

EWMA 2024 CONFERENCE ABSTRACTS

EWMA 2024 Conference Abstracts

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Published by the European Wound Management Association, Nordre Fasanvej 113, 2, 2000 Frederiks-berg, Denmark Web: www.ewma.org.
Email: ewma@ewma.org

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E-Posters

Diabetic Foot 1

EP001 Adequate local care: A solution to prevent diabetic foot amputation

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Aim: This study aimed to identify optimal local care strategies to prevent amputation and minimize adverse outcomes in patients with diabetic foot complications.

Method: Conducted between January 2018 and December 2022 at Ibn Sina University Hospital, Annaba, Algeria, this retrospective study involved 30 patients at various diabetic foot stages. Patients were categorized into three groups based on lesion progression. The first group received saline, Dakin's antiseptic, and pro-inflammatory dressing. The second had saline, diluted Betadine, and smart dressings, while the third received saline, Dakin's, and natural dressings like honey or mastic oil.

Results/Discussion: Among the groups, the second demonstrated significantly reduced amputation rates, albeit with higher care costs. The third group showed comparable amputation rates to the first but experienced expedited healing. Amputations varied across toes, forefoot, and lower leg thirds, influenced by lesion state, glycemic control, and patient adherence. Smart dressings proved highly effective, emphasizing their role in mitigating diabetic foot complications, while natural dressings exhibited promising results albeit requiring rigorous quality assessments.

Conclusion: This research highlights the importance of patient-related factors, notably therapeutic adherence, in influencing lesion progression and amputation risk. Overall, the findings emphasize the significance of tailored local care in diabetic foot management, with smart dressings and natural alternatives showing promise but necessitating a balance between effectiveness and cost.

EP002 Laser photobiomodulation on diabetes-related foot ulcer: a cytokines mRNA expression analysis

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Aim: To assess the photobiomodulation effects on mRNA cytokines expression in Diabetes-related foot ulcer (DFU).

Method: Non-randomized controlled clinical trial was carried out in two tertiary care hospitals in Brazil. 29 diabetic patients were followed for 12 weeks divided in two different groups: intervention group (IG) (n=20) which had the DFU irradiated with a laser weekly plus covered by a hydrogel; control group (CG) (n=5) which the DFU were treated with a hydrogel only. The wound fluids were collected by an endocervical brush at four different time points: before the beginning of the treatment (T0), and 4, 8 and 12 weeks (T4, T8 and T12) later. Expression of mRNAs for TGF- β , TNF- α , IL-1 β , IL-6 and IL-10 was determined by real-time reverse transcription PCR.

Results/Discussion: At T0, there was no difference in mRNA expression between the groups. At T4, there was an increase in the TGF- β and TNF- α expression in both groups. The IL-1 β , IL-6 and IL-10 mRNA expression were greater in IG at T4. At T8, TGF- β mRNA expression showed reduction in IG and CG, TNF- α and IL-1 β expression was less in the IG than in the CG. Regarding IL-6 and IL-10, both groups showed increased expression compared to T4. At T12, the TGF- β , IL-1 β and IL-6 expression was less in IG than in CG. The TNF- α expression was less in both groups compared to the other time points.

Conclusion: The laser photobiomodulation irradiation seems to modulate cytokines and growth factors at T4, the wound healing inflammatory phase.

EP003 Assessment of the Diabetes-related foot ulcer impact on quality of life using the Diabetic Foot Ulcer Scale Short Form (DFS-SF)

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Aim: To assess the impact of the Diabetes-related foot ulcer (DFU) on quality of life using the Diabetic Foot Ulcer Scale Short Form (DFS-SF).

Method: This was a cross-sectional exploratory study conducted in a Brazilian tertiary care hospital from 2022 to 2023. Socio-demographic, anthropometric, and clinical data of diabetic patients with DFU (n=103) were collected. The patients answered to the DFS-SF for QoL assessment. Data was analyzed using descriptive statistics. Mann-Whitney test and The Spearman's Correlation was applied to evaluate the associations between variables. The significance level adopted was p=0,05. All statistical analyses were carried out using Statistical Package for Social Sciences (SSPS) (Version 17.0, USA).

Results/Discussion: Of 103 participants (mean age 63.84 years), 77,67% were male, 55,34% were white. The Duration of diabetes was 15.3 (9.68) years. Mean HbA1c was 8,5% (2,1). About 77% of patients took oral anti-diabetics and 45% received insulin. The mean scores were 40.63 (20.1) for leisure, 56.89 (29.33) for physical health, 54.95 (31.01) for dependency/daily life, 54.89 (30.53) for negative emotions, 47.03 (27.58) for worried about ulcer and 59.34 (29.01) for bothered by ulcer care. A negative correlation was found between the Duration of diabetes and negative emotions (Spearman's $r = -0,1991$; $p = 0,0460$).

Conclusion: Diabetic patients with DFU face poor QoL, especially in leisure and worries about ulcer in DFS-SF domains. The duration of diabetes was negatively associated with negative emotions. Health providers should elicit patients' illness perceptions as a first step in evaluating their diabetes management self-efficacy and provide appropriate interventions.

EP004 success in implementing good practices to people with diabetic foot ulcer through an educational program in a polyclinic

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Aim: To implement a comprehensive care model through an educational program in accordance with the guidelines recommended by the international consensus in the treatment of diabetic foot ulcers in a Polyclinic at secondary care level.

Method: Experience report of a national gold standard certification program in care for patients with diabetic foot ulcers in a reference polyclinic in 32 municipalities. The program was developed over 2 years, with the first year developing protocols, multidisciplinary booklet flows and application of the rapid gravity pathway. In the second year,

adjustments, validation and applicability of all adjustments. Subsequently subjected to an audit by a representative of an international entity.

Results/Discussion: The results achieved in the audit through the qualitative questionnaire found that the flow of intersectoral communication became effective, the incorporation of protocols by the entire multidisciplinary team, training and education of the associated network was crucial for aligning care between levels of care primary and tertiary reducing complications of diabetic foot ulcers in the region, as well as team and patient satisfaction.

Conclusion: Through this program to implement good practices in the care of people with diabetic foot ulcers, Polyclinic achieved maximum certification in the prevention of complications and treatment as soon as possible to save feet and save lives, in terms of the patient, family and of health professionals.

EP005 Study on predisposing factors and recurrence sites of diabetic foot ulcer in 230 cases

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Aim: Through the study of the inducement and location of diabetes foot ulcer recurrence, it provides a basis for the prevention and control of diabetes foot.

Method: Data of 230 inpatients with diabetic foot were retrospectively analyzed. The information collected includes the patient's gender, age, place of residence, underlying diseases, whether other diseases were present at the time of onset, the cause and location of foot ulcers, and risk factors. Data were compared by X² test and Kruskal-Wallis H test.

Results/Discussion: 48.69% were caused by daily life and health care behavior. 77.39% foot ulcers recurrence, 42.61% were caused by inadequate health and daily life behavior. Foot ulcer causes lead to the comparison of incipient and relapse, recurrence than incipient, difference was statistically significant. 51.74% of the patients with recurrent ulcer were the dorsum of the foot, 17.39% plantar, 8.26% dorsum and plantar. Incipient and relapse of ulcer area compared, relapse back more than a foot of incipient, difference was statistically significant. 48.70% were caused by inappropriate daily life and health care behavior, and 33.48% occurred in the dorsum of the foot; Compare different ulcer site with incentive, the difference was statistically significant.

Conclusion: The occurrence of diabetes foot ulcer is more recurrent than the initial one. The recurrent part of diabetes foot ulcer is more than the foot bottom, and the recurrent inducement is mostly inappropriate daily life and health care behavior, providing a basis for the prevention of diabetes foot recurrence.

EP006 Application of acellular dermal matrix microparticles combined with autologous microparticle skin grafting for the treatment of diabetic foot

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Aim: To explore the clinical value of acellular dermal matrix (ADM) microparticles combined with autologous microparticle skin grafting for the treatment of diabetic foot.

Method: According to the inclusion and exclusion criteria, 15 patients with good growth of granulation tissue after debridement of diabetic foot were selected. ADM microparticles combined with autologous microparticle skin grafting were used to repair the wound. Then the wound healing time was observed, and the local tissues were taken after healing, for observing pathological sections.

Results/Discussion: Five patients with diabetic foot healed well, with a healing time (from the day of the one-step surgery to the complete healing of the wound) of 33-78 days, and the average days is 47. The result of the pathological examination is: the continuous tissue is visible in the tissue, indicating that the wound has healed. It can be seen that the formation of blood vessels and the proliferation of skin cells can also be seen in the outermost ADM structure.

Conclusion: ADM microparticles combined with autologous microparticle skin grafting is an effective method for the treatment of diabetic foot.

EP007 The impact of podiatrist intervention in reducing the incidence of high-risk factors for diabetic foot

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Aim: To explore the role of podiatrist intervention in reducing the incidence of high-risk factors for the diabetic foot.

Method: Comprehensive foot intervention was performed on 387 diabetic patients who met the inclusion criteria. The podiatrists screened, educated, and managed the diabetic foot high-risk group with dedicated interventions, peripheral nerves, and blood vessels in feet, and education, follow-up consultations and return visits to improve self-protection; collected information, established patient management files and carried out graded management of diabetic foot. The χ^2 test was used for data comparison.

Results/Discussion: The incidence of tinea pedis, onychomycosis, and callus on the patient's foot was all lower than at admission. The incidence of abnormalities in the 10g nylon wire tactile, temperature, vibration, pain, and Achilles tendon reflex examinations were all lower. The incidence of skin temperature changes, abnormal dorsalis pedis artery pulsation, abnormal posterior tibial artery pulsation, foot edema, and foot bruising in the patients' peripheral foot vascular findings at the last examination were all lower. The incidence of foot ulcers and foot numbness or pain in patients at the last examination were 6.72% and both lower than 9.82% and 17.83% at admission.

Conclusion: Comprehensive interventions by podiatrists can further prevent diabetic foot ulcers by safely and effectively reducing the incidence of tinea pedis, onychomycosis, and callus as well as reducing the incidence of abnormal results of items related to peripheral nerve and peripheral vascular examinations of the foot, thereby delaying damage to diabetic patients from high-risk factors of the diabetic foot.

EP008 Multiple tunnels a novel technique for management of diabetic foot infections

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Aim: The main objective of this study is to evaluate the (multiple tunnels) technique for managing diabetic foot infections according to rate of reinterventions and rate of amputations

Method: 118 patients with Diabetic foot infection underwent for surgical debridement by the multiple tunnels technique from April 2021 to May 2023.

This technique depends on understanding the direction of spreading of infection, and to be one step precedes the infection, so tunnels were done in the places that contain pus far from the ulcer, the inflamed and could be in healthy skin on the pathway for spreading of infection.

Tunnels were widely opened during debridement and connected to the main wound or ulcer, tunnels flushed daily during dressing.

Results/Discussion: from 118 patients complaining diabetic foot infections and underwent for multiple tunnels technique there were no cases of mortality, no cases of major amputation, one case of toe amputation post the

primary debridement procedure, 4 cases (3.4%) needed major debridement, 5 cases (4.2%) needed secondary procedures.

Conclusion: Multiple tunnels technique is an efficient procedure for management of diabetic foot infections and ulcers, that decrease time for healing, avoid unnecessary skin removal, decrease risk of infection spreading, amputations and reintervention.



Figure 1. Rt 2nd and 3rd toes amputation and multiple tunnels



Figure 2. Severe foot infection managed by web space incisions and multiple tunnels



Figure 3. Bi toe gangrene managed by debridement and 2 tunnels



Figure 4. Big toe infection managed by debridement and 2 tunnels in 1st space and planter aspect of the big toe



Figure 5. Foot infection managed by debridement and multiple tunnels



Figure 6. Infected foot ulcer managed by debridement and tunnels

EP009 Effect of the oral application of a multispecies probiotic on wound healing and periodontitis in diabetic patients - a pilot study

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Aim: Chronic wounds are common in diabetic patients and are associated with a decrease in quality of life. Pathogenic bacteria often colonizing chronic wounds hinder the healing process and bear a great risk for (systemic) infections. Here we aim to prove that probiotics are capable to displace human pathogenic bacteria, ameliorate inflammation and positively influence the microenvironment/microbiome of skin and mucosa.

Method: In this pilot study 20 patients with diabetes and chronic wounds received a multispecies probiotic daily for six months. Changes in oral, stool, and wound microbiome were investigated and the effects of the probiotic intervention on wound healing, periodontitis and wound-specific quality of live (Wound-QoL-17) were analyzed in course of the clinical study.

Results/Discussion: After six months of probiotic intake in five out of 13 patients, wounds healed completely. Most patients reported an improvement in wound-specific QoL with particular positive effects on "pain" and "mobility". Microbiome analysis revealed a reduction in *Staphylococcus aureus* and *Pseudomonas aeruginosa* and a colonization predominantly with *Staphylococcus epidermidis* in healed wounds.

Conclusion: This study provides evidence for beneficial effects of the oral application of a multispecies probiotic over six months in diabetic patients with chronic wounds on wound closure, wound microbial pattern, QoL and interestingly on tooth health. A randomized, placebo-controlled, double-blinded clinical trial is required to verify the results.

EP010 Human beta defensin-2 nanoparticles loaded into a collagen-chitosan composite scaffold for accelerated healing in diabetic wounds

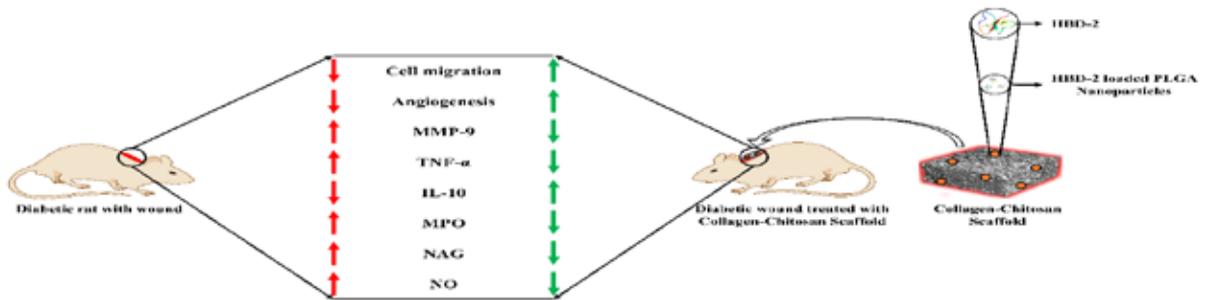
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Aim: The current study aims to develop Human beta defensin-2 (HBD-2) nanoparticles (NPs) loaded in collagen/chitosan (COL-CS) acellular dermal matrix for accelerated healing in diabetic wounds (DWs).

Method: Existing treatment strategies fail to address all the prerequisites necessary to treat because of the multifactorial pathophysiology of DWs. Thus, developing a novel formulation having a multi-role is highly desirable. HBD-2-loaded NPs have been prepared and evaluated for particle size, entrapment efficiency, and *in vitro* drug release. The optimized NPs are then loaded in the COL-CS acellular matrix to form a composite scaffold. Later the composite scaffold was subject to cross-linking. Both scaffolds have been evaluated for porosity, matrix degradation, drug release, biocompatibility, cell migration, and wound contraction in the diabetic rat model, followed by post-wound healing studies.

Results/Discussion: The characterization results of composite scaffolds reveal that HBD-2-NPs-COL-CS cross-linked (HBD-2-CL) scaffold possess optimum porosity, low matrix degradation, and sustained drug release when compared with HBD-2-NPs-COL-CS non-cross-linked scaffolds. The *in vitro* studies revealed that the HBD-2-CL scaffold was biocompatible. Using the streptozotocin and excision-induced DW model, significantly ($p \leq 0.05$) higher rates of wound contraction were observed in the HBD-2-CL treated group as compared to other groups.



Conclusion: HBD-2-CL scaffold accelerated wound healing by suppressing the inflammatory mediators followed by promoting cell migration, and angiogenesis in the diabetic rat model, which warrants its usage as a novel treatment for DWs.

Note: The work was published before the conference.

EP011 The effectiveness of mindfulness-based therapy on the healing of diabetic foot ulcers

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Introduction: We investigate the effectiveness of mindfulness-based treatment on the healing of diabetic foot ulcers.

Material and method: In our study, we use a semi-experimental research method with a pre-test, post-test and follow-up design and randomly divided 60 participants into two intervention (30 participants) and control (30 participants) groups. All patients were diabetic, and due to foot ulcers, they had referred to Karaj Ulcer Prevention, Care and Treatment. We provide eight sessions of mindfulness-based therapy to the experimental group, and the control group did not receive any treatment. The data collected in this research with four standard Wells and Davis thought control questionnaires, Beck's anxiety (1998), Beck's depression second edition (2007), Weir and Sherburne's quality of life questionnaire (1992) and the wound management and assessment form approved by the Ministry of Health and Medicine and medical education were collected and analyzed using multivariate variance analysis by Spss25 software.

Results: The results of the research showed that there was a significant difference between mindfulness based therapy on the healing of diabetic foot ulcers between the experimental and control groups, and mindfulness-based cognitive therapy was effective in healing diabetic foot ulcers in the experimental group and the follow-up phase.

Conclusion: As a result, providing the necessary facilities to implement the methods studied in the research in the appropriate proportion, we achieved the reduction of anxiety, depression and improvement of the patient's quality of life and thought control, and finally, the healing of their foot ulcers.

EP012 The effects of pandemic lockdown on the efficiency and efficacy of a third-level diabetic foot (DF) multidisciplinary service

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Aim: No data have been produced so far to evaluate if interruptions of clinical activities for DF, like those related to pandemic lockdown, could actually affect the clinical evolution of the disease.

Method: We retrospectively searched the database of the DF Clinic of our University Hospital for number of first visits, controls and urgencies (U), calculating the U-rates over the total visits (%U/TV) in the years comprised between 2013 and 2022, including the pandemic years (2020-2021). The results are reported in the table.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
First Visits	466	453	426	410	366	522	495	341	413	527
Control Visits	6082	7313	6820	7777	6184	6680	6041	4105	5312	5320
Urgencies (U)	752	714	464	486	378	381	311	435	732	393
Total visits (TV)	7300	8480	7710	8673	6928	7983	7447	4881	6457	6240
%U/TV	10.30	8.41	6.02	5.60	5.4	4.77	4.18	8.91	11.33	6.29

Results/Discussion: Between 2013 and 2018, while the number of visits remained stable (7831.57 ± 615.40), the %U/TV gradually decreased, from 10.30% in 2013 to 4.18% in 2019 ($p < 0.02$); in 2020 and 2021 the number of visits decreased (5669.00 ± 1114.40 , $\Delta -2162.57 \pm 499$), while the %U/TV increased to 8.91% in 2020 and 11.33% in 2021 ($p = 0.01$), to decrease again to 6.29% in 2022.

Conclusion: Our data show how the interruption of clinical outpatient activities due to the pandemic lockdown negatively affected not only the efficiency of our Service, but also the efficacy of its action.

EP013 Simultaneous reconstruction of soft tissue and bone defect with free flap and bone cement in diabetic foot

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Aim: The incidence of infection in the diabetic foot (DF) has been known as 30-50 % and osteomyelitis (OM) is seen in DF infection leading to osteonecrosis. The distal bone necrosis can be solved with amputation, however, the necrosis somewhere in the midportion of the foot skeleton has to be reconstructed for appropriate foot function and shape. We would like to show and share our experience and results of simultaneous reconstruction of soft tissue and bone defect with free flap and bone cement in DF.

Method: From June 2022 to August 2023, four patients underwent simultaneous reconstruction for soft tissue and bone. All operations were done after complete infection control and correction of vascular status with PTA. The free flap for soft tissue and bone cement with k-wiring for bone defects were used.

Results/Discussion: All reconstructions were successful, however, minor deformities developed in one case. In one case, the k-wire was broken during the follow-up period without adverse symptoms. All four patients could walk by themselves without any complication related with bone cement.

Conclusion: One may hesitate to reconstruct the bone defect complicated infection with foreign substance; bone cement, however, we could overcome this challenging situation. We could find some important considerations for this procedure; measuring the volume of the bone defect, period for bony consolidation, failure of k-wire, and following deformity. And we are ongoing to solve these problems.

EP014 Non-surgical treatment of diabetic foot ulcers on the dorsum of the foot with polydeoxyribonucleotide (PDRN) injection: Two cases

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Aim: The purpose of this study was to report the efficacy of intralesional injection of PDRN (polydeoxyribonucleotide) in cases where non-surgical treatment of diabetic foot ulcers was chosen.

Method: This case report presents two cases of diabetic foot ulcers located on the dorsum of the foot, successfully treated with PDRN injection as a non-surgical intervention. Both cases involved patients with longstanding diabetes and chronic non-healing ulcers, warranting alternative therapeutic options due to the risks associated with surgical procedures and the limited response to conventional wound care measures.

Results/Discussion: A 68-year-old man had about 3 cm-sized ulcer to the left foot dorsum. A conservative treatment with PDRN was chosen due to patient's need. PDRN 5.625 mg was intralesionally injected into the subcutaneous layer of the wound once a week for a total of 8 weeks. Eight weeks later, the patient's diabetic foot ulcer had fully recovered without any sequelae (Fig. 1).

A 70-year-old woman had about 2.5 cm-sized ulcer to the right foot dorsum. PDRN 5.625 mg was intralesionally injected for a total of 8 weeks. After 8 weeks, the wound had healed (Fig. 2).

Conclusion: This study demonstrates that if the patient declines surgical intervention for diabetic foot ulcers on the dorsum of the foot, conservative treatment with PDRN injection can be successful as long as the poorly vascularized tissue is removed and the wound bed is maintained clean.



Figure 1. Case 1.



Figure 2. Case 2.

EP015 Syme amputation in diabetic patients: a case series

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Aim: Despite several advantages, amputation at the ankle (Syme) is one of the least popular methods applied to diabetic ulcer patients. To reevaluate its benefits and shortcomings, we retrospectively investigated patients who received Syme amputation.

Method: From January 2017 to June 2023, patients who underwent amputation surgery at the ankle joint due to diabetic complications were identified. The following data were obtained: demographics, risk factors, previous operations on the investigated limb, wound healing, postoperative complications, additional operations needed for sufficient wound closure, and postoperative mobilization.

Results: Five cases from four patients were included, one of whom underwent bilateral Syme amputation. The mean age was 73.75 years (range: 63–98 years). Three were male, and one was female. All patients had hypertension in addition to type 2 diabetes (DM II) and underwent surgery for severe infections or osteomyelitis. Chronic kidney disease was observed in two patients. One additionally had rheumatoid arthritis, chronic adrenal insufficiency, psoas muscle abscess, and deep vein thrombosis. Patients had an average of 1.75 prior amputations (range: 0–3). One had undergone fasciotomy for compartment syndrome. Of the five Syme amputations, two healed primarily, whereas three subsequently needed below-knee amputations. One patient achieved ambulation with his stump. One of the patients with primary healing remained bedridden due to weakness.

Conclusion: Even though Syme amputation can result in a stump allowing patients to walk short distances without having to use a prosthesis, careful consideration of all options is crucial for choosing an amputation technique.

EP016 Artificial intelligence convergence and 3D bioprinting technology hyper-personalized organ regeneration technology

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Aim: The study aimed to validate a novel 3D-bioprinting & AI system's efficacy through six clinical trials with 100 non-healing diabetic foot ulcer (DFU) patients and 20 burn patients.

Method: In the longitudinal study, 63% of DFU patients and all burn patients underwent AI-assisted wound area detection, with images sent to the 3D-bioprinter Dr. INVIVO (ROKIT HEALTHCARE, Korea). Autologous adipose tissue was harvested via liposuction and micronized, and personalized adipose patches were 3D-bioprinted and applied on post-wound debridement. After a single treatment, patients received standardized offloading and dressing for a 12-week follow-up.

Results/Discussion: Results across five countries (India, Korea, Turkey, USA, Malaysia) revealed an 87% complete wound healing rate at 12 weeks in ROKIT's group compared to 38% in conventional DFU treatment. The test group showed accelerated epithelialization (>70% wound healing rate), and burn patients exhibited epithelialization within four weeks.

Conclusion: The study implies a paradigm shift in chronic wound care, emphasizing the convergence of cell biology, AI, and 3D-bioprinting. Clinical results support the feasibility of transplanting adipose-derived pluripotent cells through the new technology, ensuring safety with autologous fat transplantation and enabling side effect-free treatment. Currently, ROKIT has been commercialized in countries such as USA, KSA, India, and Turkey etc.

EP017 Reconstruction of extensive diabetic foot defect with flow-through free flaps

Suk-Ho Moon¹

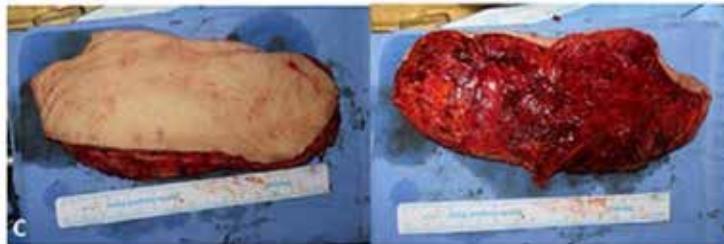
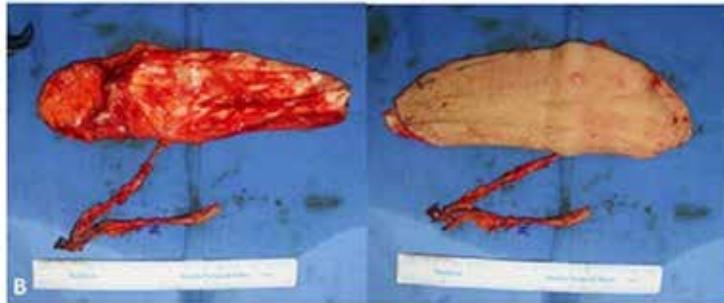
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Aim: Advances in free flap surgery and microsurgery have led to increased cases of reconstructing extensive defects in diabetic feet. However, many patients have many vascular problems, which limits the selection of the recipient vessel for the flap. Additionally, due to the three-dimensional structure of the foot, when reconstructing with a single flap, the flap becomes very bulky at the folded area, which often increases difficulties in wearing shoes or living. We present a series of cases in which these deficiencies were overcome using a flow-through flap.

Method: After debridement, two flaps were harvested according to the defect size. Among the two flaps, the first flap located close to the selected recipient vessel was the anterolateral thigh (ALT) flap. The reason is that the pedicle of the ALT flap can be harvested longer than other popular flaps, and the pedicle diameter is relatively large on the distal side. After the first flap was anastomosed to the recipient artery and vein, the second flap was anastomosed using the distal vessel end as the recipient vessel.

Results/Discussion: All flaps survived without any complications. All patients were able to perform activities of daily living, such as walking and driving.

Conclusion: Free flow-through flaps are useful in coverage of extensive defects with limited recipient vessels. In particular, the ALT flap is a very good candidate for the first of flap of the flow-through flap method.



EP018 Early outcomes and complications of surgically treated diabetic hallucal infection

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Aim: Severely infected diabetic ulcers of the big toe often necessitate surgical treatment. This study is a preliminary comparative report on the early outcomes and complications of hallucal DFI treated with either conservative surgery or amputation.

Method: This is a retrospective comparative study. All DFU were infected and at advanced stage (Wagner Grade 3 or 4). Osteomyelitis was initially suspected clinically or on MRI then all cases were confirmed by bone pathology and microbiology culture. The primary outcome was defined as the frequency of subsequent surgery (deep infection recurrence treated with surgery).

Results/Discussion: The study included 37 cases: 23 DFU with osteomyelitis (Wagner Grade 3 or 4) and 14 infected DFU (Wagner Grade 2). Twenty-four conservative procedures and 13 amputation surgeries were performed initially. Ten patients (27%) required additional surgeries. Four recurrences (16.7%) were observed in the conservative group and 6 (46%) in the amputation group ($p = 0.054$). Amputation rate as a subsequent procedure was 8.3% for the conservative group and 23.1% for the amputation group ($p = 0.2$). Only Hemoglobin (Hb) level was correlated with the outcome ($p = 0.002$).

Conclusion: The more severe the initial hallucal infection (higher Wagner grade), the higher is the frequency of early surgical complications. Our assessment tools of initial infection extent seems to be underperforming. A more aggressive treatment in the form of a more proximal cut with regard to MRI bone infection signal should be considered in an attempt to minimize the risk of subsequent surgeries and re-amputations.

EP019 Should we resect more proximally when treating forefoot diabetic infection?

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Aim: Surgical treatment is often needed when treating severe diabetic toe infection complicated with osteomyelitis. When amputation is indicated, the level of cut is not usually evidence-based. The aim of this preliminary report is to record comparative outcomes between toe amputation and ray resection and their differences between all toes.

Method: This is a comparative retrospective study based on the electronic charts of a continuous series of 44 patients (48 procedures) with diabetic forefoot infection. Only cases with confirmed osteomyelitis were included. Two groups were compared based on the level of amputation: the toe amputation group (at and distal to the metatarsophalangeal joint) and the ray resection group (distal to tarsometatarsal joint). The primary outcomes were defined as osteomyelitis recurrence and re-amputation frequency.

Results/Discussion: Outcome comparison between toe amputation and ray resection; 47.3% vs. 51.7% had a recurrence of their osteomyelitis ($p = 0.8$), 36.8% vs. 34.5% had a re-amputation ($p = 0.02$). Re-amputation was needed in 25% of cases following hallux/first ray index procedure while the same was required in 39% of cases following lateral toes/rays index procedures ($p = 0.4$). Both primary outcomes were correlated to CDK, smoking and creatinine level.

Conclusion: Bone infection recurrence and re-amputation are highly prevalent in patients undergoing initial amputation for severe diabetic toe infection. The extent of bone infection seems to be underestimated. A more aggressive approach in the form of a more proximal level of the index amputation procedure could be judicious.

EP020 Redefining treatment paradigms for midfoot and hindfoot charcot arthropathy

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Aim: To discuss the prevalence and management of relapse in midfoot Charcot arthropathy, especially when it extends to the hindfoot, exemplified by a case report of relapse after surgical stabilization.

Method: The document likely describes a case report method, focusing on a specific instance of midfoot Charcot arthropathy relapse with hindfoot involvement.

Results/Discussion: The results and discussion sections would revolve around the specific case's characteristics, the prevalence of relapse in Charcot arthropathy, and the challenges in managing the extension of the disease to the hindfoot.

Conclusion: The conclusion would summarize the key findings regarding the relapse and extension of Charcot arthropathy to the hindfoot and the implications for management and treatment.

EP021 The use of medical grade honey on infected chronic diabetic foot ulcers – a prospective case-control study

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Aim: Non-healing wounds are usually colonised and contaminated by different types of bacteria. An alternative to antibiotic treatment in patients with infected wounds with local signs of inflammation may be medical grade honey (MGH). MGH has antioxidant, antimicrobial, anti-inflammatory, and immunomodulatory features. This study aims to evaluate the effect of MGH therapy on infected non-healing diabetic foot ulcers.

Method: Prospective, observational case series ($n = 5$) of patients with wounds of diabetic foot syndrome are presented. There were five males with an average age of 61.6 years. All wounds were treated with MGH¹, and the healing trajectory was rigorously and objectively monitored.

Results/Discussion: In all cases, there was a gradual disappearance of odour, pain, and exudation. Moreover, the wound areas significantly reduced within 40 days and there was a decrease in glycated haemoglobin and glycaemia values. All these outcomes resulted in improved quality of life of the patients. Despite bacterial colonization with a variety of microorganisms (11 different strains) and different resistance/sensitivity profiles, antibiotic treatment was not necessary. All wounds were completely healed. MGH has antimicrobial, anti-inflammatory, and antioxidant effects in diabetic foot syndrome wounds, does not increase glycated haemoglobin or glycaemia levels, and thus constitutes an effective alternative to the use of antibiotics in the treatment of locally infected wounds. Treatment with MGH did not cause pain or side effects and is considered safe.

Conclusion: The topical application of MGH constitutes a potent treatment for infected chronic diabetic foot ulcers, due to its antimicrobial and healing activities.

¹L-Mesitran

EP022 Comparison of wound healing of diabetic foot ulcer by autologous platelets rich plasma (APRP) treatment vs normal saline dressing

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Aim: Aim was to compare wound healing of diabetic foot ulcer by autologous platelets rich plasma (APRP) treatment versus normal saline dressing.

Method: It was a randomized control study in which 60 patients, divided equally into two groups, were included. Group "A" were treated with APRP and group "B" underwent normal saline dressing. Patients were followed for outcomes & complications (wound healing, wound infection, hospital visits, psychological relief) for the next 6 weeks. Data collected through proforma was analyzed. The outcome of the two procedures was described and compared for differences in wound healing. The significance of differences observed by the two methods were subjected to testing. A p-value of 0.05 or less was taken as significant.

Results/Discussion: Among 30 patients of Group-A (APRP), 100.0% patients had wound healing and no wound infection; The wound size improvement was 19.03 ± 3.826 while the wound reduction was 76.12%, mean hospital visits was 5.80 ± 0.551 , all (100.0%) patients had psychological relief and mean satisfaction was 4.60 ± 0.621 . Likewise among 30 patients of Group-B (normal saline dressing), 93.3% patients had wound healing, wound size improvement was 15.8 ± 0.975 while the wound reduction was 63.20% .6.7% had wound infection, mean hospital visits was 6.07 ± 0.868 and 73.3% patients had psychological relief while mean satisfaction was 3.73 ± 0.691 .

Conclusion: Study concluded that APRP treatment is better than normal saline dressing for wound healing of diabetic foot ulcer.

EP023 Physiotherapy intervention plan to support diabetic foot ulcers treatment

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Aim: To investigate physiotherapeutic interventions for the management of foot ulceration in people with diabetes.

Method: Exploratory and descriptive study using the Delphi method. The interventions resulted from a systematic literature review that was submitted to a panel of experts for analysis. The panel consisted of 12 experts in the field of wound care, and two rounds of analysis were carried out. Quantitative analysis was carried out for the agreement of the answers and qualitative analysis was used on the experts' comments. Ethical approval was obtained from the Ethics Committee of the Health Sciences Research Unit: Nursing (UICISA:E) of the Coimbra Nursing School (Number 705/09-2020).

Results/Discussion: In the first round, the expert's analysis had consensus between 66.7% to 100% within the answers, and in the second round it ranged from 85.7% to 100%. Two of the interventions in the first round needed to be adjusted. In the second round, all interventions obtained at least 80% consensus.

Conclusion: Physiotherapy can help as an adjuvant therapy in the treatment of diabetic foot ulcers. The intervention includes therapeutic exercise (active mobilization exercises) and the use of assistive technologies (removable or non-removable offloading device). Active mobilization exercises, for example active movements of the tibiotarsal joint and toes, should be performed 10 to 15 times, with at least 1 set, with a daily frequency of 2 times/day, and with a minimum duration of 12 weeks. Physiotherapeutic interventions are an adjuvant therapy to a specific local treatment of the wound and pressure relieve.

EP024 the effect of peripheral blood supply on the wound healing process with diabetic foot patients

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Aim: To better assess limb vascularity is essential for the wound healing process with diabetic patients.

Method: Quantitative and qualitative data. 30 patients with diabetic ulcers were assessed over a period of three months and every patient had baseline measurements of their ankle-brachial pressure index, Doppler ultrasound, capillary refill, foot temperature, dependent rubor, and intermittent claudication.

Results/Discussion: Appropriate ulcer treatment was instituted over the following three months and the outcome was measured as a healed or non-healed ulcer. The study found that 15 patients with normal vascular status had complete wound healing, 7 patients with mild ischemia had complete healing after correcting their risk factors, 5 patients with moderate ischemia had improvement but no healing, and 3 patients with severe ischemia had no healing, gangrene, and toes amputation.

Conclusion: Diabetes is the most challenging problem all over the world. Most diabetic patients have diabetic complications, and the disease consequences of compromised blood vascular system in diabetes could be the most devastating problem. The study has proved that there is a strong relationship between the blood supply status and the healing process progression and each diabetic patient must be scanned for vascularity and neuropathy as well.

EP025 Early experience on injectable micronized human derived acellular dermal matrix (ADM) in management of diabetic foot wounds in Southeast Asia

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Aim: Diabetic foot wounds are notoriously difficult to treat owing to poor vascularity, delayed healing and higher infection risk. Human derived ADM is a relatively new technique in diabetic foot wounds treatment, which utilises a matrix scaffold for new tissue generation. Our aim is to investigate the efficacy of injectable micronized human derived ADM in the treatment of diabetic foot wounds.

Method: We prospectively recruited 8 patients with Wagner grade 2 and above diabetic foot wounds to undergo treatment with ADM. Wound sizes were recorded prior to treatment, at two weeks and at four weeks post treatment. Changes in granulation, slough or necrosis of the wounds were studied.

Results/Discussion: The mean defect of wound treated was 25.4cm³. Our results were highly positive with a mean reduction in wound size of 45% and 59% at two- and four-weeks post treatment respectively (p<0.01). ADM was also effective in infected diabetic foot wounds as 75% of our wounds had positive tissue cultures at time of application.

Conclusion: ADM has proven to be an effective treatment for diabetic foot wounds. Advantages include a ready-to-use injectable, single stage treatment, minimal pain, moldable matrix to fit any wound shape, allows for outpatient treatment and simple wound dressings. Shortfalls include a relatively higher cost and requires close follow up with the patient.

Case studies and professional communication on display

EP026 Effectiveness of topical debriding agent (TDA) as a debridement agent in managing chronic wounds. A case series

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Aim: A topical desiccation agent (TDA) is an acidic active gel that has a strong dehydrating action to facilitate removal of the infection by means of debridement. The extracellular matrix of biofilms, as well as the proteins in the bacteria themselves, rapidly desiccate, coagulating together forming precipitates. The 'precipitate' that forms quickly separates from the wound bed, leaving a clean, granulating wound that is necessary for secondary purpose healing. The objective is to determine if the topical debriding agent can effectively chemically debride chronic wounds with local infection to promote faster wound healing.

Method: Observational study of chronic wounds, a case series. The wounds were assessed on the principles of wound bed preparation using mnemonic D.I.M.E standing for debridement, infection, moisture balance and edge effect of the stalled chronic wound. "Local infection" is a stage of wound continuum defined as the existence of bacteria within the wound that cause the host to react, causing a delay in the healing process.

Wound is first cleansed. TDA was applied with a gloved finger to the wound bed and left on for 60 seconds. The wound bed is then thoroughly irrigated removing any detachable material. The wound was then dressed accordingly to standard of care.

Results/Discussion: 4 cases in our settings showed chronic wounds with tremendous improvement of wound bed with short timing of healing after application of TDA. The cases included were 3 diabetic foot ulcers (DFU), 1 venous leg ulcer (VLU) and 1 post trauma ulcer (PTU). All wounds were successfully debrided with single application of TDA only without further intervention and proceeded to granulation within 4 weeks in the observation period.

Conclusion: The use of TDA can promote consistent, rapid, and easy removal of both biofilm and non-viable tissue, and thus promoting faster wound healing.

Antimicrobials

EP027 Bacteria cell surface hydrophobicity and the relation to binding to a dialkyl carbamoylchloride-coated wound dressing

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Aim: Antibiotic resistance of bacteria is an emerging threat to human health. As chronic wounds are characterized by a multispecies bioburden, which can negatively affect healing when the wounds become critically colonized or infected, innovative antimicrobial treatment strategies should be utilized in their management. This study explored the cell surface hydrophobicity (CSH) of WHO prioritized antibiotic-resistant bacteria and how this property relates to binding to a hydrophobic dialkyl carbamoylchloride-coated wound dressing* and its antimicrobial activity.

Methods: CSH was evaluated by hydrophobic interaction chromatography (HIC). Antibacterial activity and the binding capacity for bacteria was tested according to JISL1902.

Results: *Staphylococcus* species exhibited the highest CSH (32-38%) of the strains evaluated, followed by *P. aeruginosa* (14-18%), *E. faecium*, *E. cloacae* and finally *A. baumannii*, only displaying 4% relative CSH. *P. aeruginosa* (ESBL) had a slightly higher CSH than the two *P. aeruginosa* control strains evaluated, whereas *S. aureus* (MRSA) did not display a higher CSH than the *S. aureus* control strains. The CSH was not affected to a large extent by presence of serum in the culture media. Against all strains tested in this study, the hydrophobic wound dressing* was able to exert a strong antimicrobial effect according to JISL1902 by irreversibly binding the bacteria.

Conclusions: The WHO prioritized antibiotic resistant bacteria tested show a broad range of CSH. However, all strains tested were able to bind irreversibly to a dialkyl carbamoylchloride-coated dressing*. This result indicates that bacteria with a wide CSH range are capable of binding to a hydrophobic surface.

*Sorbact® Compress, Essity Hygiene and Health AB

EP028 Evaluating antibiotic prophylaxis adherence: Implications for surgical site infections and wound care management

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Aim: This study aimed to evaluate adherence to an antibiotic prophylaxis protocol and its impact on incidence of surgical site infection (SSI).

Method: A prospective observational cohort study was conducted at a teaching hospital in Botucatu, Brazil, from September to November 2015. The population were adults who underwent surgery with surgical antibiotic prophylaxis. The main outcomes measured were incidence of SSI at 30-days postoperatively, protocol adherence and surgical wound complications. STROBE guidelines were followed.

Results/Discussion: Among the 527 participants recruited, a 30-day follow-up was completed by 78.7% (n=415). Within this cohort, 57.6% were females aged over 60 years (36.4%). The incidence of SSI stood at 9.4% (n=39), with dehiscence being the most prevalent complication at 64.1% (n=25), followed by increased exudate at 51.3% (n=20). Notably, full adherence to the antibiotic prophylaxis protocol was low at 1.7% (n=7). The study observed a 60% increased risk of SSI for every protocol mistake made. Alarming, 17.8% (n=74) of participants received antibiotic treatment exceeding the stipulated protocol duration. The overall mortality rate stood at 13.5% (n=56), with 1% (n=4) of these deaths attributed to SSI.

Conclusion: There is a pressing global necessity to enhance antibiotic management, as underscored by this study's revelation of low adherence to the antibiotic prophylaxis protocol. This lack of adherence correlated with a notable incidence of SSI and subsequent wound complications. Nearly 20% of participants received prolonged antibiotic treatment. Adhering strictly to the protocol could substantially impact SSI-related outcomes and enhance global antibiotic management.

EP029 “Polymeric Approach” to skin lesions: a technochallenge in wound care

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Aim: Technology evolution is influencing the skin lesions approach. A new family of polymers, combined with functionalising molecules through freeze-drying, 3D printing and supercritical CO₂ processes, can significantly modify treatments, procedures and results in wound care: these interactive materials can remain in place for many days (up to 2 weeks), requiring only the secondary dressing change once/twice a week. Aim of this work is to demonstrate its effectiveness.

Method: We enrolled 25 patients with skin lesions of all types (except necrosis) with sequential randomization. Based on the state of the lesion (totally or partially cleansed, critically colonized or infected, cavitory or flat) we have selected dressings with variable composition: polylactic acid powder/pads, anhydrous polylactic and polyglycolic acid gel, caprolactone gauze, collagen patch with ozonized oil, agarose film and PEA (PalmitoylEthanolAmide)*. Secondary dressing with moist gauzes. Dressing change, according with exudate, every 4 or 7 or 10 or 14 days. Outcomes: wound area reduction (WAR) and pain (when present). Cut off: 6 weeks or healing or serious adverse event/worsening.

Results/Discussion: All patients achieved excellent results: 55.5% healed within observation time; 44.5% improved significantly with a mean WAR of 81.2%; pain, if present, reduced from 9.4 to 3.6. No adverse events or allergies.

Conclusion: The results are absolutely significant: reduction in healing times compared to those with advanced dressings, reduction in workload because of increased wear time and costs reduction thanks to the reduction in the frequency of medications and healing times.

*Akeso Innovative Biotechnology Care (Italy)

EP030 Silver spray powder dressings: are there differences? A comparison between 3 of them

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Aim: The most commonly used product in Italy not only to cure wounds and MASD (Moisture-Associated Skin Damage), but also to prevent IAD (Incontinence-Associated Dermatitis) and pressure injuries (PI) is silver spray powder; aim of this work is to compare 3 of them.

Method: We enrolled 90 patients, 60 with MASD and 30 with critically colonized wounds (Cutting & Harding criteria), divided into 3 groups of 30 each (20 + 10) with 3 different treatments (silver spray powder): Group A micronized silver sulfadiazine (SSD)*, Group B hyaluronate and colloidal silver**, Group C silicon dioxide, ionic silver and chlorhexidine (SCX complex)***. Dressing change thrice a week in colonized wounds and thrice a day in MASD. Study duration: 3 weeks for colonized wounds, 20 weeks or complete healing for MASD. Outcomes: time of disappearance of critical colonization signs for colonized wounds and healing time for MASD.

Results/Discussion: All patients with MASD achieved the complete healing within 70 days in Group C, 91 days in Group B and 105 days in Group A. No patients of Group A achieved the disappearance of critical colonization signs within the 3 weeks of the study duration and only 2 out of 10 (20%) in Group B; on the contrary, all patients of Group C achieve the target (mean 17.8 days).

Conclusion: SCX complex demonstrated to be more effective than other types of silver, especially in comparison with SSD, and its antibacterial property is the highest.

*Sofargen (Alfasigma) **Farmactive (Farmac-Zabban) ***Kadermin (Pavia Farmaceutici)

EP031 Impact of interfering substances on the bactericidal efficacy of different commercially available hypochlorous acid-based wound irrigation solutions commonly found in South-East Asia

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Aim: To date, there is no standardised method to assess the 'true' antimicrobial efficacy of different antimicrobials, especially in testing condition that stipulate a high protein environment in the wound. As clinicians often rely on the

antimicrobial efficacy profiles for product selection, a rigorous testing is warranted. Hypochlorous acid (HOCl)-based solutions have been introduced as a good alternative for wound cleansing but the assessment of its antimicrobial activities in a stipulate wound environment is limited. In this study, we assessed the in vitro bactericidal activities of 7 commercially available wound irrigation products commonly found in South-East Asia.

Method: The evaluation was conducted using quantitative suspension method, EN 13727 in either low or high protein conditions.

Results/Discussion: Under low protein condition, 4 / 5 tested HOCl products achieved bactericidal activity (≥ 5 log₁₀ reduction factor; RF) within 2 to 5 minutes, and only one product achieved 5 log RF at 15 seconds. None of the HOCl achieved 5 log RF under high protein, even after 30 minutes of exposure time. In contrast, protein interference on the antimicrobial activities of polyhexanide-based product is less pronounced (low protein: 60 seconds vs. high protein: 2 minutes to attain ≥ 5 log RF). Octenidine is the only active not affected by protein interference achieving ≥ 5 log₁₀ RF within 15 seconds in both low and high protein conditions.

Conclusion: These findings warrant the need to screen antimicrobial wound care products, especially HOCl-based products, in high protein condition to better reflect the antimicrobial activities in wound care.

EP032 Antibacterial efficacy of hydrogen peroxide in diluted honey: new findings

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Aim: Honey is an attractive antimicrobial agent for the pharmaceutical industry. Medical-grade honey as a medical device is regularly and effectively used for treatment of various spectrum of injuries including infected chronic wounds. Despite intensive research in antibacterial activity of honey, the exact mechanisms of hydrogen peroxide (H₂O₂) antibacterial action in diluted honey are partially described.

Method: Determination of honey antibacterial activity against *Staphylococcus aureus*, expressed as minimal inhibitory concentration (MIC), was carried out by a broth micro-dilution assay. Bactericidal activity of honey was determined by cultivation of honey solutions at different concentrations on agar plate and colony forming units were counted. The content H₂O₂ was determined by a modified GOX assay calorimetric kit.

Results/Discussion: Eight honey samples with high antibacterial activity were used in the study. The ability of H₂O₂ production in diluted honeys at a MIC value of 6% was not uniform among the samples. The critical concentration of H₂O₂ in diluted honeys responsible for inhibiting the growth of *S. aureus* was 150 μ M. On the other hand, H₂O₂ itself at a concentration of 150 μ M in artificial honey solution did not show any inhibitory activity, implying the important role of honey phytochemicals in the antibacterial effect of natural honey.

Conclusion: In conclusion, H₂O₂ is a crucial molecule responsible for antibacterial activity of honey and its concentration in diluted honey should be at least 150 μ M.

Acknowledgements: This work was supported by the Slovak Research and Development Agency under Contract No. APVV-21-0262.

EP033 In vitro and in vivo evaluation of the antimicrobial effectiveness of non-medicated hydrophobic wound dressings

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Aim: 1) Investigate the impact of wound dressing materials on bacterial attachment. 2) Understand the influence of bacterial attachment in the presence of different suspension media (PBS or IPC). 3) Understand the influence of

different suspension concentrations on bacterial attachment. 4) Understand if bacterial attachment to a dressing material reduces viable counts in a suspension.

Method: We employed a range of *in vitro* experiments to compare a hydrophobic wound dressing to a control silicone dressing. We used a *P. aeruginosa* challenge suspension with increasing concentrations in addition to supplementation with PBS or IPC (Protein). Bacterial attachment was investigated over 1 and 24 hours. A bacteriostatic agent Deferiprone was used to limit bacterial growth in one of the experimental designs. Two different wound dressings were obtained from patients' ulcers and observed using SEM.

Results/Discussion: There was no statistical difference in bacterial attachment between both test dressings. Bacterial attachment to the two test dressings was significantly lower ($P < 0.0001$) when IPC was used instead of PBS. The hydrophobic dressing was unable to reduce the amount of bacteria in the suspension. When bacterial growth was arrested, attachment to the test dressings did not increase over time. SEM identified widespread adsorption of host fouling across the test dressings which occurred prior to microbial binding.

Conclusion: Bacterial binding is not unique to DACC dressings, and we demonstrate (in addition to previously published work) that the bacterial binding capabilities are not effective at reducing the number of bacteria in laboratory models or human wounds.

EP034 Development of multiple “real-world” *ex vivo* porcine skin biofilm models to assess the efficacy of a range of wound care products

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Aim: Biofilms can cause chronic wound infection, as they can penetrate deep into tissue evading antimicrobial treatments. *Ex vivo* porcine skin models bridge the gap between *in vitro/in vivo*, these models are more reflective of real wounds compared to current methods on hard surfaces. Study aim is to utilise *ex vivo* porcine skin model to develop “real-world” biofilm test methods and assess two wound care products.

Method: Porcine skin explants were inoculated with *Pseudomonas aeruginosa*, incubated for 7-days at 37°C, to encourage biofilm.

(M1) Method 1: mucoid biofilm skin samples were treated using a debridement pad (DP) for two minutes.

(M2) Method 2: 10cm x 10cm wound dressing (WD) samples were placed onto mucoid biofilm skin samples and incubated for 24 hours at 37°C.

Biopsies were removed from treated/untreated skin, DP and WD. Biopsies were placed into PBS and Quench, for M1/M2, for viable bacteria quantification using plate counts. Biopsies were placed into sterile water in M1/M2, for protein quantification using a BCA Protein Assay kit.

Results/Discussion: M1: (DP) Significant reduction of viable *P. aeruginosa* and protein quantity compared to untreated control.

M2: (WD) Significant reduction in viable *P. aeruginosa* and protein quantity from biopsies compared to untreated controls. A significant increase in protein quantity was observed in test dressing samples compared to blank dressings.

Conclusion: Results demonstrate that both products reduce *P. aeruginosa* biofilm and protein quantities within a chronic wound. Future work includes ELISA and RT-qPCR for gene expression and SEM imaging, to support innovative product development.

EP035 Role of antibiotic in the management of diabetic foot infection: A primary care perspective

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Aim: To address the role of antibiotics in DFI.

Method: Literature review.

Results/Discussion: Background: Diabetes is a significant global burden. One of the common complications associated with diabetes is diabetic foot infection (DFI), which contributes to the disease and economic burden of diabetes. DFI requires adequate and timely management to reduce ulcer-related comorbidities such as sepsis, prolonged hospitalisation, and limb amputations which will significantly affect the patient quality of life and life expectancy. Despite clinical advancements, a large number of DFI patients received inappropriate wound care and antibiotic therapy which increases resistance against commonly prescribed antibiotics. In order to reduce clinical complications, treatment failures and health costs, appropriate utilization and selection of antibiotic regimen is imperative to minimise clinical and antimicrobial resistance, appropriate and judicious use of antibiotics is imperative.

Challenges: However, antibiotics selection (empirical or cultural guided) can also be challenging especially patients with various associated factors such as underlying comorbidities (renal impairment), previous antibiotics therapy, presence of multidrug resistance bacteria or the involvement of deep tissues.

Main discussion points: This literature review has been undertaken to consider DFU with mild or moderate DFI and the recommended antibiotic therapies. The current gaps and area of improvement in the appropriate wound care management for DFU and mild or moderate DFI will also be discussed.

Conclusion: Appropriate and judicious antibiotic therapy will help to improve clinical outcome and reduce clinical complications, treatment failures and health care costs.

EP036 Assessment of a wound debridement gel's efficacy against single species pre-formed biofilm using a robust in vitro model

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Aim: The aim of this project was to assess the efficacy of a debridement gel* against single-species pre-formed biofilms using a robust *in vitro* model.

Method: Single-species *Staphylococcus aureus* and *Pseudomonas aeruginosa* biofilms were grown for 24 hours on polycarbonate surfaces. Planktonic organisms were washed away from the biofilm surface and then treated by immersion in debridement gel*, a negative control (PBS with 1% TSB), and positive control (bleach-based solution) group, for 24 and 48 hours at 37°C. Following treatment, the quantity of remaining viable organisms was determined.

Results/Discussion: Following treatment with the debridement gel* for 24 and 48 hours, a significant reduction of > 6.05 and $> 6.48 \text{ Log}_{10} \text{CFU mL}^{-1}$ ($p < 0.001$) viable *S. aureus* and *P. aeruginosa* were observed, respectively, when compared with the 0-hour negative control. The dynamic and rapidly evolving concept of wound bed preparation (WBP) is a multifaceted approach that requires effective, accurate, and timely assessment by clinicians and the availability of effective therapeutic measures. Debridement is one of the most effective treatment strategies used against biofilm, so it is critical to provide scientific evidence to support this effect.

Conclusion: This study provides data to demonstrate maintained effectiveness of the debridement gel* over a 24 and 48 hour period against pre-formed *S. aureus* and *P. aeruginosa* biofilms, with a greater than 6 Log reduction at both sampling points.

* Hydrocyn aqua Gel®

EP037 Artificial wound eschar/slough based biofilm model for antibiofilm efficacy test

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Aim: Eschar and slough serves as a reservoir for microorganisms, damaged/devitalized cells and inflammatory chemokines. Clinical studies showed that most microbes which formed biofilm were often localized in the eschar and slough rather than in the wound bed. The aim of this study is to advance our artificial wound eschar (AWE) model by building an *in vitro* system which mimics the clinical chronic wound environment more effectively, to evaluate not only the ability of antimicrobial agents to penetrate and breakdown wound eschar and slough, but also their antibiofilm efficacy.

Method: An AWE-biofilm model which involved a pre-formed biofilm under a layer of AWE, which was composed of the three main proteins (collagen, elastin and fibrin), was set up. The test antimicrobials (e.g. silver nitrate) were added onto the AWE-biofilm to validate the model. After treatment, the bacterial cell density within the biofilm was enumerated and penetration of antimicrobial (e.g. silver ions) through the AWE membrane was monitored electrochemically using a printed carbon sensor.

Results/Discussion: Silver ions penetrated through the AWE membrane to deactivate the biofilm underneath. The penetration rate of silver ions was inversely proportional to the thicker of AWE thickness. The antibiofilm test results showed that the antibiofilm efficacy of silver ions was not only determined by the concentration of silver ions but also the thickness of the AWE membrane.

Conclusion: The AWE-biofilm model can be used to evaluate the antibiofilm and antimicrobial efficacy of antimicrobial agents penetrating AWE and study the breakdown of the eschar/slough components.

EP038 Evaluation of the antimicrobial and antibiofilm activity of DTPA-metal ion complexes

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Aim: Biofilms which often show increased tolerance to antimicrobials and antibiotics in comparison to their planktonic counterparts, cause unresolvable inflammation and delayed wound healing. The aim of this study was to evaluate antibacterial and antibiofilm efficacy of a new diethylenetriaminepentaacetic acid (DTPA) based bimetallic complexes (MMCs) against *Pseudomonas aeruginosa* and *Staphylococcus aureus*, in comparison to complex components alone.

Method: The minimum inhibitory concentration (MIC) of DTPA alone and in several different complexes with silver and various metal ions was determined using a broth microdilution method. Synergistic interactions between components of MMCs were evaluated using a checkerboard method to determine the fractional inhibitory concentration index (FICI). Antibiofilm efficacy was evaluated following the ASTM E2871-13 standard for the CDC bioreactor. Biofilms were treated with MMCs for pre-defined contact times before bacterial cell density within the biofilm was enumerated.

Results/Discussion: Following MIC testing, increased antimicrobial potency was found with all complexes tested compared with DTPA or metal ions alone. Checkerboard assays showed synergistic interactions between several silver compounds and DTPA, with a FICI < 0.5 against *P. aeruginosa* and *S. aureus*. The CDC biofilm model demonstrated potential antibiofilm activity of DTPA complexes with various metal ions and antimicrobial agents against *P. aeruginosa* and *S. aureus*. The complexes showed superiority to metals such as silver, copper and zinc and non-metal antimicrobials tested in parallel.

Conclusion: DTPA complexes with or without non-metal antimicrobials and surfactants represent promising next generation antibiofilm agents for use in treating at risk and infected acute and chronic wounds.

EP039 Broad-spectrum anti-microbial effectiveness of an ionic silver alginate matrix paste dressing using a challenging in vitro method

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Aim: To determine the broad-spectrum antimicrobial efficacy of an ionic silver alginate matrix paste dressing* according to a modified AATCC Test Method 100.

Method: The product was prepared and challenged with simulated wound fluid for 24 and 72 hours. Suspensions of *Enterococcus faecium*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Staphylococcus haemolyticus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Candida albicans* were prepared and used to inoculate the pre-conditioned product. The test item and control samples were incubated for a further 24 hours at 37 °C. Following inoculation and incubation, samples were neutralised and remaining viable organisms quantified.

Results/Discussion: The modified AATCC Test Method 100 is a widely accepted method for the testing of antimicrobial finishes on textiles. In the USA, this is the FDA recommended test to determine antibacterial and antimicrobial performance of wound dressings. According to FDA guidelines, a greater than 4 Log reduction needs to be observed after 24 hours contact with a test item, when compared to a negative sampled at 0 hours. A > 4 log reduction was comfortably achieved at 24 hour and 72-hour time intervals for all gram-positive microorganisms and all gram-negative microorganisms and yeast.

Conclusion: In line with the study aim, ionic silver alginate matrix paste dressing* demonstrated > 4 Log reductions against Gram-positive bacteria, Gram-negative bacteria and a yeast. As the test method chosen includes simulated wound fluid and a high inoculum challenge it is a good indication of clinical performance.

* Askina® Calgitrol® Paste

EP040 To explore the barriers and enablers of antimicrobial stewardship strategies (AMS) in wound care.

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Aim: To explore the barriers and enablers of antimicrobial stewardship strategies (AMS) in wound care.

Method: The chosen methodology was a quantitative literature review. The study population were patients in any healthcare setting, over 18 years. Searches were conducted in December 2022 using CINAHL, Embase, Emcare, and Medline. Searches dated back to 2015 when key national and international AMS guidance was published (1,2). All studies measured the impact of an AMS intervention which covered wounds and incorporated antibiotic prescribing as an outcome.

Results/Discussion: 109 studies were identified. 7 met the inclusion criteria. (6 pre/post intervention studies with no control, 1 case control study). Studies dated from 2017-2021. 5 were based in acute hospital settings, 2 were based in spinal cord injury rehabilitation settings. Six themes emerged from a thematic analysis: Standardisation of care, leadership, education, culture of change, the role of pharmacist, and diagnostics.

Conclusion: The methodological weaknesses of the 7 studies limit the validity of the findings of this review. The inpatient setting for all studies limits the transferability to a community care setting where most wound patients receive care, and most antibiotics are prescribed. Mixed methodology pre/post intervention studies based in community care would add to the current body of evidence and address some of the complexities of AMS in wound care which were highlighted in this review.

1. National Institute for Health and Care Excellence. (2015). *Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use*. [NICE Guideline No. 15]. <https://www.nice.org.uk/guidance/ng15>
2. World Health Organisation. (2015). *Global action plan on antimicrobial resistance*. <https://www.who.int/publications/i/item/9789241509763>

EP041 Elimination of biofilms and pathogens by the rebalancing of the wound bed's bioelectric charge

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Aim: The loss of the bioelectric balance in the wound bed leads to unresolved chronic wounds with inherent biofilms and bacterial colonization. The chronic wound bed is characterized as a negatively charged (anionic) environment. To address anionic obstacles to wound healing, a rebalancing with positively charged (cationic) nano-particle (NP) minerals can bind and inactivate anions through an electron attraction process. We herein present invitro results of a proprietary combination of cationic NP minerals* on common wound pathogens and biofilm.

Method: The test product* was tested against numerous common wound pathogens in accordance with standard microbiological laboratory testing procedures. Also, a biofilm was established in batch mode for six hours and then grown under low shear in continuous flow conditions for 48 hours. Biofilm accumulation was quantified by harvesting the biofilm from coupons of a known surface area, disaggregating the cell clumps and performing viable plate counts. Several illustrative cases will be presented.

Results/Discussion: The NP cationic test product* resulted in a 99.9% log reduction in *Staphylococcus epidermidis*, *Escherichia coli*, *Candida albicans*, Methicillin Resistant *Staphylococcus aureus*, *Streptococcus pyogenes*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Clostridioides difficile*. Furthermore, the test product achieved a 99.99999% log reduction of biofilm following validated Drip Flow Reactor Method. Early clinical experience with this product* has demonstrated a decrease in bacteria, exudate and rapid healing of chronic wounds.

Conclusion: This proprietary combination of cationic NP minerals is effective against biofilms and pathogens in-vivo and invitro as exemplified in numerous clinical cases.

*AgFresh™ Fentonite (McCord Research. <https://mccordresearch.com/>)

EP042 An effective antimicrobial cationic nanoparticle matrix without cytotoxicity found with zinc or silver

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Aim: While Silver is widely regarded as an effective antimicrobial agent it can be cytotoxic to fibroblast and keratinocytes, and the reported antibacterial effects of silver are based on in-vitro studies rather than the more complex in-vivo environment. We herein introduce a novel cationic nanoparticle (NP) matrix* as a new alternative to topical silver antimicrobials. Having demonstrated broad antimicrobial efficacy against common pathogens, we sought to compare the cytotoxicity of the test product (NP*) with both Zinc and Silver on Human Fibroblasts and Keratinocytes.

Method: Human foreskin fibroblasts (HFF) and human epidermal keratinocytes (HEK) were cultured in standard growth mediums. Test Compounds (NP*, Zn, and Ag) were added in triplicate wells to the cells. We used TC50 as a measure to determine toxicity to certain types of cells. Typically, highly cytotoxic compounds have TC50 concentrations below .10 mg/mL.

Results/Discussion: For HFF, the TC50 for NP* was measured at 1.58, whereas both Zinc and Silver were found to be highly cytotoxic with TC50 of .037 and .0055, respectively. For HEK, the TC50 for NP* was 0.17, whereas both Zinc and Silver were found to be highly cytotoxic with TC50 of .037 and .0055, respectively.

Conclusion: These results demonstrate that in addition to its highly effective antibacterial activity, this unique iron containing cationic NP matrix* was far more safe to human cells than the commonly used zinc and silver containing products.

*AgFresh™ Fentonite (McCord Research. <https://mccordresearch.com/>)

EP043 Audit of antimicrobial prescribing trends in 1447 outpatient wound assessments: baseline rates and impact of bacterial fluorescence imaging

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Aim: Antimicrobials are notoriously over-prescribed in wound care. Both systemic and topical antibiotics are often prescribed irrationally. Recent Joint Commission guidelines mandate that hospital outpatient wound care centers develop and implement antimicrobial stewardship programs (ASPs). This audit was designed to understand baseline prescribing practices and rates as a critical first step toward rational antimicrobial use and the outline of an effective ASP.

Method: This prospective study was conducted across 8 outpatient wound clinics from Jan-Dec 2022. Data from consecutive patients attending single time-point, initial visits were recorded, including clinical findings, antimicrobial prescribing trends, and sampling practices.

Results/Discussion: 1438 wounds were included, 964 were assessed by clinical examination (SoC) and 474 by clinical examination plus fluorescence imaging (SoC+FL). Prescribing was supported by clinical examination findings in most wounds (SoC=61.8%, SoC+FL=68.2%). SoC patients were prescribed more concurrent medications on average than SoC+FL patients (1.4 vs. 1 per patient). Prescriptions were preferentially topical in the FL+SoC arm (92% vs. 64%, $p>0.0001$), and systemic antibiotics represented 36% of the single items prescribed under SoC (vs. 8% in FL+SoC, $p<0.0001$).

Conclusion: Fluorescence imaging promotes a local wound care approach by providing objective and actionable information at the bedside while decreasing unsupported/unnecessary systemic prescribing. ASPs can benefit from the support of validated diagnostic technologies.

EP044 Elimination of biofilms and pathogens by the rebalancing of the wound bed's bioelectric charge: In vivo and in vitro experience

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Aim: To present the in vivo and in vitro experience with a wound care system based on rebalancing wound bed bioelectric charge.

Method: The loss of the bioelectric balance in the wound bed leads to unresolved chronic wounds with inherent biofilms and bacterial colonization. The chronic wound bed is characterized as a negatively charged (anionic) environment. The negatively charged molecules include the membranes of bacteria, biofilm, and the anchoring mechanism of the biofilm to the wound bed. To remove anionic obstacles to wound healing, a rebalancing must occur with the introduction of positively charged (cationic) nano-particle minerals that bind and inactivate anions through an electron attraction process. Bentonite, a combination of cationic nano-particle minerals, releases a unique balance

of cations that have been proven to bind with the anionic biofilms and pathogens causing the loss of their ability to defend themselves due to their permanent membrane deconstruction. A biofilm model was established, and the results of bentonite exposure were recorded.

Results/Discussion: Bentonite test product resulted in a 99.9% log reduction in *Staphylococcus epidermidis*, *Escherichia coli*, *Candida albicans*, Methicillin Resistant *Staphylococcus aureus*, *Streptococcus pyogenes*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Clostridioides difficile*.

Early clinical experience with bentonite based wound care system has demonstrated a decrease in bacteria, decrease in exudate and more rapid healing of chronic wounds. Five illustrative cases will be presented.

Conclusion: Bentonite is effective against biofilms and pathogens *in vivo* and *in vitro*.

Any reference made to bentonite is Fentonite® product.

EP045 Next generation reactive oxygen - Antimicrobial technology for the prevention and management of infected wounds

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Aim: Reactive oxygen species (ROS) act as powerful antimicrobials, with no known mechanism for resistance, and play multiple roles in wound healing. Matoke have engineered a gel technology, which delivers and generates ROS *in situ* at tailored and sustainable levels. This research explores the capability of this novel system to manage topical infection and the types of biofilms commonly associated with hard-to-heal wounds.

Method: ROS producing gel was tested against planktonic and biofilm forming wound organisms. Time-kill curves were performed using a modified Miles-Misra assay to determine CFU. Single and dual-species biofilms were established over a 48-hour period before treatment. Biofilm viability and biomass were established by colony enumeration methodology and crystal violet staining respectively. Biofilms were imaged with a Zeiss-LSM900 confocal microscope.

Results/Discussion: It was found that the antimicrobial wound gel achieved total bactericidal kill within 4-hours in *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*, 6-hours in multi-drug resistant *Staphylococcus aureus* and between 6 and 24 hours in *Acinetobacter baumannii*. No recovery in viable count at 24-hours was observed, indicating no surviving resistant bacteria. Additionally, the gel was effective in reducing the biofilm viability and biomass, demonstrating in all cases a >3-log reduction in CFU.

Conclusion: The novel approach to deliver ROS topically and *in situ* through a wound gel system demonstrated rapid bactericidal kill against all organisms tested - this included WHO and ESKAPE pathogens. Furthermore, the viability and biomass of biofilm was reduced in all tested species. This work demonstrated strong *in vitro* efficacy, with no known mechanism for resistance, that could in a clinical setting provide global healthcare with a powerful tool for managing infection.

Surgical Approaches

EP046 Realistic simulation for pressure ulcer prevention in surgical patients

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Aim: To describe the stages of development of a realistic simulation scenario for patient positioning training to prevent pressure ulcers in surgical patients.

Method: This is an exploratory descriptive study that contains stages of:

- Organization and script
- Recruitment of participants:
- Organization of the scenario:
 - Current positioning devices and equipment
 - Operating Room
- Execution;
 - clinical case creation
 - guidance to perform positioning as in everyday life
- Discussion
 - Risk analysis - ELPO Scale
 - improvement execution
- Evaluation:
 - analysis of the final positioning

Results/Discussion: This strategy was carried out in more than 25 hospitals throughout Brazil and Latin America as a training method for building effective care protocols to prevent injuries related to positioning. Through this experience, we show participants how to analyze patients' risk for developing positioning injuries. It was possible to improve patient alignment, alleviate bony prominences, and question patient about uncomfortable areas and, discuss the need to acquire new devices and protections that can improve clinical practice outcomes. All team members are important to discuss, analyze and agree on possible improvements.

Conclusion: Realistic simulation consists of an innovative, inexpensive and easy way to achieve effectiveness in training and allows practical experience in a safe environment, followed by guided reflection, generating impact to professional practice.

EP047 Optimized peri- and postoperative wound care after open revascularization among patients with lower limb ischemia – a multicomponent strategy

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Aim: Postoperative Surgical site complications are frequent after open revascularisation procedures among patients with lower limb ischemia (PAD). Our aim was to explore if introducing of an optimized multicomponent peri-and postoperative wound-management strategy could minimize postoperative surgical site complications.

Method: All patients undergoing open revascularization for lower limb ischemia at a tertiary vascular centre during two comparable time periods from 2021 to 2023 were included. We used pre-specified periods before and after implementation of the optimized wound-management strategy.

Primary outcome were differences between the two groups in risk of any postoperative surgical site complications up to 60 days after surgery. Analyses will be conducted using multivariate logistic regression-analyses.

Results/Discussion: A total of 255 patients were included (pre-intervention group, n=118 and post-intervention group, n=137). We found no difference between the groups concerning mean age (72.7 vs 73.5 years) or gender-distribution (male 61% vs 53%). Furthermore, no difference was seen between the groups concerning smoking status, body mass index, status of comorbidity, operation duration or use of antibiotics both peri- and postoperatively (Table 1).

Crude outcomes showed proportion with surgical site complications (>72 hours after revascularization) of 39% in the pre-intervention and post-intervention group 20% respectively, while proportion were 38% and 39% within 60 days after revascularisation.

Conclusion: Optimized peri-and postoperative wound management strategy potentially reduce the risk of surgical site complications during primary admission. Multivariate analyses will show if this is also the case during follow up.

EP048 Use of the interrater reliability to assess the therapeutic value of the ultrasound-assisted wound debridement (UAW)

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Aim: The informative value of clinical studies on chronic wounds is low due to clinical heterogeneity. Therapy comparisons often show little evidence due to the extreme individuality. After switching to the UAW as an innovative, mechanical and less traumatizing technique, the therapeutic efficiency was supposed to be tested. To increase objectivity in wound assessment, the Interrater-reliability was used for this purpose.

Method: In order to visualize the success of the treatment, before and after photos were taken of 60 patients. A questionnaire with a scale of 1-10 (1 very good/10: very bad) was presented anonymously to a total of 80 assessors (40 doctors/40 nurses). Within 30 seconds, they should visually and clinically assess the condition of the wound. Further data on specialist status, professional experience and wound expert certification was collected.

Results/Discussion: Based on a median assessment of the initial findings of 6.2, the endpoint after at least 3 UAW procedures per inpatient stay was 4.25. The improvement in the wound condition was significant ($p < 0.001$). 30 % of patients were discharged with completely closed wounds.

Conclusion: With the help of this statistical method, it could be shown that the UAW has a high clinical efficiency and can therefore replace radical surgical techniques for wound debridement as an alternative procedure. In addition, this visual test procedure appears to increase the level of evidence, when studies on chronic wounds are needed.

EP049 Reconstructive surgery of the upper limb with dermal inductor: analysis of 20 years of experience

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Aim: Dermal inductors have changed the decision scale for surgical option for skin and soft tissue coverage. Authors present their experience and preliminary results of an integrated protocol that combine dermal inducers with the addition of growth factors and/or stem cells.

Method: 2002-2022, 428 reconstructions performed in oncological (65%), traumatic (35%), epidermolysis bullosa (3%) and burn patients (7%). Duration of procedure (T0): 35 ± 15min. Size of reconstructed areas: 40 ± 30cm². Moulage: greasy gauze or polyurethane foam. Occlusive dressing, checks at 7 (T1) and 21 (T2) days if no complications. Autologous skin graft at 21-42 days (T3). Evaluation of the results with the POSAS 10-point scale.

Results/Discussion: Optimal coverage: 90%. Complications: infection of the recipient site (9%), hematoma (1%), poor revascularization (2%), partial engraftment of skin graft (15%). The POSAS scale showed low scores. Ease and versatility of dermal inductors and the right indications, low morbidity, availability, low costs, repeatability and limited duration of the procedure, easy postop management, higher compliance, satisfactory results, low complications, make dermal inductors an indispensable tool in the hands of the plastic surgeon.

Conclusion: In future we expect a higher implementation in the use of dermal inductors with growth factors and/or stem cells able to modulate the inflammatory phase and possibly orient the growth of cell lines. The already numerous in vitro studies must be followed by appropriate in vivo studies.

EP050 Dermal substitute with collagen and elastine: retrospective observational study of 45 cases in a Wound Care Center

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Aim: Chronic skin ulcers treatment makes use of modern technologies based on the study of extracellular matrix. Collagen-based dermal substitutes capable of providing adequate support for regenerative processes have been developed. The study aims to investigate the effectiveness of a dermal substitute in single layer collagen and elastin in chronic ulcers' treatment.

Method: We observed 45 patients (20 women, 25 men) age 33-89 affected by lower limb chronic ulcers with different etiology: traumatic (13%), post-surgical (16%), vasculitic (11%), venous (40%) and arterial (19%) with extension from 6 to 120 cm² with atrophic or necrotic bed. Surgical debridement was performed followed by application of the dermal substitute, dressing with fat gauze or perforated silicone dressing and leg bandage. In 7 cases a dermal graft was performed immediately. Medical control and dressing was performed twice a week for 6 weeks.

Results/Discussion: In 77% of cases a stable permanence of the dermal substitute for approximately 2 weeks. In 33%, the dermal substitute was removed after 4-9 days due to early degradation or perilesional maceration. Complete healing was observed in 2 cases in which dermal substitute was associated with a skin graft (14 days after). In 26 of 45 cases was observed improvement of lesions: appearance of re-epithelialization and dimensional reduction (approximately 48%).

Conclusion: This dermal substitute proved to be effective in association with surgical debridement in promoting repair of chronic ulcers. Have good conformability and manageability with good long-term results. An increase in the dermal portion was observed at 3 weeks.

EP051 Use of Collagen dermal substitute in the reconstructive surgery of the skull

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Aim: In reconstructive surgery of the skull very often the surgeon is faced with important substance losses that are resolved with different surgical times and complex interventions. At the basis of such surgery we find hooks, injections and combined techniques depending on the case. Dermal collagen substitutes prove to be very versatile because they allow the faster regeneration of deficient tissue as well as in combined techniques allow the less invasive surgical / demolition in those patients complicated by other comorbidities.

Method: Presentation of surgical protocols in combined technique in several patients undergoing post-oncological or post-traumatic reconstruction of the skull. Combination of surgical techniques with dermal collagen substitute.

Results/Discussion: We have achieved excellent results in terms of compliance surgeon/patient in the type of combined technique. Ease of use in the operating room and excellent functional/esthetic result of the healing results. (picture of the combined technique, healing time, histological finding)

Conclusion: Dermal collagen substitutes provide an excellent solution both in single-solution reconstructive surgery and in more complex reconstruction surgery with free or pedunculated leaves, optimize the cost benefit with reduction of multiple interventions with prolonged hospitalizations and have an excellent operator/patient compliance with satisfactory outcomes of the healed part.

EP052 Back midline reconstruction using perforator based fasciocutaneous pedicled flap

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Aim: The patients of back midline wounds are increased in number nowadays. Sometimes back midline wound causes skin and soft tissue defect resulting in bone and/or hardware exposure. So, the coverage of the back midline wounds is not easy due to these wound complexities. The purpose of this article is that perforator based pedicled (island) flap is useful for coverage of back midline wounds.

Method: After serial debridement of the wound, the perforators were detected by Doppler near the back midlines and the flaps were designed including these perforators. Unilateral fasciocutaneous flap was incised, dissected and inset into the midline wounds. The donor site was closed primarily. If the wound was too large to be covered with a unilateral flap, another flap at the contralateral site was used. Immediate and early postoperative position changes were made.

Results/Discussion: Between May 2011 and November 2019, 13 patients with skin and soft tissue defects of the midline back underwent coverage with this method. All the flaps survived. The flap tip necrosis and/or wound dehiscence occurred in five patients, healed by simple debridement and dressing. Immediate postoperative position change was possible, allowing the patient to avoid flap ischemia.

Conclusion: The perforator based pedicled (island) fasciocutaneous flap is a reliable option for covering back midline wounds. This flap is useful for small to medium sized wounds, also in large sized wounds.

EP053 Risk factors for complications during flap reduction after free tissue transfer

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Aim: In patients who have undergone reconstruction with free flaps, flap reduction is needed to address excessive volume for cosmetic and functional reasons. However, depending on the timing and volume of reduction, complications such as necrosis and hematoma may occur. In this study, we sought to determine the safe surgical interval for performing flap reduction and the degree of volume reduction achievable using the direct excision method. Additionally, we aimed to identify variables that could potentially lead to complications following flap reduction.

Method: We analyzed 30 patients who underwent reduction after free tissue transfer from March 2014 to April 2023. All 46 cases of reduction were performed including skin and muscle of the flap. We reviewed the interval between reconstructive surgery and flap reduction, the extent of reduction, and postoperative complications.

Results: Of the 30 patients, 21 were men and 9 were women, with a mean age of 45.89 years. The flaps used for reconstruction were an anterolateral thigh free flap in 17 cases, a thoracodorsal artery perforator free flap in 6 cases, and a latissimus dorsi free flap in 5 cases. Out of 46 flap reduction cases, complications occurred in 10 cases. The average reduction ratio was 46.88%, and the mean reduction interval was 9.65 months.

Conclusion: As long as the flap reduction is within the range of 50%, it is thought that reduction can be performed without major complications as early as 2 months. Smoking was identified as a risk factor for complications

EP054 Intravelar veloplasty in submucous cleft palate without lateral relaxing incision or nasal mucosal incision

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Aim: Patients with symptomatic submucous cleft palate are advised to undergo surgery as soon as velopharyngeal insufficiency is established. The method and clinical results of minimally invasive intravelar veloplasty are described in this study.

Method: Seven patients with submucous cleft palates (median age: 36 months; range: 16–60 months; 5 females, 2 males) underwent intravelar veloplasty between August 2013 and March 2017. There was no lateral relaxing incision or nasal mucosal incision used. The posterior dissection of the levator veli palatini muscle from the hard palate was accomplished through the oral mucosal incision located along the border of zona pellucida. The muscles were sutured after being placed in a transverse alignment (Fig. 1-3). The first follow-up was three weeks after surgery, and the second was two to three years later (average follow-up duration: 31 months; range: 26 to 35 months).

Results: There were no cases of facial development abnormalities or oronasal fistulas, minimal hypernasality and air emission in all patients. Additionally, the velopharyngeal function of the patients was competent or at least borderline competent.

Conclusion: Another treatment option for submucous cleft palate with velopharyngeal insufficiency might be intravelar veloplasty, which would satisfactorily improve velopharyngeal function. The risk of oronasal fistula and the burden of facial growth can be reduced by this procedure because neither a lateral nor a nasal incision was made.



Figure 1. An oral mucosal incision along the border of zona pellucida was made.



Figure 2. The levator veli palatini muscle became transverse.



Figure 3. Postoperatively taken photograph.

EP055 Split thickness skin graft for hypertrophic scar on the donor site of previous skin graft: A case report

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Aim: Hypertrophic scars because can result in functional impairment, symptoms, and cosmetic issues. For scar improvement, many treatment options are available, such as intralesional steroid injection, surgical excision and laser treatment. In this case, the hypertrophic scar was successfully treated with excision and a split thickness skin graft technique.

Method: A 57-year-old male patient manifested symptoms of hypertrophic scarring on his left thigh, accompanied by pain and itching (Fig. 1). Due to an open wound on his right thigh from a car accident, he had split thickness skin grafting surgery one year prior. Because of the artificial blood vessel graft on his right thigh, the anticoagulant medication clopidogrel could not be stopped. Under general anesthesia, the hypertrophic scar was excised and a split thickness skin graft was performed. The skin graft was taken from the superolateral aspect of the left thigh (Fig. 2).



Figure 1. Preoperative photograph.



Figure 2. Postoperative photograph.

Results: Three days after, hematoma was observed, and hematoma removal was performed (Fig. 3). Following full wound healing, the patient was discharged and continued to receive laser therapy and observed through the outpatient clinic. 6 months following the procedure, there was no hypertrophic scar visible, and the patient was satisfied with the cosmetic result (Fig. 4).

Conclusion: Split thickness skin grafting is an effective treatment for hypertrophic scars that accompany subjective symptoms like pain and itching with aesthetically satisfying outcome.



Figure 3. Photograph of postoperative day 3.



Figure 4. Photograph of 6 months after operation.

EP056 Anterolateral thigh chimeric flap: An alternative reconstructive option to free flaps for large soft tissue defects

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Aim: The anterolateral thigh (ALT) skin flap provides abundant, thin, pliable skin coverage with adequate pedicle length and calibre, and tolerable donor site morbidity. However, coverage of relatively large defects using the ALT flap alone is limited.

Method: We present our experience of using the ALT flap coupled with the vastus lateralis (VL) flap supplied by the same pedicle for large defect reconstruction. Between 2016 and 2020, ten patients with extensive lower-extremity or trunk defects were treated using the ALT/VL chimeric flap. The ALT portion was used to cover the cutaneous and joint defect while the VL part was used to resurface remnant defects, and a skin graft was performed. All flaps were based on the common descending pedicle, and branches to separate the components were individually dissected.

Results/Discussion: All defects were successfully reconstructed using the ALT/VL chimeric flap. No surgery-related acute complications were observed, and the patients had no clinical issues with ambulation or running activities during the long-term follow-up period.

Conclusion: With the separate components supplied by a common vascular pedicle, the ALT/VL chimeric flap allows us to reconstruct extensive defects with joint involvement or posterior trunk lesions. Thus, the ALT/VL chimeric flap may be a suitable alternative for extensive tissue defect reconstruction.

EP057 Surgical deroofting in the treatment of patients with auricular pseudocyst

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Aim: An auricular pseudocyst is a fluid filled cavity, characterized by a lack of epithelium, in the intra-cartilaginous space. Clinically, it presents as a painless lump on the upper anterior surface of the ear. Various treatment methods have been discussed in the literature, including aspiration, incision and drainage, or steroid injection. However, these approaches are associated with a high rate of recurrence and results are often esthetically unsatisfactory; therefore, a need for improved treatment approaches remains.

Method: From March, 2015, to June, 2022, 25 patients with auricular pseudocyst were treated with surgical deroofting followed by local contour pressure dressing with a simple bolster. In addition, the structure of the auricular pseudocyst was assessed at a microscopic level.

Results/Discussion: Patients were followed up for a mean period of 12 months, during which time there were no reports of postoperative complications or recurrence. The results were cosmetically excellent in all patients and no cartilage deformity was seen. Considering the composition of pseudocysts seen on microscopic evaluation, deroofting to remove the anterior leaflet and removal of debris from the posterior leaflet is an appropriate treatment modality.

Conclusion: This reliable and simple approach may be recommended as first line treatment for auricular pseudocysts to avoid recurrence and complications associated with other treatment modalities, such as cartilage deformity, skin depigmentation, and scarring.

EP058 Outpatient split-thickness skin graft - 9 years of experience

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Aim: Split thickness skin graft can be performed safely and successfully on an outpatient basis

Method: In the period from January 2, 2015, to December 4, 2023, i.e. for 9 years, our medical team consisting of 6 doctors (5 general surgeons and 1 diabetologist) performed 344 skin grafts. All grafts were collected without a dermatome, only using an SG3 knife under infiltration anesthesia. Then it was chopped by hand and applied to the previously prepared difficult-to-heal wound. The graft was always covered with an NPWT dressing (traditional or closed incision). The NPWT dressing was removed or changed on the 7th day after the procedure.

Results/Discussion: The number of skin grafts performed in our center on an outpatient basis is systematically increasing, and over 90% of graft on the 7th day after the procedure were determined to be 100% accepted.

Conclusion: Skin graft performed on an outpatient basis is a safe, cheap, and effective method of closing hard-to-heal wounds in the proliferative phase. Promotion of this relatively simple method may improve access to it and increase the quality of care for patients with chronic wounds.

EP059 Challenges in the management of necrotizing fasciitis – case series

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Aim: Necrotizing fasciitis represents a rare surgical emergency, with high mortality secondary to sepsis and multiorgan failure. We noticed a high incidence of NF in young patients in the last year, so we decided to analyze the cases diagnosed in our service regarding etiology, treatment options, complications and socio-economic implications.

Method: We identified 6 cases of necrotizing fasciitis, without associated immunosuppressive factors. In all cases the diagnosis was confirmed through CT scan. Regardless of the location, all patients required multidisciplinary management: extensive soft tissue debridement resulting in large defects with skin loss, extended fasciotomies, complex intensive care therapy (hemodiafiltration, multimodal antibiotherapy, i.v. immunoglobulin), negative pressure wound therapy and reconstruction surgery.

Results/Discussion: In these case series, the fulminant form of the disease was observed in younger patients, half of them being under 40 years old. Hospitalization mean time was 40 days, with admission on the ICU of at least 17 days. Septic shock was present in all cases, half of them secondary to streptococcus infection. In all patients at least 2 sessions of negative pressure wound therapy were necessary to accelerate wound healing. Reconstruction surgery included skin flaps, skin grafts or artificial skin graft. The main local complication was represented by hemorrhage. All patients survived, despite going through multiple organ dysfunction.

Conclusion: Necrotizing fasciitis requires a multidisciplinary approach that includes high usage of hospital resources. Its importance needs to be emphasized the more so as a high incidence and delayed diagnosis is recorded in young patients.

EP060 Post burn and surgical scar reconstruction with tissue expanders: review of the literature and our local experience

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Aim: Tissue expansion (TE) is a rather widely accepted technique in plastic surgery, with variable indications; among numerous other indications, it is commonly used in scar management. In our research, we focused on the significance of TE as an important armamentarium and valid solution for the treatment of large and old post-burn scars, with good cosmetic and functional outcomes

Method: Our study is a retrospective analysis conducted at Dr. Soliman Fakeeh Hospital, Jeddah, during the period from 2020 to 2023. This retrospective analysis included 15 tissue expanders, which were inserted in eight patients with large post-burn scars

Each patient underwent two stages of scar repair using variable-size tissue expanders. Post-operative assessment for scar quality and patient satisfaction was conducted using the POSAS score system in addition to standard documentation

Results/Discussion: In this study, we found that tissue expander use is linked with good patient satisfaction post-operatively, good surgery outcome, and minor complication rates. Patient satisfaction is a crucial aspect of our study, and we have assessed it through the patients' responses to our survey

Conclusion: In our study, we emphasize that Tissue expander is an effective technique for improving cosmetic and functional outcomes in large burn scars, with a superior satisfactory result in comparison to other modalities for large burn scars

EP061 Dehydrated human amnion chorion membrane (DHACM) use in patients with emergent craniectomies demonstrates minimal dural adhesions at time of cranioplasty

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Aim: To evaluate whether dehydrated human amnion chorion membrane (DHACM) used in emergent decompressive craniectomies (DC) decreased the rate of dural adhesion formation and subsequent cranioplasty (CP) complications.

Method: Retrospectively analyzed patients undergoing an emergent DC for a traumatic brain injury or malignant edema secondary to a cerebral infarction of the middle cerebral artery (MCA) where either group received DHACM anti-adhesion protocol. Primary objective was to qualitatively evaluate adhesion formation in patients who received intraoperative DHACM interlay/overlay (Figure 1). Secondary outcomes included estimated blood loss (EBL) during CP, time dedicated to dissection/exposure, and post-surgical complications. The study was approved by the site's institutional IRB.

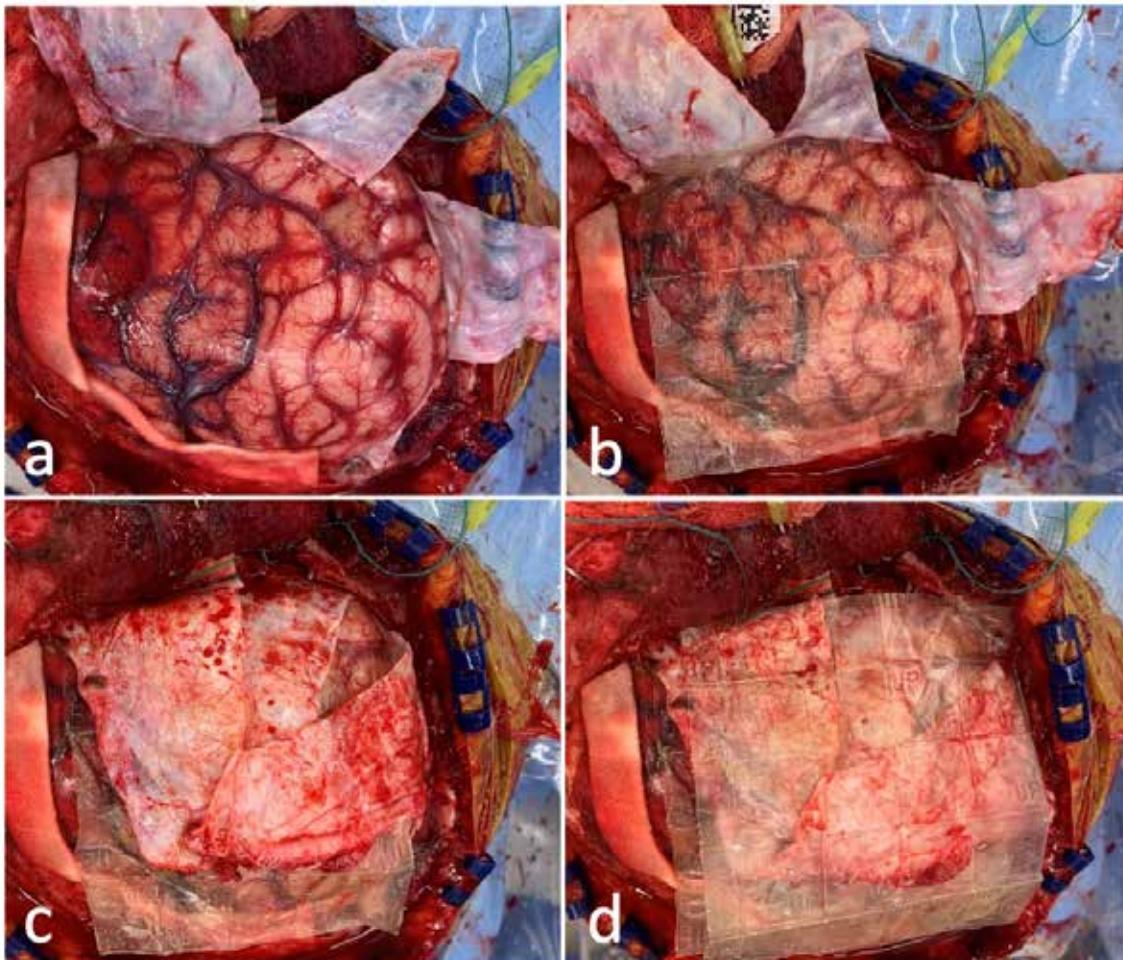


Figure 1. Steps a-d of inserting DHACM as inlay and overlay during craniectomy closure

Results/Discussion: Of the seven patients evaluated, five (71%) underwent emergent DC due to traumatic subdural hematoma while two (29%) had right MCA infarctions resulting in a large midline shift (Table 1). 86% (6/7) of patients demonstrated no adhesions at the time of the obligatory secondary CP. One (14%) patient was found to have significant adhesions, yet perioperative notes did not show evidence of complications. Secondary metrics revealed an estimated time spent dissecting during the CP prior to implantations was under 3 minutes. EBL was marginal with an average of 64.2 ml. Postoperative repair complications were minimal.

Table 1. Demographics, locations, mechanism of injury, blood loss and time between DC to CP

Patient	Age	Gender	Laterality	Mechanism	EBL	CP duration (minutes)	DC to CP (days)
1	36	M	Right T	SDH	50mls	86	36
2	28	M	Right FTP	SDH	50mls	100	176
3	31	F	Right T	SDH	50mls	69	105
4	54	M	Left F	SDH	50mls	64	103
5	46	M	Right FT	MCA Infarct	50mls	84	131
6	63	M	Left T*	SDH w/ partial lobectomy	100mls	68	77
7	43	F	Right FT	MCA Infarct	100mls	84	150
Average	43	-	-	-	64.2mls	79.2 minutes	111 days

T: temporal, F: frontal, FT: frontotemporal, FTP: frontotemporal parietal, T*: temporal with partial lobectomy, EBL: estimated blood loss

Conclusion: DHACM as a physical barrier can potentially aid in supporting an intracranial environment that can ameliorate reactive fibrosis in DC patients is promising. Further research with larger patient volume and controls arms would be invaluable in determining the full therapeutic effect compared to current anti-adhesion protocols.

EP062 Utility of piscine regenerative dermal matrix in extending the reach of pedicled muscle and fasciocutaneous flaps in complex soft tissue reconstructions

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Aim: Reconstructive surgeons aim to provide durable solutions for complex wounds with exposed vital structures, emphasizing minimal donor site morbidity. While muscle and fasciocutaneous flaps are often the gold standard, their limitations sometimes necessitate additional interventions like skin grafts. Minimizing donor site morbidity is crucial in treatment planning, driving the search for solutions to avoid secondary flap or graft harvest. This abstract explores the use of decellularized fish skin grafts (FSG) as a regenerative matrix product to extend flap reach during transfer.

Method: Ten patients requiring soft tissue coverage underwent reconstruction using muscle or fasciocutaneous flaps combined with decellularized FSG. FSG was utilized when flaps alone were unable to fully cover the wound or when minimizing tension on the surrounding structure, such as the lower eyelid, was desired. In these cases, FSG replaced traditional skin grafts or additional flaps.

Results/Discussion: FSG supported flaps involving various muscles and fasciocutaneous areas in all 10 patients, with successful tissue transfer and rapid FSG integration. Flaps supported in this way included the lateral gastrocnemius muscle, abductor digiti minimi muscle in addition to keystone, dorsal nasal, rotation advancement and filet of toe fasciocutaneous flaps. The wounds healed without further surgical intervention, and patient satisfaction was high.

Conclusion: Decellularized fish skin grafts prove effective in extending flap reach while minimizing donor site morbidity. The rapid integration of FSG facilitates quick re-epithelialization and complete closure, demonstrating its utility in challenging cases.

EP063 Reconstruction of Large Scalp Defects with Skin Flaps and Donor-Site Applied Decellularized Intact Fish Skin

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Aim: Resection of large skin cancers in the scalp can result in exposure of calvarium with denuded periosteum. In these scenarios, large, vascularized skin flaps for defect coverage are preferred but can lead to secondary donor-site areas requiring wound management or grafting. We evaluated the utility of a decellularized, intact fish skin xenograft* for improved closure of the donor site.

Method: From 2021-2023, large fasciocutaneous flaps were used for reconstruction of extensive scalp defects with exposed bone after skin cancer resection. A peripheral donor site was left open over with exposed galea or muscle to prevent central flap tension. Decellularized fish skin was sutured to the donor site. Wound healing dimensions, time to epithelization, presence of peripheral scar alopecia and patient satisfaction were evaluated at daily intervals.

Results/Discussion: Table 1 demonstrates full patient data. Average donor-site defect was 34.7 cm² (5.8-121.4 cm²) in 15 patients. After application, epithelization was achieved in 29.3 days (16-51 days). Final scar demonstrated contraction to an average width of 1.0 cm (0.5-2.5 cm). At 90 days, donor sites demonstrated minimal scar alopecia as measured at the widest dimension (0.7 cm average). Figures 1 and 2 illustrates sample case photographs.

Conclusion: Decellularized fish skin can be successfully utilized to repair donor-sites in large scalp flap reconstructions with minimal healing time. Scar width and cosmesis can be improved over skin grafting or secondary intention healing with significant reduction in scar alopecia.

TABLE 1: PATIENT DATA/OUTCOMES IN APPLICATION OF DECELLULARIZED FISH SKIN TO SCALP FLAP DONOR SITES

PATIENT		DONOR SITE DIMENSIONS			TIME TO FULL	FINAL SCAR DIMENSIONS			ADDITIONAL ALOPECIA AT
DEMOGRAPHICS		AT SCALP			EPITHELIZATION	IN PERIPHERAL FLAP DONOR SITE			WIDEST SCAR PERIPHERY
PATIENT	AGE	LENGTH (CM)	WIDTH (CM)	AREA (CM ²)	(DAYS)	LENGTH (CM)	WIDTH (CM)	AREA (CM ²)	(CM at 90 days)
1	70	4.5	1.5	6.8	18	3.8	0.5	1.9	0.5
2	56	3.2	1.8	5.8	16	2.9	0.6	1.7	0.7
3	83	4.8	3.2	15.4	25	4.2	0.8	3.4	0.0
4	87	8.3	2.3	19.1	37	8.1	1.1	8.9	1.2
5	83	9.0	2.7	24.3	34	8.2	1.2	9.8	0.9
6	80	13.2	3.5	46.2	45	12.2	0.7	8.5	0.8
7	37	15.8	3.9	61.6	25	15.2	2.5	38.0	0.5
8	23	21.3	5.7	121.4	33	19.0	1.8	34.2	0.0
9	68	5.6	1.2	6.7	19	5.2	0.3	1.6	0.0
10	72	12.2	3.5	42.7	51	10.2	0.9	9.2	1.2
11	69	10.6	3.1	32.9	34	9.8	0.8	7.8	0.8
12	70	3.2	2.5	8.0	18	2.1	1.4	2.9	0.5
13	78	5.2	3.1	16.1	23	4.3	1.2	5.2	1.2
14	59	14.9	5.6	83.4	35	14.1	1.1	15.5	0.9
15	81	12.0	2.5	30.0	26	11.3	0.8	9.0	1.2
MEAN:	67.7	9.6	3.1	34.7	29.3	8.7	1.0	10.5	0.7



Figure 1. Scalp Flap Donor-Site Treatment with Intact Decellularized Fish Skin



Figure 2. Scalp Flap Donor-Site Treatment with Intact Decellularized Fish Skin

*Kerecis Omega3 Wound is a decellularized intact fish skin (Keracis LLC, Arlington, Va.)

EP064 Advanced wound care of pyoderma gangrenosum through fluorescence-guided debridement

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Aim: Pyoderma gangrenosum (PG) is an ulcerative cutaneous condition linked to autoimmune disease that shows pathergy in 30% of patients. Trauma worsens PG lesions, and targeted fluorescence*-guided debridement, with 8-fold superior sensitivity in bacteria bedside detection compared to clinical assessment alone, may improve outcomes by limiting surgical trauma to the minimum necessary.

Method: A multi-site case series of 8 patients demonstrating the benefits of conservative, precisely targeted debridement guided by fluorescence imaging of bacteria*. This is a bedside, handheld non-invasive device, which makes it an ideal tool to aid in the assessment and treatment of PG.

Results/Discussion: Utilizing a fluorescence imaging device to visualize the location of pathogenic bacterial loads and biofilm enabled precise and conservative debridement of bacteria-laden tissues—a crucial step in initiating the healing cascade according to TIME management principles. All patients exhibited wound area reduction or complete healing, showcasing the effectiveness of this conservative approach in mitigating the onset of the pathergy phenomenon associated with PG. While the literature reports improved outcomes owing to the influence of fluorescence imaging on treatment selection, including debridement guidance, this case series represents the first focused examination of PG exclusively.

Conclusion: Fluorescence imaging is a valuable and uniquely suitable bedside tool for the enablement of conservative, minimally traumatizing debridement. This type of debridement applies to PG, and many other patient conditions where tissue removal must be conservative.

*MolecuLight i:X and D:X®, Toronto, Canada

EP065 Innovative solutions in reconstructive surgery: A case series on complex back closures with biologic inlay

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Aim: Postoperative complications, particularly wound dehiscence and infection, pose significant risks in spinal surgery. The pursuit of effective solutions in reconstructive surgery has led to investigations into novel biomaterials. Kerecis Omega-3 (SurgiBind), derived from intact Icelandic cod fish-skin, exhibits promise as a biologic material for reinforcing soft tissue, with anti-inflammatory and bacterial barrier properties. This study aims to identify interventions to reduce wound complications and improve patient outcomes.

Method: This case series focuses on complex back closures utilizing Kerecis Omega-3 (SurgiBind). We assessed patients undergoing neck and back procedures for laminectomy and fusion at a single institution from November 2021 to November 2023. Evaluation encompassed patient demographics, co-morbidities, intraoperative and postoperative findings, as well as patient outcomes.

Results/Discussion: Seven patients underwent wound washout, debridement, complex closure involving tissue and muscle rearrangement with advancement, and incisional wound VAC placement. Kerecis Omega-3 (SurgiBind) fenestrated was used as an onlay. The median age was 59 (range 51-73), with 57% female patients. One case experienced postoperative seroma development, while the remaining six recovered without complications.

Conclusion: These cases demonstrate an innovative approach to addressing challenges in intricate back closures. This study encourages further exploration into potential benefits, such as health system cost savings, and the integration of Kerecis Omega-3 in complex back closure procedures. It aims to contribute valuable insights to the field of reconstructive back surgery and optimal wound healing environments.

EP066 Evaluating the versatility of fish skin acellular dermal matrices in wound reconstruction

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Aim: Medical advancements have made a variety of acellular dermal matrices (ADM) from different donors available to the reconstructive provider. Fish skin ADMs are relatively new and have already demonstrated promising results in promoting wound healing. This study aims to assess the versatility of fish skin acellular dermal matrices as a reconstructive tool for the provider who may encounter a variety of wound etiologies.

Method: Eight patients with different wound etiologies who underwent a reconstruction with fish skin ADM were retrospectively reviewed. Wound etiologies included different anatomical surgical wound complications, wounds from medication complications, and pressure wounds. The grafts were applied to a healthy wound bed under general anesthesia. The grafts were either placed under skin for flap reinforcement or reinforced with a non-adherent bolster dressing. Wounds were reassessed after 5-7 days.

Results/Discussion: All eight patients had successful graft take and incorporation. No complications were encountered. In the cases where the graft was placed under the skin, the overlying skin repair healed without any delays. The anatomical areas of application included chest, posterior trunk, and lower extremity. All patients reviewed in the case series required a single application.

Conclusion: The case series demonstrates fish skin ADMs can be used safely in a wide versatility of applications. Patients were able to successfully achieve healing. There were no cases of graft loss or infections requiring graft removal or debridement.

EP067 Healing of difficult mohs surgical scalp wounds with exposed bone using decellularized fish skin grafts

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Aim: Due to the inflexibility of scalp skin, Mohs Micrographic Surgical resection of skin cancers of the scalp can create difficult wounds due to exposure of the bone of the calvarium. Large wounds in scalp skin can limit the feasibility of flap reconstruction. Skin grafts are at high risk of failure when applied directly to bone. Even if successful, skin grafting can prevent the contracting of a wound as it heals leaving a large area of permanent alopecia resulting in poor cosmetic outcomes. We report the utility of decellularized fish skin xenograft for effective coverage of wounds with exposed bone and improved appearance of the final cosmetic outcome in wounds of hair-bearing skin.

Methods: Four cases of wounds created by Mohs Micrographic surgical excision of non-melanoma skin cancers of the scalp and forehead larger than 14cm² were treated with the application of applied decellularized fish skin grafts.

Results: Table 1 shows patient data. All wounds extended to the calvarium and ranged from 14.35 cm² to 90.24 cm². All wounds healed without complication and exhibited an average contracture of 57% (53-65%) to form smaller scars.

Conclusion: Decellularized fish skin grafts are effective in the management of scalp wounds with excellent formation of granulation tissue for coverage of bone. Wounds exhibited minimal inflammation and pain and also showed beneficial contracture resulting in cosmetically acceptable healed wounds with minimal alopecia.

EP068 Surgical treatment with endovenous laser in high-risk patients with venous ulcer: feasibility, safety and results

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Aim: We retrospectively analyzed patients with primary and secondary varicose veins and lipodermatosclerosis and active ulceration (CEAP stage C5 and C6) treated with 1470 nm endovenous laser with dual ring technology fiber (ELVeS). The aim was to evaluate the safety of the method in a high-risk patient population and the efficacy in terms of ulcer healing.

Method: Over a period of 3 years, 127 patients at high surgical risk with varicose veins and lipodermatosclerosis and ulceration were treated consecutively (98 were hypertensive, 48 diabetic, 92 were obese with mean BMI > 35), 28 were heart patients. The surgical procedure was performed with tumescent local anesthesia in the operating room but with an outpatient pathway. All patients received post-operative elastic compression therapy and the lesions were treated with surgical debridements, NPWT used under bandage, platelet gel, mononuclear cell inoculation and grafts with dermal and epidermal substitutes when indicated. The QoL SF36 questionnaire was administered to all patients.

Results/Discussion: The success rate of the ELVeS procedure was 100%; the ulcer healing rate was 100% over a period of 1 to 5 months with a recurrence rate of 5.7% over 12 months of follow-up. The QoL SF36 test demonstrated a significant improvement in quality of life in all patients treated

Conclusion: The ELVeS protocol has been shown to be safe and effective in the treatment of venous reflux even in patients at high surgical risk and with lipodermatosclerosis and ulceration with a reduction in healing time and recurrence rate of the lesions with a significant improvement of the quality of life.

Negative Pressure Wound Therapy

EP069 A prospective randomized clinical trial on negative pressure wound therapy for lower limb full-thickness skin grafts

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Aim: Full-thickness skin graft (FTSG) reconstructions of lower limb are especially prone to wound complications compared to split-thickness skin grafts (STSGs). Negative pressure wound therapy (NPWT) enhances wound healing, but no broad evidence exists if it promotes graft take of lower leg FTSGs.

Method: In this investigator-initiated, prospective, randomized and controlled trial, 20 patients with ambulatory FTSG reconstruction for lower limb skin cancers were randomized for postoperative treatment with either NPWT, or conventional dressings. As outcomes, adherence of the skin graft one-week postoperatively, any wound complications within three months, including ≥ 3 weeks delayed wound healing, and the number of additional postoperative visits were compared.

Results/Discussion: In both groups, grafts adhered equally well ($p=0.47$); 80% of NPWT-treated and 100% of control group grafts adhered $>90\%$. There was no significant difference in the number of postoperative complications/delayed wound healing ($p=0.65$); 70% of patients in the NPWT and 50% in the control group developed a wound complication. Both groups had an equal number of patients with at least three additional control visits ($p=1.0$). The study was discontinued after 20 recruited patients, as no benefit from NPWT was seen.

Conclusion: In conclusion, NPWT did not reduce complication risk for lower limb FTSGs, and both interventions had a high risk for complications.

EP070 Novel foam dressing with through holes and negative pressure wound therapy with instillation: a new era?

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Aim: To compare the efficiency of Negative Pressure Wound Therapy with instillation and dwell time (NPWTi-d with reticulated open cell foam with through holes (ROCF-CC) dressing versus NPWTi-d with standard reticulated open-cell polyurethane foam (ROCF-V) dressing.

Method: we conducted an observational retrospective cohort study of hospital records of NPWTi-d patients with venous leg ulcers who received ROCF-CC dressings ($n=50$) versus standard ROCF-V dressings ($n=50$). Various topical wound solutions were instilled. Solution dwell time was 10 minutes, followed by 2.5-hour negative pressure cycles at -125 mmHg. Dressings were changed every 72 hours.

Results/Discussion: Overall, duration of therapy and length of hospital stay were shorter in the ROCF-CC group versus control group. Wound size reduction was greater in the ROCF-CC group vs control group.

Conclusion: ROCF-CC dressings were a useful tool in assisting wound bed preparation and reducing time to skin graft closure in this series of complex leg ulcers.

EP071 Single-use hydrofiber NPWT system for the treatment of difficult-to-heal chronic ulcers

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Aim: The aim was to assess the efficacy of NPWT dressings in the topical treatment of patients with “non-healing” venous stasis ulcers.

Method: We considered 45 patients treated consecutively between November 2020 and November 2023 with only “non-healing” venous stasis ulcers with NPWT Hydrofiber; these non-healing wounds had fibrinous tissue, eschar and slough removed and were targeted with anti-biobiotic therapy following positive swab and treated for underlying venous disease (bandaging, phlebotonics, lifestyle improvements and weight loss). The patients studied all had one or more comorbidities and several risk factors for venous stasis and ulceration. The dressing was changed when the presence of enough exudate to wet 50% of the dressing. In the event of minimal or no exudate, the dressing was left in place for seven days. The dressing was applied under a bandage in 22 cases.

Results/Discussion: In all cases there was a clinical improvement in the wound after 30 days, in particular in the wound bed with greater debridement, greater vascularization and more reduction in the production of slough and exudate, and a marked reduction in periwound inflammation and pain. Application of the dressing under a bandage was well tolerated by all patients.

Conclusion: Single-Use NPWT devices offer a range of benefits and are able to provide sufficient negative pressure to the wound bed, with low weight and low impact on patient quality of life. They are also able to be used in conjunction with compression bandages for venous leg ulcer treatment.

EP072 Effectiveness and safety of negative pressure wound therapy on melanoma-resected surgical wounds

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Aim: Negative pressure wound therapy (NPWT), a wound dressing system that provides sub-atmospheric pressure throughout the wound site, promotes wound healing, and reduces surgical complications. Although it is contraindicated in malignant wound due to the potential risk of tumorigenesis, the evidence is limited.

To compare tumor recurrence and wound healing performance, and surgical complications to provide evidence for the use of NPWT on melanoma-resected wounds.

Method: We retrospectively reviewed the medical record of 232 patients who were histopathologically diagnosed with acral lentiginous melanoma without nodal and distant metastasis between Jan 2006-Feb 2020. One hundred and seventy-nine patients received NPWT, and 53 patients received conventional surgical dressing.

Results/Discussion: Fifty-one (28.5%) patients in the NPWT group had recurrence of which 18 (10.1%) were local recurrence, 17 (32.1%) patients who received conventional surgical dressing had recurrence of which 5 (9.4%) was local recurrence. There were no significant differences in recurrence free survival between both groups (Log rank test, $P=0.701$). Patients who received NPWT with skin grafting showed significantly faster wound healing compared to those who received conventional surgical dressing alone, and NPWT without skin grafting ($P < 0.001$). Patients who received NPWT had lower surgical site infection rate than conventional surgical dressing (15.1% vs 28.3%, $P = 0.028$)

Conclusion: NPWT does not significantly increase tumor recurrence in melanoma-resected wounds. Compared to conventional surgical dressing, NPWT offers several advantages in promoting wound healing and reducing surgical site infection

EP073 Does epinephrine infiltration affect postoperative bleeding after pressure ulcer debridement with negative pressure wound therapy?

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Aim: Epinephrine is commonly used as a vasoconstrictor with infiltration anesthesia to reduce intraoperative bleeding. However, the effects of epinephrine on postoperative bleeding complications are still a matter of debate. Bleeding is a potential complication of negative-pressure wound therapy (NPWT), which is widely used in the post-debridement management of pressure ulcers. We hypothesized that the risk of post-debridement bleeding would be greater if negative pressure were applied postoperatively to pressure ulcers while bleeding conditions were masked by the vasoconstrictive effect of epinephrine, and retrospectively reviewed medical records to compare bleeding complications.

Method: A 3-year retrospective chart review of 38 patients who received 204 surgical debridement and NPWT procedures was performed to evaluate the incidence of bleeding complications by type of local infiltration (i.e., no infiltration, lidocaine infiltration only, or infiltration of lidocaine mixed with epinephrine).

Results/Discussion: A total of 18 postoperative bleeding complications were observed, eight from the non-injection group and five from each of the lidocaine and lidocaine-epinephrine injection groups. Procedures with epinephrine infiltration had a 31.9% higher rate of bleeding complications than others, but the difference was without statistical significance.

Conclusion: The use of epinephrine for infiltration led to a higher risk of bleeding complications when NPWT was applied after pressure sore debridement, but this trend did not reach statistical significance. We recommend meticulous bleeding control when using epinephrine, and applying NPWT at least 10 hours after surgery. A more detailed and extensive future study would help obtain more conclusive results.

EP074 The Application of the ovine forestomach matrix with negative pressure wound therapy in the management of complex volumetric soft tissue defects

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Aim: Various aetiologies result in complex soft tissue defects. The defects are complex where vital structures such as bone, tendon, nerve and vasculature are denuded. Denuded structures often lack sufficient vascularisation¹. The said defects usually require further surgical reconstruction including skin flap to achieve closure. Besides that, the application of extracellular dermal matrix (ECM) as an adjunctive therapy along with negative pressure wound therapy (NPWT) is also an effective option to achieve faster wound closure for complex soft tissue defect wounds².

Method: This retrospective case series evaluated 6 cases using ovine forestomach matrix (OFM) as ECM in managing complex soft tissue defects. The following data is collected from patient records including comorbidities, defect cause, defect size, presence of exposed structures, Wagner grade, OFM graft use, time to 100% granulation tissue, STSG use, overall time to heal, and postoperative complications.

Results/Discussion: This case series demonstrates the use of OFM along with NPWT as a clinically effective treatment in the management of complex lower-extremity soft-tissue defects with exposed structures in patients with multiple comorbidities. One application of OFM products was effective in regenerating well-vascularized granulation tissue, often in the presence of exposed structures, with an average time to 100% granulation of 21.0± 10 days.



Conclusion: This case series support the use of OFM as a safe, cost-effective and clinically effective management option for coverage of complex soft tissue wounds, including exposed vital structure. This treatment has also shortened the time for definitive wound closure in patients with multiple comorbidities.

EP075 Enzymatic debridement combined with negative pressure wound therapy for deep burns treatment – a clinical study

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Aim: We evaluated the efficiency of enzymatic debridement, using bromelain powder, followed by the local application of negative pressure wound therapy (NPWT) in the treatment of second and third degree burns.

Method: Our study is a retrospective one. We analyzed 28 patients (16 men), hospitalized in the Burns Unit from “Sf. Spiridon” Emergency Hospital Iasi, during a 5-year period (2019-2023).

The patients included in our study suffered thermal (22) and electric (6) burns, covering a surface area ranging from 8 to 45% from the total body skin area. The enzymatic debridement therapy was applied within the first 3-5 days after the injury. The burn wound depth was evaluated, before and after the debridement, using a Laser Doppler Perfusion Imaging system.

After the enzymatic debridement, we added negative pressure wound therapy (NPWT) for wounds located on the limbs and trunk (14 cases). For another group of patients (14 cases), we continued the wound therapy using local applications of ointments based on low molecular weight hyaluronic acid (LMW-HA-3 cases), hyaluronic acid silver

powder spray (4 cases), hydroactive nanocellulose-based wound dressings (3 cases) or antibacterial dressings based on dialkylcarbamoyl chloride (4 cases).

Results/Discussion: The survival rate was 89.28% (25 patients). The wound healing daily rate for the NPWT group was higher (3.25%-2.86% wound surface) compared with the second group (2.64%-1.98%).

Conclusion: The combined effect of enzymatic debridement of the burned tissue and NPWT can reduce wound healing time and the hospitalization period.

EP076 When, why, how and with what results negative pressure therapy is used in the treatment of burns

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Aim: The purpose of this presentation is to establish the place, role, timing, and importance of utilizing Negative Pressure Wound Therapy (NPWT) in the therapeutic management of burns of varying surfaces and depths through the evaluation of personal experience results.

Method: We conducted a study involving a cohort of 46 patients (25 males and 21 females) with burn injuries, caused in 31 cases by hot liquid and in another 15 cases by flames. The burn surfaces ranged from 3% to 30% Total Body Surface Area (TBSA), encompassing superficial and deep second-degree, as well as third-degree burns. NPWT was initiated in 25 cases within the first hours of hospital admission after chemically cleansing burn injuries, aiming to prevent wound infection, particularly by stimulating vascularization and avoiding surgical intervention. Dressing changes occurred every 3 days over a 10-day interval. In 10 cases requiring excision, NPWT was employed for 3-5 days afterward to stimulate granulation and obtain a more suitable graft-receptive area. Additionally, in cases requiring excision and coverage with split-thickness skin grafts, NPWT was universally utilized to expedite the integration of skin grafts.

Results/Discussion: Of the 25 cases initially treated with NPWT, excision and grafting were only necessary in 6 cases, with the remaining cases resulting in directed healing. The use of NPWT post-grafting led to a 100% integration rate, without lysis or infection.

Conclusion: With its advantages, NPWT proves to be useful and sometimes indispensable in the therapeutic management of burns.

EP077 Vacuum-assisted compression therapy settings for treatment of chronic wounds

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Aim: Vacuum-assisted compression therapy plays an important role in the treatment of chronic wounds, especially for preparing good basis for covering skin defects.

Method: During the last year, we treated 30 patients with skin defects of various etiology, using different vacuum-assisted compression therapy settings. Depending on the depth of the wound, the presence of an infectious agent in the wound and the general condition of the body, vacuum-assisted compression therapy was used at once or more times before skin transplantation.

Results/Discussion: The whole settings was corrected due to the granulation response. In 10 patients we have used vacuum-assisted compression therapy in intermittent mode, in the next 10 patients we have used it in continuous mode, and in the rest of patients we have used it in both intermittent and continuous mode. For all the patients the pressure was 125 mm Hg. The healing time was significantly lower in the last mode.

Conclusion: Vacuum-assisted compression therapy plays an important role in the formation of granulation tissue, but using combination of intermittent and continuous mode gives better results than any single mode.

EP078 Analysis of exudate management of foam dressings using negative pressure wound therapy

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Aim: Our clinical team has detected that commercial foam dressings saturate quickly in case of complex exudates, infection and/or necrosis during the NPWT. The purpose of this study was to investigate the diminution of the pore size under NPWT of two commercial polyurethane foam dressings.

Method: A sample of each commercial dressing was placed into a sample holder and connected to the negative wound therapy system. The sample was wrapped with an adhesive polyurethane drape to achieve the vacuum once connected to the negative pressure system. The behaviour of the sample was visualized through a confocal microscope during the application of different negative pressures (-25, -50, -75, -100, -125, -150 mmHg). Using confocal microscopy, optical sectioning was made. The signal level was quantified and three-dimensional reconstructions and maximum projections were made.

Results/Discussion: The results of the test demonstrated the diminution of the dressing pore size as the negative pressure increased. Through the images and data obtained from the confocal microscope it can be observed how the space occupied by the fibers of the dressing is bigger as the pressure exerted increases and, therefore, the size of the dressing pore is reduced.

Conclusion: The diminution of the pore size as the negative pressure exerted increases shows that the foam dressings could become clogged easily with the normal exudate of a wound. This fact can further be aggravated with complex exudates where only the least viscous exudate will pass through the cell foam of the dressing.

EP079 Safety and effectiveness of negative pressure wound therapy on venous leg ulcers

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Aim: To evaluate the clinical effectiveness and safety of negative pressure wound therapy (NPWT) in hard-to-heal wounds.

Method: A single-arm, single-centre, open-label, prospective study (NCT05666570) conducted in an outpatient setting. Patients received NPWT¹ until study completion (Day 13) or withdrawal. The co-primary endpoints were change from baseline in wound size and dressing durability (number of dressing changes). Secondary endpoints were clinical wound characteristics and adverse events (AEs).

Results: Fifty-nine patients with VLUs had enrolled and received NPWT (intention-to-treat [ITT] population). No patients with diabetic foot ulcers were enrolled. The median age was 66 years. Among 50 patients in the per protocol population, there was a statistically significant 46.8% reduction in wound area from baseline to end of study. The median dressing wear time was 6 days and the most common reason for dressing change was wound evaluation. One VLU had completely healed at end of study. Erythema was the most common peri-wound skin condition at baseline (62%) but decreased at end of study (54%). Throughout the study, $\leq 13\%$ of patients had signs of eczema/dermatitis, hyperkeratotic callus, maceration, or oedema, and there were no signs of infection. In the ITT population, one patient experienced device-related dermal lesions that resulted in study withdrawal and one patient experienced a serious AE that was unrelated to the study device.

Conclusion: NPWT demonstrated clinical effectiveness in VLUs with a good safety profile. These results, combined with features of the device such as portability suggest it could be a treatment option in hard-to-heal wounds.

¹Avelle™

EP080 Versatility of negative pressure wound therapy (NPWT) when utilised in the management of non-healing wounds: a case series

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Aim: To present the outcomes of five patients with non-healing surgical wounds when utilizing NPWT alongside collaborative evidence-based practice (EBP) and holistic patient care. Also demonstrating its the safe and effective use, alongside optimised wound care strategies and interventions including a comprehensive wound care portfolio.

Method: Holistic assessments, treatment pathways and outcomes were captured as case studies. Five patients were treated in hospital and/or community settings and received single use NPWT (with or without prior traditional NPWT) in conjunction with holistic assessments that guided clinically appropriate treatment plans to supplement, or transition from, discontinuation of NPWT.

Results/Discussion: This case series included male and female patients (aged 32 to 84 years) with non-healing surgical wounds who received treatment with NPWT (range of delivery duration 19 to 91 days). Three wounds healed, one was managed palliatively with markedly improved quality of life outcomes, and one approached full approximation of wound edges.

Conclusion: Non-healing surgical wounds, either healed or improved substantially when treated with an evidence-based approach using NPWT in conjunction with optimised wound care strategies and interventions. Patient quality of life improvements were achieved as healing the wounds enabled rehabilitation programs to commence.

EP081 Removing the complexities associated with traditional (tNPWT) bridging applications

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Aim: To explore clinicians' experiences when applying Negative Pressure Wound Therapy, with a focus on the bridging technique, alleviation of complexity in application and reducing concerns relating to medical device-related pressure injury (MDRPI), when applied to awkward anatomical areas.

Method: An anonymised survey of 200 HCPs in the United States was undertaken. All HCPs were identified as experienced in utilizing tNPWT and bridging. Questions focused on the need for bridging, alleviation of complexity in application and reducing concerns relating to medical device-related pressure injury (MDRPI), when applied to awkward anatomical areas.

Results/Discussion: 75% (n=150) of HCPs agreed that the bridging technique makes tNPWT application slightly more challenging. Reasons included: additional time taken to apply (74%; n=148), increased dressing resource (67%; n=134) and additional staff required (50%; n=100). Over half (53%; n=106) agreed that the 'flexible port' can eliminate the need for bridging. Wound Specialists were significantly less likely to favour a 'hard port' (58%; n=116).

Conclusion: Overall HCPs preferred the 'flexible port' when using tNPWT. Further potential benefits of using a tNPWT 'flexible port' identified by HCPs included a risk associated with pain/pressure when applying a 'hard port' over a smaller wound size (29%; n=58) and certain anatomical areas which pose a risk of medical device related pressure injuries (MDRPI) and/or kinked/twisted tubing (31%; n=62) which may impact the delivery of NPWT.

References:

'Flexible port' RENASYS™ Soft Port, Smith and Nephew, Hull, UK

'Hard Port' SensaT.R.A.C.™ Pad, 3M, San Antonio, US

EP082 Simplifying the Complex: applying traditional negative pressure wound therapy to complex wounds

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Aim: Achieving and maintaining a seal when applying tNPWT can often prove problematic in clinical practice, particularly in certain wound indications and presentations. The aim of this case series is to share how certain dressing application techniques and/or adjunctive dressings, can be adopted to accomplish successful delivery of tNPWT.

Method: Seven retrospective, anonymized cases are presented across a range of wound indications including isolating abdominal fistula, external fixators, trauma wounds and open surgical wounds in awkward anatomical locations.

Results/Discussion: The cases demonstrate successful application techniques and adjunctive dressings to achieve and maintain a seal when applying tNPWT. These include 'bridging' and 'sandwich' applications. The use of adjunctive dressings including how to use stoma rings/paste, gel strips, adapting the application of the film drape and skin preparations.

Conclusion: The techniques and recommendations demonstrated in this case series are efficacious and safe approaches to attain a reliable seal. They can reduce supply costs from additional dressing changes due to reapplication of tNPWT due to loss of a seal, decrease clinician frustration and optimize wound healing outcomes that may be caused by interruption of NPWT. In the authors' experience, these recommendations have proved very successful, and patients have tolerated these adaptations very well. Through the objective to reduce the incidence of leaks and shorten the time required to apply NPWT, the authors of this case series provide helpful insights for clinicians to consider in their own clinical practice.

Reference:

RENASYS™ TOUCH, Smith and Nephew, Hull, UK

EP083 From traditional to single-use: The evolution of negative pressure wound therapy

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Aim: The aim of this analysis is to assess the proportion of wounds treated with tNPWT that could be amenable to sNPWT, thus determining fit-for-purpose treatment and device modality.

Method: A de-identified dataset of 11027 patients, from 2006-2020, with wounds treated with tNPWT within outpatient wound clinics was purchased from a United States electronic medical record vendor. Analysis was undertaken to determine the proportion of wounds that could have received sNPWT based on wound area, depth, exudate volume and sNPWT dressing size. Descriptive statistics were reported.

Results/Discussion: A total of 5040 wounds were included in the analysis. In total, 10 wound types were identified, with the most prevalent being surgical open wound (n=2268; 45%); pressure injury (n=1033; 20.5%); diabetic foot ulcer (n=877; 17.4%). All commercially available dressing sizes (n=8) of the sNPWT device were included and applicability to the instruction for use were matched. Overall, 3403 (68%) wounds would have been suitable to receive sNPWT instead of tNPWT at treatment commencement.

Conclusion: The utilization of tNPWT is ideally positioned for large, deep, highly exuding wounds with treatment continuing until wound closure or closure via skin graft. However, by assessing a wound's dimensions and exudate volume, appropriate NPWT device selection can be made. This ensures a patient has been treated with a suitable device modality that is appropriate for their wound, while also protecting device availability.

EP084 A case series demonstrating the use of traditional npwt (tNPWT) for the management of complex and challenging wounds

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Aim: This case series describes the use of tNPWT, in conjunction with fillers in the management of a range of challenging and complex wounds within the acute care setting.

Method: Five, retrospective anonymised case studies of varying wound indications are presented from a large trauma hospital in the UK. The primary objective is to demonstrate how tNPWT may facilitate earlier discharge to community services for continuation of care, support patients at end of life (when a wound is present) and manage challenging wound symptoms.

Results/Discussion: Across all five cases, tNPWT was reported as being efficient and effective in managing highly challenging wounds and supporting complex patient management within an acute care setting. The case presentations demonstrate effective management of high volumes of exudate; meaning fewer dressing changes and reduction in unnecessary interventions which may reduce the risk of further complications if tNPWT was not used. These case studies validate how versatile tNPWT is when treating challenging wound indications.

Conclusion: The case series demonstrates how NPWT is used in an acute care setting to manage symptoms and challenges presented by a variety of wound indications. The cases demonstrate how NPWT can be used effectively to achieve short term goals and accelerate healing trajectories, with care continuing after discharge. Without the intervention of NPWT, these wounds could potentially become more challenging to manage in terms of time and resources, and possibly have a detrimental effect to the patients' quality of life.

EP085 Negative pressure wound therapy systems: A retrospective multinational comparative cohort study

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Aim: To compare clinical performance and outcomes of patients with wounds managed with negative pressure wound therapy (NPWT) systems indicated for acute or chronic low-to-moderate exuding wounds, using real world evidence collected from Healthcare providers (HCPs) in Colombia (CO), Germany (DE), Spain (ES), Italy (IT), France (FR), and United Kingdom (UK).

Method: A chart audit review of patients managed with either NPWT-1¹, NPWT-2², or NPWT-3³ within 12-months (CO, DE, ES, IT, UK) or 36-months (FR) prior to June 2023. HCPs reported data from electronic medical records and charts. The quantitative data was analysed both descriptively and inferentially.

Results/Discussion: Data was collected on 229 patients for NPWT-1, 338 for NPWT-2, and 212 for NPWT-3. Patients managed with NPWT-1 had a statistically significant greater proportion of wounds that completely healed or improved (92.6% NPWT-1, 84.6% NPWT-2, 80.7% NPWT-3, $p=0.006$). In a multinomial logistic regression model, patients' wounds in the NPWT-1 group were significantly more likely to have completely healed or improved, as compared to NPWT-2 (53.8% less likely than NPWT-1, $p=0.010$) and NPWT-3 (67.9% less likely, $p=0.000$). Similar results were seen in all six countries.

Conclusion: This study demonstrated NPWT-1 non-inferiority to NPWT-2 and NPWT-3 systems. When factors such as age, comorbidities, and wound exudate were controlled for in a logistic regression model, NPWT-1 performed best regarding wound improvement. Additionally, this chart audit review found few complications in all cohorts.

References:

1. Avelle™ Negative Pressure Wound Therapy System
2. PICO™ 7 and PICO™ 14
3. Prevena™ Peel and Place

EP086 Effect of nNPWTi-d versus NPWT on healthcare utilization and costs in South Africa

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Aim: Negative pressure wound therapy with instillation and dwell time (NPWTi-d) provides repeated wound cleansing plus the therapeutic benefits of traditional NPWT and has been elevated to a first-line therapy in some regions given evidence of its effectiveness. This study aimed to examine the effect of NPWTi-d versus NPWT[†] on healthcare utilization and costs in South Africa, where NPWTi-d is frequently used as a therapy of last resort.

Methods: This retrospective study was conducted utilizing a large, South African, private health insurance claims database. A matched cohort of 836 inpatients receiving NPWT or NPWTi-d for various wound types from 2018-2022 was created using propensity scoring. Differences in outcomes were compared between groups using *t* tests.

Results/Discussion: Despite matching, patients who were treated with NPWTi-d were likely more complex as indicated by a longer length of stay (18.5 vs. 13.2 days, $p=0.1500$) and higher overall care costs during the index hospital admission. Readmission rates were similar between groups; however, patients who received NPWTi-d were less likely to have visits for wound-related sub-acute care or rehabilitation (20.3% vs. 53.5%) and the average cost of this care was significantly lower for patients receiving NPWTi-d versus NPWT (R3,231 vs. R12,317, $p<.0001$).

Conclusion: Although this study had many limitations, including a potential selection bias, study data suggest NPWTi-d may reduce wound-related healthcare utilization and costs through decreases in sub-acute care visits. More studies are needed to fully assess how NPWTi-d impacts wound care pathways, patient outcomes, and costs in South Africa.

*3M™ Veraflo™ Therapy (3M Company; St. Paul, MN); †3M™ V.A.C.® Therapy (3M Company; St. Paul, MN)

EP087 Outcome analysis of management of post-surgical abdominal wound dehiscence in obstetrics and gynaecology patients using moist exposed burn ointment (MEBO) and negative pressure wound therapy (NPWT)

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Aim: Analyse the outcome of using NPWT with Moist Exposed Burn Ointment (MEBO) in long standing wounds due to wound dehiscence in an obstetrics and gynaecology patients in Tengku Ampuan Rahimah general hospital (HTAR).

Method: A retrospective observational method was used to analyse the outcome based on the objective of the study with the sample size of 32 patients.

Results/Discussion: The results showed majority (n=13, 68.4%) had positive culture for *Staphylococcus Aureus* were obese patients. For the chronic infected wounds the median duration of NPWT was 27.5 days interquartile range = 5(IQR) and showed no significant association between duration of NPWT with Body Mass Index (BMI) categories ($p > .05$). Similarly there was no significant correlation between duration from initial surgery till the onset of wound dehiscence for the different BMI category.

Conclusion: In conclusion, our study demonstrated the use of NPWT with MEBO in obstetrics and gynaecological post-operative subjects who experienced wound breakdown. The outcome of NPWT was favourable in closing the open wounds at an average time of 27 days. Most of our findings, including the risk factors and microbial causes were consistent with various studies conducted in other countries.

Dressings 1

EP088 Bio-electrospun membrane of bio-polyurethane/polycaprolactone (PU/PCL) nanofibrous loaded with ozonized sunflower oil for antibacterial wound healing applications

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Aim: Chronic wound infections can be polymicrobial but their major characteristic is their ability to develop a biofilm. This study aims to fabricate and optimize a wound dressing with excellent mechanical properties and antibacterial properties.

Method: A wound dressing scaffold based on bio-polyurethane (PU) and Polycaprolactone (PCL) blended with Ozonized Sun Flower Oil (OSFO) nanofibers was developed using an electrospinning technique, evaluated in its mechanical properties, scanning electron microscope, bacterial activity, porosity and fluid handling capacity.

Results/Discussion: The prepared PU/PCL/OSFO showed smooth nanofibers without any bead defects, with size range from 544 to 607nm. The hybrid bio-poliurethane polymer with excellent physical properties, higher stability and good biocompatibility and polycaprolactone (PCL) as a drug carrier, biodegradability and biocompatibility, with an excelent shape memory polymer, carried with ozonized sun flower oil (OSFO), that was utilized as the antibacterial, reduce the presence of harmful bacteria on the skin, in addition to its anti-inflammatory properties that can help to reduce redness, swelling, and other signs of inflammation on the skin, a natural emollient that can help moisturize. The PU/PCL/OSFO hybrid nanofibers exhibited adequate antibacterial, with tensile strength and elongation at break respectively of 4.64N/in and 78.75% respectively. In simulated exudative microenvironment, water vapor transmission rate (WVTR) values around 4319g/m²/day. The scaffold has a liquid uptake capacity to absorbs phosphate-buffered saline of 133.33%.

Conclusion: The scaffold offers great potential to be used as a wound dressing because of its suitable mechanical properties, good WVTR, swelling profile, antibacterial activity, biocompatibility, and wound healing properties.

EP089 Management of silicone gel dressing with rosa canina fruit oil and ozonized sunflower seed oil on wound care treatment

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Aim: Chronic wounds are serious injuries to the skin and underlying tissues that cause their sufferers immense problems, such as permanent pain, disability, suffering, loss of self-esteem, social isolation and financial expenses.

Method: This is a descriptive and explanatory case report. In order to prove the benefits of silicone gel associated with rosa canina oil and ozonized sunflower seed oil in the clinical improvement of chronic wound at epithelialization phase. It was carried out at the Specialized Nursing Service in southeastern Brazil in 2023.

Results/Discussion: The silicone gel with rosa canina oil and ozonized sunflower seed oil showed a favorable action on healing process, accelerating the epithelization phase process of the wounds tested. The use of silicone gel on scars stimulates keratinocytes to favor growth factors locally, consequently influencing the regulation of fibroblasts and associated with the herbal medicine rosa canina fruit oil which has moisturizing, regeneratin skin tissue, cell growth and healing properties, together with the ozonized sunflower seed oil properties like bactericide and fungicide, scar modulation, anti-inflamatory, stimulates skin regeneration and improves oxygenation of cells and tissues.

Conclusion: The silicone gel improved healing on recent scars, improving subjective and objective parameters, such as erythema, pruritus and hardening.

EP090 25 years with alginogels

Blanka Kocmichová¹

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Aim: The aim of this presentation is to report 25 years of experiences with the treatment of burns injuries and of another defects and damages of the skin in childhood and in young matures.

Method: We have used hydrocolloid gel (L-arginine, hydroxybenzoate) and enzymatic alginogels (enzymatic system glucose oxidase and lactoperoxidase) for enzymatic necrectomy with satisfactory result in treatment of all types of damage tissue. Alginogels have high antimicrobial activity and they are supporting growth of the new tissue after enzymatic necrectomy.

The application is easy, quick and painless, the treatment can be done in the ambulatory mode in a majority of cases and the result of healing has a positive cosmetic effect.

Results/Discussion: 25000 patients are undergoing medical treatment in our outpatient department per year, one third from them is treated with skin injuries (burns, infection, loss of skin and others).

Alginogels have started immediately enzymatic necrectomy and replacement of damaged tissue in local treatment in combination with other methods (antibiotics, sea water, laser therapy, physiotherapy). The average time of healing oscillates between 2 - 4 weeks usually.

Conclusion: Alginogels with enzymatic system of glucose oxidase and lactoperoxidase have maximal necrolytic and antimicrobial effect, in combination with laser therapy support granulation and epithelization of new epidermal tissue and it is prevention of hypertrophic scars.

Use of hydrocolloids and alginogels like a local medical treatment, combined with complex therapy including laser therapy is in our opinion one of the most effective possibilities to heal tissue with minimal consequences.

EP091 Observational, international, multicentre, single-arm study to assess the performance, safety and handling of new antimicrobial hydro-active fibre dressing

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Aim: Addressing the challenge of infected or infection-prone wounds in wound care, a new antimicrobial hydro-active fibre dressing with silver nanoparticles was developed. This study aims to evaluate the product's performance, safety, and usability in managing such wounds.

Method: The clinical study was conducted at 6 centers in Germany and Austria. Eight wound managers treated 81 patients using the investigated product, performing at least 4 dressing changes over 7 to 28 days as instructed. Data was collected through an electronic questionnaire, and patients' average age was 66.88 ± 16.17 years.

Results/Discussion: The study included patients with various conditions (e.g., leg ulcers, postoperative wounds, burns, injuries, diabetic ulcers, traumatic wounds, bleeding-prone wounds). Of these, 41% were deep and 59% superficial. Exudation was moderate in 75% and high in 25%. Infection signs decreased by 2.64 on the Visual Analog Scale. Biofilm disappeared in 60%, partially in 31%. Practitioners achieved treatment goals at 95.3%, ensuring moisture, debridement, edge protection, healing support, exudate management, infection control, and prevention. The dressing removed debris in 100%, conformed in 98.8%, had gelation issues in 3.7%, and exudate spread in 26%. Maceration occurred in 2.5%. Exudate was directed into the secondary dressing in all cases. Intact removal was 100%, with 12.4% easily removable fibre residues. Adherence to the wound bed was in 5%. Atraumatic dressing changes occurred in all cases, and the dressing could be cut for every wound.

Conclusion: The study showed the new wound dressing is effective for managing infected or infection-prone wounds.

EP092 Observational, multicentre, single-arm study to assess the performance, safety and handling of new antimicrobial calcium alginate dressing

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Aim: Addressing the challenge of infected or infection-prone wounds in wound care, a new antimicrobial calcium alginate dressing was developed. This study aims to evaluate the dressing's performance, safety, and ease of use in treating such wounds.

Method: The clinical study occurred at 5 German centers, treating 91 patients (46% male/54% female) with the investigated product. They followed instructions for at least 4 dressing changes over 7 to 28 days. Data was collected via an electronic questionnaire, with an average patient age of 69.46 ± 16.38 years.

Results/Discussion: The study included patients with various conditions (e.g., leg ulcers, postoperative wounds, pressure injuries, diabetic ulcers, arterial ulcers, and skin graft or donor sites). Among these, 42% were deep, and 58% superficial. Infection indicators decreased by 1.34 on the Visual Analog Scale. Practitioners achieved treatment goals at a 94% success rate, addressing moisture, debridement, wound edge protection, healing support, exudate management, infection control, prevention, and bleeding. The examined dressing had a 7.7% gel failure rate, maintaining 98.9% coverage. It efficiently removed debris in 97%, conformed to the wound in 98.9%, with 1.1% maceration. Exudate channeled into the secondary dressing in 97.2%. Dressing removal was in one piece in 97.8%, with 10.99% easily removable fiber residues. Adherence to the wound bed was 4.4%. Dressing changes were atraumatic in 97.8%, and 100% found ease of use, including cutting when dry, as very easy or easy.

Conclusion: The study confirmed the new wound dressing's excellent effectiveness in handling infected or infection-prone wounds.

EP093 Prospective observational study to examine clinical performance and safety of a gelling fiber dressing* in routine clinical practice

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Aim: Effective exudate management is crucial in wound care to create an optimal moist wound healing environment while at the same time preventing exudate-related complications like peri-wound skin damage and discomfort for the patient. This study evaluates the clinical outcomes of a gelling fiber dressing* to manage exudate, support wound healing, and improve patient's quality of life (QoL).

Method: A prospective observational study including 35 participants was conducted in a German wound ambulance in routine clinical practice. Patients with a wound indicated for treatment with gelling fiber dressing were treated for 4 weeks with weekly assessments of wound size, wound margins, pain and final assessment of wound-related QoL.

Results/Discussion: The gelling fiber was used on 35 acute or chronic wounds with a mean age of 8.34 weeks (min-max: 1–32 weeks). Exudate management was judged successful by the clinician in 99.3% and resulted in improved conditions of the wound margins (more intact, less macerated and reddened). After 4 weeks, the mean relative wound size reduction was more than 50% (46% for wounds ≥8 weeks), wound pain was decreased, and QoL significantly improved. In almost all cases, ease of application, removal, and comfort were rated high, removal was atraumatic, and satisfaction with the dressing as well as success of treatment were reported.

Conclusion: The study highlights the effectiveness and safety of the gelling fiber dressing* to manage exudate, support healing, and improve wound pain and QoL in patients with a variety of wounds.

*Cutimed® Gelling Fiber, BSNmedical GmbH/Essity

EP094 A new odour-controlling treatment option for chronic wounds

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Aim: During wound treatment, highly intense wound odour may lower health-related quality of life (QoL), produce psychological discomfort and social isolation. Wound dressings to ensure odour reduction are therefore an important addition to wound care treatment. This case series evaluates the performance of a superabsorbent dressing in home care setting to minimise wound-related-odours

Method: Patients suffering from exuding, odour-intensive wounds were asked via German outpatient care centres to participate in a case series (manufacturer sponsored). A superabsorbent dressing containing activated charcoal in combination with naturally occurring minerals was evaluated as a new therapeutic approach to reduce odour during exudate treatment. Wound documentation was based on standardised patient questionnaires using the 2013 CARE checklist. A German translation based on the TELER® Scala was used to assess odour perception.

Results/Discussion: Odour perception was predominantly rated as positive by 21 patients and their carers. 2/3 of the patients who received an earlier treatment alternative rated the dressing as better. Individual cases show a clearly perceptible reduction in odour, thus demonstrating the individual impact on their QoL.

Conclusion: This case series describes regular clinical patient care in a home environment with focus on odour reduction. With all the limitations of case reports as an investigative tool, these results suggest that the odour-reducing wound dressing is perceived positively by patients and caregivers. Whether this positively affects the patient's well-being and QoL needs to be investigated in a clinical study.

*Cutimed Sorbion Cabon+, BSNmedical GmbH/Essity

EP095 Pure hypochlorous acid cleansing solution – an ideal treatment in traumatic and chronic wounds: a case series

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Aim: A wound treatment that can be used on all wound types. Pure hypochlorous acid-HOCL (no preservatives) at the correct acidic pH 2.5 value, has been proven to be an effective antimicrobial irrigation and utilized to prevent infection. A safe, efficacious, and cost-effective irrigation at debridement. HOCL-Sterisent is a naturally occurring small molecule generated by white blood cells during the oxidative burst to kill pathogens and highly effective in killing drug resistant bacteria and all human pathogens. No negative effects on keratinocytes or fibroblasts.

Method: 40 patients were treated for three weeks in different departments of the hospital, for various types of wounds such as pressure injuries, surgical dehiscence, venous ulcers, bullous erysipelas.

Sharp debridement (if indicated) was completed, HOCL-Sterisent was applied to each wound: a soaked gauze was applied twice a day and left in place for 12 hours, covered with a dry bandage, in case of venous ulcer we covered with compression bandaging.

Results/Discussion: All wounds showed an improvement in wound cleanliness, a reduction in amount of secretion, formation of granulation tissue, reduction in local edema and local redness, reduction in pain and swelling. no side effects developed.

Conclusion: HOCL demonstrated efficiency and safety topical wound care. The solution can be used in different ways such as dipping, spraying and dressing. HOCL is more cost effective. We conclude from our experience that HOCL can be used effectively for many indications in wound care practice.

EP096 An innovative local therapeutic solution in the approach to acute and chronic tissue loss

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Aim: The losses of tissue substance of a traumatic nature, if localized in particular anatomical regions or if previously treated locally in an incongruous way, frequently represent a therapeutic challenge even for the most expert professionals.

Mat: In the Ortho and Trauma Unit of the Army Military Hospital, for a few months, we have been addressing these complex wounds with the application of an antioxidant* dressing composed of Turmeric and Carob derivatives and Acetylcysteine, associated with natural excipients with anti-inflammatory action. The dressing, tailored to the size of the lesion, is changed twice a week; a polyurethane foam is usually placed as a secondary dressing.

Results/Discussion: 20 patients (14 male, 6 female) with acute (12) and chronic (8) loss of tissue substance located mainly in the lower limbs were recruited. Healing of the lesion was achieved after 4 weeks overall in 80% of cases; in the remaining 20% (only chronic cases) complete resolution occurred at the seventh week. We achieved stable healing in 19 patients, in one case, characterized by fragile repair at the sole of the foot, we were forced to prolong the treatment with another local dressing.

Conclusion: The experience conducted, although in a limited number of cases, has shown that this natural dressing is capable of both stimulating the healing process (acute trauma) through a synergistic autolytic, antioxidant and hydrating action, and of interfering positively with the inflammatory mechanism probably through the reduction of free radicals and the creation of a microclimate suitable for cell proliferation.

*REOXCARE

EP097 Pain control and wound bed preparation in leg ulcers using a novel polyacrylate and TLC dressing

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Aim: Chronic wounds management still represents a clinical challenge and a great socio-economic burden. The aim of the study was to evaluate the effectiveness of an antimicrobial silver dressing made of polyacrylate fibres in patients affected by lower leg chronic vascular ulcers with local signs of critical bacterial colonization.

Method: We enrolled 15 patients (10 F 5 M), mean age 73 ± 4 yrs. Each patient was treated with an antimicrobial dressing, composed by polyacrylate fibres and lipid-colloidal technology with silver sulphate. The patients were evaluated twice a week for a maximum of 4 weeks. At each visit a comprehensive wound assessment was performed evaluating the presence of perilesional erythema, oedema, odour, skin temperature, amount of exudate. Pain was assessed using Numerical Rating Scale (NRS), wound area was measured through a 3D camera and bacterial colonization was assessed with a non-invasive fluorescence stimulating device.

Results/Discussion: After 4 weeks, 75% of patients exhibited more than 50% or total reduction in wound bed fibrin and clinical infection signs. 90% of patients revealed an easiness and atraumatic dressing removal with an average NRS < 2.5. One patient decided to discontinue the dressing because of worsening in wound conditions, while other two were hospitalized for reasons not related to the wound management.

Conclusion: This innovative antimicrobial dressing has proven to be effective in the treatment of painful wounds with mild to moderate exudate. The polyacrylate fibres ensure a constant debridement of the wound bed, while lipid-colloidal matrix performs an antimicrobial action.

EP098 Pemphigoid syndrome in the elders: how to treat it without using drugs

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Aim: Pemphigoid Syndrome is quite common among the elders; it's a bullosus pathology with a favorable prognosis (it can heal in short time), but often we have relapses. The most commonly used medications are hydrocolloids, but it's recommended to also use low-dose steroid systemic therapy (prednisone). Aim of this work is to demonstrate that it's possible to treat this syndrome without using drugs, reaching complete healing and avoiding recurrences in most cases.

Method: In the last 4 years we treated more than 50 cases of Pemphigoid Syndrome in institutionalized elderly people without using drugs, but only dressing the blisters (open or closed) with spray and gauzes containing Ozoile®, a pool of olive oil derived stable ozonides*. Non-woven gauzes and tape/bandages as secondary dressing. Medication change 3 times a week. Outcomes: healing time, scar quality and relapses frequency within one year.

Results/Discussion: All patients achieved complete healing within one month (from 13 to 29 days) and a satisfactory quality of scar. We had only one case of relapse in a 95 years old female that had 9 recurrences in the previous 3 years.

Conclusion: The anti-inflammatory property of stable ozonides, very similar to the steroid one, demonstrated that isn't necessary to use drugs to heal the Pemphigoid Syndrome lesions: it's enough to treat them with dressings that, locally, can work just like anti-inflammatory drugs and allows to cure elderly people without using steroids, avoiding the contraindications of this drugs, often very dangerous for the elders.

*Rigenoma Spray/Gauzes (Erbagil-Italy)

EP099 Evaluation of the performance and safety of hyaluronic acid gel in management of acute and chronic wounds: A prospective, multicentric, clinical investigation

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Aim: Acute and chronic wounds affect millions of people per year and are a particular socioeconomic and healthcare burden for national health service. The impact of comorbidities on predicting wound healing must be considered as part of the holistic patient evaluation. The purpose of this study was to evaluate the performance and safety of the use of an HA-based gel¹ in terms of wound management. Moreover, we collected data on the correlation between wound characteristics and secondary dressings.

Method: One-hundred and seventy patients (72 female and 98 male, mean age 60.0 ±15.95) with different wounds aetiologies (second-degree burns, surgical wounds, vascular ulcers, metabolic and pressure ulcers) were enrolled and evaluated for a maximum period of 56 days. The primary objective of this study was to evaluate the performance of the HA-based gel¹ after 14 days of treatment. Furthermore, secondary outcomes were assessed at 7, 21, 28, 42 and 56 days to evaluate the amelioration of the wound bed, quality of life, easiness of application and safety.

Results/Discussion: The evaluation of the primary objective showed at 14 days a significant amelioration in wound bed conditions (tissue type, exudate amount and type) in 45% of patients. Furthermore, the secondary endpoints also confirm the trend of the primary objective, with no Adverse Event correlated to the product.

Conclusion: Based on these results HA-based gel¹ wound dressing has been shown to be effective in speeding up the through healing process, providing the best conditions for an optimal wound management.

¹Hyalo4 Skin Gel

EP100 Active dressing in hyaluronic acid and collagen tipe I: experience in complex ulcers in a wound care unit

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Aim: Collagen and hyaluronic acid, as fundamental constituents of the matrix, are able to biomodulate tissue repair, supporting regenerative processes.

This study examine the effectiveness of a bioactive pad in hyaluronic acid and collagen for outpatient treatment of chronic leg ulcers.

Method: We recruited 12 patients (15-81 years old) suffering from traumatic, autoimmune and vascular lower limb ulcers' from 1 to 12 cm². All cases have atrophic wound bed. Only 2 case we observed bone or tendon exposition. A debridement was performed followed by application of the dressing adhered to the bottom and covering with fat gauze and leg bandage.

Patients were followed in the outpatient clinic with medications and medical checks twice a week from 8 to 63 days.

Results/Discussion: In all cases we observed rapid degradation of the dressing (After 48-72 hours, no dressing residues)

2 cases of drop-out due to lack of improvement, 1 case after 8 days and in 1 case after 12 days

In all the remaining cases, improvement of the wound bed was evident with the appearance of re-epithelialization at the edges and the reduction in the size with 1 case of complete healing at 60 days.

Conclusion: The bioactive dressing in collagen and hyaluronic acid, associated with minimal debridement, has proven effective in promoting the repair of chronic ulcers.

Characteristics of good conformability, manageability and safety in outpatient environment were also observed.

Therefore, thanks to the excellent results, it is suitable for future uses on a larger scale in outpatient.

EP101 The use of a pad as a tool for home nurses for mechanical debridement and for cleansing superficial wounds and perilesional skin

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Aim: Skin ulcers tend to become chronic especially due to the presence of fibrin and devitalized tissue. Biofilm also represents one of the main barriers that hinders and causes delays in the healing of ulcers

Method: A debridement pad use was explored, consisting of a wound contact layer of white monofilament microfibre rings and blue abrasive microfibre rings, both for cleansing superficial wounds and the peri-wound skin. The pad was soaked both with saline solution, but also with water, sodium hypochlorite and polyhexanide. 10 patients were treated, both outpatients and at home, with superficial skin ulcers of different etiologies.

Results/Discussion: The pad used, right from the first use, proved effective in removing debris, controlling and breaking down biofilm. Even pain, which until now has represented the main obstacle in mechanical wound debridement, was well tolerated. The PAD has proven to be easy to use, cost-effective and applicable to all types of wounds. The use of the PAD has also allowed good cleansing and hygiene of the peri-wound skin, which too often is not treated as we only focus on the lesion.

Conclusion: The pad used represents an excellent tool for cleansing and mechanical debriding of skin ulcers and peri-wound skin. Precisely for these reasons, it can be used by home nurses and can therefore guarantee hospital-territory continuity.

EP102 An Efficient management of complications at the venous catheter insertion site (Phlebitis)

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Aim: When phlebitis occurs, only hot or cold compresses are applied, and appropriate interventions are not performed at the site of venous tube removal. Therefore, in order to prevent additional damage in the event of phlebitis, appropriate intervention to manage inflammation by accurately assessing the site of venous tube removal is necessary.

Method: When phlebitis occurs, only hot or cold compresses are applied, and appropriate interventions are not performed at the site of venous tube removal. Therefore, in order to prevent additional damage in the event of phlebitis, appropriate intervention to manage inflammation by accurately assessing the site of venous tube removal is necessary.

Results/Discussion: Applying a dressing containing povidone-iodine in the early stage of phlebitis alleviated the symptoms of phlebitis and helped to reduce the patient's subjective discomfort compared to the previous application

Phlebitis Scale (INS: 2006)			
Grade	Symptoms	Evaluation	Intervention
0	No symptoms		Observation of the venous line
1	Erythema at access site with or without pain		Removal of venous line
2	Pain at access site with erythema and/or edema		Removal of venous line
3	Pain at access site with erythema and/or edema, Streak formation, Palpable venous cord		removal of venous lineconsider treatment
4	Pain at access site with erythema and/or edema, Streak formation, Palpable venous cord greater than one inch in length and purulent drainage		removal of venous lineconsider treatment

A dressing containing povidone iodine (PVP-I) was applied to prevent exacerbation of phlebitis and secondary infection from 1 point on the scale.



of only cold and warm therapy. The application of povidone-iodine-containing dressings has a wide range of bactericidal power against other preservatives, has a rapid and sustained effect, and is not easily inactivated by chemicals. It has no resistance even when used for a long time, is helpful for quick wound recovery compared to silver sulfadiazine and chlorhexidine, has low cytotoxicity, is less irritating than chlorhexidine, and has a low allergic reaction.

Conclusion: We were able to prevent additional damage by applying a povidone-iodine-containing dressing with these features to the phlebitis site.



EP103 Effectiveness of a turning and positioning system for prevention of pressure injuries among intensive care unit patients. A randomised controlled trial

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Aim: To determine the clinical and cost effectiveness of a system for turning and positioning intensive care unit (ICU) patients, when compared with usual care turning and positioning devices, for preventing pressure injuries (PIs).

Method: Investigator initiated, prospective, single centre, two group, non-blinded RCT conducted in Australia. Participants were ≥ 18 years, had critical illness or trauma, and were at high risk of PI development. Screening and enrolment were conducted by study nurses and usual PI prevention care was provided to all participants. The intervention group received a purpose designed turning and positioning system and the control group used the usual pillows, wedges and slide sheets. The primary outcome was incidence of PIs in the sacral, buttock and ischial tuberosity region. Data was collected by study nurses at baseline and daily during the participants ICU stay. Analysis involved descriptive statistics as the trial was prematurely discontinued due to pandemic related challenges and did not achieve sample.

Results/Discussion: The study groups (n=38 intervention group, n=40 control group) were comparable on baseline characteristics. Four participants developed a PI (n=2 in each group). Intervention adherence was high, there was no participant drop-out or withdrawal, and there were no adverse events, device deficiencies or adverse device effects identified.

Conclusion: This presentation will (a) overview the trial results, (b) share our positive experience with enrolment, intervention adherence and safety and (c) offer advice for future trial planning in the context of events (such as pandemics and workforce issues) that may disrupt trial conduct.

Devices & Intervention 1

EP104 Versatility and analysis of autologous micrografting with stem cells in complex lower limb injuries

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Aim: Our objective is to demonstrate the applicability of using autologous micrografting with stem cells in the treatment of complex injuries in the lower limbs, in different etiologies.

Method: We did five cases of injuries, that were selected with the following diagnoses: post-trauma, “Charcot foot”, vasculitis, mixed diabetic foot and perforating foot (both in the hallux).

Results/Discussion: The autologous micrografting technique with stem cells was performed in all cases, after the main surgical therapy established, which, depending on the diagnosis and severity, ranged from simple debridement to distal angioplasty of the limb. Due to the extent and complexity of the injury, the technique became necessary to promote tissue regeneration and optimize healing more effectively, even after treating the underlying pathology. We did the same protocol and post-operative care in all cases.

This procedure is minimally invasive as a 4mm punch is used to collect adipose tissue, normally extracted from the medial surface of the thigh. The centrifugation of the device, which is performed on the collected fat fragment, provides us with 70 to 90% cell viability. We injected this rich in mesenchymal cells material along the entire edge of the lesion. After we occluded it with polyurethane foam for 4 to 6 days, following this period, we cleaned the lesion and occluded it for another 7 days.

Conclusion: The technique was effective, safe, capable of promoting significant tissue regeneration, avoiding major and minor amputations.

EP105 Using a polylactic acid dermal matrix for achieving wound healing in challenging wounds

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Aim: Polylactic acid (PLA) dermal matrices have shown initial success in promoting the shift from inflammation into proliferation of chronic wounds. Here, we show our experience in using this technology in a cohort of patients with challenging wounds.

Method: 12 patients with chronic wounds, including diabetic foot ulcers, venous ulcers, and inflammatory ulcers, received weekly applications of PLA matrices until healing. The application protocol consists of “preparing the wound for healing,” which includes a thorough debridement, tissue preservation wherever possible, and optimization of comorbidities and nutritional status, followed by the application of PLA matrices under a non-adherent dressing. Secondary absorbent dressings were used and changed as often as needed. Digital planimetry was used to measure wound size and assess its change over time.

Results/Discussion: Ulcer healing improved significantly in most patients. Within 3 weeks, four ulcers had healed. By 12 weeks, 80% of the patients had healed, and the remaining 2 patients healed within 15 weeks. The repair tissue was characterized by abundant granulation tissue and thick epithelial borders. Reductions in erythema on inflammatory ulcers was also observed.

Conclusion: PLA releases lactate into the wound bed, which has demonstrated three main effects: promoting neo-vascularization, promoting cell survival and differentiation, and promoting immunoregulation of the wound bed. When added to a wound bed that has been prepared for repair, its combined effects lead to a shift from inflammation into proliferation. The results observed in this patient cohort confirm lactate's powerful effect on healing challenging wounds.

EP106 Dynamic interpretation of hyperspectral imaging findings of microcirculation parameters

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Aim: The aim of this presentation is to point out the possibility of dynamic interpretation of findings of hyperspectral imaging of microcirculation parameters, primarily intended for static imaging. In this way, the flexibility of the walls of the small blood vessels of the outer periphery can be assessed.

Method: Hyperspectral imaging (HSI) is a contactless method of illuminating the tissue with light of different characteristics through a specially designed device, where we obtain tissue oxygen saturation, perfusion, and edema. For this purpose, we use the device TIVITA 2.0 (Diaspective Vision). The advantages of this method are short duration of contactless examination, with a rapid analysis of the results obtained. Provocation of breathing with normobaric pure oxygen (100% nbO₂) or after hyperbaric oxygen therapy session (HBOT), shows any change in the distribution of blood and oxygen. That can assess the current status, but also screen patients for supportive treatment with HBOT and monitor the effectiveness of such treatment. After provocation, the tissue reaction is observed, compared to the native finding.

Results/Discussion: Physiological reaction to pure oxygen is vasoconstriction. Any change in this sense indicates the status of the microvessels, the stage of the disease and the perspective of treatment.

Conclusion: Following a large number of patients with various diseases of the peripheral circulation and chronic wounds, we concluded that the mentioned method is useful in our daily work. Further research and comparison with other methods such as transcutaneous oximetry, laser doppler flowmetry, measurement of endothelial dysfunction, etc. are desirable.

EP107 Integration of an electrostimulation device into the management of patients with hard to heal leg ulcers

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Aim: The aim of this study was to analyse the benefit of a microcurrent electrostimulation device* in the management of patients with leg ulcers, on an outpatient basis.

Method: A single-centre study was carried out including 40 outpatients with leg ulcers of multiple aetiology (venous ulcers, mixed ulcers, hypertensive ischemic leg ulcers and medicinal ulcers) treated with hydroxyurea. The analgesic benefit of the electrostimulation device* was assessed by evaluating wound pain at baseline and every subsequent week using a digital evaluation scale (0-10). The possibility of performing a skin autograft more quickly in these patients was evaluated by analysing the healing time compared with the age of the wound.

Results: Adoption of the electrostimulation device into existing wound care practices was easy. A significant improvement in pain was observed over 60% of patients. Improvement of the wound under electrostimulation* made it possible to perform an autograft in 75% of patients.

Conclusion: The electrostimulation device* demonstrated its value in the treatment of leg ulcers by reducing wound-related pain and enabling skin self-grafting to be carried out more quickly.

*Accel Heal Solo, Accel-Heal Technologies Limited, Kent, UK.

EP108 The effect of plasma therapy on the improvement of surgical site openings

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Aim: Getting to know the effect of plasma therapy on the healing of surgical site openings by presenting a case report

Method: A 47-year-old patient was referred with a complaint of opening of the laparotomy surgery site and a wound above the navel. He had a healthy lifestyle. One week after the surgery, the patient noticed inflammation and discharge of purulent discharge from the operation site, and although he received medical treatment, there were no signs of recovery. The treatment started with a multi-specialty team based on the latest comprehensive approaches to wound treatment. Antibiotic therapy, surgical debridement and sharps with new products were performed along with plasma therapy, and the patient's dehiscence wound healed in less than 3 weeks.

Results/Discussion: Taking advantage of the presence of a multi-specialty team is useful for solving many treatment challenges. In this case study, benefiting from a new method such as plasma therapy along with other team treatments had an effective role in providing sufficient tissue perfusion, creating bacterial balance and growth of granulation and epithelial tissues.

Conclusion: Taking advantage of the presence of a multi-specialty team is useful for solving many treatment challenges. In this case study, benefiting from a new method such as plasma therapy along with other team treatments had an effective role in providing sufficient tissue perfusion, creating bacterial balance and growth of granulation and epithelial tissues.

EP109 Using photobiomodulation for skin ulcers treatment: An observational multicentric study

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Aim: Photobiomodulation operates with blue light energy transferred directly to the patient. Photobiomodulation mechanism promotes - in a natural and non-invasive way - wound healing processes and inflammatory process control.

Efficacy of photobiomodulation in reactivating non-healing lesions and pain control.

Method: Multicentric study; ASL TO5 outpatients (observation period: January 2022 - October 2023). 67 patients selected with venous (29), mixed (17), vasculitic (6), and diabetic (15) ulcers; lasting more than 6 months and with poor progression.

7 patients were excluded for associated infection (4) and hospitalization for acute illness (3).

Protocol with photobiomodulation: 1 treatment/week - 60 sec/treatment; direct application; patient's usual medication. 8 to 12 treatments per patient. Patients with diabetic ulcers 2 min/treatment.

Clinical data examined:

- Pain reduction (VAS scale)
- Reduction in lesion size (area - VisitraK®)

Data collection: weekly measurements; selected at starting (T0), after 3, 5 (T3 -T5) and 10 weeks (T10).

Results/Discussion: Healing was observed in 17 patients and improvement in 32 patients. In 11 patients, no significant results were obtained in wound healing.

None of the patients reported side effects, pain on administration, or any complications related to treatment.

Pain: In all cases, patients reported pain reduction starting from T3 (mean VAS reduction from 8 to 4).

Lesion area: in 49 patients there was a progressive reduction in ulcer's area, starting from T3-T5.

Conclusion: Use of photobiomodulation in selected patients (non-healing ulcers) can modify evolution, favoring reduction in ulcers size and healing time, and improving pain control.

References: Photobiomodulation EmoLED®

EP110 Devitalized tissue serial management with an ultrasonic wound portable cleaner*: original clinical experience in a orthopedics and traumatology complex unit

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Aim: The correct management of the wound devitalized tissue, is a very sensitive problem in any surgical department with very critical implications for the patient's prognosis. The possibility of implementing a conservative debridement with a portable and effective device* allows to obtain a significant result both in terms of assessment and speeding up the healing process.

Method: In the Ortho and Trauma Unit of the Army Military Hospital, we carry out maintenance debridement with a portable battery-operated ultrasonic wound cleaner*, equipped with disposable cleaning head, both electively in strictly surgical patients and in the complications of prolonged bed rest.

Results/Discussion: In the experience described, patients suffering from surgical wound dehiscence, surgical site infection, traumatic tissue loss and pin-site complications mainly localized to the lower limbs were treated electively; pressure sores were also treated directly in bed. The ultrasonic wound cleaner, used in association with a Bacteria Fluorescence Imaging Device (BFID) has proven to be an effective tool in managing any type of devitalized tissue representing an obstacle to the healing of the complex wounds faced.

Conclusion: The severe trauma wound or resulting from reconstructive orthopedic operations represent an important challenge in the difficult path of healing, especially in the presence of osteosynthesis means. We have successfully addressed the problems linked to the presence of devitalized tissue wound bed with the use of a portable ultrasonic cleaner associated with the BFID obtaining a targeted debridement capable of lowering both the bacterial load than to selectively eliminate the devitalized tissue.

*Curason – Curasonix GmbH

EP111 Miniinvasive autologous micrograft for all kind of difficult injuries

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Aim: The choice between the various types of graft may be influenced by ethical or religious reasons (e.g. heterologous pig graft in Muslim patients) or practical reasons (e.g. diabetic patients prefer homologous or heterologous grafting to avoid further scarring)

Method: When the donor and recipient of skin tissue are the same person, the graft is referred to as autologous; we speak of homologous grafts if taken from a donor belonging to the same species as the recipient or heterologous grafts if taken from a donor of a different species

Hy-Tissue Micrograft Technology is a technical protocol for the regeneration of human tissue, based on an innovative

technology for the selection of viable micrografts from a patient's own tissue biopsy (fully autologous process)
The amount of tissue to be harvested is approximately 1 mm for every 2 cm of surface to be colonised.
The tissue is disrupted by thousands of micro scalpels, filtered through 50 µm holes and immersed in sterile saline.

Results/Discussion: The technique used does not involve any manipulation of the cells, so the doctor does not in any way incur any ethical or European regulatory problems

Conclusion: In our experience, we have performed about 30 autologous grafts on different lesions:

- Pressure ulcer
- Wound dehiscence
- Diabetic ulcers

with wound closure and, above all, immediate disappearance of pain

EP112 The Challenge of Composite Graft: The use of Fluorescent Light Energy to improve engraftment

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Aim: Composite graft is a useful tool for the reconstruction of specific aesthetic subunits with a single surgical stage. This technique gives optimal results in the reconstruction of small defects.

The aim of this work is to optimize the attachment of composite grafts in the reconstruction of small complex facial defects by combining it with Fluorescent Light Energy during the healing process of the graft.

Method: We experienced rewarding achievements using Photonic energy in the treatment of burns, non-healing wounds and pathological scars. Therefore, we chose to exploit the potential of bioluminescent energy to maximize aesthetical and functional results, enhancing the formation of new vascular connections and modulating both inflammatory and scarring process. From the 2nd postoperative day, the patients were locally treated with 5 FLE sessions every 48/72hrs.

We evaluated results in terms of time for engraftment, quality of the scarring, infective complications and morbidity of the donor site.

Results/Discussion: Graft survival is subject to many factors, both local and systemic. To overcome these issues, various methods have been described.

We here report the successful reconstruction of full-thickness defects of the free margin of the nasal alar rim and the central portion of the inferior lip with a composite graft, without complications and good aesthetic results.

Conclusion: By analyzing our small cohort, and the encouraging results, we demonstrated how new technologies may push this traditional reconstructive procedure beyond their old boundaries: overcoming an increased size demand or a potential infective wound environment and obtaining pleasant aesthetic results.

EP113 patient case series: debridement of methanesulfonic acid infected lesions

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Aim: Debridement remains a cornerstone of chronic skin lesions' treatment. Topical Desiccating agent (TDA) was recently introduced as chemical debridement of chronic skin lesions and results are evaluated by means of case series.

Method: 5 patients underwent TDA⁽¹⁾ debridement for a total of 12 ulcers assessed.

Bacterial contamination was assessed using an endogenous autofluorescence system ⁽²⁾

All lesions were treated with non-adherent dressings during follow-up. Patients were monitored every 2 weeks. TDA treatment took place in an operating room; Swabs were collected for bacterial analysis, and treatment pain was monitored via NRS.

Results/Discussion: 7 out of 12 contained necrosis. Using fluorescence system, 4 cases showed Pseudomonas contamination, 4 had Staphylococcus, and 4 had a mix of both. During treatment, the mean NRS was 4, in 4 patients topical anesthesia was sufficient, in one case sedation was required. In the 2-week control, 6 lesions had a fully granulated wound bed, 4 showed significant improvement; Meaning 83.3% of treated lesions showed improvement. 3 lesions still had presence of Pseudomonas and 1 of Staphylococci at week 2.

Conclusion: The effectiveness of the TDA is undeniable in terms of debridement and infection control. The behaviour of 2 injuries was not in line with the others. The patient's inflammatory lesions caused a sharp increase in pain during application. Given the limited data, awaiting additional studies to better define results.

(1) Debrichem®

(2) Moleculight®

EP114 Human-mimic submuscular and premuscular irradiated rat model: histologic characteristics of the capsule tissue in contact with the breast implant

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Aim: In this study, we established two rat models that mimic human submuscular and premuscular breast reconstruction. We analyzed the capsule formation according to surgical techniques and adjacent tissues, including the chest wall tissues, such as the ribs and acellular dermal matrices (ADMs) that come in contact with silicone implants.

Method: This study consisted of experiments on 12 Sprague Dawley rats that underwent implant reconstruction using ADM. They were divided into two groups: rats that underwent dual-plane implantation (n = 6; group 1) and those that underwent premuscular implant insertion (n = 6; group 2). All rats were irradiated with 35 Gy of fractionated radiation. Three months after surgery, the histology and immunochemistry of the capsule tissues of the ADM, muscle, and chest wall were analyzed.

Results/Discussion: Overall capsule thickness was thicker in group 1. Based on the tissue in contact with the silicone implant, the ADM had a thinner capsule, less inflammation, less fibrosis, and less vascularization than the muscle and chest wall tissues.

Conclusion: This study described two rat models of clinically relevant implant-based breast reconstruction using a submuscular and premuscular plane, ADM, and irradiation. Overall, the premuscular implantation rat model was associated with a thinner capsule. The ADM in contact with the silicone implant, even after irradiation, had superior protection from radiation compared with the other tissues.

EP115 Near-infrared angiography of chronic wounds: a case series

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Aim: Hard to heal wounds pose substantial challenges in healthcare. Near-infrared fluorescent (NIRF) imaging provides a means to visualize the vasculature and dynamic tissue changes through in vivo fluorescent imaging. This case series explores the application of NIRF imaging as a diagnostic tool. We investigated the utility of indocyanine green (ICG) imaging using a near-infrared camera, evaluating chronic lower leg wounds across various aetiologies. Our aim was to explore the potential of this modality to provide insights into wound perfusion, tissue viability, and healing progress.

Method: Six patients with chronic wounds received treatment under the care of a multi-disciplinary team. International wound treatment guidelines were followed. NIRF imaging using ICG was administered prior to treatment, at six and twelve weeks. Visual assessment and quantitative analysis of fluorescent intensity within a region of interest were conducted and summarised.

Results/Discussion: In 83% of cases, wounds demonstrated signs of healing, evidenced by reduced wound size and healthier wound bed. A decrease in fluorescent intensity of ICG corresponded with decreasing wound size, indicative of reduced inflammation in the surrounding tissue. NIRF imaging identified sites of inflammation that were not visually observable in two patients.

Conclusion: NIRF imaging, utilizing near-infrared technology, allows for the visualization of revascularization and wound healing progress prior to observable changes in hard to heal wounds. NIRF imaging can provide insight into inflammation sites that may not be visual to the practitioner. Incorporating NIRF imaging into chronic wound management may facilitate timely interventions, potentially improving patient outcomes and preventing further complications.

EP116 Avoid vertical suture marks and enhance wound healing: Exploring the mechano-modulatory effects of sutripts suture technique

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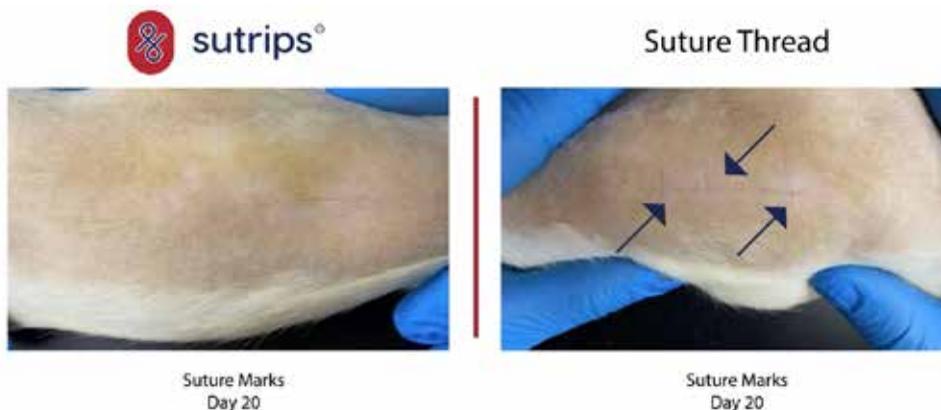
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Aim: To compare the performance of a mechano-modulatory device versus traditional interrupted suturing by studying the vertical suture marks and healing process on the epidermis.

Method: A 5 cm incision was made on the left side of the columna vertebralis, followed by suturing with Sutripts using three test items. On the right side, a reference material necessitated six separate interrupted sutures. Daily observations post-operation and specific assessments on the 10th and 20th days was made to monitor the tissue healing process.

Results/Discussion: The study highlights a significant difference between the test and reference substances regarding their cicatrix effects. Despite the less frequent application, the test substance, the mechano-modulatory device, demonstrates superior wound healing. This disparity is attributed to its unique multifaceted abilities. The combined action of tension adjustment, precise edge approximation, fixation point creation, wound area immobilization, stress reduction, and regulation of the mechano-transduction pathway, the device fosters an optimal environment for wound healing. These features collectively explain its superior cicatrix effects and its potential for more expedited wound closure and enhanced aesthetic outcomes compared to the reference substances.

Conclusion: The integration of mechano-modulatory devices in wound care signifies a groundbreaking approach. These devices, encompassing specialized sutures, tension adjustable feature, and closure technologies, actively manage tension dynamics during wound closure, creating favorable healing environments. This fosters better wound recovery and improves aesthetic outcomes.



EP117 Outcomes of out-patient based ultrasound-assisted wound debridement for venous stasis ulcers

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Aim: To describe the outcomes of patients with chronic venous stasis ulcers who underwent ultrasound-assisted debridement on an out-patient basis.

Method: 10 patients with venous stasis ulcers were included in this series. Using the Sonoca 185 and appropriate sonotrode, UAWD was performed in contact mode. Topical anesthetic (lidocaine and prilocaine) was applied 30 minutes before each session. A solution with polyhexamethylene biguanide (PHMB or polyhexanide) and betaine as active ingredients was used for irrigation of the wound bed. A similar hydrating gel was applied to the wound before dressing. The length of each procedure, frequency of each session, as well as conservative sharp debridement was based on the assessment of our health care professional. Two-layer compression therapy was performed in most cases post-debridement as an adjunct therapy. Home care instructions, including schedule of removal of the compression bandage, were advised after each session.

Results/Discussion: Mean number of sessions was 21.6 (range 10 to 34) for all cases, spanning an average of 7.8 months (2 to 12). Four patients are still undergoing treatment. On the latest follow-up, all but 1 case had significant decrease in wound bed size. In 3 patients, we noted new ulcer formation during period of treatment, prompting an increase in frequency of sessions; these healed uneventfully.

Conclusion: Out-patient based ultrasound-assisted wound debridement is a feasible adjunct treatment for patients with chronic venous stasis ulcers, resulting in improved wound conditions.

PATIENT #2 73/F dorsum of LEFT ANKLE



PATIENT #2 73/F lateral aspect LEFT ANKLE



PATIENT #2 73/F with two-layer compression bandaging



EP118 Abdominal stretch marks: CO2 Laser vs fractional radiofrequency

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Aim: This study investigates the efficacy of CO2 laser and fractional radiofrequency treatments for striae, a skin condition resulting from alterations in elastic fibers and collagen due to physiological changes such as pregnancy, growth, and weight fluctuations.

Method: An observational study was conducted on 65 consecutive patients at a skin department, focusing on abdominal stretch marks treatment using CO2 laser and fractional radiofrequency. Over three months, skin temperature, pH, oiliness, and humidity were assessed, and pre-and post-treatment photographs of the stretch marks were blindly compared by external physicians.

Results/Discussion: The participant demographic included 63 females and 2 males, averaging 34 years of age (range 18-51). Most patients (55.38%) had phototype 2 skin. Of the initial 65 patients, 48 completed the treatment, with 10 discontinuing due to pain experienced during the CO2 laser procedure. Other reasons for dropout included surgery and non-attendance. While both treatments showed positive outcomes, no statistically significant superiority was observed between them. Notably, the discomfort and pain reported during the CO2 laser treatment, causing 15.38% of participants to withdraw, was a significant aspect impacting the overall results.

Conclusion: Although both treatments yielded positive results, there was no clear superiority of one over the other. The high dropout rate due to pain experienced with CO2 laser underscores the need for patient comfort considerations in treatment choice, potentially influencing future treatment preferences and outcomes.

EP119 Automated electrical stimulation therapy accelerates re-epithelialization in a 3D *in vitro* human skin wound model

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Aim: Electrical Stimulation Therapy (EST) shows promise for accelerating wound healing, but its clinical mode of action remains unclear. We evaluated the effect of an automated microcurrent EST clinical device* directly on epidermal repair using an *in vitro* human skin wound model.

Method: We scaled-up an established De-Epidermized Dermis Human Skin Equivalent (DED-HSE) wound model to 5 x 10 cm to accommodate the clinically used device. Identical models where the EST device remained switched off, served as controls. The impact of EST on re-epithelialization of 4-mm circular epidermal wounds was assessed after 4 and 7 days of treatment, using metabolic activity, H&E histology, immunohistochemistry (IHC) and RNA *in situ* hybridization.

Results/Discussion: Wounds subjected to EST for 4 days consistently exhibited faster area reduction compared to controls (65.8% vs 49.7% n=9 p<0.05). H&E histology confirmed EST wounds developed significantly longer epithelial tongues (50.3% vs 26.2% wound diameter n=9) p<0.001). At day 4, RNA *in situ* hybridization showed EST increased Matrix Metalloprotease 1 (MMP1) transcription (mean 0.00067, n=5 vs 0.00018, normalised intensity, n=6) p<0.05 in basal keratinocytes in the peri-wound treated epidermis, consistent with a mechanism for enhanced migration as epidermal sheets. At day 7, IHC staining showed greater EST epidermal proliferation (p63), migration (K16) and differentiation (K10) as well as deeper and stronger attachment of the newly formed epidermis (n=15 p<0.001).

Conclusion: Using a human skin wound model, we demonstrated significantly faster epidermal migration, proliferation and stronger attachment following EST with a clinical device.

*Accel-Heal Technologies Ltd UK

EP120 Rethinking wound care: evaluating the accuracy and consistency of traditional measurement techniques, such as paper rulers, in hard-to-heal wounds

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Aim: With an increasing prevalence of hard-to-heal wounds, accurate measurement is critical for effective management and treatment. However, the commonly used ruler method has shown significant inaccuracy and variability, contributing to poor wound care outcomes. This study examines the accuracy and reproducibility of wound measurements using the golden standard (GS) of length * width disposable paper rulers in hard-to-heal wound care.

Method: Our study involved 39 high-resolution wound images measured by health care professionals (HCPs), assessing both individual reproducibility and inter-observer reliability.

Results/Discussion: The results revealed that while HCPs could identify wound changes with 86 % accuracy, the error margin in reproducing the same wound measurements was significantly high, with an average of 58 %. This discrepancy suggests that although the progression of wounds can be somewhat tracked, the method's accuracy in measuring wound size is limited. The study also highlighted the substantial variation in measurements between different HCPs, with differences up to 303 %, rendering data from other colleagues or departments unreliable for clinical decision-making.

Conclusion: The findings underscore the need for more reliable measurement methods in wound care, such as digital planimetry or artificial intelligence. Utilizing such advanced techniques enhances the accuracy of wound size assessment, improve treatment strategies, and ultimately lead to better patient outcomes. The study's limitations include a reliance on measurements from printed images, which may not fully replicate clinical conditions. The results emphasize the necessity of standardized protocols and training in wound measurement to ensure better care for patients with hard-to-heal wounds.

EP121 A Review of cold atmospheric plasma (CAP) and its impact on wound healing

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Aim: This review provides a comprehensive analysis of the impact of cold atmospheric plasma (CAP) on wound healing, focusing on wound area reduction and microbial load decrease.

Method: Conducted using PubMed, the search included studies using Mesh terms “wound” or “wound healing” combined with “cold plasma.” 23 studies were reviewed, encompassing varied designs such as RCTs, case series, and reports.

Results/Discussion: Some RCTs displayed CAP's potential in reducing microbial load and promoting wound area reduction. However, a 2018 meta-analysis showed no significant statistical differences in these aspects. Notably, most studies were from Germany, with limited representation from other regions, especially Southeast Asia. Large-scale RCTs are crucial to validate these outcomes.

Conclusion: Understanding CAP's effects on wound healing in Southeast Asian populations necessitates further investigation. Thus, more clinical research involving this specific demographic is essential to fully comprehend CAP's efficacy in diverse ethnicities and enhance wound care practices.

EP122 A novel wound healing methods using Lorentz fields

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Aim: Wound healing is a process by which the body repairs damaged tissue after injury. The primary goal of wound healing methods is to restore tissue integrity as quickly as possible, prevent infection, and reduce pain. This study investigates a novel wound healing method to heal the wounds using Lorentz fields, based on static magnetic fields and ultrasound.

Method: The Lorentz field is generated in the wound area with the pressure distribution generated by linear phased array (LPA) transducers under a static magnetic field. The feasibility of the proposed wound healing approach is explored through both analytical and numerical investigations. Numerical studies are conducted using the COMSOL Multiphysics software for a comprehensive analysis. Two-dimensional geometry with wound, skin layers (dermis, epidermis, hypodermis), and a 16-element LPA transducer is modeled. The crystals of the LPA transducer are driven at specific time intervals, steering pressure, and current density distributions at thirteen steering angles from -30° to +30° at intervals 5°.

Results/Discussion: The maximum pressure observed in the wound area is approximately 0.2 MPa, a value well within safety thresholds. The resultant current density value generated by the LPA transducer driven by a sinusoidal signal at a frequency of 1 MHz under a 0.5 Tesla static magnetic field is 2-3 $\mu\text{A}/\text{cm}^2$.

Conclusion: Simulation studies indicate that Lorentz fields can produce a current density sufficient for promoting wound healing while adhering to safety standards.

Keywords: wound healing, Lorentz fields, linear phased array transducer, static magnetic field

Translational Science

EP123 Adipose-derived mesenchymal stem cells are ideal for the cell-based treatment of refractory wounds

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Aim: Although Mesenchymal Stem Cells (MSCs)-based therapy has been proposed as a promising strategy for the treatment of chronic lower-extremity ulcers, their optimal sources, amounts, and delivery methods are urgently needed to be determined.

Method: In this study, we compared the heterogeneity of the human MSCs derived from bone marrow (BMSCs), umbilical cord (UCMSCs), and adipose tissue (ADSCs) in accelerating wound healing and promoting angiogenesis and explored the underlying mechanism. Briefly, a diabetic rat model with a full-thickness cutaneous wound on the dorsal foot was developed. The wound was topically administered with three types of MSCs. Additionally, we carried out in vitro and in vivo analysis of the angiogenic properties of the MSCs. Moreover, the molecular mechanism of the heterogeneity of the MSCs derived from the three tissues was explored by transcriptome sequencing.

Results/Discussion: When compared with the BMSCs- and UCMSCs-treated groups, the ADSCs-treated group exhibited markedly accelerated healing efficiency, characterized by increased wound closure rates, enhanced angiogenesis, and collagen deposition at the wound site. The three types of MSCs formed three-dimensional capillary-like structures and promoted angiogenesis in vitro and in vivo, with ADSCs exhibiting the highest capacity for tube formation and pro-angiogenesis. Furthermore, transcriptome sequencing revealed that ADSCs had higher expression levels of angiogenesis-associated genes.

Conclusion: Our findings indicate that MSCs-based therapy accelerates the healing of ischemia- and diabetes-induced lower-extremity ulcers and that adipose tissue-derived MSCs might be ideal for therapeutic angiogenesis and treatment of chronic ischemic wounds.

EP124 Hierarchically assembled nanofiber scaffold promote skin wound healing through rapid cell recruitment

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Aim: Chronic wounds remain a formidable challenge in wound healing. In terms of developing materials for chronic wound healing. Using drugs, growth factors, and new materials to develop wound dressings is difficult to achieve commercial translation because approving drug-device combinations is challenging. On the contrary, using approved materials and achieving rapid cell recruitment through structural modification, they are classified as medical devices and are easier to obtain approval.

Method: In this study, we engineered a hybrid fibrous scaffold composed of randomly arranged fibroin fibers and vertically aligned cryogel fibers. The porous fibroin fiber scaffold was fabricated through a novel one-step preparation method that enabled efficient degumming at room temperature and created a porous spatial structure. The vertically aligned cryogel fibers were produced via directional freeze-drying by modulating the solution concentration and freezing polymerization temperature.

Results/Discussion: Integrating these aligned cryogel fibers into the fibroin scaffold enhanced cell infiltration in vitro and in vivo, conferring greater tissue compatibility to the hybrid scaffold. Moreover, the hybrid scaffold treated wounds showed enhanced granulation tissue formation, angiogenesis, collagen deposition, and re-epithelialization compared to the commercial product PELNAC. Furthermore, the epidermis thickness, numbers of regenerated hair follicles, and collagen density of the hybrid scaffold treated group were closer to normal skin tissue after remodeling.

Conclusion: Together, the hybrid scaffold comprising randomly aligned fibroin fibers and vertically aligned cryogel fibers developed in this study could be a promising substrate to support tissue regeneration for chronic wounds.

EP125 Medical-grade collagen dermaceutical: enhancing dermatological health in oncology patients

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Aim: Innovative dermaceuticals are crucial for addressing dermatological challenges faced by cancer patients undergoing treatment. Our pioneering study focuses on a specialized collagen-based solution aimed at expediting wound healing and alleviating skin complications resulting from radiation and chemotherapy.

Method: Using enzymatic and thermal modifications of porcine tendon, we developed a triple-helix atelocollagen complex with distinct molecular weights, reaching up to 120kDa. This water-soluble atelocollagen underwent comprehensive characterization, including SDS-PAGE, amino acid analysis, and SEM examination. Mechanical assessments encompassed swelling, viscosity, solubility, and contact angle assays. Natural extracts were strategically incorporated during the final formulation blending.

Results/Discussion: Extensive research and development culminated in a specialized collagen formulation exhibiting super-hydrophilic properties and preserving core microstructural collagen. Rigorous in vitro assessments, employing cell monolayers, 3D-skin assays, and ex vivo blood/skin compatibility analysis, validated its biocompatibility and efficacy for wound healing.

Conclusion: This innovative dermaceutical product underwent thorough testing across diverse skin models, demonstrating promising results at the clinical stage. Our approach integrates sequential testing from collagen development to dermaceutical formulation, emphasizing cellular, tissue, and individual-level investigations. Ultimately, our aim is to mitigate skin irritation, enhance hydration, and expedite wound healing, thereby significantly improving the well-being of cancer patients undergoing treatment.

EP126 The use of a shared decision support tool when deciding amputation level – perceived facilitators and barriers among clinicians. A national cross-sectional investigation

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Aim: To explore facilitators and barriers towards shared decision making (SDM) among orthopedic and vascular surgeons when deciding amputation level.

Method: An electronic survey was distributed November 2023 at 22 hospitals in Denmark, and answered by vascular (n= 28) & orthopedic (n=24) surgeons. The questionnaire covered four domains, known to influence implementation of SDM: 1) Environmental Context and Resources, 2) Social/Professional Role and Identity, 3) Knowledge and Skills, and 4) Beliefs about Capabilities. Furthermore, respondents' viewpoints on the potential use and implementation of a tool to facilitate SDM in the determination of amputation levels was explored.

Preliminary results: Both groups agreed on patients wanting to participate in SDM (75%). One-third (35%) thought patients would find it difficult to understand the advantages and disadvantages of amputation at different levels, and most (88%) found it advantageous to involve the patient's relatives in the decision process. Less vascular than orthopedic surgeons explain to patients the advantages and disadvantages of amputating at the different levels (68 vs 98%); believed they had the needed competency's to involve in SDM (54 vs 88%), and the needed time available (46

vs 71%). More vascular than orthopedic surgeons believed; a SDM support tool would improve patients' experience of the decision-making process (77 vs 48%); would benefit their praxis (62 vs 35%); would use such a tool (65 vs 48%).

Conclusion: Different barriers and facilitators for implementing a SDM support tool exist among vascular and orthopedic surgeons. This should be taken into account in the implementation process.

EP127 Development of wound infection model on diabetic rats using artificial biofilm matrix

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Aim: The aim of this study was to develop biorelevant *in vivo* wound infection models on diabetic rats for testing the efficacy of antimicrobial wound dressings.

Method: Male Wistar rats were used as model animals and diabetes chemically induced with streptozotocin (65 mg/kg). The dermatome, burn, tape-stripping, and biopsy needle were used for wounding. A novel method (artificial biofilm) was used to create infectious wounds. Pre-grown 10^7 CFU *Staphylococcus aureus* DSM2569 biofilm on the polymeric carrier matrix was placed into differently created wounds right after wounding. Wound healing, infection development, and immune response to infection were assessed at 24 h and 72 h time points. Animals with no infection were used as controls.

Results/Discussion: The tested wounding methods were all suitable. Biopsy needle and burn wounds were more consistently obtained compared to the dermatome and tape-stripping ones. We managed to successfully develop *S. aureus* wound infection using artificial biofilm matrix. The infection development depended on the wound type (superficial vs split-thickness vs full-thickness). After 24 h, the infection level was distinct in different wound types and by 72 h timepoint, the average infection level was $\sim 10^9$ CFU per wound.

Conclusion: The selected wounding methods and the proposed artificial pre-grown biofilm matrix are suitable for creating infected wounds in a reproducible manner. Further studies enable us to monitor the wound infection longer and test the efficacy of topical antimicrobial wound dressings.

Acknowledgement: Estonian Research Council project PRG1507. Ethics committee licence no 216 and ARRIVE guidelines.

EP128 Disparities in wound care

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Aim: A collaboration of the Association for the Advancement of Wound Care and the European Wound Management Association to provide clinicians with an overview of the etiologic mechanisms of disparities that exist in wound care.

Method: An in-depth review of the etiologic mechanisms of disparities in wound care through a literature review revealed specific actionable items to decrease disparities and improve inclusivity in wound care. Subsequent manuscript sections highlight common complex wounds and the disparities that exist to inform clinicians and provide strategies for improvement and future research. This first report provides an introduction of social injustice and wound care, general actions for improvement, and a focused review of pressure injury disparities.

Results/Discussion: Our molecular, cellular, social, and physical environments contribute to the development of conditions associated with wounds and impacts successful healing outcomes. Contributing factors to disparate pressure injury prevalence and healing were noted to include disparities in access to visual skin assessment best practices, a need for an impartial evaluation of skin tone using a standardized tool as a standard component of routine skin assessments, and limitations in a variety of technologies reported in the literature as beneficial for assessment of pressure injuries.

Conclusion: By examining and acknowledging current gaps in wound care, we discover additional opportunities to improve outcomes across populations by delivering more equitable care. Multifaceted interventions are needed that aim to reduce the drivers of disparities.

EP129 Clinically-relevant bench test evaluation of superabsorbent dressing functional properties and their effects on exudate management

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Aim: This study evaluated key performance characteristics of a superabsorbent dressing that affect performance in the treatment of chronic, high exudating wounds. Efficacy was evaluated using *in-vitro* models simulating clinical conditions, with and without a primary wound contact dressing, and when under compression.

Method: Superabsorbent dressing SAP* functional properties were evaluated using an *in-vitro* wound model developed using established and new test methods in line with clinical challenges and simulation of physical conditions. Absorbency was evaluated using low and high viscosity artificial exudates, and moderate and high flow rates to simulate moderate to high exudating wounds.^{1,2} Fluid management and retention under compression, were also investigated using a vertical wound model.

Results/Discussion: SAP* showed no leakage at the border after 24-hours using high flow rates and low or high viscosity exudates. When used as a secondary dressing to a gelling-fibre dressing[§], no leakage and no strikethrough were observed for longer than 24 hours. For moderate flow rates, the combined dressings showed no leakage and no strikethrough for up to seven days. Compression tests demonstrated favourable fluid retention by preventing back-wetting to the wound contact area.

Conclusion: The dressing tested using this *in-vitro* model demonstrated functional properties suitable for the treatment of moderate to high exudating wounds, including wound management under compression or in combination with a gelling fiber dressing.

*3M™ Kerramax Care™ Super-Absorbent Dressings, §3M™ Kerracel™ Gelling Fiber Dressing (3M Company; St. Paul, MN)

References:

1. Thomas S, Fram P. The development of a novel technique for predicting the exudate handling properties of modern wound dressings. *J Tissue Viability*. 2001;11(4):145-153, 156.
2. Dealey C, Cameron J, Arrowsmith M. A study comparing two objective methods of quantifying the production of wound exudate. *Journal of Wound Care*. 2006;15(4):149-153.

EP130 The Effect of locally applied iloprost on wound healing in experimental animal wounds

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Aim: Application of Iloprost, known for its physiological effects, as a novel approach to wound healing by local application which is not available. We believe that local application, with the advantage of reducing systemic side effects and allowing for higher concentrations, could have positive effects on wound healing.

Method: 36 rats were administered Iloprost at 5-20-40mcg/g, concentrations, on experimental wounds, comparing the outcomes with control groups— negative, positive—. The study design aimed to establish a dose-response curve and determine the effective dose of the drug for local application. At the end of the 7th day tissue was excised. Excised materials were evaluated histopathologically according to the modified wound healing score which is delayed, normal and advanced wound healing.

Results/Discussion: Histopathological evaluations revealed a concentration-dependent improvement in wound healing scores, with the 40 mcg/g concentration group achieving an “Advanced” classification. Statistically significant differences were observed in various parameters, indicating superior outcomes for the high-concentration Iloprost-treated group. Notably, no histopathological findings were observed in the positive control group. 40mcg/g group exhibited notable improvements in inflammatory cell score, granulation maturation, fibroblast maturation, collagen pattern, collagen organization, and collagen accumulation scores.

Conclusion: Our study, the first of its kind in the literature, demonstrates the potential of locally applied Iloprost in enhancing wound healing. The findings suggest that high concentrations of Iloprost with minimal side effects could be a promising strategy for promoting wound healing. This research opens new avenues for topical Iloprost applications, may inspire further studies in this emerging field.

e-Health

EP131 Mobile APP developed with artificial intelligence (AI) trained on “timers” global scale to assistance on wound healing treatments

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Aim: describe the specialist's perception of effectiveness to wound healing treatments using AI on wound photographs. Health education practices refer to education activities aimed at the development of individual and collective capacities improving quality of life and health. The use of technologies applied to education contributes as a facilitator in the process of knowledge construction and serves as a tool for various teaching practices and standardization of methods in wound healing.

Method: Develop a mobile APP to assist in the treatment of wounds that brings together the steps of the acronym TIMERS and guides the professional during the wound healing treatment. **Method:** A bibliographic survey was carried out to support the idea of the proposed concept and its relevance to professionals in this area. Subsequently, a technological production project was developed to create an mobile APP transformed the results obtained in these processes into a product with potential for practical use.

Results/Discussion: This APP developed assists the wound healing treatments associated with the acronym TIMERS and has the differential of uniting the bibliographic references used by professionals in a dynamic and didactic way, facilitating the user's understanding of the process, and making the treatment be carried out faster, in a structured, standardized and grounded way.

Conclusion: Artificial intelligence (AI) associated with health professional knowledge favors to develop a software trained to assess wounds, with high usability on professional's daily routine, easy to understand, faster, safe, less expensive and modern

EP132 Challenge perception of the brazilian stomatherapist, in the management to analyze and categorizing photographs of wounds, with support of artificial intelligence (AI). Case report

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Aim: In Brazil, complex wounds are a public health problem. During the COVID-19 pandemic period, due to clinical complexities and health guidelines, we used digital technology more emphatically to analyze and monitor the clinical evolution of wounds through photographic records.

Method: This is a descriptive, exploratory and explanatory experience report study. Developed by a Brazilian stomatherapist together with a research and development team. Southern Brazil in 2023. A total of 600 random wound photographs were selected in order to identify and classify standardized terminologies based on the acronym TIMERS in each image.

Results/Discussion: Wound assessment software was developed in order to assist health professionals in obtaining accurate and reliable analyses. The stoma therapist has a fundamental role to manage the image categorization processes

Conclusion: This study demonstrated satisfactory for the phases of the process, making it necessary to provide clinical support to the establishment of a methodology that gathers techniques and data in a more comprehensive way, including computational intelligence approaches. The technological innovation of new tools is of great importance to increase the efficiency of the health service

EP133 Improving chronic wound referrals via app-based-patient-engagement prior to first consultation, to provide a more efficient and smoother patient journey

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Aim: The aim was to increase the quality of information in chronic wound referrals via APP-based-patient-engagement prior to the first consultation.

Method: 1) Define what referral information is essential to plan the first consultation efficiently.
2) Grade all referrals
3) Observe and design referral handling and application questions
4) Intervene: Single doctor handling all referrals & checking medication status as well as the app answers received prior to scheduling the patients' first consultation.

Results/Discussion: The patient Journey was improved in many aspects. For example: the app prevent 42% of the patients from having to be rescheduled to be seen by our multidisciplinary diabetic foot care team another day.

Using the app along with one medical practitioner working systematically, increases the quality of information in chronic wound referrals by over 50%, thereby improving the quality and efficiency of the first consultation by pre-booking relevant exams, providing correct facilities and staff. This saves time and resources, providing timely treatment and a smoother patient journey.

Conclusion: To provide the chronic wound patient with a safe, efficient and smooth patient journey, the referral must contain specific background information. App-based-patient-engagement prior to first consultation along with one medical practitioner working systematically increases the quality of information in chronic wound referrals, thereby improving the quality and efficiency of the first consultation.

EP134 Digitising wound assessment, management and documentation within an Irish public health nursing service – a proof of concept evaluation

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Aim: Facilitate efficient, reliable digital wound imaging, wound measurement, documentation and monitoring of wound progress on one data platform.

Method: A digital application was sourced and funded to test the feasibility and suitability within community nursing services within a large rural and urban geographical area. The clinical site ran the proof of concept for 8 weeks from June 2023-August 2023. Pre and post implementation questionnaires were developed for data collection.

- **Results/Discussion:** 67% of clinicians found it “easy” to input wound assessment information on the digital application
- 50% of users reported that using the digital application improved their communication with other clinicians
- 66% of users reported that the digital application assisted with their communication with the patient regarding their wound care
- 83% of users reported that the digital app assisted with real time tracking and monitoring of the wound(s) progress
- 83% of users reported that the digital app supports their clinical assessment and documentation of wound care

Conclusion: This proof of concept evaluation demonstrates that “*pinch point specialist areas*” within community nursing such as wound care can be enhanced through a digital health solution. Digital applications can improve access for the nursing workforce and the patient cohort to the right clinical expert at the right time in the right setting. Proof of concept evaluations can make the case for digital technologies within the relevant government departments such as health and public expenditure.

EP135 Advanced nurse practitioners; actualising, adopting, integrating and championing digital transformation - a case study

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Aim: To discuss the lived experience of two Advanced Nurse Practitioners in driving digital transformation in healthcare and map an evolving skillset.

Method: Using the four themes relative to ANP clinical autonomy- “stepping up”, “living it”, “bounce-back ability” and “setting in motion”, we have used these themes to guide our discussion and reflection.

Discussion: Digital technologies can be utilised in several ways such as capturing digital data to improve health research, joining up provision between services and improving patients’ self-management of conditions to influence health outcomes.

There are six core competencies of Advanced Nursing Practice in Ireland: Professional Values and Conduct, Management and Team Competence, Clinical-Decision Making, Knowledge and Cognitive Competence, Communication and Interpersonal Competence and Leadership and Professional Scholarship.

We propose that based on our experience and learning that fundamental to the adoption of digital health in clinical practice it is imperative that ANP’s develop a further skillset which encompasses digital expertise, foresight, innovation and entrepreneurship.

Conclusion: There is limited reference to the academic preparation required within the current ANP education programme to adopt and integrate digital technology in clinical practice.

To prepare candidate ANP’S to actualise, adopt, integrate, champion and drive digital health in clinical practice we propose the integration of the identified digital health skillset as competencies in post-graduate advanced nurse practice education curriculum.

EP136 Advanced vulnology with telemedicine and telemonitoring

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Aim: Since the beginning of the pandemic, telemedicine has been used at the S.S. Vulnology of ASL AL. A considerable part of this new assistance modality consists of telemonitoring which is one of the four minimum telemedicine services together at teleassistance and teleconsult.

Method: The S.S. team Vulnology of ASL AL through the use of telemonitoring has managed the progression of the lesions over time and guarantee support to caregivers/patients.

Since 2021, an “All in one” device has been used which allows for advanced televisitation providing an otoscope, stethoscope, infrared thermometer and tongue depressor. The device has a 5 megapixel camera that allows you to take videos and photos that can be stored in a cloud.

Since 2023, complete applications capable of characterizing the lesion (size, type of exudate, location) have been used. In the end, this app provides advice on possible medications to use and gives the possibility of sharing the report generated with the specialist doctor or other professional figures (other doctors, local nurses).

Results/Discussion: Of approximately 600 visits, 95% gave excellent wound analysis and follow-up results. 5% had internet connections problems so we had to repeat the entire procedure several times.

Conclusion: Telemonitoring allowed for better detection of parameters and less need for the patient to personally go to the clinics.

EP137 Exploring the integration of ChatGPT-4 in wound care: A preliminary study in advancing telemedicine support

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Aim: The objective of this study was to create and evaluate the initial usefulness of a ChatGPT-4 model named *WoundX360*, specifically designed for assessing wounds in the telemedicine context to assist wound care practitioners.

Method: The *WoundX360* model was created using the ChatGPT-4 builder specifically for the purpose of wound assessment. Few settings and principles were configured (i.e., ethical issues, wound assessment guideline), with a focus on educating rather than replacing clinical expert guidance. Subsequently a total of 20 simulated wound case scenarios were conducted, presented in both text and visual formats. Two wound care experts then conducted separate evaluations of its responses to evaluate its consistency and accuracy.

Results/Discussion: Our internal evaluation utilising simulated wound assessment scenarios demonstrated the ability of *WoundX360* in accurately recognising wound characteristics, offering recommendations, and providing educational insights. The result showed that we achieved an accuracy rate of 91% in assessing wounds and making treatment recommendations. *WoundX360* was specifically programmed to abstain from offering medical diagnostics or substituting healthcare expert consultations for diagnoses; its purpose is to assist and educate users in wound assessment, with an emphasis on the fact that medical diagnoses require review by professionals.

Conclusion: This initial study highlights ChatGPT-4's potential through *WoundX360* model for enhancing telemedicine in wound care. Its precision and user-friendly interface make it a valuable resource for remote patient care, benefiting both healthcare providers and patients. Further development and rigorous clinical validation are crucial to fully harness its capabilities and elevate telemedicine-based wound care quality.

EP138 Prediction of time to wound healing using routinely collected data at repeated wound care visits

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Aim: Having a wound decreases patients' quality of life and brings uncertainty, especially if the wound does not show a healing tendency. The objective of this study was to develop and temporally validate a model to predict time to wound healing at routine wound care visits in The Netherlands.

Method: The model was developed in a retrospective cohort study on wounds that were treated between 2017-2022. Potential predictors were selected based on literature, expert opinion, and availability of predictors in the routine care setting. As the model was intended to be implemented in future wound care visits, the developed model was then validated in a new cohort of wounds visited in the first half of 2023.

Results/Discussion: Data from 107,994 patient visits, corresponding to 16,866 wounds and 8,140 patients, was included in our development cohort. The median time from treatment start to wound closure was estimated at 1.84 [95% CI 1.84, 1.94] months. At external temporal validation, discriminative performance was comparable to internal validation (c-statistic 0.73 [0.72, 0.75]), though the model did show a slight underestimation of healing times in the new data (calibration intercept 0.25 [0.12,0.38]).

Conclusion: The model showed a stable performance and its implementation in daily practice is feasible as it is based on routinely collected characteristics. Predictions of time to wound healing can contribute to patient satisfaction and reduce uncertainty. Furthermore, when the predicted time of wound healing increases, wound specialists can take this into consideration in their treatment decisions.

EP139 Beyond the clinic: Empowering patient and therapist in diabetic footcare through mobile technology

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Aim: People at risk of diabetic foot ulceration (DFU) often struggle to monitor the health of their feet in everyday life. The use of self-monitoring eHealth technologies is still limited in the context of diabetic feet. Through a co-design process, we developed a smartphone application that guides patients through a question-list ('check') and prompts them to take a picture of their feet if needed. The picture is then inspected by a specialized podiatrist, who will contact the patient in case of an identified medical urgency. This study aims to investigate patient experiences with the application as well as therapist' insights in using the app in clinical practice.

Method: We conducted a 3-month evaluation study with 23 patients and 5 therapists. Data was collected through questionnaires, semi-structured interviews and application datalogging.

Results/Discussion: Patients (n=23, age 71 [SD=7.9] years) completed 342 checks, of which 6 patients were called for a follow-up consult with a podiatrist. Patients were positive about using the app to monitor the health of their feet. Although patients found it generally easy to use, challenges remain in digital literacy. Patients expressed that they felt reassured because they knew a podiatrist would see the picture and follow-up with them. Therapists indicate that a picture has important benefits over calling, enabling them to quickly identify potential issues.

Conclusion: We present the use and user experience of the application by patients and therapists. The study shows that easy data sharing with podiatrists shows promise towards prevention of DFU

EP140 iWound application as effective and accepted tool in postoperative wound monitoring

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Aim: Important element of SSI prevention, crucial in the postoperative period, is the continuation of wound care by medical staff and patients for at least 30 days. One of the methods of better care for these patients is the use of telemedicine tools. The aim of the study was to assess the effectiveness and acceptance of the proprietary iWound application for monitoring and supporting the treatment of patients after surgery.

Method: The study group included 104 randomly selected patients aged 18-86 who underwent surgery at the Department of General in Gniezno Hospital (Poland). During the 30-day postoperative period, surveys were conducted regarding the use of the iWound application (on the 7th, 14th and 30th day after surgery, respectively). The number of diagnosed SSIs was also monitored.

Results/Discussion: The study was completed in 89 patients, and SSI was observed in 4 cases (4.5%). Among patients undergoing emergency surgery, 90.9% used the application, and in elective surgery 84.1%. 84% of patients with minor and medium procedures used the iWound app during the postoperative 30 days. After major procedures, 100% of patients used the app to monitor the wound. The use of the application was rated as satisfactory for all (100%) patients who took part in the study. The mean number of patient's visit in ambulatory was smaller in patients using iWound

Conclusion: Application for postoperative wound monitoring can be effective and accepted tool for postoperative wound monitoring.

EP141 Wound care patients' satisfaction on E-health

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Aim: Wound care patients' satisfaction on E-health.

Method: This prospective multi-center study has 2775 patients who agreed to participate. All participants have one or more wounds limited to pressure ulcer/injury (PU/PI), diabetic foot ulcer (DFU) and surgical site infection (SSI). Participants received full wound care services through E-health including but not limited to dressing materials requests, appointments scheduling, wound pain related issues and requesting dressing changing.

Results/Discussion: E-health is used widely in the current era and it's crucial to meet patient expectation needs. 88% of the patients were totally satisfied and comfortable with e-health service in wound care while 8% were totally unsatisfied. Moreover, 64% believed e-health should be used more widely in healthcare facilities.

Conclusion: Patients satisfaction is a major component of every facility. E-health proof that patient satisfaction can be reached in wound care and a good outcome can be noticed.

Burns 1-2

EP142 Characterisation of extracellular vesicles present in Burn blister fluids of paediatric patients

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Aim: The study's objective was to optimize the extraction and characterization of extracellular vesicles (EVs) from pediatric burn blister fluid (BBF) and compare the protein composition and genetic cargo of vesicles from superficial partial (SP) and deep partial (DP) thickness burns.

Method: A protocol initially developed for plasma samples was adapted for isolating EVs from burn blister fluids from 10 mL pooled samples from two groups of 10 patients with SP and DP burns, ultrafiltration and subsequent ultracentrifugation. The isolated EVs were subjected to Nanoparticle Tracking Analysis, Western Blot, and Transmission Electron Microscopy for characterization. The protein content was examined by Liquid Chromatography tandem Mass Spectrometry along with Next-Generation sequencing for miRNA cargo analysis.

Results/Discussion: The protein composition was different between SP and DP burns, with SP exhibiting proteins associated with immune system activation whereas proteins from DP burns were more associated with protein folding and metabolism. Approximately 80 million single-end small RNAseq reads were generated, revealing differentially expressed miRNAs potentially involved in tissue regeneration, scar formation, and other cellular processes. These findings provide insights into the roles of miRNAs although further analysis is required to confirm their functions.

Conclusion: This study successfully isolated and characterized EVs from pediatric burn blister fluid, uncovering significant differences in molecular composition between SP and DP burns. The results open new avenues for future research and potential therapeutic interventions in burn treatment and recovery.

EP143 Local treatment of burns in paediatrics using tlc-nosf dressings: assesment of a new therapeutic strategy

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Aim: The literature has highlighted the increase in matrix metalloproteinases levels in acute wounds (even though lower than in chronic wounds). As TLC-NOSF dressings have demonstrated their efficacy in local treatment of chronic wounds, we aimed to evaluate the efficacy of these dressings in the local treatment of burns in a paediatric plastic surgery unit.

Method: Monocentric retrospective observational clinical study conducted on children (outpatients or hospitalized), presenting one or multiple second-degree burns. The following treatment protocol was applied:

- J0: neutral lipidocolloid (TLC) dressing (UrgoTul^{  }) + silver sulfadiazine cream
- J2/J3: follow-up with a lipidocolloid matrix containing sucrose octasulfate potassium salt (nano-oligosaccharide factor) (TLC-NOSF) (UrgoStart Plus Pad^{  } or UrgoStart Plus^{  } Border and UrgoStart^{  } Contact) until complete healing.

These patients were regularly examined until complete healing of their burns.

The criteria used to assess the benefit of this new treatment protocol were healing time and dressing-change frequency (important parameter during the Covid period).

Results/Discussion: Twenty-seven patients (mean age 7 years) presenting with a second-degree thermal burn for less than 48 hours with a mean Total Body Surface Area of 4% [1-10%] were included. The average healing time was 16 days, with dressing-change frequency every 3 to 4 days. No side effects were reported, and acceptability of the dressing was judged very good by patients/their parents and healthcare professionals.

Conclusion: The very encouraging results of this new standard of care, introduced during the Covid period for our young burn patients, need to be confirmed by a prospective clinical study.

EP144 Enhancing burn wound management: Fish skin grafts expedite healing and improve outcomes

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Aim: Our primary objective was to determine the optimal approach for managing burn wounds, with a focus on achieving expedited wound healing and enhanced functional and aesthetic outcomes. This study explored the use of enzymatic debridement in combination with intact fish skin as a potential solution. In the context of burn care, our aim was to address the common challenges arising from resource constraints and patient-specific factors, aiming to improve overall therapeutic outcomes.

Method: In a retrospective case series, we treated 12 patients with superficial or deep dermal burn wounds using enzymatic debridement followed by fish skin, lactic acid membrane, or a split-thickness skin graft (STSG). Outcomes, including wound healing, pain relief, and scar quality, were assessed objectively and subjectively for 12 months post-injury.

Results/Discussion: Fish skin-treated wounds exhibited accelerated healing, increased water storage capacity, and pain relief compared to STSG or lactic acid membrane. Improved functional and cosmetic outcomes were observed, with enhanced skin elasticity, reduced thickness, and better pigmentation. Fish skin-treated wounds also showed reduced pain and itch scores (POSAS) compared to STSG and lactic acid membrane.

Conclusion: Our study suggests that combining enzymatic debridement and fish skin grafts enhances burn wound management, leading to faster healing and improved functional and aesthetic outcomes.

EP145 Negative pressure wound therapy in comparison to standard care in treatment of IIa and IIb burn wounds: results of a prospective mono-centre randomised double-arm study

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Aim: This study compared efficacy of negative pressure wound therapy (NPWT) and a local standard of care (SoC) in treatment of second-degree burns. The primary endpoint was time to achieved healing or skin grafting, secondary endpoints were rate of achieved healing and time to complete healing after skin graft.

Method: Patients were randomly assigned to NPWT or SoC and received therapy until wound healed or skin grafting was possible (phase 1). After skin grafting remaining patients were treated by NPWT until wound healing (phase 2).

Results/Discussion: The median time to healing or skin grafting was 10 (8-11) days for NPWT and 9 (7-11) days for SoC ($p=0.085$). Healing in phase 1 was achieved for 28 patients in NPWT group (84.8%) and 22 patients in SoC group (78.6%). Skin grafting was performed for all remaining patients ($N=5$ NPWT, $N=7$ SoC), all of them later achieved healing, healing time 7.8 ± 2.6 days in NPWT vs 9.8 ± 5.2 days in SoC group ($p=0.058$). Number of dressing changes was significantly lower in NPWT group (3.6 ± 1.6 vs 5.7 ± 2.6 , $p<0.001$). Pain levels significantly decreased ($p<0.001$) in both groups (by 2.7 ± 2.5 points in NPWT vs 2.3 ± 3.2 in SoC group, $p=0.549$). Assessment of extremity function (DASH or LEFS), QoL (SF36) and scarring (POSAS) did not show significant differences between groups. No adverse events were reported during the study.

Conclusion: Both dressings were effective in promoting healing. Fewer dressing changes, required by NPWT, may become a psychological advantage for the patients and economical / logistical advantage for the caretakers.

EP146 Enhancing paediatric burn care: A novel approach using medical-grade honey

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Aim: Burns are one of the main reasons children are admitted to the ER. Paediatric patients have sensitive skin and rudimentary immune system, making them more prone to developing severe wounds complicated by infection. Here, we aimed to show the safety, efficacy, and simplicity of using medical-grade honey (MGH) dressings in paediatric burn patients.

Method: Nine patients (4♀/5♂) with an average age of 2.2 years (range 3 weeks-5 years) presented to paediatric hospitals with partial-thickness and full-thickness burns. Wounds included thermal burns ($n=7$), a chemical burn ($n=1$), and an electrical burn ($n=1$). Treatment with various MGH-based dressings, including a wound gel¹, ointment², hydrogel³, and foam⁴, was started directly upon presentation. Dressing changes were performed by the healthcare professional or the caretakers, depending on the state of the wound.

Results/Discussion: Most of the wounds were non-infected ($n=8$). One wound was infected, supported by clinical signs, such as pain and high amounts of exudate, and a swab confirming presence of methicillin-resistant *Staphylococcus aureus*. MGH therapy resolved the infection within a week and prevented infections in all other cases. Besides exerting antimicrobial effects, MGH treatment stimulated autolytic debridement and sped up re-epithelialization. The average healing time was 13.1 days (range 6-19 days) without further pain or complications due to the treatment.

Conclusion: Overall, the MGH-based products prevented and resolved infections in burns, while successfully healing the wounds and generating a cosmetically pleasing result in paediatric patients. Therefore, MGH could be used as an effective and safe treatment for paediatric burn wounds.

¹L-Mesitran

EP147 3D printed hydrogel wound dressing facilitates healing of burns by providing protection, moisture, and balanced pH

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Aim: The effect of moist and absorbent healing on re-epithelialization and closure of burn wounds is well established. Furthermore, burn wounds with poor progression are associated with increased pH. Our objective was to create a dressing with outstanding moisturizing and absorbing properties, while balancing wound pH and providing a nourishing wound healing environment. To minimize environmental impact, the dressing should be made from naturally sourced, sustainable raw materials.

Method: We developed an all-marine dressing, containing alginate, nanocellulose and purified, unfertilized salmon roe extract. This bio-ink was 3D printed and crosslinked with calcium, creating a porous, moist, solid hydrogel dressing. We assessed the buffer capacity and the impact of this dressing on porcine burn wounds to evaluate its safety, functionality, and efficacy.

Results/Discussion: We found that the marine dressing had the ability to stabilize pH and to facilitate the healing of porcine burn wounds. The wounds treated with the marine dressing had less rubor and showed accelerated wound closure compared to a standard-of-care dressing. Importantly, the marine dressing showed low reactivity, was sterile, and biocompatible.

Conclusion: We developed a solid hydrogel wound dressing with moisturizing, absorbing, and pH-stabilizing properties. The marine dressing was shown to facilitate wound healing and had an excellent safety profile. Upon conclusion, the research received acclaim from Norway's national burn care center, where a first-in-human clinical trial is currently planned for 2024.

EP148 MEEK technique as an alternative method of skin transplantation in burn patients with limited area of donor sites

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Aim: The aim of the study is to present a method of covering burn wounds using the MEEK method, which allows covering a large surface of burn wounds while reducing the area of donor fields by half.

Method: MEEK skin grafts were used in 10 patients with burns of the lower half of the body, mainly lower limbs. A special dermatome was used for this purpose, which allows the graft to be cut into square-shaped skin microislands. Skin microislands range from 3:1 to 9:1. Skin collection is adapted to the spacing of the cutting machine and can be significantly limited in size, which results in coverage of a large wound surface from a small collection area.

Results/Discussion: The MEEK method allowed to cover burns, depending on the case, from 30 to 70% of the wound surface, while reducing the donor area by half. However, each patient required another skin graft, using the traditional mesh graft method, to cover residual wounds.

Conclusion: The MEEK method allows for the treatment of burn wounds with a skin graft in patients with limited donor fields. However, in our opinion, despite the healing of a large area of wounds using this method, there is still a need to finally close the residual wounds with a classic mesh graft.

EP149 Topical treatment of third degree burns – a bridge to excision and grafting?

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Aim: The purpose of this study is to emphasize the applicability of topical treatment in burns larger than 15% total body surface (TBS), in centers with limited resources.

Method: Twenty patients with burns larger than 15% TBS, hospitalized in a functional burn unit, were retrospectively reviewed between 2022 and 2023. Data included patient demographics, anatomical site and depth of burns, methods of treatment and surgical outcome. All patients were treated according to the hospital's protocol. Furthermore, the subjects were divided in two groups. Ten patients in Group A were treated with ointment with Hyaluronic Acid Sodium Salt 0.2% and Collagenase (from *Vibrio Alginolyticus*) on third degree burns, for five days, then Hyaluronic Acid Sodium Salt 0.2% and Silver Sulfadiazine 1% cream was applied for seven days, while ten patients in Group B received the standard treatment with Silver Sulfadiazine 1% cream for 12 days.

Results/Discussion: A reduction in the healing time with two-three days was observed in Group A. Moreover, the skin of these subjects had a smoother texture. In addition, surgeons have noticed a poorer quality of tissue after excision in Group B. All patients were discharged home. Nevertheless, patients in Group A had fewer hospital days.

Conclusion: Ointments could represent an useful tool in covering burns between the excision-grafting sessions. They might, as well, enhance tissue regeneration. Burn centers with scarce resources might benefit from this option. Further studies with a larger number of participants are needed.

EP150 Nanocellulose-based wound dressing efficiency in second degree burn treatment – clinical study

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Aim: To evaluate the healing progression for the patients with second degree burns, which met the criteria of nanocellulose-based wound dressing local application.

Method: Our study is a retrospective one. We analyzed 20 patients (9 men), treated in a 2-year period (2022-2023). The patients included in our study suffered IIndA-IIndB thermal burns, located on face and limbs, covering a body surface area ranging 10-25% . We selected only patients with acute wounds, treated from the first 24 hours after injury, with negative secretions. We applied two different protocols for wound management, after the surgical debridement: a) applications of HA+collagenase ointments (10 cases); b) nanocellulose-based wound dressing (10 cases).

Results/Discussion: We evaluated the progression of the healing process, both in surface and thickness, using a Laser Doppler Blood Perfusion imagery system. The wound healing daily rate was similar (2.73%-2.45% wound surface, for the first group; 3.05%-2.80% wound surface, for the second group). The wound deepened only in 1 case from group 2, comparative with 4 cases from group 1. For those patients, we performed excision and reconstruction with skin grafts. We evaluated the pain related to dressing changes, using a pain scale. The patients from the group 2 needed fewer painkiller administrations than those from group 1. This conclusion is related to the special properties of the nanocellulose-based dressings (wound hydration, permeability, local cooling effect).

Conclusion: The nanocellulose-based dressings create a moist environment to the wound, reduces local pain and prevent burn wound deepening.

EP151 Burn wound care after enzymatic debridement with bromelain-enriched pineapple extract with proteolytic enzymes

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Aim: Enzymatic debridement, utilizing bromelain, represents an alternative to surgical debridement, offering speed, tissue selectivity, and enhanced safety. Bromelain enzymatic debridement demonstrates superiority over surgical debridement by preserving healthy tissues, thereby avoiding blood loss, minimizing graft donor sites morbidity, promoting better outcomes.

Method: The study involved 30 patients aged 20 to 56 years with flame burns (10 cases) and scald burns (20 cases), covering 5% to 30% of the skin surface, ranging from burn degree IIB (deep partial-thickness) to III (full-thickness). Enzymatic debridement was initiated within the first 72 hours after burn injury, limited to an area not exceeding 15% Total Body Surface Area (TSBA).

Results/Discussion: Enzymatic debridement proved effective in 86% of patients, with only 2 out of 15 patients necessitating conventional surgical debridement following the enzymatic process. In cases where enzymatic debridement was successful, wound healing occurred via spontaneous re-epithelialization in approximately 3 weeks, using local topical applications based on hyaluronic acid. Additionally, in 3 cases, Split-Thickness Skin Grafts (STSG) were applied within the first 3 days post-debridement. For the two instances requiring secondary surgical debridement, STSG was indicated. In patients with burn surfaces exceeding 20%, the Meek micrografting technique was utilized.

Conclusion: The use of bromelain demonstrates both safety and efficacy in wound care. Avoiding the need for grafting translates to avoiding anesthesia, surgical interventions, creating a donor graft site with its associated aesthetic sequelae, and achieving a superior aesthetic outcome in the re-epithelialized region.

EP152 Sterile polyethylene film: a novel application for the treatment of facial pediatric scald burns

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Aim: This study aims to address the challenge of scald in children by introducing an innovative approach utilizing sterile polyethylene film and moisture exposed burn ointment to enhance wound healing and alleviate pain during dressing changes.

Method: A 3-year-old girl with second-degree scald affecting 1% TBSA was treated with the described approach. The burns were initially debrided using ultrasonic debridement and then covered with moisture exposed burn ointment and a layer of sterile polyethylene film. The film was changed every 2 days, and elastic net was used to secure it in place. 1-year follow-up was conducted to evaluate the aesthetic restoration and presence of scarring or dyspigmentation.

Results/Discussion: The use of sterile polyethylene film and moisture exposed burn ointment resulted in an acceptable aesthetic restoration without significant scarring or dyspigmentation in the patient's burn. The film provided a smooth and transparent covering that alleviated wound pain, provided a soothing experience during dressing changes, and allowed for direct observation of wound healing progress. The film's ability to create a relatively closed and moist environment also contributed to accelerated epithelialization.

Conclusion: The innovative approach utilizing sterile polyethylene film and moisture exposed burn ointment presents a cost-effective, safe, and practical solution for managing scald injuries in children. This technique improves patient experience by reducing pain and discomfort during dressing changes and facilitates wound healing with favorable long-term outcomes. Further studies and wider application of this approach are warranted to validate its efficacy and explore its potential benefits in larger patient populations.

Prevention

EP153 The Influence of mattress stiffness on an in-bed body position monitoring technology for patients with pressure injury (PI)

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Aim: In clinical practice, preventing in-bed pressure injuries (PIs) involves regular patient repositioning. This study aims to propose and evaluate a continuous body monitoring system to enhance patient care and reduce caregiver workload in diverse environments.

Method: Ten healthy participants were recruited to lie on three mattresses: a hospital bed (high stiffness), a home bed (medium stiffness), and a foam mattress topper placed on top of a bed (low stiffness). Data was collected from a pressure-sensitive mat which was placed on each mattress. Participants were asked to lie in 17 postures related to supine, prone, right side, and left side. Additionally, data was collected from seated positions and an empty bed. A convolutional neural network (CNN) algorithm was trained and validated to detect and categorize body positions on each mattress.

Results/Discussion: The F1-scores for the algorithm trained and validated on the hospital bed, home mattress, and foam topper were $94.29\% \pm 3.49\%$, $91.22\% \pm 10.02\%$, and $85.79\% \pm 11.05\%$, respectively. Figure 1 illustrates that as the mattress becomes softer, it becomes more challenging to distinguish between postures due to increased noise in the pressure profiles, resulting in a decrease in algorithm performance.

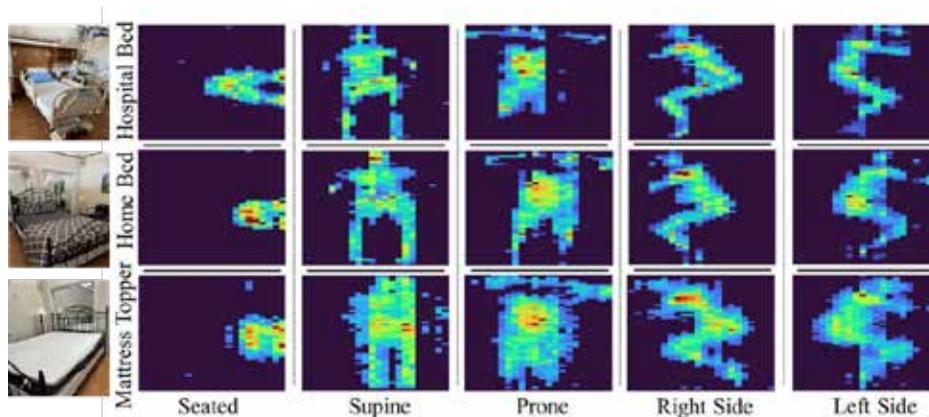


Figure 7. Examples of pressure profiles of various positions for each mattress environment.

Conclusion: The proposed method has great potential to be used in hospitals and at home for PI prevention. It can notify the user or caregiver when it is time to shift positions, if this has not occurred naturally.

EP154 Management protocol of tracheostomy stoma in the adult critical patient unit

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Aim: The insertion of tracheostomies in Critical Care Units (CCUs) is a commonly performed technique. It is recognized for facilitating weaning from mechanical ventilation, improving survival, and maintaining patients' quality of life. However, serious complications can occur, including bleeding, skin injuries, infections, pain, and discomfort. The role of nurses in early detection of these complications is crucial for preventing infections and skin injuries around the stoma. Our goal is to ensure that all patients requiring a tracheostomy receive standardized wound care, ensuring its integrity and preventing further complications.

Method: An in-depth examination of scientific literature and expert consensus was carried out to formulate a protocol for the management of the stoma wound and its care. We defined recommendations concerning stoma care and management, focusing on thorough cleaning and hygiene, exudate control, and peristomal skin care.

Results/Discussion: Our review reveals a scarcity of specific studies. Nonetheless, we have developed a comprehensive care protocol that focuses on nursing care before, during, and after the intervention. This primarily focuses on the cleaning of the stoma wound, infection prevention, dressing use, and patient comfort.

Conclusion: Considering the growing number of patients requiring this device, nurses are confronted with the challenge of developing comprehensive interventions to ensure the quality and safety of care. Our protocol facilitates the standardization of tracheostoma wound management, leading to infection prevention and improved care management.

EP155 Evaluation of the effectiveness of prophylaxis and management of oral mucositis in hematological patients

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Aim: Evaluate the effectiveness of prophylaxis and management of Oral Mucositis (OM) in patients undergoing antineoplastic treatment or Hemopoietic Stem Cell Transplantation in order to reduce mucositis damage.

Method: We analyzed all patients admitted to the Structure of Hematology and Cellular Therapies, from December 2022 to July 2023. Diagnostic and Therapeutic Care Pathway was structured for patients, through a multidisciplinary team (dentists, dental hygienists, nurses, physicians and pharmacists), which includes:

- Professional Oral Care before chemotherapy and after 15 day
- Oral Care Kit
- Daily assessment of World Health Organization (WHO) grading
- Self-management and self-reporting education through completion of the Oral Mucositis Daily Questionnaire

Results/Discussion: A cohort of 41 patient were analyzed: median age 63 [Inter Quartile Range (IQR): 58-74] where leukemia is the most present disease (45%) and a median of hospitalization of 14 days [IQR:4-26]; none of the patients discontinued chemotherapy treatment because of OM. The effectiveness of the prophylaxis is reflected in a WHO grading onset less or equal than 1 in 86% of patients as shown in the tab:

WHO 0	WHO 1	WHO 2	WHO 3	WHO 4
68%	18%	7%	4%	3%

Moreover, a subgroup analysis of patients with WHO more than 0 (n=19) at the onset showed a decrease of grading from a median value of 1 [IQR:1-2] to 0 [IQR:0-1] after taking charge.

Conclusion: A structured Diagnostic and Therapeutic Care Pathway composed by multiprofessional team showed a reduction the incidence OM harm and related complications by increasing patients'self-care capacity.

EP156 Silver sulfadiazine in the prevention of Surgical Site Infection

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Aim: Surgical site infection (SSI) is one of the most prevalent hospital-acquired problem, with estimated prevalence ranging from 2 to 11%.

Lowering the rate of SSI is a common goal within the medical community as it would enable to reduce costs, hospitalizations and mortality rates.

Local antibiotics have been shown to decrease risk of postoperative infection, although recent evidence is conflicting.

Our aim is to evaluate the reliability of a Silver Sulfadiazine 1% cream in reducing the incidence of SSI in patients undergone dermatological surgery.

Method: We treated 800 patients with different comorbidity (such as diabetes, smokies) who have undergone dermatological surgery and treated with 1% silver sulfadiazine (SSD) cream.

Patients were divided into 2 groups: control group, which did not use SSD, and study group. The evaluation of the surgical wound was performed according to the Southampton Wound Assessment Scale (SWAS) using the main levels I-V.

All patients were evaluated as T0 (intraoperative), T1 (4 days), T2 (8 days), T3 (15 days) and T4 (30 days).

Results/Discussion: With the use of SSD cream we achieved a significant reduction in the rate of the SSI compared to the control group. The application is simple. No patient developed allergic reactions.

Conclusion: SSD in the prevention of infections of the surgical site represents a valid choice especially in patients with comorbidities. The use of SSD is simple, safe and well tolerated by patients. Our treatment protocol can be extended to all surgical branches for the prevention of infections of the site.

EP157 Statistical analysis of pediatric hand trauma: 3432 cases over 15 years

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Aim: Pediatric hand trauma is frequent and can occasionally result in deformity or disability. Children experience hand trauma at a different rate and with different etiologies than adults do. Over a 15-year period, the features of pediatric hand trauma cases and patients were examined in this study.

Method: From January 2005 to December 2019, 3432 patients with hand injuries had their medical records reviewed retrospectively. In all, 3432 children under the age of eighteen (1167 girls and 2265 boys) were included in our study. We assessed the distribution of sexes and the causes of injuries. Injury types were classified as extensor and flexor tendon injuries, burns, amputations, lacerations, nerve injuries open and closed fractures.

Results: The distribution of injuries showed a statistically significant difference between genders ($p < 0.001$). Males dominated the patient population with pediatric hand injuries (1.94:1). The most frequent injury was a simple laceration (58.4%), which was followed by a fracture (22.8%). Younger age groups were more likely to experience burns and lacerations, whereas older age groups were more likely to experience tendon, nerve, and crushing injuries (Table 1, 2, 3).

Conclusion: Strategies for preventing hand trauma should be developed with the common trauma etiologies in specific age groups. Awareness of age-specific traits of pediatric hand trauma patients will be helpful for hand trauma prevention.

Table 1. Injury type distribution by sex

Injury type	Males (n=2265)	Females (n=1167)	Total (n=3432)
Laceration	1287	717	2004
Closed fracture	448	272	720
Open fracture	53	10	63
Burn	168	105	273
Extensor tendon injury	111	20	131
Flexor tendon injury	36	4	40
Amputation	36	12	48
Nerve injury	57	12	69
Crushing injury	69	15	84

Table 2. Injury type distribution by age group

Injury type	Group 1 (n=1065)	Group 2 (n=525)	Group 3 (n=330)	Group 4 (n=402)	Group 5 (n=552)	Group 6 (n=558)
Laceration	684	357	201	204	264	294
Closed fracture	171	80	101	132	150	86
Open fracture	6	4	4	12	18	19
Burn	171	64	2	6	18	12
Extensor tendon injury	9	11	7	9	48	47
Flexor tendon injury	3	1	2	3	12	19
Amputation	9	3	3	11	6	16
Nerve injury	6	2	4	12	18	27
Crushing injury	6	3	6	13	18	38

* The patients were grouped according to age into group 1 (0–3 years), group 2 (4–6 years), group 3 (7–9 years), group 4 (10–12 years), group 5 (13–15 years), and group 6 (16–18 years)

Table 3. Locational distribution of lacerations and burns

Injury type	Location	Number of patients
Laceration	Distal phalanx	661
	Middle phalanx	381
	Proximal phalanx	790
	MCP area	172
	Total	2004
Burn	Finger	80
	Hand dorsum	93
	Palm	79
	Multiple area	21
	Total	273

EP158 Assessment of multifunctional polymeric dressings in mitigating surgical site infections in sternal and leg wounds post-coronary artery bypass grafting surgery among patients with preoperative glycaemic control challenges

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Aim: This prospective study aimed to specifically evaluate the impact of multifunctional polymeric dressings on reducing surgical site infections (SSIs) in sternal and leg wounds post-coronary artery bypass grafting (CABG) surgery among 50 patients facing preoperative glycaemic control challenges over a 5-month duration at Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia.

Method: Patients meeting inclusion criteria due to preoperative glycaemic control challenges were randomly allocated into two groups: one undergoing standard wound care and the other treated with multifunctional polymeric dressings. Rigorous monitoring and comparison of glycaemic control, wound healing progression, and SSI incidence were conducted between the groups.

Results/Discussion: Among patients encountering preoperative glycaemic control challenges, those receiving multifunctional polymeric dressings exhibited a noteworthy reduction in SSI rates in both sternal and leg wounds compared to the standard care group ($p < 0.05$). Notably, these dressings facilitated enhanced wound healing and fewer complications in this specific patient subset.

Conclusion: For patients encountering preoperative glycaemic control challenges undergoing post-CABG surgery, the application of multifunctional polymeric dressings displayed significant promise in reducing SSI rates in both sternal and leg wounds. These findings underscore the potential of these dressings as a beneficial adjunct in enhancing postoperative care and mitigating SSIs, particularly in patients facing preoperative glycaemic challenges. Further extensive research involving larger cohorts is imperative to validate and reinforce these findings comprehensively.

EP159 Prevalence of neuropathy and its associated factors among patients with diabetes presenting to the specialist diabetes and endocrine centre in Taif, Saudi Arabia: Cross sectional study

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Aim: This study aims to evaluate the prevalence of such a common and morbid neuropathy complication in a sample of Saudi diabetic patients.

Method: A descriptive questionnaire-based cross-sectional survey was conducted of sample of all diabetic patients who attend the specialist diabetes and endocrine centre in Prince Mansour Military Hospital in Taif, Saudi Arabia. A monofilament test was used to identify peripheral neuropathy cases, whereas its associated factors were identified through generalized linear logistic regression analysis.

Results/Discussion: The study included ($n = 343$) diabetic patients. The prevalence of peripheral neuropathy was 84.8% affected patients ($n = 291$). Dyslipidaemia increased the risk for neuropathy by 98.4% ($P = 0.04614$). An interaction existed between the duration of diabetes and HbA1c levels in terms of their effect on peripheral neuropathy. When the interaction term is included, a positive association between neuropathy and both HbA1c (increased risk by 46.2%, $P = 0.03222$) and DM duration (increased risk by 19.6%, $P = 0.04497$). Cardiovascular disease reduced neuropathy risk by 62.1% ($P = 0.03516$), and retinopathy reduced neuropathy risk by 60.9% ($P = 0.00782$). Our result indicates that over four out of every five patients have peripheral neuropathy. This is because our study was conducted among a high-risk group of attendees at the specialist diabetic centre. Dyslipidaemia, poor glycaemic control, and longer diabetes duration were associated with peripheral neuropathy in our participants, confirming a direct nerve-damaging effect for high levels of lipoproteins, glucose and lipids in the blood.

Conclusion: Diabetologists and public health physicians in Saudi Arabia should address the poor glycaemic control and poor lipid profile in diabetic patients due to their risk of neurological complications.

EP160 Informal caregiver family members' level of knowledge on pressure injury prevention

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Aim: The aim of this study was to determine the level of knowledge of family caregivers about pressure injury prevention.

Method: The study is cross-sectional and descriptive. Data were collected between February and May 2023. The study sample consisted of 105 family members caring for patients at risk of developing pressure injury. A descriptive information form for the patient and family caregiver and a pressure injury prevention knowledge test were used to collect the data. Frequency analysis, descriptive statistics, Mann-Whitney U test, Kruskal Wallis test, Dunn's test were used.

Results/Discussion: Of the patients who participated in the study, 38.1% (n=40) were male, 61.9% (n=65) were female, and the mean age was 68.96 years (SD=18.07). It was determined that 28.57% of the patients had pressure damage. 71.43% of the caregivers were female (n=75) and the mean age was 47.11 years (SD=14.85). It was determined that 47.62% of the caregivers were primary school graduates, 77.14% had an income less than their expenses, and 97.14% had not received any education about pressure injury before. Family caregivers received an average score of 22.25 (SD = 6.96) on the Pressure Injury Prevention Knowledge Test. A significant difference was found between the knowledge test score and education level and income level (p = .006; p = .002).

Conclusion: Caregiver family members needed information about pressure injury prevention, and individuals with low education level and income less than expenses had low pressure injury knowledge levels.

EP161 Assessment of the risk of pressure ulcer in the intraoperative period: adaptation of the Scott Triggers scale to Turkish

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Aim: Operating room-associated pressure injuries account for 45% of hospital-associated pressure injuries. The scales commonly used to evaluate the risk of pressure injury in the general hospital population are the Braden, Norton, and Waterlow scales, and it has been stated that these scales are not specific to the patient undergoing surgery. This study was conducted to adapt the Scott Triggers Scale to Turkish and to evaluate its validity and reliability.

Method: This methodological study was carried out between 14 October 2022 and 21 June 2023. Data were collected using the "introductory information form", "Braden Risk Assessment Scale" and "Scott Triggers Scale". A total of 82 patients were evaluated for pressure injury risk before surgery using the Braden and Scott Scale. Patients were re-evaluated with the Scott scale 0, 24 and 72 hours after surgery.

Results/Discussion: The average "age" of the patients is 56,476±12,514 (Min=32; Max=86), and 54.9% are women. When correlation analyzes between Braden and Scott scores were examined for criterion validity; A moderate negative correlation was found (r=-0.674, p<0.001). The area under the ROC curve (AUC)=0.922 was found to be statistically significant (p<0.05). The optimum cut off value was determined as >1. Sensitivity at the cut-off point was 82.61; specificity was determined as 93.22.

Conclusion: The Scott Triggers Scale was found valid and reliable for the Turkish population. This scale can help nurses identify patients at high risk of pressure injuries in the perioperative period and plan preventive interventions for this.

EP162 Nurturing skin health through simplified incontinence associated dermatitis (IAD) care

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Aim: This study aimed to evaluate the effectiveness of 3-in-1 pre-impregnated cloths in managing Incontinence Associated Dermatitis (IAD) in a long-term care facility, focusing on residents' skin health and operational efficiency.

Method: An observational intervention study with dual objectives was conducted. Conventional IAD management practices were replaced with the implementation of a 3-in-1 product. Staff underwent comprehensive training to ensure proficient product changes and application.

Skin assessments were performed on 45 residents over five days, evaluating redness, rash, and skin loss. Simultaneously, a time and motion study with 18 participants captured product usage, cost and time savings over two weeks.

Results/Discussion: The skin health aspect of the study the assessments evaluated parameters such as redness, rash, and skin loss, providing valuable insights into the impact of the intervention on residents' skin conditions. Using the 3-in-1 product resulted in skin improvement in 31% (14/45) and maintenance without deterioration in 67% (30/45). In the time in motion arm, reductions were observed: fewer wipes used (6 vs. 2) and overall products per cleansing episode (4 vs. 1) Staff overall procedure time significantly decreased from 16.4 to 5.8 minutes, resulting in potential cost savings of up to 40%.

Conclusion: This dual-armed study demonstrates that 3-in-1 pre-impregnated cloths offer substantial benefits for long-term care residents, caregivers, and providers. The 3-in-1 action contributes to improved skin integrity, and presents advantages in cost reduction, sustainability and time efficiency. These findings provide valuable insights for the effective management of IAD in long-term care settings.

EP163 Improving efficiency of an ambulatory wound clinic

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Aim: To highlight improved efficiencies by providing the optimum wound care treatment within a timely manner. Wound healing can be unnecessarily protracted when accurate assessment and effective treatment is delayed.

Method: An audit of a wound care clinic obtained a baseline of existing patients with active wounds prior to implementing a change in practice, establishing time from referral to first appointment, source of referral, wound type, age and treatment.

Development of wound treatment tool, including NICE recommendations for treating diabetic foot ulcers and leg ulcers.

Results/Discussion: The audit captured prevalence data for 35 patients with the lower limb being the highest wound type. Implementation of a wound treatment tool, guiding all non-infected lower limb wounds commence TLC-NOSF first-line and all other wound types to initiate it at 8 weeks, if limited wound area reduction (WAR) had occurred.

Further results from initial patients:

Lower Limb Wounds of 6-12 months old: 2 patients were discharged due to healing; 2 patients had a WAR of 94.5% and 16.7% and 1 patient had an infection present.

Lower Limb Wounds of less than 3 months old: 4 patients were discharged due to healing and one patient who experienced a period of infection had a WAR of 16.7%

Conclusion: Recognising WAR is important as percentage reduction is a predictor to full healing within the expected time. Timely healing reduces the impact on the resources and although clinics will continue to be at capacity, waiting times will reduce and patients will receive timely evidence-based care.

EP164 Revision of an intentional care rounding assessment using a quality improvement methodology

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Aim: Intentional Care Rounding (ICR) was introduced at a large acute care trust in Southwest England over ten years ago in response to recommendations made in the Francis Inquiry. Recent learning from patient safety incidents highlighted that the current ICR nursing assessment needed revision. The aim of this project was to improve the document and implement the changes throughout the Trust.

Method: The project was planned using the Plan Do Study Act (PDSA) quality improvement cycle. Recommended amendments were made to the ICR assessment and shared with the senior nursing team. Two acute medical wards and one surgical ward were recruited to pilot the ICR for 5 weeks. Ward Managers and Clinical Educators were guided through the revised ICR and wards were given a large wipeable poster to display and use as an educational resource for ward staff. Information regarding the pilot was communicated internally for Trust awareness and staff had access to an online feedback survey and paper copies during the pilot.

Results/Discussion: 25 staff responses were received with 80% agreeing the form was easy to fill out and no further changes necessary. The full feedback results were shared with the senior nursing team which highlighted a need for further staff education.

Conclusion: Prior to the amended ICR being implemented across the trust, further educational resources and staff education needs to be planned. Patient feedback was not obtained during the pilot which is also an important element of the PDSA cycle. This will be considered during implementation.

EP165 A service evaluation demonstrating the protocolisation of a single-use negative pressure wound therapy device for reducing surgical site complication risk following gynaecology and gynaecological oncological surgery

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Aim: To determine the clinical and health economic outcomes following the implementation of a risk based surgical incision protocol for reducing wound complications by applying single-use negative pressure wound therapy (sNPWT) for closed incision management.

Method: A multicenter service evaluation was conducted to assess the implementation of a surgical incision protocol including sNPWT, in patients at higher risk of developing SSCs, based on patient and surgical risk factors. Key outcomes measured and reported included incidence of surgical site infections (SSI), incidence of SSCs, length of stay, delay in adjunctive therapy, re-admission, and reoperation.

Results: A total of 96 patients received a sNPWT device for incision management. The wound complications rate was 10.4% (n=10); encompassing 6.7% (n=7) SSI and 3.1% (n=3) dehiscence. No seroma or hematoma events were reported. Of the 10 patients that experienced either SSI or SSC, four patients were readmitted, no re-operations due to wound complications occurred. No patients experienced delays to adjuvant therapy or required re-operation due to wound complications.

Discussion: Implementation of a surgical incision protocol including sNPWT for patient's undergoing gynecology and gynecological oncological surgical procedures was shown to be beneficial within this cohort. In comparison to recent literature, which demonstrated a 16% SSI rate, the implementation of a surgical incision protocol including sNPWT reduced the SSI rate by more than half (58%).

Conclusion: This reduction therefore positively impacts other relevant outcomes, including re-admissions, re-operation, adjunctive therapy delays, morbidity, and mortality.

Reference:

Pico 7™ single use negative pressure system
Smith and nephew plc™

EP166 The impact of a novel therapeutic (physiologic aqueous chlorine) on wound healing in routine oral surgery

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Aim: Antimicrobial resistance (AMR) is a major negative factor in the management of wounds and is associated with delayed (or refractory) wound healing and is linked with increased pro-inflammatory cytokines e.g. IL-6. We selected oral alveolar osteitis as a wound management model as healing in the mouth is well understood with multiple historic datasets on progression and complications which include wound site infection. Endogenous Physiologic Aqueous Chlorine (PAC) is produced by inflammatory cells providing broad-spectrum microbicidal activity amongst other actions. We have synthesised an investigational drug (M3), based on PAC with three modes of action: a broad anti-IL6 function, anti-microbial/AMR activity, and keratinocyte activation.

Method: We examined the potential for M3 to improve wound healing in an open-label clinical study in 260 patients with alveolar osteitis. The study group were irrigated with M3 (6.6 mM / 500ppm) in physiological saline, then M3 mouth rinse for 5 minutes every 6 hours for 5 days at home and control received 0.2% chlorhexidine mouth rinse. All patients were reviewed after seven and fourteen days to assess wound healing.

Results/Discussion: There was a statistically significant reduction in the incidence (10-fold) of alveolar osteitis and refractory healing in the study group compared to the control, standard of care group. Our hypothesis is M3's combination of anti-IL6 activity and antimicrobial effect provides significantly improved wound closure.

Conclusion: From this study and our other data e.g. on sepsis in severe burns, we believe M3 could be examined in the management of a wider variety of wounds.

EP167 Introduction of a new moisture associated skin damage pathway in an adult critical care unit in a large regional teaching hospital in the north of England

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Aim: To reduce the number of Moisture Associated Skin Damage (MASD) incidents by 20% in three months by using a new Adult Critical Care (ACC) specific MASD care plan in a 36 bedded unit across two hospital sites.

Method: A review of MASD incidents in ACC identified 68 reports over six months from June to November.

A bespoke bowel and MASD flow chart was produced specifically to assist the management of MASD in critically ill patients, including which barrier products and incontinence pads to be used. This was used in conjunction with the new formulated MASD care plan detailing the severity of MASD, barrier products used, medical photography requested or images on the bedside tablets saved directly into the medical notes.

In order for above methods to be embraced, bedside education and promotion of the changes were pivotal. This was achieved through partnership with Tissue Viability Leads, link nurses and the senior team.

Results/Discussion: The initial results show a similar incidence of MASD but due to more rigorous reporting, the severity of cases has greatly reduced. Verbal feedback from staff was positive, describing the care plan being easy to use and understand, increasing clarity over reporting, and photographic documentation has been undertaken,

allowing closer monitoring of the skin condition. To minimise MASD risk, staff found the flowchart detailing which continence pads and barrier cream to select extremely helpful.

Conclusion: Due to this success, our plan is to roll it out to the rest of the units in ACC.

EP168 Pressure injury prevention with a unique multi-layer foam dressing: a systematic review and meta-analysis of randomized controlled trials

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Aim: Pressure injury (PI) is a major burden to both patients and healthcare systems, leading to morbidity and excess cost. The aim of this study was to determine if the inclusion of a uniquely designed five-layer hydrocellular polyurethane foam dressing (HPFD)* as part of standard PI prevention (PIP) can significantly reduce the incidence of sacral PI development compared to standard of care (SOC) PIP protocols.

Method: A systematic literature review (SLR) was performed in October 2023 to capture studies reporting on sacral PI incidence in at-risk patients using the HPFD (with standard protocol) compared to SOC PIP protocol alone. To be included, studies had to be randomized controlled trials (RCTs). Binary meta-analysis of sacral PI incidence was performed and summarized with odds ratios.

Results/Discussion: Five RCTs containing a total of 2819 participants (1657 HPFD vs 1162 SOC) were included in the SLR. Three RCTs were included for final meta-analysis, demonstrating a 66% reduction in the odds of PI incidence compared to SOC PIP protocol (odds ratio 0.34 [0.22-0.54], $p=0.0016$).

Conclusion: Use of a unique HPFD in multiple settings in at-risk patients significantly reduces the odds of PI incidence compared to SOC alone. Findings from this study may inform healthcare professionals as to the appropriate dressing in their PIP protocols.

*ALLEVYN™ LIFE (Smith and Nephew, Hull, UK)

EP169 Pediatric intraoperative pressure injury prevention

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Aim: Intraoperative pressure injuries are a never event. As a new graduate nurse, I was taught the importance of skin protection but wanted to learn what the literature says about pediatric intraoperative pressure injury prevention. From this curiosity, an Evidence-Based Practice Fellowship was completed.

Method: A PICO question was created which guided a literature review. Critical appraisal of 464 articles was narrowed to sixteen keeper articles which were arranged into data tables. Education was a key factor in preventing pressure injuries, so information was disseminated to staff through two in-services. The first in-service focused on the evidence and the second focused on past intraoperative pressure injuries dating back to 2016. Pre-presentation and post-presentation surveys were filled out to assess confidence levels and applicability of the evidence.

Results/Discussion: There was an 8% increase in pressure injury prevention confidence level after the first presentation, while the second presentation had a 42% increase in confidence level by staff. Focusing on the literature review, there was little change in staff confidence levels of pediatric pressure injury prevention and just over a third could apply what was presented to their practice. After the second presentation, focusing on past pressure injuries, there was a significant shift in both confidence levels of evidence-based practice as well as applicability of information.

Conclusion: Applying the education piece with local data of past pressure injuries created tangible evidence. The results of the surveys showed the importance of using local information in conjunction with evidence-based practice.

EP170 A more prophylactic surgical site and chest tube incision site management in thoracic surgery. Reducing the risk of medical adhesive related skin injuries. Evaluation of a postoperative wound care protocol in thoracic surgery

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Aim: The “one size fits all” approach in thoracic surgery patients, with conventional surgical site and chest tube site dressings, can easily lead to skin tears (ST). These complications can result in increased length of stay, decreased patients physical and mental health and costs for specialized dressings. In response to a specific case known as “patient zero” who suffered severe ST after elective surgery, a new postoperative care protocol for patients with frail skin conditions was developed. This pilot was designed to evaluate the protocol aiming to use polyurethane and silicone dressings, reduce reapplication of dressings and thus reduce the risk on ST.

Method: Data were collected between August-October 2022 (pre-implementation) and August-October 2023 (post-implementation). The prevalence of ST was compared pre-and post-implementation. The nursing staff completed a questionnaire, on preference and overall performance of the dressings.

Results/Discussion: 24.892 wound registrations were analyzed. The prevalence of ST decreased with 16.67%. The severity of ST decreased (patient with ST type I=3,II=0,III=3 vs. I=1,II=3,III=1). Reapplication of dressings decreased with 27.95% (2400 vs. 3331 reapplications). 75% of the nurses reported an equal or shorter time investment, 80% reported less waste and 95% perceived the use of the new dressings as an overall improvement.

Conclusion: The results demonstrate that the new protocol was considered an improvement. The correct use of prophylactic dressings is not necessarily associated with a higher total expenditure. It can reduce workload, waste and costs associated with the dressings. The successful implementation and results of the project suggests its potential for generalization to other departments.

EP171 The unexpected outcomes of using a sub epidermal moisture scanner: reduced pressure damage, reduced moisture damage, increased nurses knowledge on pressure ulcer grading, prevention and management, reduced workload

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Aim: To reduce incidence of pressure damage by identifying early signs of pressure damage by measuring sub epidermal moisture levels daily on pressure areas of a high risk group of patients.

Method: Evaluated a device which measures sub epidermal moisture levels on the skin at pressure areas, the higher the score on the device, the higher the risk of pressure damage. The device is found to identify pressure damage 5 days before it is visible. Evaluation carried out over 1 month in a 20 patient older adult ward who had a high incidence rate of hospital acquired pressure damage, despite the patients being deemed at risk and having a ritualistic practice of 2 hourly positional changes for all patients.

- All patients scanned daily at sacrum and heels
- Scan results recorded daily on data recording sheets and PU Data recorded
- If high scoring at sacrum, positional changes increased from 4 to 2 hourly, if at heels, off-loading footwear applied.
- Staff questionnaires

Results/Discussion:

- Patient repositioning reduced by 55%, equating to time saving of 7.15 hours /day.
- Pressure ulcer rate per 1000 occupied days reduced from 5.77 to 0.0
- Moisture damage reduced by 100%
- 100% increase in staff knowledge.

Conclusion: Using this device reduced the number of positional changes staff were required to carry out by 55%, the ward noticed a reduction in moisture damage, staff were able to differentiate between moisture and pressure more effectively. Staff described it as their “Crystal ball” being able to identify truly high risk patients.

Basic Science

EP172 Scaffolds as regulators of cell morphology: effects of fibrin-based composites

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Aim: Incorporation of fibrin, into scaffold-like biomaterials, gives favourable wound healing properties, especially of capillary ingrowth, cellular migration and deposition of new tissue. Whilst many biomaterial scaffolds claim similar properties, clinical outcomes, in terms of degree of scarring, from scaffold types used in dermal reconstruction, vary widely.

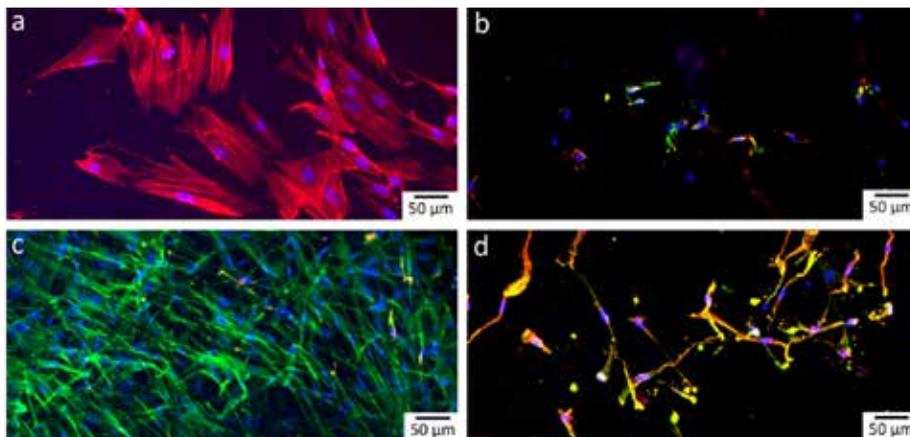
Our overall hypothesis is that extent of scarring or regenerative reconstruction, is determined by morphological and phenotypic responses of cells to a specific scaffold.

The aim of this study was to investigate the effect of a second component incorporated to a base fibrin scaffold structure, on the morphological and phenotypic response of primary dermal fibroblasts (HDF).

Method: Fibrin-based scaffolds were fabricated by emulsion templating, cross-linking. Chitosan (F-C), gelatin (F-G) or hyaluronan (F-H) were incorporated at 10% w/w, as well as a fibrin alone (F). HDF seeded onto scaffold discs in 96-well plates were evaluated, by vital staining (CalceinAM/Propidium-iodide), proliferation (alamar-blue), alpha-smooth muscle actin (α SMA) expression, and morphology (SEM).

Results/Discussion: HDF adhered to all scaffolds and remained viable. Cell morphology in F-G and F-H became elongated over 24 h, whereas on F-C and F, cells remained rounded, and highest density found in F-H. Expression of α SMA was down-regulated as shown (Table & Figure). Also, SEM showed HDF conformed closely to each scaffold structure, with a morphology distinct for each scaffold type.

Scaffold Type	HDF Morphology	α SMA Expression
F+C	Rounded	+
F+G	Flat elongated	+
F+H	Thin Elongated	++
T/C Plastic	Flat elongated	+++++



Representative confocal images of differences in α -SMA expression in HDFs cultured on various scaffolds (b-Chitosan, c-Gelatin and d-Hyaluronan), compared to tissue culture plastic (a). Other stains are Actin (green) and Nucleus (DAPI)

Conclusion: ‘Tuning’ tissue scaffold composition regulates fibroblast morphological behaviour and attenuated expression level of α SMA. This may determine intrinsic histological and clinical scarring or regenerated tissue outcomes for full-thickness skin-loss reconstruction.

EP173 An interdisciplinary perspective on links between the domains of cancer and wound healing

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Aim: Comparisons between wound healing and cancer have been made in biology and healthcare. We investigate this link in an interdisciplinary fashion to derive insights into what one clinical field might learn from the other.

Method: A non-systematic narrative literature review of biological mechanisms and historical factors shaping the wounds and cancer domains.

Results/Discussion: Cell proliferation, migration, and angiogenesis are features first described for cancers but are now known also to drive non-malignant tissue growth. For instance, the phosphorylation of ribosomal protein S6 describes the spatial patterning of cancer growth and wound healing (Ring, Dworak et al. 2023). From this and similar discoveries, we can identify overlapping biological mechanisms whose investigation likely benefits both fields.

The only sociological comparison of wound healing and cancer so far states that diabetic foot syndrome is as deadly and costly as many cancers yet receives less financial investment (Armstrong, 2020). We identify further differences between the fields regarding professionalisation, reputation, and research investment. Yet the success of cancer medicine means that chronic disease management in the community becomes more critical, as it already is in wound care. Non-medical health professions become more important, generating learning potentials, e.g. between cancer and wound nurses. Disease-specific mental health care could also carry over from cancer to wound healing.

Conclusion: The importance of community and primary health care likely becomes a converging zone for both fields, with the possibility of mutual learning. Similarly, basic cancer research may have co-benefits for wound healing.

EP174 In vitro and in vivo evaluation of Chitosan/HPMC/Insulin hydrogel for wound healing applications

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Aim: to obtain stable gels with advanced wound healing properties and to evaluate the Chitosan/HPMC/Insulin hydrogel *in vitro* and *in vivo*.

Method: A hydrogel formulation containing insulin, chitosan and hydroxypropyl methyl cellulose (Chit/HPMC/Ins) was prepared and characterized by FTIR, thermogravimetric and gel point analysis. *In vitro* cell viability and cell migration potential of the Chit/HPMC/Ins hydrogel were evaluated in human keratinocyte cells (HaCat) by MTT and wound scratch assay. The hydrogel was applied to excisional full-thickness wounds in diabetic mice for twenty days for *in vivo* studies.

Results/Discussion: When heating the samples up to 100 °C, weight losses due to water. There is a sharp drop in mass around 165 °C, most likely due to the removal of glycerol. A second decrease marks decomposition of the polysaccharides around 338.5 ± 3.6 °C. The rheological experiment confirms that a gel film forms after a certain period at 37 °C. Cell viability studies indicated no cytotoxicity of the Chit/HPMC/Ins hydrogel. Moreover, the Chit/HPMC/Ins hydrogel promoted faster gap closure in the scratch assay. *In vivo*, the wounds treated with Chit/HPMC/Ins hydrogel resulted in faster wound closure, formation of a more organized granulation tissue and hair follicle

regeneration. The formulation of insulin with polysaccharides in biohybrid hydrogel systems has the advantage to synergistically combine the bioactivity of the protein with biocompatibility and hydrogel properties of polysaccharides.

Conclusion: These results suggest that Chit/HPMC/Ins hydrogels might promote wound healing *in vitro* and *in vivo* and could be a new potential dressing for wound healing.

EP175 Morphological evaluation of healing with medical-grade ulmo honey nanofunctionalized with copper in infected burns

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Aim: This study aimed to morphologically assess the healing potential of medical-grade honey, (ulmo honey, *Eucryphia cordifolia*, supplemented with ascorbic acid) and nanofunctionalized with copper, in infected burns.

Method: In a controlled experimental design, twelve adult guinea pigs were divided into two groups: MGMNpCu (medical-grade honey nanofunctionalized with copper) and MGM (medical-grade honey). Under anesthesia, white dry heat, a 1 cm diameter burn reaching the deep fascia was induced on the dorsal thorax. After 24 hours, the burns were inoculated with 5×10^5 CFU of *Pseudomonas aeruginosa* from a clinical culture. On the 10th day of treatment, biopsies were extracted, fixed in buffered formalin, and processed using histological techniques, including hematoxylin-eosin and Vangieson collagen. The semiquantitative description method by Hazrati and Mehrabani was employed. The ethical approval was obtained from the relevant committee.

Results/Discussion: Both inoculated groups exhibited subtle signs of infection, but the MGMNpCu-treated group showed consistent histological changes in re-epithelialization, granulation, inflammatory cells, and blood vessels. This group showed an initial proliferative stage, characterized by epithelial presence, fibroblastic reaction, and collagenogenesis. Findings suggest that copper's influence on angiogenesis, impacting hypoxia-inducible factor expression and vascular endothelial growth factor regulation, contributes to accelerated healing, even in infected tissue. In conclusion, the combination of medical-grade honey with copper nanoparticles appears to have synergistic effects, enhancing both the quality and speed of wound healing.

Conclusion: the combination of medical-grade honey with copper nanoparticles appears to have synergistic effects, enhancing both the quality and speed of wound healing.

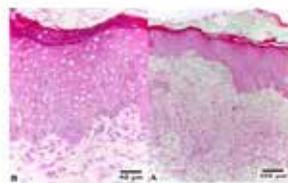


Fig.1. Biopsy of the healing area of the burn injury on guinea pig (*Cavia Porcellus*) skin on day 10 of treatment. A. MGMNpCu group, 40X, HE stain. B. MGMNpCu, 10X, HE stain. Epidermal regeneration reached 100% of the tissue, with good epidermal organization. Fibroblastic reaction and proliferation of collagen fibers were observed.

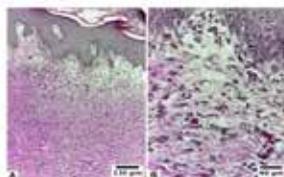


Fig. 2. Biopsy of the healing area of the burn injury on guinea pig (*Cavia Porcellus*) skin on day 10 of treatment. A. MGMNpCu group, 10X, VGC staining. B. MGMNpCu 40X, VGC staining. Epidermal regeneration reached 100% of the tissue, with good epidermal organization. At the level of the superficial dermis, numerous blood vessels and abundant capillaries were observed.

EP176 Skin lesions and associated factors in patients hospitalized in a cancer center: cross-sectional study

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Aim: To evaluate the frequency of skin lesions and analyze the clinical and sociodemographic factors associated with their presence in hospitalized adult cancer patients

Method: Cross-sectional observational study, carried out in hospitalization and intensive care units of a cancer center in Bogotá, Colombia. The sample consisted of 396 individuals with cancer. The data were collected, from January 2021 to July 2022, using RedCap, during three moments: interview with patient and/or legal representative, physical assessment and review of medical history. The frequency of skin lesions was calculated as the ratio between the number of affected individuals and the total population. For the descriptive and inferential analysis, bivariate and multivariate analyzes were applied through a decision tree model that explored the factors associated with the presence of lesions, with a significance level of 5%.

Results/Discussion: Of 396 cancer patients, 252 had skin lesions (63.6%). The average age was 56.94 (SD 16.5), the majority were women (50.7%). The frequency of the main injuries corresponded to surgical wounds (38.9%), complicated surgical wounds (17.4%) and pressure injuries (8.8%). The factors associated with the presence of skin lesions were having surgery in the current hospitalization, Cohen's Kappa of 0.6, sensitivity of 80.6% and specificity of 88.9%.

Conclusion: This study contributed to knowledge about the frequency and associated factors of skin lesions in patients hospitalized with cancer, positively impacting hospital management by contributing to decision-making regarding the prevention and treatment of these lesions, thus improving the quality of care, patient safety and optimization of resources.

EP177 A red-laser-based wound therapy device stimulates healing in models of delayed keratinocyte and fibroblast scratch wounds

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Aim: Photobiomodulation has been shown to exert beneficial effects in wound healing disorders, which present a major challenge in health care. The study's aim was to examine the effect of a novel, red-laser-based wound therapy device (WTD) on keratinocytes and fibroblasts during wound healing under non-optimal conditions.

Method: The scratch wound assay was employed as a wound healing model for mechanical damage with readjustment of specific cell milieus, explicitly chronic TH1 inflammation and TH2-dominant conditions. Gene expression analysis of pro-inflammatory cytokines (*IL1A*, *IL6*, *CXCL8*), growth factors (*TGFB1*, *PDGFC*), transcription factors (*NFKB1*, *TP53*) and heat shock proteins (*HSP90AA1*, *HSPA1A*, *HSPD1*) as well as desmogleins (*DSG1*, *DSG3*) in keratinocytes and collagen (*COL1A1*, *COL3A1*) in fibroblasts was performed after WTD treatment.

Results/Discussion: WTD treatment supported scratch wound closure under non-optimal conditions. Distinct induction of desmoglein and collagen gene expression as well as enhancement of early growth factor gene expression was observed under chronic inflammatory TH1 conditions. Moreover, WTD augmented *HSPD1* transcript levels in keratinocytes and increased collagen expression in fibroblasts during wound healing under TH2 conditions. WTD treatment also alleviated the inflammatory response in keratinocytes and induced early growth factor gene expression in fibroblasts under physiological conditions.

Conclusion: Positive effects described for wound treatment with WTD *in vivo* seem to be conferred by a direct influence on cellular processes taking place in keratinocytes and fibroblasts during wound healing as shown in these experimental models.

EP178 Adaptation of keratinocyte and fibroblast scratch wound models to investigate delayed wound healing conditions

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Aim: Wound healing is a complex, highly regulated process entailing diverse cell types controlled by various cytokines and growth factors. Chronic, non-healing wounds represent a major challenge in hospitals and health care settings. Models of keratinocyte and fibroblast scratches help to elucidate effects of various interventions on epithelial and dermal healing. However, these scratch wound models are mostly performed under optimal cell environments, which does not represent wound healing disorders. In accordance, we have recently begun to investigate how non-optimal settings, like infection, chronic TH1 or TH2 inflammation and glucocorticoid presence affect cell layer regeneration.

Method: Healing progression of keratinocyte and fibroblast scratches under these non-optimal conditions was investigated. Gene expression analysis for cytokines (IL1A, IL6, CXCL8), growth (TGFB1, PDGFC) and transcription factors (NFKB1, TP53), heat shock proteins (HSP90AA1, HSPA1A, HSPD1) and keratinocyte desmogleins (DSG1, DSG3) and fibroblast collagen (COL1A1, COL3A1) was performed.

Results/Discussion: Keratinocyte and fibroblast wound healing under non-optimal conditions was found to be distinctly reduced in vitro. Especially the inflammatory response in infected keratinocytes as well as under chronic TH1 inflammatory conditions was critically augmented and decreased wound healing progression. In contrast, in the TH2 setting or after glucocorticoid administration, correct initiation of an acute inflammatory response necessary after injury to stimulate the regenerative processes and advance scratch closure was inhibited.

Conclusion: The scratch wound model can easily be adapted to investigate how non-optimal cellular conditions affect wound healing as well as be used to analyze the influence of various wound therapies under non-healing conditions.

EP179 Impact of concomitant anticoagulant medication on wound healing: analysis of a cohort of 217 patients suffering from a standardized wound model

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Aim: Aim of this study was to assess the impact of concomitant anticoagulant medication on wound healing.

Method: Data sets of two multi-centre phase III clinical trials were analyzed. Objective of the two underlying studies (BSG-12 and BSH-12; n=217) was to examine the efficacy of betuline gel (TBG) in wound healing. Primary endpoint was the difference in time to wound closure between two equal halves of a split-thickness skin graft (STSG) donor site wound as standardized wound model. Each half of a STSG donor site wound was either treated with TBG or a standard as control group. For this subsequent investigation only wound healing times of the control group (STSG donor site half that was treated with a standard moist wound dressing alone) were relevant depending on the concomitant anticoagulant medication. Kaplan-Meier analyses were performed to compare means in time to wound closure of patients who did take concomitant anticoagulant medication to those who did not take anticoagulants.

Results/Discussion: Analysis showed an accelerated wound healing in patients who took Nadroparin ($12,9 \pm 0,8$ d) or Enoxaparin ($13,4 \pm 1,0$ d) whereas patients who took other low-molecular-weight heparins ($18,9 \pm 2,3$ d) or other anticoagulants ($18,0 \pm 2,2$ d) showed a delayed wound healing towards patients who did not take anticoagulants ($16,1 \pm 0,9$ d)($p=0,003$).

Conclusion: Anticoagulant therapy using Enoxaparin or Nadroparin can improve wound healing whereas Marcumar, Phenprocumon, Aspirin and other low molecular weight heparins, e.g. Certoparin, Tinzaparin, Dalteparin and Bemiparin are negative predictors of wound healing.

EP180 Exudate fluid mechanics and its influence on wound healing

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Aim: Exudates form naturally in response to wounds and while a moist environment is important for wound healing, excessive exudate can interfere with healing. Exudates form as part of the initial immune response to tissue injury and include immune cells and proteins and enzymes required to facilitate healing. As immune cells migrate from capillaries into the wound site, vessels become locally permeable and fluids may leak out into the wound site. Accumulation of excessive fluids may interfere with healing, damage healthy neighboring tissues, cause unpleasant odors and appearance, and affect effective application of dressings. Exudate composition is dynamic, depending on wound severity and stage of healing, and affects its fluidity and “thickness”, or mechanical-structural ability to flow - its rheology. That also affects exudate appearance, ease of cleansing, dressing application, and absorption by dressings. Exudate grading is focused on overall volume and viscosity, typically only referring to material thickness. However, an important feature of the fluid is its elastic response, its stretchiness and stickiness.

Method: We evaluate rheology of different materials (e.g. liquids, gels, biological tissues) to demonstrate fluid composition effects and internal microstructure on their viscoelastic response. We show that medical honey (a viscous material) added to the cell environment affects migration during gap closure.

Results/Discussion: With more, large elements, e.g. large proteins and cells, the viscoelastic fluid becomes more elastic, which may affect the viscoelasticity of the wound bed and the healing.

Conclusion: Exudate viscoelasticity may affect choice of wound treatment methods and procedures.

EP181 In vitro and in vivo evaluation of sustained epidermal growth factor (EGF) loaded alginate-hyaluronic acid (AlgHA) microbeads system for wound healing

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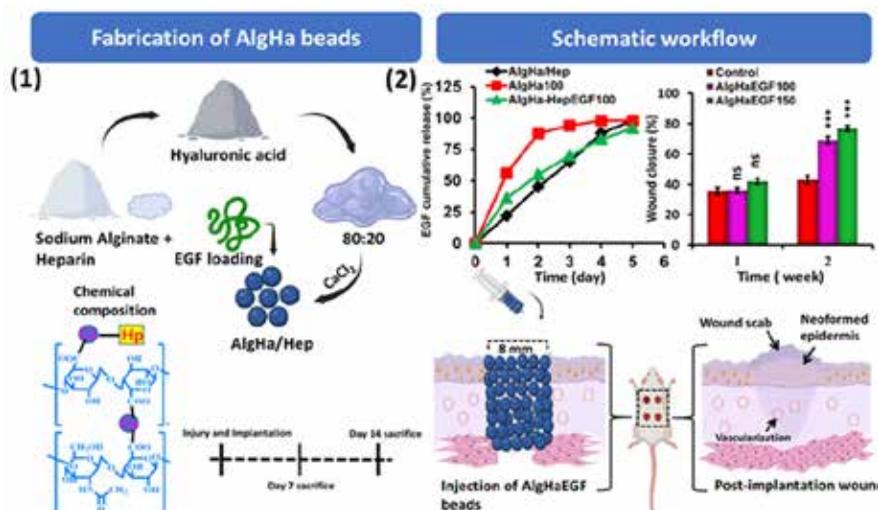
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Aim: Epidermal growth factor (EGF) is one of the growth factors that help in wound healing by inducing cell proliferation. As proteins are denatured or inactivated after injection for medical treatments, the protection of EGF is crucial in wound healing. The slow release of the growth factor essentially depends on the nature of biomaterials and cross-linkers used for the system.

Method: We used alginate (Alg) and hyaluronic acid (HA) composite (80:20) beads for the sustained release of epidermal growth factor (EGF) delivery. Heparin crosslinked AlgHA beads showed significant loading and entrapment of EGF. Encapsulated beads demonstrated biocompatibility with rat L929 cells and significant migration at the concentration of AlgHAEGF100 and AlgHAEGF150 within 24 h.

Results/Discussion: Both groups significantly improved the expression of Fetal Liver Kinase 1 (FLK-1) along with the Intercellular Adhesion Molecule-1 (ICAM-1) protein in rat bone Mesenchymal stem cells (rbMSCs). In vivo assessment exhibited significant epithelialization and wound closure gaps within 2 weeks. Immunohistochemistry shows markedly significant levels of ICAM-1, FLK-1, and fibronectin (FN) in the both groups.

Conclusion: AlgHA bead system was formulated to achieve the sustained release of EGF and promote wound closure and healing. AlgHAEGF groups showed migration and biocompatibility with L929 fibroblasts in in vitro studies. The treatment groups also demonstrated enhanced wound closure and increased epidermal layer formation along with endothelial vascularization in the wounds. Our innovative bead system is intended to keep therapeutic amounts of EGF at the wound site, eliminating the need for daily or frequent dressing changes.



EP182 Comparison of antibacterial and wound healing activities between chitosan and povidone-iodine-based hydrogels

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Aim: This study aimed to compare the antibacterial and wound healing efficacies of Chitosan hydrogel with povidone-iodine (PI) gel.

Method: In vitro antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* was assessed. Eighteen male Sprague-Dawley rats, aged 6-8 weeks, were categorized into control, PI gel, and Chitosan gel groups. Using an excisional wound splinting model, two 10-mm full-thickness dorsal wounds were inflicted on each rat. Each wound received 0.2 ml of gel thrice over three postoperative weeks. Weekly observations ensued, and at postoperative week 3, rats were euthanized for histopathological and qPCR evaluations. Data analysis involved two and one-way analysis of variance.

Results/Discussion: Chitosan gel exhibited comparable in vitro antibacterial activity and a significantly enhanced in vivo wound closure rate than PI gel. Three weeks post-surgery, the Chitosan gel group manifested marked differences in wound repair ($p < 0.01$). Histologically, increased collagen deposition was observed with Chitosan gel. Immunohistochemistry for CD68 revealed fewer macrophages in the Chitosan gel-treated wounds. qPCR analysis indicated a superior collagen 1 to 3 ratio and reduced pro-inflammatory cytokine mRNA expression (IL-1 β , IL-6, TNF- α , and IFN- γ) in the Chitosan gel group.

Conclusion: Chitosan gel demonstrates potential as an effective alternative to PI gel, offering enhanced wound healing capabilities while retaining comparable antimicrobial properties.

EP183 Is the split study on the forehead reliable?

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Aim: The use of botulinum neurotoxin or a variety of filler is one of the representative methods of skin rejuvenation. Double-blind, split-face studies are being actively conducted to analyze the effects of drugs. The split-face study in which the drug is administered by dividing the forehead area of the test subject in half was conducted to directly compare the effects of facial rejuvenation. In this study, we investigated whether the split-face study is a reliable method.

	left	right	P value §
Eyebrow height	13.55±2.69	13.24±2.61	0.658
Eyebrow movement	7.68±1.93	7.68±2.31	1.000
EMG	181.7±90.09	181.9±98.56	0.994

Method: The subject were women between 35 and 60 years of age. We measured eyebrow height and movement, and electromyography (EMG) signal. Eyebrow height was defined as the distance (mm) from the eyebrow to the upper eyelid margin on primary gaze and measured on both the right and left sides. Eyebrow movement was measured as the distance (mm) the eyebrows moved by grimacing the forehead for 5 seconds. EMG studies were conducted on the frontalis muscles

Results/Discussion: The study was conducted in 31 women with ages ranging from 35 to 60 years. The mean age of the group was 42.79 ± 5.01 years.

§ Student t-test

Conclusion: This study showed no significant differences in eyebrow height and movement, and EMG muscle activity on the right and left sides. Split study of forehead is reliable.

EP184 Hyaluronic acid based adipose tissue derived extracellular matrix scaffold (Scaffiller) in wound healing: Histological and immunohistochemical study

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Aim: Adipose tissue is considered the most accessible and optimal source of extracellular matrix (ECM) products in clinical settings. We evaluated the effectiveness of human adipose tissue-derived ECM (adECM) sheets as a wound dressing material. To enhance healing potential and cost-effectiveness, we modified adECM sheets by adjusting ECM concentration and incorporating crosslinked hyaluronic acid (HA) Adipose tissue was obtained from healthy donors, processed, and casted into ECM sheets.

Method: Crosslinked HA was added to create ECM-HA sheets (Scaffiller, Medikan, Korea). In vitro analysis involved seeding adipose-derived stem cells (ASCs) onto porous ECM-HA sheets and evaluating cell survival rate and cytokine array after 3 days. In vivo efficacy, applying ECM-HA sheets to full-thickness wounds in a rat model, with HA-based dressing and adECM sheets as control groups. Re-epithelialization and collagen deposition were examined through histopathological examinations, while immunohistochemistry was used to wound healing.

Results/Discussion: The extracted ECM components accounted for approximately 5% of the original tissue volume, with ECM-HA sheet production efficiency being six times higher than adECM sheet. In vitro analysis revealed favorable ASC survival rates and increased angiogenetic and bioactive cytokine levels in ECM-HA sheet. Macroscopic evaluation showed enhanced healing rates, while histological analysis demonstrated improved epithelialization, thicker dermis, increased collagen deposition, and enhanced vascularity in the ECM-HA group.

Conclusion: Our study successfully fabricated ECM-HA sheets incorporating adECM and HA, hold promise as scaffolds for adipose-derived stem cells, showcasing significant therapeutic potential for wound healing applications.

EP185 Effect of acellular adipose matrix for skin defect wound in murine model

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Aim: Extracellular matrix isolated from adipose tissue is a novel biomaterial product, called acellular adipose matrix (AAM). AAM is a potential scaffold to not only support stem cells in proliferation and differentiation and but also induce adipogenesis and angiogenesis. This study aimed to investigate the wound healing effect and microenvironment changes of AAM applied in murine model with full-thickness skin defect.

Method: Human fat harvested from the fresh abdominoplasty fat, the AAM was manufactured by a mechanical-modified method. Wound healing study was performed on athymic nude mouse model, dressing with either AAM or conventional foam dressing, to the full-thickness skin defect of mice (Circular skin defect 10mm, n=8 per group). Wound evaluation and dressing change was done on postoperative day 2, 5, 7, 9, 12, 14. Histologic analysis were done on the 14th day.

Results/Discussion: AAM has been shown to provide better wound healing effect on the 14th day in the aspects of remaining wound size ($p < 0.05$). There was no significant difference on wound size on day 2, 5, 7, 9, and 12. On histologic analysis, there was similar inflammatory cells compared to conventional foam dressing on the 14th day.

Conclusion: In summary, AAM as a dressing material is effective in skin defect of murine model, better decreasing size at the late stage of wound healing, compared to conventional foam dressing. This promising allogenic biomaterial has potential to offer a safe and effective alternative in wound management fields of clinical practice.

EP186 Biocompatibility evaluation of adipose derived stem cell seeding ADM using rat

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Aim: The use of acellular dermal matrix (ADM) in breast reconstruction inhibits capsular contracture, thereby increasing the success rate of surgery. Adipose-derived stem cells (ADSCs) can effectively suppress foreign body reactions, the major cause of capsular contracture. The purpose of this study is to investigate the effect of applying ADSCs to ADM on the formation of capsules using experiments with rats.

Method: Twelve rats were divided into two groups. In group A, silicone implants were inserted and the ADM was covered in front of the implants. In group B, silicone implants and ADM were inserted, and ADSCs were seeded on the ADM. After 4 and 8 weeks, visual findings, tissue staining, and RT-PCR were performed with extracted capsule specimens.

Results/Discussion: It was visually confirmed that the capsule specimen from group A at the 8 weeks of the experiment, was thicker compared to the specimens from group B. In histological findings, group A had more inflammatory cells and collagen fibers and less angiogenesis than group B. In RT-PCR, group A had a lower angiogenesis-promoting gene expression level than group B, and had a higher gene expression level related to capsular contracture.

Conclusion: In the group that ADSCs were used, the thickness of the capsule decreased, and factors involved in inflammatory and foreign body reactions were expressed at low levels, while factors involved in angiogenesis were expressed at high levels. Therefore, it appears that ADM with ADSCs could reduce capsule contracture and their future application in clinical settings is expected.

EP187 Comparative microbiome analysis of the contracted breast capsule using next generation sequencing

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Aim: Of all the potential aetiology of capsular contracture, the leading theory is the subclinical infection by bacterial biofilm. However, recent studies are limited by culture method, so it's restricted to the cultivable fraction of bacteria. Microbiome of the capsule was analyzed using the most advanced sequencing technology, next generation sequencing (NGS). The aim of this study is to characterize the microbiome of the breast capsules using NGS and to estimate the origin of the bacteria found.

Method: 25 normal and contracted breast capsules were collected during implant removal or replacement. Ipsilateral skin samples were collected by swabbing method. We analyzed them by dividing into 2 groups, Healthy Capsule (HC) and Contracted Capsule (CC), according to the baker grade. NGS was performed with an Illumina MiSeq. Data analysis was processed by Quantitative Insights into Microbial Ecology 2 pipeline.

Results/Discussion: Beta-diversity analysis shows capsules are distributed completely different clusters with skin. There was no relationship between the microbial structure of the capsule and the skin. In taxonomic analysis, bacterial composition of the two specimens were significantly different. In HC, several bacteria, including breast normal flora, were evenly distributed, whereas in CC, colonies dominated by opportunistic pathogens.

Conclusion: This study presented new perspectives on biofilm theory. We suggest the possibility that the endogenous bacteria of breast tissue play a role. And opportunistic pathogen dominates the microbiome as capsular contracture progresses. By understanding changes in the breast microbiome around the implant, it may be possible to prevent, or treat capsular contracture.

EP188 Comparison of periodical effect in external volume expansion (EVE) on fat graft retention rate in BALB / C nude mouse

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Aim: Autologous fat graft is widely used because it is known to be convenient and safe. There are many studies to improve the fat retention rate and EVE is the one of them. In particular, research about the effectiveness of EVE in fat retention rate is being conducted, but only a few researches have been performed about its periodical effect. This research was designed to perform research in order to examine the effective time of the EVE.

Method: Consent was obtained from a female donor aged 36 without underlying illness condition scheduled for fat grafting from the abdomen. Liposuction was performed to absorb the fat cell and it was immediately used for animal experiment. After conducting EVE, gross examination, assessment with Quantum FX micro CT, and histopathologic assessment were implemented. The experimental groups were classified as follows.

Results/Discussion: Fat retention rate at 10 weeks was measured as Group A(39.3%), Group B(46.6%), Group C(57.0%), and Group D(68.4%) Measurement was also taken for the changes in the fat volume for each individual at 10 weeks of the experiment and immediately after performing fat grafting. It was measured as Group A(40.4%), Group B(47.7%), Group C(57.5%), and Group D(68.4%).

Conclusion: It is considered that performing external volume expansion at a clinically appropriate period will bring more benefits in the fat retention rate According to the results of this study, prior EVE followed by concomitant fat graft and additional EVE after fat graft can obtain the highest fat retention rate.

EP189 The potential of polydeoxyribonucleotide (PDRN) to prevent scar - in vitro study

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Aim: The size and quantity of scars are intricately regulated by the delicate balance between collagen synthesis and degradation. Within this process, the deficiency of TGF-B prevents fibrosis, consequently leading to reduced scar formation.

The primary objective of our study is to demonstrate that Polydeoxyribonucleotide (PDRN) induces accelerated wound healing and diminishes scarring through its anti-inflammatory and collagen synthesis effects.

Method: We conducted experiments involving the administration of varying concentrations of PDRN to Human Dermal Fibroblasts (HDF) and HDF+TGF-B which is factor associated with scar tissue formation (Fig. 1, Fig. 2, Fig. 3).

Results/Discussion: After treating HDF with TGF-b followed by PDRN, we observed a concentration-dependent decrease in proliferation and cell expression (Fig. 4). Additionally, the levels of scar-associated factors, including collagen I, collagen III, and pSMAD 2/3, significantly decreased (Fig. 5, 6).

Conclusion: Our investigation into the wound healing and scar formation unveils a crucial interplay between TGF-B deficiency, collagen regulation, and the effects of PDRN. By demonstrating the concentration-dependent impact of PDRN on HDF with TGF-B proliferation, our study provides compelling evidence for its role in accelerating wound healing and minimizing scar formation. Significantly, the observed diminishing returns at higher concentrations underscore the necessity for careful optimization in utilizing PDRN's dual effects on anti-inflammation and collagen synthesis. These findings pave the way, positioning PDRN as a promising candidate for targeted interventions aimed at enhancing wound healing outcomes and minimizing scarring.

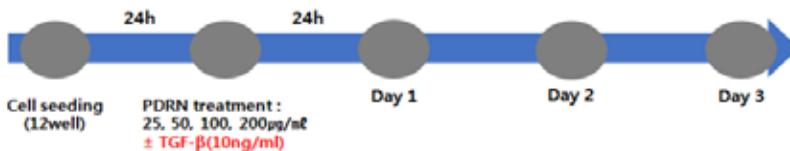


Figure 1.



Figure 2. qRT-PCR

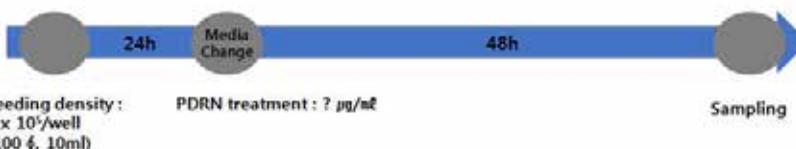


Figure 3. Protein intensity

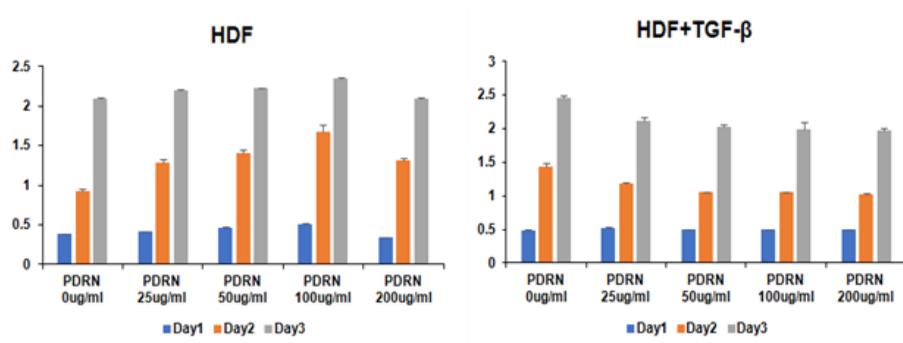


Figure 4.

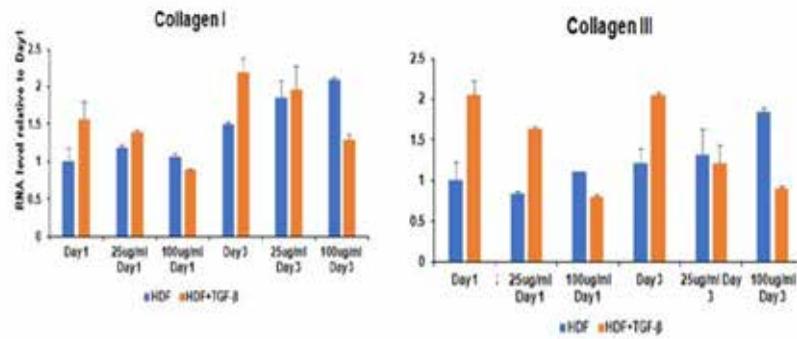


Figure 5.

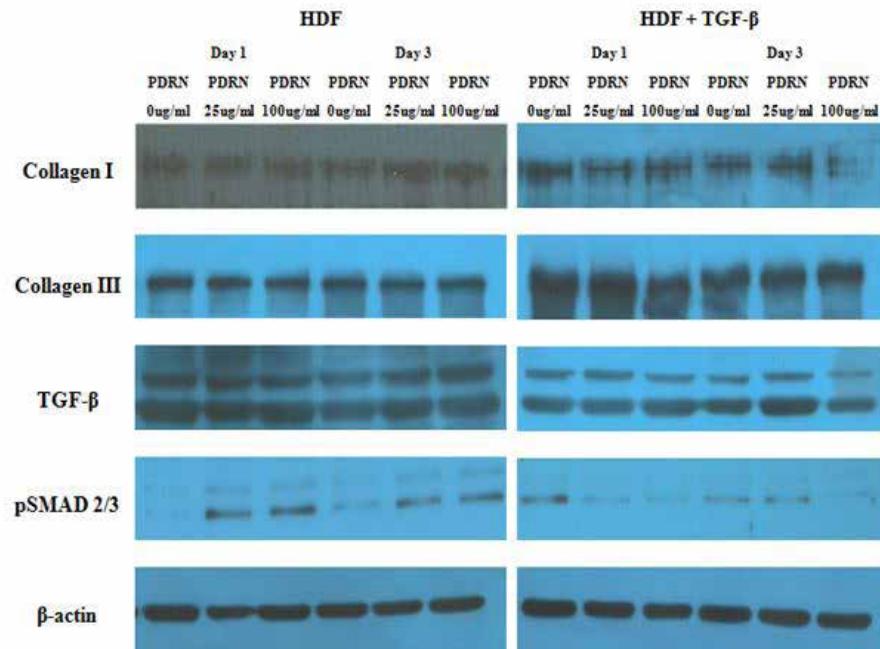


Figure 6.

EP190 The potential of epigenetic modifiers combined with an insect-derived natural product in promoting fibroblast-mediated wound healing

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Aim: Chronic wounds are characterized by incomplete wound healing due to limited proliferation and migration of fibroblasts. As a result, fibroblast-focused therapies are being investigated. This study aims to develop and investigate the effect of combinatorial treatments consisting of epigenetic modifiers A (DNA demethylating agent), B (histone deacetylase inhibitor) and an insect-derived natural product X on the proliferation and migration of fibroblasts.

Method: All experiments were carried out on human dermal fibroblasts. A treatment regimen consisting of a 48-hr treatment with the combination of A and B, and a 72-hr treatment with varying concentrations of X was developed. The treatment regimen was investigated for its effect on fibroblast proliferation by MTT cell viability assay and cell cycle analysis. Furthermore, wound healing assays using serum-deprived fibroblasts were done to investigate the effect of treatment on migration.

Results/Discussion: MTT cell viability assays and cell cycle analysis showed that the treatment regimen did not affect the proliferation of fibroblasts. From wound healing assays, the treatment regimen containing the highest concentration of chemical X showed the greatest increase in migration ($P < 0.01$). The migration of fibroblasts is a critical step during the proliferative phase of wound healing. RNA sequencing is going to be carried out to identify the signalling pathways involved in promoting the migration of fibroblasts.

Conclusion: The treatment regimen may promote fibroblast-mediated wound healing by promoting cellular migration. Further experiments are required to identify the mechanism of action and potential effects on the proliferation of fibroblasts.

EP191 Characterization of human platelet lysate-cultured cell sheet for enhancing wound healing in a murine burn model

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Aim: This study aims to investigate the potential of human platelet lysate (HPL)-cultured adipose-derived stem cell (ASC) sheets in promoting wound healing, particularly in a rat burn model. The primary goal is to assess the impact of HPL sheets on wound closure, collagen deposition, ASC retention, and angiogenesis.

Method: A rat burn model was employed to simulate healing-impaired cutaneous wounds. Adipose-derived stem cells were cultured in HPL, and cell sheets were formed. The study compared the effects of HPL-cultured ASC sheets with those cultured in fetal bovine serum (FBS). Techniques included histological examination, immunohistochemistry, and in vitro analyses to explore gene expression and protein secretion patterns.

Results/Discussion: HPL-cultured ASC sheets demonstrated a significant acceleration in wound closure, along with enhanced collagen deposition in the neo-dermis. The study observed a higher presence of transplanted ASCs in tissues treated with HPL sheets compared to FBS sheets. Furthermore, HPL sheets reduced macrophage recruitment and fibrosis. Immunohistochemistry also indicated increased angiogenesis in the HPL group. In vitro studies revealed enhanced expression of CCL5 and angiogenin in HPL-cultured ASC sheets, as further neutralizing antibody experiments confirming the pro-angiogenic role of CCL5.

Conclusion: This study underscores the pivotal role of CCL5 in the pro-angiogenic effect of HPL-cultured ASC sheets during wound healing. The results provide valuable insights into the potential therapeutic applications of these sheets for healing-impaired cutaneous wounds. The findings offer new perspectives on optimizing wound healing strategies by harnessing the regenerative and immunomodulatory properties of HPL-cultured ASC sheets.

EP192 Photobiomodulation therapy with red LED accelerates diabetic wound healing by modulation M1/M2 like macrophage polarization and tissue regeneration in a STZ-induced diabetic mice model

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Aim: This study investigates whether photobiomodulation therapy with specific red light-emitting diode (LED) treatment could accelerate diabetic wound healing and analyze the biomechanisms are beneficial for macrophage regulation and tissue proliferation in a streptozotocin-induced diabetes mice model.

Method: A dorsal skin defect (1x1 cm²) in a streptozotocin (STZ)-induced diabetes mice model was designed. Forty male BALB/c mice were divided into five groups (n=8 each subgroup). The irradiation parameters were red-LED illumination with a peak wavelength at 630nm, Group 1, non-diabetic control; group 2, normal mice received red-LED 15min/day for one week; group 3, diabetic control without treatment; group 4, diabetic mice received 15 min/day red-LED for 1 weeks; and group 5, diabetic received 45 min/day red-LED for one week. The wound healing was assessed clinically. The tissue biopsy was done on day 3, 10, and 17 post-wounding.

Results/Discussion: The wounding area was significantly reduced in the red-LED group than in the diabetic controls. Histological findings of peri-wounding tissue revealed a significant increase in the neo-vessels in the red LED-treated groups as compared to the controls. IHC staining showed significant increases in angiogenesis expressions (VEGF), cell proliferation (Ki-67), and suppressed inflammatory response (CD45) expressions in the LED-treated groups as compared to that in controls. The M2 like macrophage polarization (CD206) were also significant increase in the DM with red-LED group.

Conclusion: Optimal dosage of red-LED significantly facilitated diabetic wound healing and associated with suppressed pro-inflammatory response and modulate M1/M2 macrophage polarization, increased neovascularization and tissue regeneration.

EP193 Healing from the inside out: Development of a pro-angiogenic regenerative scaffold for skin reconstruction

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Aim: Our goal is to introduce a new artificial skin modality for reconstruction of skin-loss wounds. This concept is an off-the-shelf biological product, to accelerate skin reconstruction with scarless healing by targeting vascularisation and tissue regeneration. Previous work established a biomaterial composition which supports rapid ingrowth and differentiation of blood capillaries and fibrocytes from the wound bed, and developed a technology for forming 3-dimensional surgically handleable material from these compositions. It was also found that the nanoscale fibre mesh and microscale porosity is essential for scaffold integration. Porcine in vivo studies showed such scaffold are cellularised rapidly, and result in histologically non-scarred reconstruction.

The specific aim was to evaluate the properties of scaffolds produced by a new method ready for clinical quality (GMP) manufacture.

Method: Protein polymer scaffolds from fibrin alone or together with hyaluronan, gelatin, chitosan, or PVA, were manufactured by the method of emulsion templating, to create 3-dimensional porous material, stabilised by chemical cross-linking and freeze-drying. Resultant structures were examined by Scanning electron microscopy, internal surface area by N₂-adsorption isothermography, and mechanical properties by DMA. Proteolytic stability by trypsin degradation rate. Biocompatibility in vitro was investigated using human dermal fibroblasts, obtained with ethical consent.

Results/Discussion: Scaffold pore diameters were 40-90 μm . Each formulation gave unique variant nanostructures. Fibroblasts rapidly adhered to all scaffolds, were viable, but showed low proliferation. After 28-days culture, cells were infiltrated and conformed closely to each scaffold, with a unique morphology characteristic of each scaffold variant.

Conclusion: Optimized scaffold production to improve consistency of pore structure and streamline production ready for clinical scale-up (GMP), preserves biocompatibility. Moreover, insights into possible anti-scarring properties of scaffolds were observed.

EP194 Advanced micelle technology reduces biofilms by 99.99999%

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Aim: Biofilms represent a significant impediment to wound repair and are nearly ubiquitous in all chronic wounds. The aim of this study is to evaluate the ability of three anti-biofilm test articles to prevent the formation of *Pseudomonas aeruginosa* biofilm using the Colony/Drip Flow Biofilm Reactor (C/DFBR) methodology. We tested 1. an anti-biofilm polymer hydrogel*, 2. the anti-biofilm polymer hydrogel combined with a cationic nanoparticle (NP) matrix*, and 3. an anti-biofilm wound wash. Each of the three products contain trillions of micelles encapsulating an Octenidine cationic core.

Method: Using the (C/DFBR) methodology, *Pseudomonas aeruginosa* biofilms were grown and extracted biofilm samples plated onto agar. Three replicates of each test article was evaluated with paired untreated control replicates. Mean log₁₀ and mean percent reductions attributable to each test article was calculated relative to paired untreated control replicates.

Results/Discussion: We noted significant reductions in Biofilm development in all three test products as compared to control solution. Each of the test products had a 1.60 Average Log₁₀ CFU/membrane recovery (vs.8.66 in controls) and an Average Log₁₀ CFU/ Membrane Reduction Relative to Untreated Control of 7.05.

Conclusion: These preliminary results indicate the excellent anti-biofilm properties of these unique micelle-containing anti-biofilm polymers*,*** as well as that one combined with the cationic NP matrix product. These safe, non-cytotoxic agents can significantly reduce the biofilm burden as well as prevent its regrowth when used as a several times weekly protocol.

*BioRelease™ (McCord Research. <https://mccordresearch.com/>)

**AgFresh™ Fentonite (McCord Research. <https://mccordresearch.com/>)

***BioClense™ (McCord Research. <https://mccordresearch.com/>)

EP195 Intravesicular cytokine profiling of stage IV pressure ulcers treated with NPWT vs. NPWT and porcine extracellular matrix dressing

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Aim: The aim of this study is to analyze intravesicular cytokines in wound fluid to understand how healing and non-healing wounds behave at the molecular level when treated with negative pressure wound therapy (NPWT) versus a combination of NPWT and Porcine Extracellular Matrix dressing (Oasis Ultra).

Method: Wound fluid samples were obtained from 16 patients with stage IV trunk pressure ulcers. The patients were divided into two groups (n= 8 in each): a control group on NPWT alone and a study group on NPWT plus Oasis Ultra. Patient wound fluid was collected from the NPWT device (wound VAC) every four weeks over the course of the 12-week study. Microvesicles were isolated and analyzed.

Results/Discussion: Wounds in the study group expressed higher intravesicular pro-healing growth factor concentrations earlier in the study. The intravesicular fibroblast growth factor (FGF) concentration at 4 weeks in the study group was statistically significantly higher than the control group (112.93 pg/mL vs. 28.51 pg/mL, $p < 0.01$). As wounds progressed toward healing, the EV concentration of proinflammatory molecules such as IL-5, IL-6, IL-8, IL-12, IFN- γ , and TNF- α decreased in the study group over time and were lower than control group levels by 12 weeks. Anti-inflammatory molecules IL-1ra and IL-10 were produced at higher concentrations in the faster healing study group as compared to the NPWT only group.

Conclusion: Our results suggest critical interactions between intravesicular cytokines and cells in the wound site. Intravesicular molecular profiling can help characterize wound progression, serving as a wound healing biomarker.

EP196 Improvement of bio-integration efficacy of acellular dermal matrix through plasma surface treatment

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Aim: Plasma treatment has been mainly used and developed for sterile of medical devices. Recently, there was a report that osseointegration was improved through plasma treatment of dental implants. The purpose of this study is to evaluate the effectiveness of plasma surface treatment on acellular dermal matrix (ADM), which is used in various clinical settings, especially wound healing.

Method: This plasma device was designed to allow direct installation of sealed ADM packaging containing the ADM. In this manner, the ADM could be treated with plasma under a moderate vacuum environment while remaining in a sterile condition. To assess the bio-integration efficiency, in vitro and in vivo experiments were performed. In vitro, the ADM surface was observed with scanning electron microscope (SEM) before and after plasma treatment. Thereafter, protein adsorption, cell adhesion, proliferation, and differentiation efficiency were investigated on the surface of each ADM using fibroblast. In vivo, the ADM and capsule thickness, fibroblast proliferation and neo-vascularization was investigated.

Results/Discussion: In vitro, plasma treatment significantly improved protein adsorption, cell adhesion, and cell proliferation efficiency. In vivo, peri-ADM capsule of plasma treatment was thinner. Fibroblast proliferation was increased in plasma treatment

Conclusion: According to the findings, the proposed vacuum plasma device has shown the potential to improve bio-integration efficiency. We believe that this plasma technology can be an innovative chairside solution that can be easily handled in the clinical field with superb usability.

Education

EP197 Nipple wound pathway: choosing the right wound dressing to help breastfeeding parents heal for success

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Aim: Nipple wounds are frequently encountered by PHN's (Public Health Nurses) and other Health Care Professionals in the community. However, these can be a struggle to successfully treat. This pathway aims to serve as a tool to guide the use of therapeutically targeted dressings and address the complex requirements of non-resolving or difficult to heal nipple areolar wounds. This cohort exists despite best practice breastfeeding support and use of Photobiomodulation (near infrared light), in addition to traditional healing remedies. Early intervention for resolution of these wounds is particularly time sensitive in the prevention of early cessation of breastfeeding.

Method: Clients presenting with nipple wounds at Primary Care for support were assessed using HSE (Health Service Executive) wound management guidelines (2018). Wounds were assessed based on appearance, pain, exudate and possible infection. Over the course of 18 months 50 clients were assessed. Six wound dressings were initially selected for treatment. Out of these six, three significantly effective dressings emerged based on safety, verbal client feedback, wound resolution, pain reduction and infection prevention.

At the first and subsequent consultations, best practice breastfeeding support and wound assessment was provided plus or minus Photobiomodulation. Clinical presentation of the wound based on the pathway determined dressing selection.

Second consultation, scheduled within 3 days, involved repeat wound assessment and evaluation of dressing efficacy. Improvement in wound presentation and reduction of pain determined the ongoing care plan.

A final consultation by Day 11 resulted in discharge of the majority of the clients.

Results/Discussion: A wound care pathway was developed, describing wound type, treatment objective and indication for use of 3 selected dressing; Polymem, ActiVheal PHMB Foam and Medihoney HCS. The pathway was implemented at PHN IBCLC primary care clinic to standardise care, on a trial basis.

To date, significant wound improvement has been observed at second consultation on day 3, with 96% of clients discharged by Day 11. Only 4% of clients required onward referral as minimal improvement was achieved. It is necessary to acknowledge the multiple complex variables which can be associated with individual breastfeeding dyads, including biopsychosocial and mechanical challenges.

Dressing choice was based on first ranked category items available on the Irish public health system. On review of the literature, limited research exists on the use of wound dressings for this cohort. There are completed studies on the use of Polymem and Medihoney HCS for breastfeeding dyads. However, with ActiVheal PHMB Foam there are no studies to date, therefore, using the product off-label requires breast cleansing prior to breastfeeding to ensure safety.

Conclusion: Possessing a nipple wound care pathway to guide dressing selection provides a useful tool for this unique wound type, which Health Care Professionals frequently encounter but struggle to successfully treat. These wounds need accurate assessment and treatment without delay. This pathway is intended to provide safe, effective guidance to achieve pain reduced wound healing and support of client breastfeeding goals.

EP198 Supporting navigation of care for persons with chronic wounds through health communication

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Aim: In Austria, healthcare providers and patients frequently report a significant delay in seeking medical care for abnormal wound healing. In addition, patients face a healthcare landscape that lacks clear care pathways. Wound care doctors and nurses admit patients who experienced months of low-value care practices before seeing them. We developed a patient education brochure to strengthen their health navigation competencies. An implementation test will be performed in Q1 2024 in a rural district in Upper Austria. In this presentation, we share the co-creative methodology and the implementation design underlying this intervention.

Method: We performed a qualitative analysis of four roundtable discussions with patients and informal carers, three workshops with health professionals, and two interview studies involving 27 participants.

Results/Discussion: Two important findings shaped the design process. Firstly, the written and visual components of health communication on chronic wounds should convey empathy and advocacy. Consequently, we developed a visual character to signal these values as it guides readers through the brochure. Secondly, we conceptualised the brochure to function as a tool in patient-doctor interaction in primary care. Yet the content is designed to work independently of a given care setting.

Conclusion: Patient participation in their care process is indispensable for improving care quality, yet improved navigation competencies can only achieve better outcomes when appropriate health services are readily accessible.

EP199 Contribution of the “MULTIFERIDAS League” to academic integration and the assistant practice in the people with wounds care

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Aim: To describe the contributions of an academic league in consolidating teaching and university extension actions to people with wounds approach.

Method: In 2021, the “Academic League for Multidimensional Care for People with Wounds” was created, composed of students, professors from the Federal University of Goiás (UFG), and members external to the university. The MULTIFERIDAS League, a pioneer on the topic at the Faculty of Nursing at UFG, was organized based on demands for academic actions aimed at caring for people with wounds and ostomies, which integrated teaching, research and university extension. The actions include different assistance scenarios and strategies to inform the population, professionals and students interested in the themes of the League.

Results/Discussion: Actions were carried out to provide services to the community, mainly on health education to prevent complications of foot disease related to diabetes and care to prevent peristomal skin lesions; local scientific events; technical productions released on Instagram (@ligamultiferidas, 1,392 followers) and directly to the community; periodic scientific meetings; organization of training courses for professionals in the municipal health network. Recently, two ex-directors of the MULTIFERIDAS League started their master’s degree with research on the treatment of people with wounds.

Conclusion: The complexity of caring for people with wounds requires an interdisciplinary approach¹, which needs to be developed among professionals from the beginning of their training. The structuring of academic leagues favors the integration of students, care professionals and the community, permeated by the qualification of care and the translation of scientific knowledge²⁻³.

EP200 Educational interventions to improve knowledge among nurses in the prevention of skin tears in institutionalised adults and older adults: a scoping review

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Aim: To map and synthesize the current state of the literature on educational interventions to prevent skin tears in adults and older adults, provided by nurses to nursing professionals in various healthcare settings.

Method: A scoping review following the JBI methodology was performed including articles that complied with the framework Population Concept and Context, published in English, Spanish and Portuguese and without time limit. Ten databases were consulted in addition to unpublished studies and grey literature.

Searches were managed using Endnote and then exported to the Rayyan tool. Two independent reviewers screened the articles retrieved from the databases by title and abstract following the inclusion criteria, full text of selected articles was read by the same reviewers; a third reviewer solved some discrepancies, and a final agreement was reached.

Results/Discussion: Six hundred ninety-four articles were obtained, among which four met the inclusion criteria. Two modalities of educational interventions in the prospective quasi-experimental studies were identified: face-to-face classes using the PowerPoint presentation and online training available 24 hours a day, seven days a week, through the institution's website. The primary outcome measures were knowledge level and skin tears incidence.

Conclusion: The education intervention provided by nurses improved knowledge of skin tears and reduced their incidence. More primary studies are needed to examine the preferred and feasible educational interventions or technologies to enhance learning and knowledge acquisition. Future studies should also review the direct impact of knowledge on practice change and skin tears incidence.

EP201 Quality assurance of wound care service through staff cultivation in primary healthcare setting

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Aim: To cultivate learning culture

To promote wound care knowledge or skills transfer

To promote EBP in wound care service

To ensure continuity and quality care

Method: Appropriate levels of wound training are provided for frontline nurses based on their competencies and service needs. For all qualified nurses especially newly joined nurses (1st tier) who provide management of simple wound, linear wound and uncomplicated pressure injury, basic wound training is offered to enhance nurses' clinical knowledge on wound healing process, and basic wound care on different wound types. For wound link nurses and those (2nd tier) providing advanced wound management, intensive training is offered. Clinical practicum is also included to facilitate nurses' application of theory into practice. Recognized 3rd tier wound nurses holding qualification in advanced wound care and wound debridement credentialing serve as wound team coordinators and clinical mentors to provide guidance and assessment during the daily practice. Regular departmental wound case conference is also organized.

Results/Discussion: Front-line nurses including APN, RN and EN (n=109) are targeted to receive appropriate level of wound training. Eleven conferences including 237 attendances and 60 topics with EBP were organized from 2017 to 2023.

Conclusion: With staff empowerment enhanced by structured education program based on individual need, quality of wound care service could be assured and sharing culture of expertise is also cultivated. EBP and updated wound management could be promoted through regular wound case conference and wound care activities.

EP202 The application of addie model in chronic wound nursing training

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Aim: Chronic wounds have become a clinical treatment challenge due to their complex and diverse pathogenesis. With the transformation of modern medical models, nurses are playing an increasingly important role in wound management. This study is based on the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model to develop a training plan and evaluate its effectiveness in wound care training.

Method: This study is a single-arm controlled before-and-after study. Participants were recruited from a tertiary hospital in Shanghai between May 2022 and April 2023 using convenience sampling, and the ADDIE model was used to develop a training plan. The theoretical and practical scores were evaluated using self-made answer sheets and operational scoring criteria. The critical thinking skills was assessed using a critical thinking scale, and the communication techniques were evaluated using a clinical communication skills scale for nurses. SPSS 26.0 software was used for data analysis.

Results/Discussion: 385 nurses were included in the final analysis. After the ADDIE model training, the nurses' theoretical scores were (83.67±4.42) points, and the operational scores were (86.86±4.46) points. In addition, the nurses' critical thinking scores were (298.62±14.81) points, and the communication techniques scores were (260.58±30.36) points, all of which increased compared to before. The difference between the two groups was statistically significant (P<0.05).

Conclusion: The chronic wound care training program based on the ADDIE model can effectively improve the ability in all aspects of nurses and the quality of nursing, which help promote the development of nursing discipline.

EP203 Clinical simulation in wound care education

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Aim: Clinical simulation creates an environment that allows participants to experience the presentation of a real event for the purpose of practice, learning, evaluation, testing or gaining a better understanding of the health care system or professional activities. Aim is to report on our experience of creating and implementing two clinical simulation scenarios in the teaching of wound care and the students' opinion on the use of this tool in teaching.

Method: Experience report on the implementation of two teaching scenarios for students of Secondary Medical School. We created the scenarios according to the model from the National League for Nursing/Jeffries Simulation Framework. The scenarios were evaluated using the Simulation Design Scale instrument, while the students evaluated their satisfaction and experience using this tool in the learning about chronic wounds in a short questionnaire.

Results/Discussion: The scenarios presented a realistic situation in the nursing care of a patient with a chronic wound. Before the simulation exercise, the students were given learning materials and the instructions for the simulation exercise. After the simulation, a debriefing was conducted, with the aim of the students themselves identifying and removing deficiencies in the implementation of the skill. After the simulation, the students expressed their satisfaction with the the simulation.

Conclusion: The use of simulation in wound care education encouraged students' independent learning, had a positive effect on students' clinical judgment, as well as decision-making in the assessment and treatment of chronic wounds.

EP204 Implementation of the EWMA curriculum in the educational program in Croatia

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Aim: Point out the importance of continuous improvement of existing educational programs in accordance with the needs of the population.

Method: Show the steps of implementing the EWMA curriculum into the nursing education program in Croatia.

Results/Discussion: The reason for launching educational program of enterostomal therapy was the lack of licensed nurses who take care of patients with ostomy, wounds and continence. The educational program is created according to the guidelines of the World association of enterostomal therapists (WCET). In the end of education, participants receive a certificate of enterostomal therapist, recognized by the WCET and are trained to provide assistance and care for people with ostomy, wounds and continence in Croatia. This is the first nursing specialization program in Croatia.

The needs of patients require the launch of this program. After being discharged, patients are on their own and in the care of the health professionals who do not have adequate knowledge and skills to care for them.

According to the above, and the increasing number of people with chronic wounds in the Croatia and around the world, it has proven necessary to improve education in the field of caring for chronic wounds.

Conclusion: Professional associations create curricula in certain areas of health care with the aim of ensuring equal and highest quality of health care for all people. The implementation of such curricula raises the level of quality of health care around the world.

EP205 Investigation if implementation of wound hygiene protocol-of-care¹ can improve wound care in hard-to-heal wounds in deviant population groups across national borders - A case study with 17 out clinic patients in two municipalities

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Aim: To show the effect of implementing Wound Hygiene protocol-of-care (WHP) across deviant population groups, to ensure standardized and uniform care to improve wound treatment in hard-to-heal wounds across national borders.

Method: All health care professionals were educated in WHP prior to start, of the case study.

17 patients were selected (N=17 wounds)

The patient group were deviant, based on age and cause of ulcer formation, where both substance abuse problems and common ulcer diagnoses were represented.

The wounds were assessed and treated following WHP, with application of an antimicrobial dressing at Step 4 of the protocol. The wounds were monitored for 4 weeks. Changes from baseline in wound characteristics and status were captured in an evaluation form.

Results/Discussion: Pre-WHP implementation: Wound status – 10 out of 17 wounds were static.

Wound duration ranged from 7 days to over 12 months.

Post 4 weeks WHP implementation: 1 wound healed, 14 wounds improved, in 2 cases, a consistent treatment plan could not be followed, due to poor patient compliance.

Following the case studies, 100% of the healthcare professionals will consistently incorporate the use of WHP in their future daily treatment practices.

100% of the healthcare professionals will continue the use of an antimicrobial dressing and recommend the use of it.

Conclusion: Implementation with WHP gives positive results across deviant population groups across the national borders and will change the daily wound care strategy in hard-to-heal wounds for out clinic patients, to support better patient outcomes.

EP206 Transforming wound care education: enhancing postgraduate learning through a hybrid approach based on engaging and reflective learning

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Aim: The current Royal College of Surgeons in Ireland (RCSI) School of Nursing and Midwifery Postgraduate Certificate/Diploma/MSc programmes in Wound Care and Tissue viability (NQF 9, EQF 7) were redesigned into a new hybrid programme using the ABC Learning Design. The aim was to improve students' engagement and reflective practice.

Method: Project implementation in innovative education delivery.

Results/Discussion: In 2020 was redesigned a hybrid online format that incorporated the ABC Learning design. The previous combination of face-to-face/asynchronous online interactions was restructured to add interactive elements to the asynchronous content and engaging discussions. The shift towards more reflective questions resulted in a significant increase in student participation, not seen in previous years, which also enabled active interaction from a diverse range of students across locations and backgrounds. To provide structured learning, evidence-based clinical concepts as the 'TIME CDST' wound assessment, the PU prevention 'SSKIN bundle' and computer-based interactive cases were used. Weekly discussions focused on experiential learning rather than factual knowledge, fostering a comfortable environment for student participation. Additionally, students maintained reflective journals to document personal experiences and learning. Tutorials followed a flipped classroom approach using the Blackboard Collaborate Platform, facilitating both small and large group discussions. Student feedback has been overwhelmingly positive, with praise for concise asynchronous sessions and synchronous sessions with global experts.

Conclusion: The Wounds program's shift to a hybrid online format enriched student engagement, offering a diverse, structured learning experience through evidence-based concepts and interactive methodologies, fostering positive feedback while refining aspects for enhancement.

EP207 Psychometric validation of the Korean pressure ulcer knowledge assessment tool

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Aim: The implementation of pressure ulcers (PUs) prevention is essential for all patients however only two-thirds of Korean nurses are reported to be performing PU prevention tasks, such as risk assessment. Nurse with greater knowledge of PU prevention would be expected to perform it more often than those with less knowledge. The purpose of this study was to evaluate the psychometric properties, including content validity, validity of multiple choice items, and the reliability of the Korean version of the Pressure Ulcer Knowledge Assessment Tool (K-PUKAT 2.0), using classical test theory (CTT) and item response theory (IRT).

Method: Linguistic validation process and factor analysis were conducted among wound care nurses, staff nurses and nursing students. Items were analyzed according to the CTT and IRT using a two-parameter logistic model. Intraclass correlation coefficients were used to examine reliability.

Results/Discussion: A total of 378 wound care nurses, staff nurses and nursing students participated in this study. While most items showed moderate difficulty based on the CTT, difficulty index values based on the IRT were more broadly distributed (low: 5 items; moderate: 9 items; high: 1 item). The intraclass correlation coefficient for K-PUKAT 2.0 was 0.72. The K-PUKAT 2.0 demonstrated concise and good psychometric properties.

Conclusion: Based on the results of this study, repetitive use of K-PUKAT 2.0 will not only help in distinguishing whether an individual has sufficient clinical knowledge, but will also play a key role in supporting learning.

EP208 The professionalisation of tissue viability nurses in Kuwait, Qatar, Jordan, and Egypt

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Aim: To explore the barriers and facilitators that influence developing specialist nurses in tissue viability and skin integrity through the concept of professionalisation.

Method: In-depth semi-structured interviews and purposive and snowball sampling was used to identify the relevant key informants.

Results/Discussion: The status and reach of nursing has dramatically improved to levels where nurses can now be seen as authentic and legitimate producers of globally relevant healthcare knowledge in various areas of speciality including tissue viability. Yet there are still notable gaps in the status and professional credibility of nurses and the perceived value of their knowledge in different geographical locations. This thesis consequently sets to explore the professional status of nurses in four Middle Eastern countries (Kuwait, Qatar, Jordan, and Egypt) relating to wound management and skin integrity. Primary data was collected between November 2021 to November 2022. A total of 32 interviews were conducted exploring the current and actual practices related to wound management and skin integrity.

Conclusion: This research revealed that nurses are not well accepted as knowledge producers, and are considered to be less than doctors, due to the organisation's hierarchical structure. The consequences of this hierarchical structure negatively impact nurses' roles. This research revealed that in Kuwait, Qatar, Jordan and Egypt; nursing is considered professionally and socially lower than doctors due to the social and cultural hierarchy of the system, which makes nurses unable to make decisions related to wound management and skin integrity leading to the absence of tissue viability nurses.

EP209 It started in a corridor

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Aim: The W.I.L.F programme was designed and implemented after the author noted that the fundamental woundcare education needs were not addressed within undergraduate nursing placement. Resulting in an inconsistency of learning and an unsystematic approach to wound care. The programme was designed using a digital platform to ensure that nurses in any clinical setting were able to access the learning. Creating equity to those outside of the tertiary healthcare setting. The exponential growth of the programme to a national level, created questions of who actively sought the learning and importantly who didn't and their rationale.

Method: Descriptive case study and literature review was conducted to correlate any findings of the research with present information utilising the Woundcare Integrated Learning Framework (W.I.L.F) as a demonstration of digital learning. Qualitative data is also used to demonstrate the users' thoughts of differing learning approaches, its affects upon their knowledge base, and clinical skill

Results/Discussion: The digital engagement with accessible online learning encourages equity to access, irrelevant of role or location. The data also indicated that for some the delivery mode was difficult to negotiate, with several learners identifying problems with technology and internet connectivity. Such issues can be compounded by a remote location and lack of IT support.

Conclusion: The aim of this study is to explore the barriers amongst health care professionals in New Zealand to the use of digital education, will aide to inform educators about digital professional education design and assist them to embrace the changing education landscape

EP210 A versatile framework to quickly implement wound care-specific, role-based competency programs

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Aim: Staffing shortages have been a top patient safety concern.¹ Organizations with competency programs have 40% lower turnover and 87% greater ability to hire the best people.² However, consistently ensuring clinicians' competency in wound care is challenging, given time/resource constraints.^{3,4} To address these needs, we aimed to create a framework to quickly implement role-specific, wound care competency programs.

Method: Using the Design Thinking methodology⁵, the framework* was created within a clinical/reimbursement decision support web-application**. Role-based competency templates/training modules featuring evidence-based content and continuing education credits were built, based on managers/clinicians' needs; Playbook for competency program customization was created; Framework was implemented in several organizations.

Results/Discussion: The framework is a digital solution that enables organizations to quickly implement/manage/document wound care-specific, role-based competencies. Use cases include: For acute care nurses: to achieve quality goals, hospital implemented customized pressure ulcer/injury prevention competencies for 330 nurses, reducing educational program development time by 80%; For certified wound care specialists: to complement their organization's generic competencies, specialists implemented wound-care specific competencies, aligning with job duties and enhancing compliance; For professional certification: to address lack of local qualified supervisor, candidate completed a hybrid Preceptorship Module to become a Certified Hyperbaric Technologist.

Conclusion: A framework to quickly deploy wound care-specific, role-based competency programs and meet continuing education/certification/compliance requirements was successfully developed/implemented. Its versatility may help organizations address staffing turnover by decreasing onboarding time and increasing talent retention.

EP211 High fidelity clinical simulation skills training in the assessment of a patient with a wound

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Aim: To assess high-fidelity simulation contribution to the development of skills in multidimensional assessment of patients with a wound.

Method: Qualitative and exploratory study with 21 nurses off a tissue viability specialization course.

A clinical scenario script was developed focus on a diabetic patient with a foot wound and his family caregiver that have the first multidisciplinary team assessment to decide the best therapeutic approach.

The students took part in the simulation scenario as tissue viability nursing specialists, aiming to assess the patient and to establish an accurate care plan.

The remaining class were challenged to observe and register relevant occurrences of the scenario and nurses' conduct during the high-fidelity clinical simulation.

The qualitative analysis was based on the debriefing reports.

Results/Discussion: The simulation scenario promoted the development of clinical and relational skills with the multidisciplinary team, the patient and the family caregiver.

The students involved in the simulation scenario assessed comorbidities, pain, diet and self-care of the patient with the wound. Conditions at home were assessed regarding barriers, equipment and environmental reorganization. The knowledge and ability of the family caregiver to effectively respond to care needs and domestic tasks and the identification of existing health and social resources in the community were also addressed.

Conclusion: The simulation allowed the development of skills regarding the interaction with the multidisciplinary team, the patient and the family caregiver.

The dimensions addressed during the simulation scenario were: patient's global assessment; home characteristics; community resources; caregiver's abilities and wound assessment.

EP212 Problem-based learning (PBL-2x3) model: evidence-based decision making in complex wound care

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Aim:

- Establish a training-learning model to guide nurses towards causal and clinical case analysis of each problem or situation (critical thinking) to facilitate evidence-based decision making in the management of complex wounds.
- Lay the foundations for nurses to be able to transfer this systematic methodology to any other clinical situation in their professional practice.
- Determine the level of satisfaction of the students when using this new training model.

Method: The development, implementation and evaluation of the PBL-2x3 required 4 phases: Development of the clinical situation with clinical decision-making questions, methodological organization, implementation (2 moments/3 levels) and evaluation (quantitative-qualitative satisfaction survey).

Results/Discussion: PBL-2x3 training (virtual and face-to-face) was provided to 1594 nurses from all over Spain, with the following outcomes:

Quantitatively: Net Promoter Score (NPS) of 80.25 (virtual modality) and 88,75 (face-to-face).

Qualitatively: Categories emerged related to Methodology, critical thinking, evidence-based practice and specific knowledge.

Conclusion: The PBL-2x3 applied to the care of people with complex wounds, guides evidence-based decision making, with a high degree of satisfaction among nurses. It promotes critical thinking, evidence-based decision making and the development of transversal competencies, enabling participants to be the protagonists of their own learning. In essence, “learning how to learn”.

EP213 Developing diversity in wound management education, addressing skin tone bias

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Aim: The Accelerate Academy recognise a lack of diversity in our educational materials, with people with darker skin tones being disproportionately underrepresented. We wanted to explore this bias and how to bring challenge to this area of wound care education.

Method: We set a target in 2022-2023 to achieve a minimum of 50% of teaching materials to contain photographs of darker skin tones.

In 2023–2024 we undertook an audit to measure compliance to target and to discover future themes for development of skin tone diversity within curriculum design.

Results/Discussion: Skin tone bias exists within wound management, with a heavy focus on white skin in teaching materials. We recognise that there is a need to establish skills in assessing signs/symptoms in people with darker skin tones (1).

We propose lack of diversity is, in part, rooted in education, with people with darker skin tones being disproportionately underrepresented in teaching materials (2). We wanted to explore this bias and how to bring challenge to this area.

Conclusion: - Quantitative data identified undercompliance with targets.

-When pictures of darker skin tones were used the same pictures were used repeatedly.

-Ratio comparisons indicated a high ratio of darker skin tone photographs when profiled against clinical caseload.

Next steps: Development of case studies and discussion of signs and symptom assessment in darker skin tones for inclusion into all courses.

1.Wounds UK (2021) Best Practice Statement: Addressing skin tone bias in wound care: assessing signs and symptoms in people with dark skin tones. Wounds UK, London.

2.Gunowa, N.O. (2022) Skin tone bias and wound care: highlighting the current evidence and addressing the gaps in knowledge of dark skin tones. Wounds UK, London.

EP214 Pledge to protect: An initiative to support application of aSSKINg to practice and identify areas for focused education

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Aim: Pledge to Protect aims to promote application of aSSKINg to practice, stimulate discussion and explore actions to reduce pressure damage.

Method: Staff make a pledge to protect patients these are recorded on a Red Spot, a certificate and an anonymous database.

The Red Spot can be displayed enabling staff to share pledges. (This will be illustrated on the poster). The certificate supports reflection and learning. The pledges are analysed, determining where aSSKINg is prioritised by staff.

Results/Discussion: In 2022 36 staff participated in Pledge to Protect. (The poster will include 2023 results). Table 1 highlights the number of pledges relating to each aspect of aSSKINg (examples of pledges are included the poster). As nutrition did not receive any pledges and incontinence only received one, education needs to be focused here.

Audit by the author highlights the benefits of clinical training to address Incontinence Associated Dermatitis (IAD). This and other approaches to education are explored and can be used to address the less dynamic elements of aSSKINg.

Table 1

aSSKINg	Number of pledges
Assessment	3
Skin	5
Surface	3
Keep moving	9
Incontinence	1
Nutrition	0
Give information	4
General pledges	17

Conclusion: Pledge to protect can improve communication and awareness amongst practitioners of the importance of pressure ulcer prevention and greater emphasis need to be placed on nutrition and incontinence if skin is to be protected. Clinical education on IAD can result in application of knowledge to practice. Pledges also highlight gaps in knowledge and drive educational activity.

EP215 Reducing skin tone bias in Scotland

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Aim: In Scotland, 4% of the population is from black or minority ethnic backgrounds (Scotland Population, 2023). The low percentage of people with dark skin tones causes lack of skill, thus emphasising the need for update of assessment and diagnosis tools to support healthcare practitioners with early detection of skin damage and pressure injuries. It is widely recognised that documentation requires to be more inclusive.

Method: The National Association of Tissue Viability Nurses of Scotland (NATVNS) set up a project group to review and update national wound assessment tools and guidance. The group identified which guidance required updating. It reviewed literature to identify useful tools and engaged with relevant organisations to support correct language usage. Images were sourced to support the additional challenges with recognition and early diagnosis of skin and pressure injuries in people with dark skin tones as well as simply making guidance more inclusive

Results/Discussion: work continues to complete national wound assessment tools and guides. Recent publications aimed at reducing skin tone bias in conjunction with the NATVNS project group work has inspired updating of educational resources in Health and Social Care settings across Scotland.

Conclusion: It is intended that updating wound assessment and pressure grading tools and guidance across Scotland will reduce ethnic disparities and bias and support improvement with assessment and early diagnosis of skin damage and pressure injury in all skin tones to optimise patient care and improve outcomes.

Scotland Population 2023. Available at: <https://www.ukpopulation.org/scotland-population/>

EP216 An Innovative tripartite approach to the design and implementation of multi-disciplinary wound care curriculum in higher education: Clinical – Education - Industry

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Aim: The benefits of tripartite approaches are widely established however much less is known about its contribution to higher education, specifically multi-disciplinary wound care. To determine this, a nurse lecturer from the University of the West of Scotland, the NHS GG&C Tissue Viability Team and Clinical Manager, Mediq UK collaborated to design a SQA accredited curriculum to meet the NMC(2023) ambition to modernise post-registration education standards.

Method: Tripartite working involves members from three different disciplines working together to share knowledge and skills to achieve the best outcomes. For this case the three working groups are formed from education, NHS and commercial backgrounds: University West of Scotland, NHS Greater Glasgow and Clyde and Mediq UK. The aim of this collaboration is to provide education that has moved with the times including:

- fit for purpose
- accessible for all disciplines
- internationally accessible
- collaboration of different skills, experience and attributes

Each lead accessed the UWS virtual learning environment. Allowing for local circumstances, in line with EWMA guidance, educational priorities were agreed. The approach synthesised very different skills, experience and attributes, each contributing learning resources to the VLE instructional design. Student support was augmented by named clinical and educational experts.

Results/Discussion: An increase in creativity by generating new ideas, thoughts and approaches were observed. This resulted in innovative ways to present new clinical content accessible and suitable for all disciplines delivered in an interactive informative way. Early evaluation indicates a progressive, modern curriculum fit for purpose and an international audience.

Conclusion: Munro (2020) explored professionals concerns of managing wound care and their difficulty accessing structured training. Industry partners play a significant contribution to training and education. Each party monitored and critiqued the actions of the other where the whole is better than the individual parts, the combination of individual elements created a result that was more valuable than the sum of each individuals contribution alone.

EP217 Empowering patients through fluorescence imaging: Key insights for advancing wound care success from survey results

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Aim: Adherence to treatment and patient empowerment are vital for healing chronic wounds. Clinical trials demonstrate the efficacy of fluorescence (FL) imaging* in improving treatment outcomes. It's been our perception that FL imaging enhances patient understanding and engagement in wound care. This pilot survey aims to collect quantifiable data on patient perceptions of FL imaging.

Method: A 10-item questionnaire was completed by 27 outpatients attending a hospital-based US wound clinic for DFU, VLU, surgical, or trauma wound care. Inspired by validated quality-of-care tools, the questionnaire was designed to assess patients' impressions, feelings, and impact on well-being owing to point-of-care FL-imaging. Responses spanned the 5-point scale from strongly agree to strongly disagree.

Results/Discussion: Education: all respondents agreed/strongly agreed that FL-imaging helped them better understand their wounds' status and the purpose behind their treatments (e.g. tissue removal, antibiotics). Adherence: most respondents agreed/strongly agreed that they were more likely to carry out at-home care plans (89%) and return for future appointments (78%) when FL-imaging was used during their wound care visits. Empowerment: nearly all respondents agreed/strongly agreed that FL-imaging improved their understanding of their wounds' status (100%) and most reported that FL-imaging led to a greater sense of hope, lessened anxiety (89%) and greater trust in their wound care provider (96%).

Conclusion: Overall, FL-imaging enhanced patient perception of care. These results suggest a role for FL-imaging in patient education, adherence, and empowerment efforts.

*MolecuLight i:X & D:X®

EP218 An effect study documenting the impact of implementing an evidence based wound care pathway in clinical practise

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Aim: To measure and document the knowledge, motivation, critical thinking, and confidence levels among generalist HCPs when implementing the Wound Care Pathway (WCP), an evidence-based 5-step guide to wound healing, in clinical practice.

Method: The effect study run for 12 months (January-December 2023) and used a one-group pretest-posttest, naturalistic design to investigate the effect of training in the WCP on the motivation, confidence, knowledge, and critical thinking of generalist HCPs engaged in wound care. Participants included 75 -100 HCPs working in a community setting in Denmark. They were trained in the WCP and were asked to implement it in their daily practice. HCPs were asked to fill out a survey evaluation pre- and post-training to assess the impact of the training.

Results/Discussion: HCPs managing wounds often face challenges such as receiving limited training, guidelines are lacking or not used, and treatment decisions are not always evidence-based. With the results from this study, we highlighted that the WCP positively impacted HCPs knowledge regarding best practice wound care, the motivation to carry out tasks and the confidence to complete tasks related to wound care. We also can claim that the WCP is a validated and documented tool for use in clinical practice.

Conclusion: The implementation of the WCP aims to address challenges often highlighted by HCP. The results presented here indicated that investing in education and training using an evidence-based guide positively impact the motivation, knowledge, confidence, and critical thinking of HCPs when managing chronic wounds in a community setting.

EP219 WOUNDED – Improving wound outcomes for people with dementia

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Aim: The prevalence and incidence of wounds increases with age and therefore, is a serious issue for staff and residents in Residential Aged Care (RAC) facilities. Over 50% of people in RAC will also have a diagnosis of cognitive impairment or dementia where the impact of poor skin integrity and the presence of wounds can be particularly challenging. Informed by a literature review on wound care for people with dementia, this study aimed to explore key stakeholder's perceptions of wound care needs specific to people with dementia.

Method: A co-design workshop including key stakeholders (wound nurse practitioner, RAC and staff, research academics with expertise in RAC, wound experts, consumers/carers) was conducted.

Results/Discussion: Fourteen key stakeholders contributed to two workshops, one online and one in person and for people unable to attend, two individual interviews occurred. Recommendations for wound care were concluded and a guideline is being developed on wound care for people with dementia which will include recommendations on acute and chronic wounds, nutrition and general wound care.

Conclusion: This is an innovative project that has the potential to create significant impact for people with cognitive impairment or dementia and wounds. The outcomes from this project will provide evidence-based resources that can be utilised for people with dementia who have wounds, their relatives, and carers, and health professionals. Resources for these groups are an unmet area of need globally and important in the health care context.

EP220 A virtual education programme for skin care champions in social care and care home settings

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Aim: To support education in skin and wound care to those working in social care settings.

Method: It is traditionally difficult for social care staff (including those in home care, care homes and nursing homes) to access training outside of mandatory subjects. A UK registered charity wanted to support social care staff to provide excellence in skin care to their clients/residents. A virtual, modular educational programme has been developed for carers working in social care settings across the UK.

Results/Discussion: In its 3rd year of delivery, 228 champions have participated in the programme [137 in year/ cohort 3; a growth of 500% since inception]. On average 38% of Champions attend the monthly meetings. Access to the Champions Private Web area is good with 651 visits for cohort 3. The most visited areas are meetings, pressure ulcers and acute wounds (which includes skin tears).

Whilst return rates were poor, pre and post module questionnaires showed a mean 14% increase [5% - 19%] in self-assessed knowledge, skills and confidence. One champion with a 100% return rate, scored 39.1% increase. The programme development will be discussed with a focus on measurement of learning, quality improvement, champion feedback and programme evolution.

Conclusion: This programme demonstrates the challenges of reaching this population of dedicated professionals. Resources need to be accessible, short and understandable across a range of experiences and backgrounds. Whilst engagement with the learning resources is good, responses to measure learning outcomes can be poor making formal programme effectiveness measurement difficult.

EP221 Improving assessment and diagnosis for patients with dark skin tones via a higher education platform

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Aim: To incorporate more teaching of dark skin tone assessment within higher education university institutions. To improve assessment techniques of nurses on patients with dark skin tones to reduce morbidity and improve patient outcomes.

Method: The relevance of differences between skin tones and different methods of assessment have been incorporated into teaching sessions within a higher education institution, for both undergraduate and postgraduate nursing programmes.

Students were asked to conduct skin matching exercises on each other using different skin tone assessment tools with open discussions around likely barriers to implementation within practice, including feelings of uncomfortableness and uncertainties around appropriate terminology. Exercises of “state the obvious” and “none-visual descriptions of skin” were implemented to improve assessment skills. Key issues were highlighted and explored, including current medical terminology “erythema” and “redness”. Discussions also included missed diagnoses on dark skin tones of, rashes, bruising, skin cancers, pressure ulcers, vascular and dermatological conditions.

Skin tone assessment has also been incorporated into a post graduate wound care module and the issue of skin tone bias has been identified as a learning outcome for the module.

Results/Discussion: Nursing students will be more informed of the health inequalities related to patients with dark skin tones and associated implications. They will have enhanced methods and tools of assessment, enabling a more accurate assessment of a patient’s skin and hopefully earlier detection of any concerns. Nurses will also feel empowered to have the confidence in being able to have conversations about skin tone with patients, as Moorley et al (2020) emphasised that there is evidence of “shying away” from this.

In wound care education there is a need to address the gap in bias around light skin tones and the lack of understanding of accurate assessment for dark skin tones (Dhoonmoon et al, 2021).

Conclusion: More research is required to raise the profile of the health inequalities related to dark skin tones and address the issues of skin tone bias. With more teaching of the topic integrated within our education institutions, hopefully improved practices will become engrained in the nurses of the future and will thus reduce inequality of care and improve patient outcomes, morbidity and mortality.

Pressure Ulcer 1

EP222 The management of decubitus in the neonatal and pediatric population. A hospital care setting. A case series

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Aim: Medical device related pressure ulcer (MDRPU) result from the contact of any device with skin. This phenomenon sometimes is related to neonate and children skin or mucous membranes.

Method: We treated 10 pediatric patients admitted to the PICU with pressure injuries caused by devices: 4 injuries caused by cannula needle, 4 injuries caused by infusion set tubes and 2 injuries caused by central venous catheter, during the last year. We use Dialkylcarbomoyl chloride (DACC)-coated dressings and hydrogel during the debridement phase (at least 2-3 dressing change) and honey and beeswax ointment during the epithelialization phase. We evaluate the healing improvement through the wound bed preparation (WBP) score.

Results/Discussion: We achieved a reduction in pain with in-place dressing, during dressing changes, avoiding wet-to-dry technique. Additionally, we saw an improvement in wound bed preparation and better tissue healing. We register Wound Bed Score improvement of 20% during the first week. The 80% of these patients reached a complete healing in 2 weeks. We observed that the child tolerated the dressings throughout the entire wound treatment period. No side effects or adverse event have been reported. This is a positive sign indicating that the child responded well to the treatment and that wound care was effective

Conclusion: The use of atraumatic and antibacterial dressings that do not contain antibiotics and antiseptics has facilitated wound healing in children; furthermore, pain control reduced the stress of the parent taking care of their child.

EP223 Prevalence and risk factors of medical device-related pressure injury in icu patients: a systematic review and meta-analysis

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Aim: Medical device-related pressure injury (MDRPI) in intensive care unit (ICU) patients is a serious issue. This study aims to evaluate the prevalence and risk factors of MDRPI associated with ICU patients through systematic review and meta-analysis, and provide insights into the clinical prevention of MDRPI.

Method: We searched PubMed, Embase, CINAHL, The Cochrane Library, Ebscohost, Web Of Science, Ovid MEDLINE, Elsevier Science Direct, Clinicalkey, Scopus, China National Knowledge Infrastructure (CNKI), WanFang Database, and China BioMedical Literature Database (CBM), VIP Database for Chinese Technical Periodicals (from inception to April 2023) for studies that identified prevalence and risk factors of MDRPI in ICU patients. Meta-analysis was performed using Revman 5.3 and Stata17.0 .

Results/Discussion: In this study, 881 articles were initially screened, and 14 literatures were finally included, involving a total of 959 patients and 32 risk factors. The results of meta-analysis showed that the pooled prevalence in all studies was 22% [95%CI(0.16-0.27)], noninvasive positive pressure ventilation[OR=3.74, 95%CI (1.58-8.83), P=0.003], impaired consciousness [OR=4.54, 95%CI (2.01-10.30), P<0.001], and positional restriction [OR=3.10, 95%CI (1.63-5.90), P=0.001], history of diabetes mellitus [OR=5.72, 95%CI (1.83-17.9), P=0.003], lactic acid [OR=1.01, 95%CI (1.00-1.01), P=0.013], higher APACHE II score [OR=1.14, 95% CI (1.02-1.28), P=0.024] were identified as risk factors for MDRPI in ICU patients.

Conclusion: This study reported the prevalence and risk factors of MDRPI in ICU patients. A comprehensive analysis of these risk factors will help to prevent and optimize interventions, thereby minimizing the occurrence of MDRPI.

EP224 Meta-analysis: the impact of curvilinear supine position on preventing intraoperative pressure injury

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Aim: The research evaluated the effect of curvilinear supine position on preventing intraoperative pressure injury systematically to provide reference for developing scientific postural management strategies for preventing intraoperative pressure injury.

Method: We searched for databases such as WanFang Database, Wiley Online Library, Web of Science, PubMed, Cochrane Library, Medline and so on, and collected randomized controlled trials, which used the position for prevention of surgical pressure injuries. Searching from the establishment of the database until April 2023. Two researchers independently screened literature, extracted data, evaluated the quality, and then performed meta-analysis using Revman5.4.1 and Stata17.0 software.

Results/Discussion: 1762 patients were included. The results showed that the use of curvilinear supine position during perioperative period could reduce the incidence of pressure injury, the incidence of pressure injury within 24h [OR=0.10, 95%CI(0.05, 0.19), Z=6.64, P<0.001], and the incidence of pressure injury within 3 days [OR=0.06, 95%CI(0.02, 0.16)], Z=5.56, P<0.001], the intraoperative comfort rate of patients was improved [OR=64.00, 95%CI(29.24, 140.08), Z=10.41, P<0.001], and the comfort score [SMD=2.35, 95%CI(2.00, 2.70), Z=4.51, P<0.001]. However, the satisfaction rate of surgeons [OR=3.00, 95%CI(0.47, 19.30), P=0.25], occipital skin pressure [MD=-2.74, 95%CI(-5.70, 0.22), Z=1.81, P=0.07], and heel skin pressure [MD=-13.21, 95%CI(-27.91, 1.50), Z=1.76, P=0.08] The difference was not statistically significant.

Conclusion: The use of curvilinear supine position among surgical patients can reduce the incidence of intraoperative pressure injury, improve patient comfort, and reduce sacrococcygeal pressure. However, the impact of pressure on other skin areas still needs to be validated through high-quality clinical studies.

EP225 The Onset of multiple acute sacrococcygeal skin ulcers heralds skin failure before the cascade of multiple organ failure

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Aim: Herein we conducted this study with the aim of exploring the relationship of acute multiple high-output sacrococcygeal skin ulcers to the onset of cascade of multiple organ failures.

Method: The relevant data of patients in the pre-designed database for in-home wound care and treatment from April 2020 to April 2022 were analyzed on the categories of therapeutic and cost efficacies of in-home wound care and treatment. Besides, Kaplan Meier survival analysis was performed to determine the trend of overall survival change of the enrolled patients.

Results/Discussion: A total of 16 patients who suffered from bed-ridden disability from various disease entities were included in this study, with the age of 78.1(+/-15.8) years old. Among these patients, 43.7% of the patients presented acute, multiple, giant (over 10 cm x 10 cm) and high output (200ml per day) type IV pressure ulcers at sacral region, and the remaining ones developed acute single giant Type IV decubitus ulcers. 81.5% of the patients had silicon foam dressing, which significantly reduced output and inflammatory dermatitis around the ulcers. Kaplan-Meier curve showed 81.3% patients expired with 50 days after the onset of the ulcerative lesions. Finally, the median cost for management was 2,000USD with the range from 1000 to 3,5000USD.

Conclusion: The onset of acute multiple or single giant IV sacrococcygeal skin ulcers precedes the initiation of the cascade of multiple organ failure, and foam silicone dressing is one of cost-effective palliative approach to manage this terminal skin failure for bettering the quality of patients' life.

EP226 Clinical verification and application of the modified waterlow scale based on mathematical model

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Aim: After simplifying the internationally applicable Waterlow scale, the modified version was obtained and clinically verified.

Method: Based on the mathematical model, a total of 204 cases were analyzed retrospectively by the attribute reduction method, and the modified Waterlow scale was obtained. Afterward, from June to November 2022, 249 inpatients from Shanghai General Hospital were selected for a prospective study. A paired chi-square test and area under the receiver operating characteristic curve (ROC) were used to compare the prediction effect of these two scales.

Results/Discussion: When the optimal critical value of the modified Waterlow scale was 9.5 marks, it had good sensitivity (0.893) and specificity (0.963), and the maximum value of Youden index (sensitivity+specificity-1) was 0.856. Moreover, the area under the ROC curve of the modified Waterlow scale and the traditional Waterlow scale were 0.879 and 0.931, respectively (both>0.7). The rate of positive case detection was 60.24% for the modified Waterlow scale and 76.31% for the traditional Waterlow scale. The kappa test value was 0.737 (>0.7), and the result of McNemar test was no statistical difference, which indicated that the consistency of these two scales is established ($\chi^2 = 0.042$, $P = 0.838$), there was no statistically significant difference in the detection effect.

Conclusion: The modified Waterlow scale has highly scientific. The detection efficiency is consistent with the traditional Waterlow scale, the prediction accuracy is high, and there are few evaluation items and easy to use, which can effectively improve the efficiency of nursing work.

EP227 Tools for assessing risk of intraoperative pressure injuries: a systematic review

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Aim: To identify which tools are helpful in assessing the risk of intraoperative pressure injuries and to compare the diagnostic accuracy of currently available tools.

Method: We conducted a systematic search of PubMed, Embase, CINAHL, Web of Science, and The Cochrane Library to retrieve literature on risk assessment tools for surgical pressure injuries from database inception until October 2022. The quality assessment of diagnostic studies was performed using the QUADAS-2 tool. Sensitivity, specificity, and area under the receiver operating characteristic curve of the risk assessment tools were extracted and compared. This study has been registered in PROSPERO (registration number: CRD42021270064).

Results/Discussion: A total of 5,901 articles were retrieved, and ultimately 14 articles involving 9,439 patients and 15 surgical patient pressure injury risk assessment tools were included. The incidence of pressure injuries during the perioperative period ranged from 2.47% to 33.33%. All studies were judged to have a “high” or “uncertain” risk of bias. Among the different pressure injury risk assessment tools, the AUC ranged from 0.484 to 0.897, sensitivity ranged from 44.2% to 93.3%, and specificity ranged from 31.0% to 92.0%.

Conclusion: Currently, it cannot be concluded that any particular pressure injury risk assessment tool is more effective than others in assessing the risk of pressure injuries in surgical patients. Further research is needed to design and select more effective risk assessment tools for pressure injuries in surgical patients. Additionally, researchers need to be more rigorous in their study designs to reduce the risk of bias.

EP228 Nurse-led intervention plan to prevent hospital-acquired pressure injuries in children

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Aim: to develop an evidence-based, holistic plan to prevent pressure injuries (PI) in a Bavarian children's hospital.

Method: According to the Seven Steps of Evidence-Based Practice¹, we conducted a systematic review and subsequently developed and implemented a PI prevention plan.

Results/Discussion: Initially, we defined our research question (1) and conducted a systematic literature search (2). In that search, we identified the Braden QD assessment tool², which was not available in German. This is why we carried out a translation process along the ISPOR guidelines³ in order to implement it. Then, we reviewed existing evidence and summarized prevention interventions in a systematic review including 37 studies (3). Afterwards, we synthesized these interventions into a protocol for nurses (4). This protocol was then implemented and introduced to the nursing staff in training sessions (5). That process was followed by a survey to evaluate and adapt the implementation process (6). Last, we will evaluate outcome data. These analyses and the incidence of PIs before and after implementation will be available in March 2024 (7).

Conclusion: The amount of studies on PI in children is increasing. Still, more recent evidence and guidelines are partly unknown in nursing practice. In order to improve patient care, it is necessary to keep nurses up-to-date and transfer these evidence-based findings into clinical practice. Our methodical approach enabled us to meet both requirements. Firstly, we critically reflected on the current literature. Secondly, we translated relevant evidence into recommendations for care together with the nursing staff.

EP229 Predictive comparison of pressure injury risk scales in intensive care unit

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Aim: To perform a predictive comparison of five pressure ulcers (PU) risk assessment scales in an intensive care unit (ICU).

Method: A prospective cohort study was conducted in the ICU of a tertiary hospital in Botucatu, Brazil, from March to October 2022. The study population comprised adult ICU patients with a minimum 24-hour stay and lacking prior pressure ulcers. Researchers applied the Braden, CALCULATE, EVARUCI, Cubbin & Jackson, and Sunderland scales daily until discharge, death, or completion of 21 consecutive days.

Results/Discussion: A total of 150 patients underwent 1340 applications of each scale. Of these, 26.7% (n=40) developed PUs. The area under the curve (AUC) of the ROC was used to calculate the predictive validity of the scales, where values >0.50 indicated satisfactory performance. The Cubbin&Jackson and Sunderland scales achieved the highest AUC values, both at 0.7, while remaining scales scored 0.6. EVARUCI exhibited the highest sensitivity at 80% (95%CI: 67.2%–92.8%), as well as the negative predictive value of 98.5% (95%CI: 97.4%–99.5%). Cronbach's alpha values were also calculated for Braden at 0.683 (95%CI: 0.665–0.701), EVARUCI at 0.669 (0.652–0.686), Cubbin & Jackson at 0.725 (95%CI: 0.704–0.744), and Sunderland at 0.598 (95%CI: 0.569–0.626). Additionally, the dichotomous CALCULATE scale was assessed using the Kuder-Richardson method, yielding a value of 0.579 (95%CI: 0.549–0.607).

Conclusion: The Cubbin&Jackson scale demonstrated superior internal consistency. Additionally, both the Cubbin&Jackson and Sunderland scales exhibited higher specificity, particularly tailored for ICU patients, with Cronbach's alpha values of 0.725 and 0.598, respectively.

EP230 Cross-cultural adaptation of the CALCULATE instrument into Brazilian Portuguese for use in intensive care settings

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Aim: To perform a cross-cultural adaptation of the CALCULATE (Critical Care Pressure Ulcer Assessment Tool made Easy) instrument for Brazilian Portuguese.

Method: A translation, transcultural adaptation, and content validity study were conducted from January to December 2021. The study comprised six stages: translation, synthesis, back-translation, expert committee with the application of the content validity index and Kappa coefficient, pre-test with 40 adult intensive care patients assessed by 10 intensivists nurses, and submission to the authors of the original scale. The study was conducted in the intensive care units of a tertiary public teaching hospital in São Paulo, Brazil. The original CALCULATE has eight assessment items (risk factors) and is stratified with a score of 0-3 (high risk) and 4-8 (very high risk).

Results/Discussion: Content validity and the Kappa coefficient were 0.9. The expert committee improved the cultural adaptation of the content, including changes in acronyms and terminologies. In the pre-test, the items were considered suitable for understanding, except for item seven, “low protein and/or poor nutritional status,” which had agreement from 47.5% of nurses (19 scores/40), who recommended additional explanation for adequacy. In the final version, the instrument retained the items but with additional explanatory captions.

Conclusion: The cross-cultural adaptation of CALCULATE contributes to advancing knowledge, implementing preventive measures, and planning care for patients in intensive care. Further psychometric studies are needed to validate its use in assessing the risk of pressure injury development in critical patients in the Brazilian context.

EP231 Psychometric properties of the italian-Neonatal Skin Risk Assessment Scale (i-NSRAS)

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Aim: To prevent pressure ulcers, the use of risk assessment scales is recommended in order to implement preventive measures and, consequently, reduce risk factors. However, specific and validated tools are needed in this population. Therefore, the objective of our study was to evaluate the validity (construct) and reliability (internal consistency, intraobserver, interobserver) of the i-NSRAS.

Method: A multicenter observational study was conducted between October 2021 and January 2023 in the neonatal units (intensives and intermediates) of 2 Italian hospitals. 54 nurses used i-NSRAS to evaluate a total of 200 newborns. Exploratory and confirmatory factor analysis were performed jointly to assess construct validity. Internal consistency was analyzed using McDonalds omega coefficient and Cronbach's alpha, while intra and interobserver agreement using Intraclass Correlation Coefficients (ICC).

Results/Discussion: Exploratory factor analysis confirmed a 2-factor model; the factor “duration and intensity of pressure” explained four subscales (mental state, mobility, activity and nutrition), while “skin immaturity” explained the subscales (general physical condition and skin moisture). Confirmatory factor analysis results indicated good model fits ($\chi^2/df=0.84$, $p=0.002$, $RMSEA=0$, $NNFI=1.01$, $NFI=0.98$ y $CFI=1$). The i-NSRAS showed a good internal consistency, McDonalds omega coefficient and Cronbach's alpha were both 0.86. An excellent intra and inter observer reliability was also observed, ICC 0.99 and 0.98 respectively.

Conclusion: i-NSRAS has proven to be a valid and reliable tool for measuring the risk of pressure injuries in the neonatal population. In addition, it is the first infant-specific scale that assesses the presence of medical devices as a risk factor.

EP232 Accuracy and validity of a new predictive model for pressure ulcers in Italian neonatal population: an incidence study

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Aim: The relationships between pressure ulcers (PU), risk factors and preventive measures in hospitalized neonates have not been extensively studied. Our objective was to explore the incidence of pressure injuries in hospitalized neonates; the risk factors and preventive measures associated with them; and to construct a risk predictive model.

Method: A multicenter, prospective, cohort study was conducted. The risk factors and preventive measures were determined by using univariate and multivariate analysis. In addition, the decision tree technique was applied to analyze variables best explained the occurrence of PUs in newborns.

Results/Discussion: In a sample of 209 newborns, 62 PUs occurred, with a cumulative incidence of 19.1%. The PUs were categorized as stage I, 38.7%; stage II, 53.2%; and stage III, 8.1%. The most frequent location was the nose, 46.8%. Multivariate analysis identified the following risk factors: i-NSRAS score (RR 0.81; 95% CI 0.69-0.94; p=0.007); sedation/analgesia (RR 7.35; 95% CI 1.67-32.40; p=0.008), local pressure relief devices (RR 4.41; 95% CI 1.3 5-14.38; p=0.014) and fasting (RR 5.04; 95% CI 1.37-18.47; p=0.015). The decision tree detected that an i-NSRAS score ≤ 17 and the local pressure relief devices were the variables that best explain the appearance of PUs in infants.

Conclusion: The incidence of PUs in infants is high, especially in critically ill ones, and is mainly due to the presence of medical devices. The clinical tree model obtained can easily predict the risk of PUs in hospitalized neonates and, consequently, allows preventive measures to be assigned according to the assessed risk.

EP233 Prevalence and incidence of pressure ulcers in palliative care settings: an update of systematic review

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Aim: To synthesize the most recent literature on the prevalence and incidence of pressure ulcers (PUs) in palliative care settings (home care and hospice) to integrate the results of a pre-existing systematic review.

Method: A systematic review was performed in PubMed, Scopus, Embase, and CINAHL, including studies from September 2017 to September 2023. The Condition, Context, Population (CoCoPop) framework guided the search. PROSPERO identification number: CRD42023394468.

Results/Discussion: eight studies (5 observational; 2 quasi-experimental, 1 randomized controlled trial) were included (patients involved= 3142). All the studies included were of acceptable quality. The overall prevalence of PUs was 22% (range 13.1%-34.1%); the cumulative incidence was 15.3% (range 4.8%-26.5%). The reported risk factors were: low body mass index (BMI, OR = 4.294); malnutrition; immobility; Braden index < 16 (OR = 3.033); advanced

age; having a male caregiver or absence of a reference caregiver; length of stay in hospice; bladder catheter in situ (OR = 1,958); overall compromised skin status. A Karnofsky Performance Scale index < 40%, in association with low BMI and Braden index < 16, resulted in one of the stronger predictors of PUs.

Conclusion: PUs are often unavoidable in end-of-life patients due to non-modifiable risk factors.

Managing these patients should include prevention strategies, accurate risk evaluation with validated tools for PUs development, and frequent reassessments that consider changes in the clinical condition. However, if PUs occur, the patients' comfort and best possible quality of life must be ensured until the end of their life.

EP234 An Investigation on the deterioration of pressure ulcers: Relevant factors explored via the application of machine learning techniques

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Aim: Pressure ulcers (PU) have become a global issue due to the significant social costs associated with various factors. Although many factors have been shown to have an impact on PU, what specifically contributes to the worsening of the disease remains unclear. The aim of this study is to analyze variables that are highly correlated with pressure ulcer aggravation using machine learning.

Method: This observational study examined 71 grade 2 PU patients from May 2018 to June 2022. We classified patients into two groups according to wound progression: Group A, aggravated group, and group B, healed group. All 24 factors were analyzed using a random forest with hyper-ensemble approach, one of the machine learning algorithms. Each random forest is composed of 50000 decision trees, and results from 100 random forests were hyper-ensembled. The mean decrease accuracy were calculated to evaluate the importance of the factor and overlapped partial dependence plot were obtained to interpret the risk factors.

Results/Discussion: Group A had 14 patients, whereas Group B had 57. In an analysis using machine learning, the following factors were found to be highly associated with the progression of PU: serum-albumin, Braden Scale, hemoglobin, wound size, serum-blood urea nitrogen, body mass index, serum-protein, and serum-Creatinine. But the following variables were less associated: end-stage renal disease, sex, and myocardial infarction.

Conclusion: The PU prediction model has broad application as a PU prevention tool. In addition, these findings can aid in the development of strategies to minimize the risk of PU aggravation.

Figure 1. Schema of our task force team for pressure ulcer. PU; Pressure ulcer

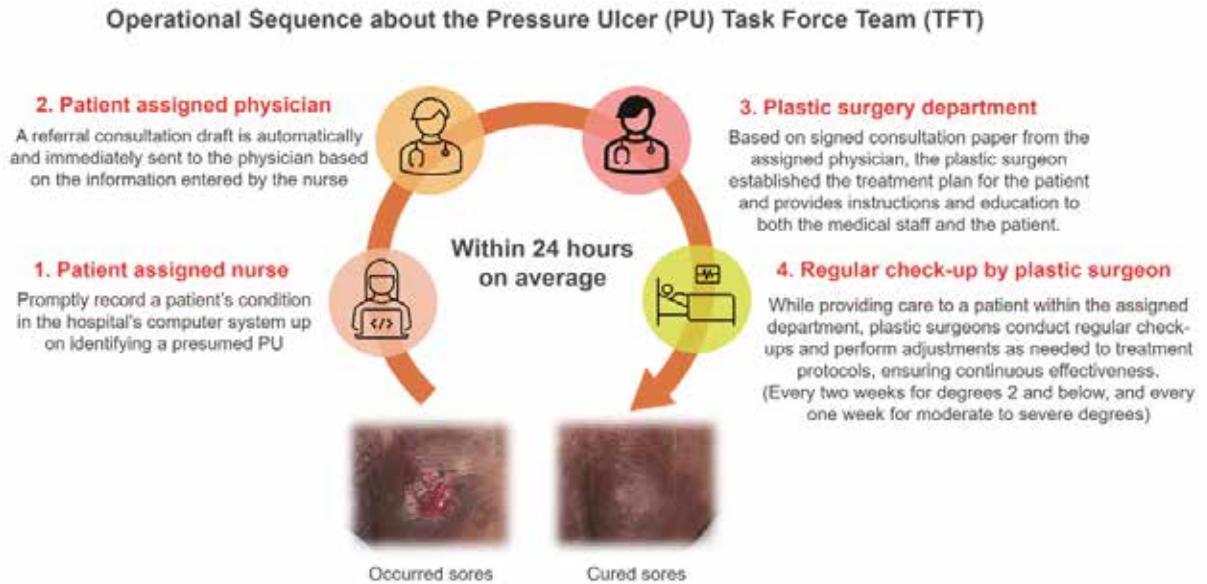


Figure 2. Clinical photographs of both groups. The state at the point of identification (left in each group photographs). the degree of the pressure ulcer alters during treatment progresses (right in each group photographs). Group A; the aggravated group, Group B; the healed group



Figure 3. Importance of risk factors is visualized with the mean decrease accuracy (MDA).

MDA shows that the albumin is the most important factor on aggravation of PU.

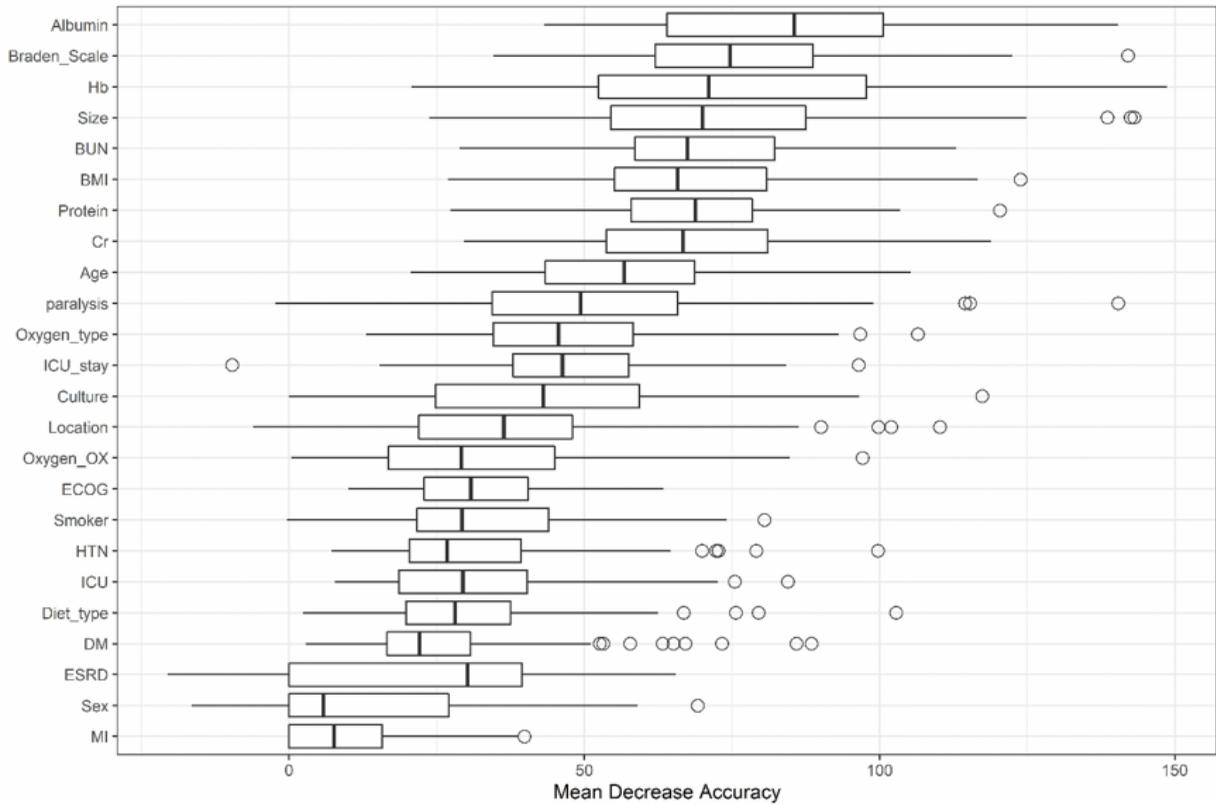
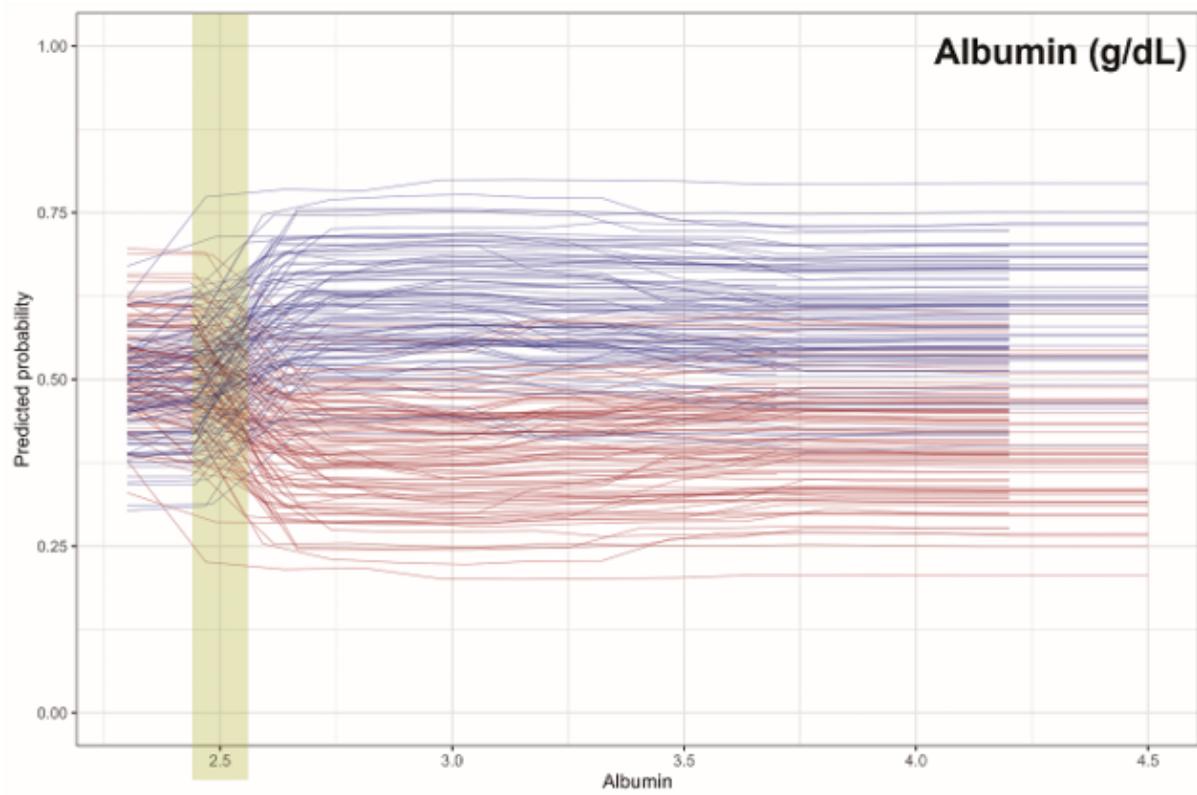
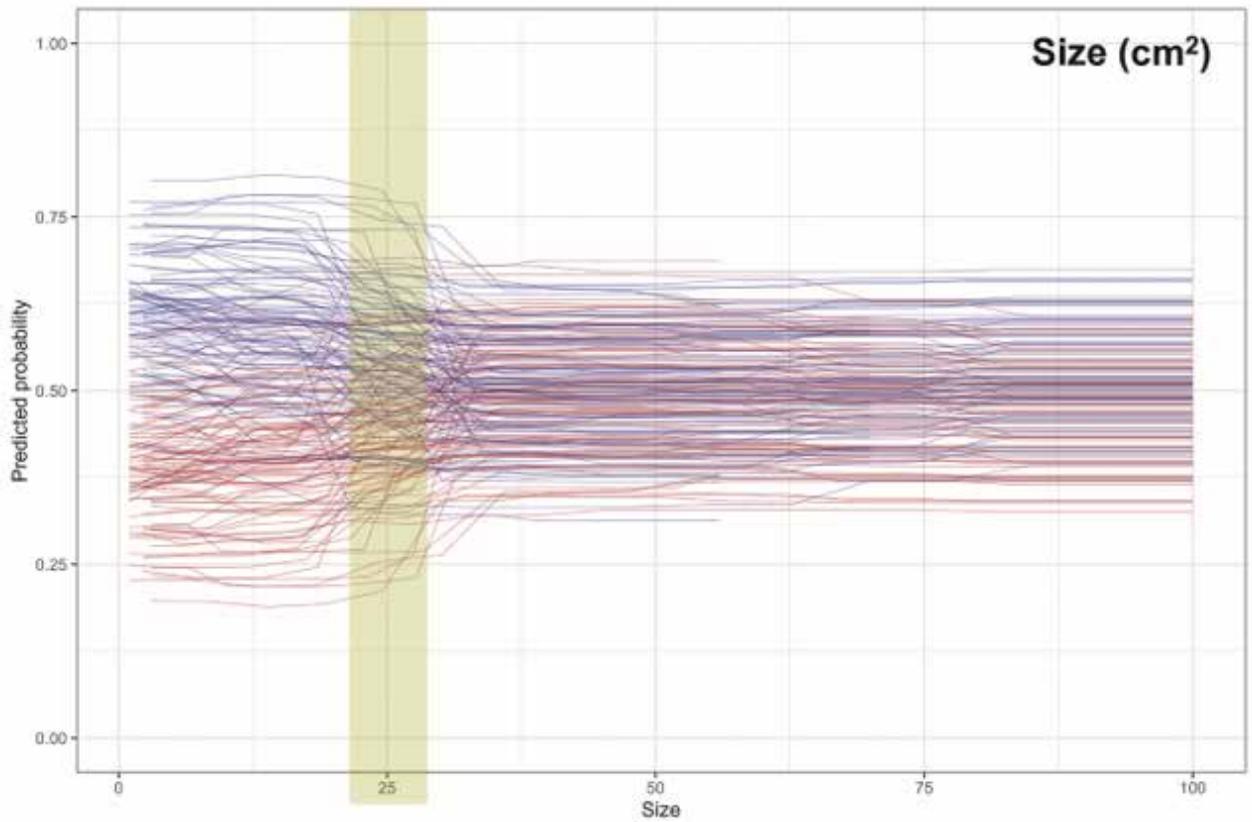
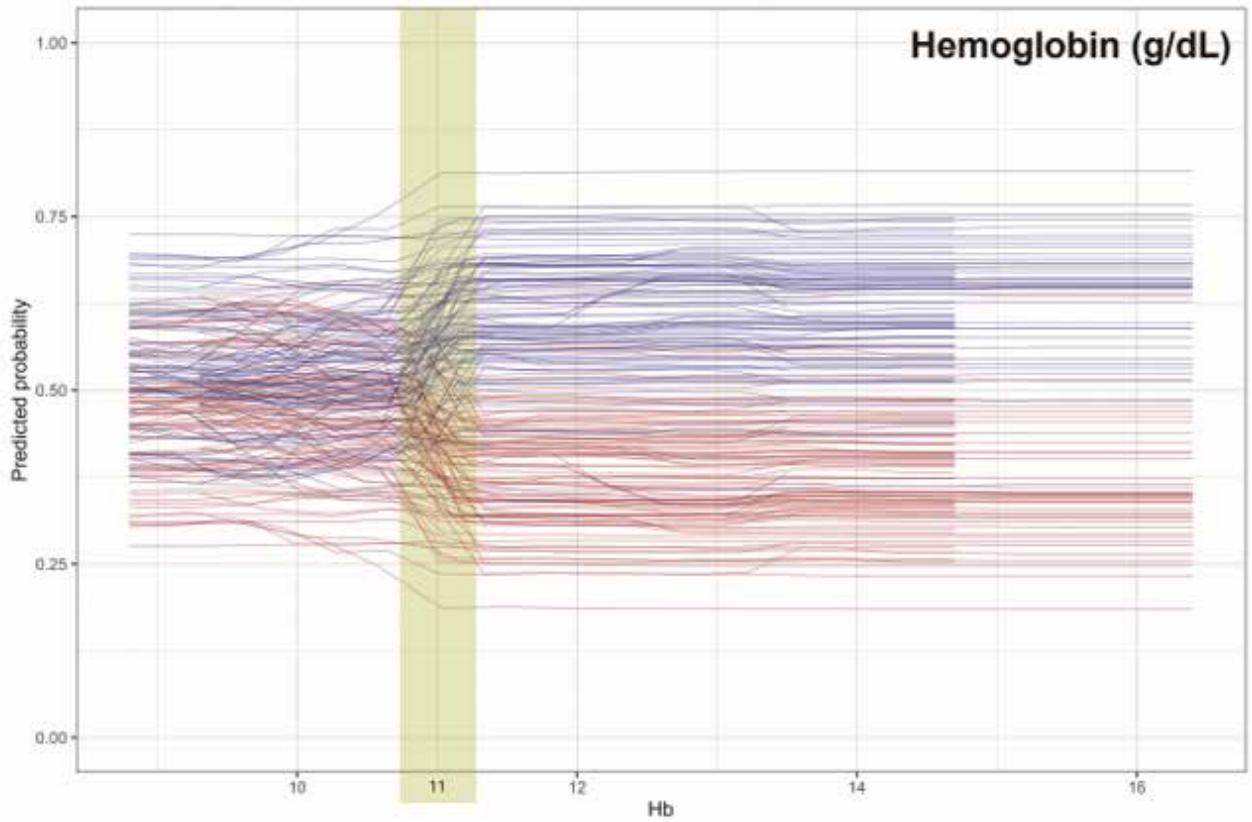


Figure 4. Overlapped PDP from 100 random forest models. The PDP is used to visualize the effect of individual factors on the target. If the PDP plot is apart from the axis of 0.5, the factor is more capable of classifying the target. (top) When the albumin is more than 2.5g/dL, the PDP of albumin shows a clear separation. (middle) Likewise, when the hemoglobin is more than 11.0g/dL and (lower) size is lower than 25cm², the PDPs show a clear separation. This implies that the albumin, hemoglobin and size have more capability in predicting the aggravation of PU. (Red: Group A; Blue: Group B)





EP235 A relationship analysis of the effects of COVID-19 isolation on pressure sores in a tertiary hospital

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Aim: Management of pressure sores can have various environmental effects; moreover, the COVID-19 pandemic notably affected efforts towards effective management of pressure sores. Some cases of COVID-19 infections require long-term hospitalization in the intensive care unit. Moreover, special protective equipment worn by physicians owing to the pandemic complicate wound management. In this study, we compared the pressure ulcer characteristics between isolated patients with and those without COVID-19 and evaluated the effects of isolation on pressure sores.

Method: From November 2022 to February 2023, patients who had pressure sores were included and their medical charts were reviewed retrospectively. The experimental group included patients with confirmed COVID-19 infections, who received clinical treatment in an isolated unit. Wound characteristics in each group and associated risk factors were analyzed.

Results/Discussion: Fifty-four isolated patients with COVID-19 and 58 control patients were included. The Braden Scale score and Korea patient classification system-1 did not vary significantly between the two groups. However, the number of Grade I pressure sores in the COVID-19 isolation group were significantly lower than those in the control group ($p < 0.001$), while the number of lesions was significantly higher ($p = 0.034$). The mortality rate in the COVID-19 isolation group was higher than that in the control group ($p = 0.008$), and more patients were discharged with unhealed wounds ($p = 0.004$).

Conclusion: A higher treatment effect on pressure sores may be expected if the disease is more actively managed. Moreover, the wound care systems for isolated patients with COVID-19 require further attention.

EP236 Risk factors for device related pressure injuries (DRPI) in general ward inpatients of tertiary general hospital: a case-control study

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Aim: To identify the characteristics of device related pressure injuries (DRPI) in general ward inpatients, and to confirm the DRPI risk factors by examining differences between a DRPI and non-DRPI group.

Method: High-risk adult patients for pressure injuries who were admitted to a general ward of a tertiary general hospital in South Korea from January 1 to September 30, 2021 were enrolled in this study. Among them, participants were selected by matching the patients with DRPI ($n = 50$) to the non-DRPI patient group ($n = 100$) in a ratio of 1:2. A retrospective case-control study.

Results/Discussion: The comparative analysis revealed significant differences between the DRPI and non-DRPI groups in length of hospital stay, average operation time, diabetes, cardiovascular disease, Braden scale score, edema, hemoglobin, hematocrit, glucose, albumin, and protein. The administered drugs showing significant differences included sedatives, anticoagulants, vasopressors, and steroids. As for risk factors, longer hospitalization periods and the presence of oedema increased DRPI risk. In blood tests, higher glucose levels increased the risk by 1.03 times, and lower albumin levels increased the risk by 0.08 times. Furthermore, the risk of developing DRPI was 7.89 times higher when sedatives were administered.

Conclusion: Based on the DRPI risk factors identified in this study, patients who have oedema, who with an extended hospital stay, who use sedatives, who use devices, who have a low albumin level, and whose blood glucose is not well controlled are at high risk of developing DRPI.

EP237 Prospective study on incontinence-associated dermatitis and its severity instrument for verifying its ability to predict the development of pressure ulcers in patients with fecal incontinence

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Aim: The aim of this study was to determine the feasibility of applying the Incontinence-Associated Dermatitis and its Severity (IADS) instrument to patients with fecal incontinence as a tool to predict PU development.

Method: Data were collected between April 1, 2017, and April 30, 2018. This prospective study enrolled 120 intensive care unit patients with bowel incontinence of Bristol Stool type 5, 6, and 7. Trained nurses evaluated IADS scores and the occurrence of PUs daily for 7 days.

Results: Patients with higher IADS scores were significantly more likely to develop a PU (odds ratio=1.22, 95% confidence interval=1.12–1.33). The receiver operating characteristic curve analysis revealed the area under curve to be 0.790, suggesting that higher IADS scores are associated with an increased likelihood of developing a PU (sensitivity 72.5%, specificity 71.2%, using a cut-off value of 8/9).

Conclusion: Our results suggest that the IADS instrument can serve as a tool for predicting the occurrence of PUs in patients with fecal incontinence. Patients with IADS scores that exceed eight points should be classified as being at risk of developing a PU, and placed under intensive care as a proactive measure to prevent PU development.

EP238 A retrospective study using the Pressure Ulcer Scale for Healing (PUSH) tool to examine factors affecting stage ii pressure ulcer healing in a Korean acute care hospital

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Aim: Stage II PUs accounted for the largest share of pressure ulcers (PUs) in acute care hospitals and they should be managed promptly to prevent from progressing to Stage III or IV PUs. Thus we need to identify the factors affecting Stage II PUs healing

Method: Patient and ulcer characteristics were retrieved from electronic medical records. The effect of all variables on healing status and change in Pressure Ulcer Scale for Healing (PUSH) scores for healing rate were compared.

Results: Records of 309 Stage II PUs from 155 patients were analyzed. Of those, 221 healed and 88 were documented as not healed. The variables that were significantly different between patients with PUs that did and did not heal were: major diagnosis, peripheral arterial disease, serum albumin (<2.5 g/dL), vitamin use, PU size, Malnutrition Universal Screening Tool score, Braden scale score, and mean arterial pressure (MAP, mm Hg). The Cox proportional hazard model showed a significant positive difference in PUSH score change when support surfaces were used ($P < 0.001$, HR = 2.317), PU size was small ($\leq 3.0 \text{ cm}^2$, $P = .006$, HR = 1.670), MAP (within a range of 52–112 mm Hg) was higher ($P = .010$, HR = 1.016), and patients were provided multivitamins ($P = .037$, HR=1.431).

Conclusion: The study showed that small ulcer size ($\leq 3.0 \text{ cm}^2$), higher MAP, and providing a support surface and multivitamins affected healing of Stage II PUs in an acute care setting.

EP239 The usefulness of gracilis musculocutaneous pedicled flap as a surgical option in ischial pressure injury

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Aim: Ischial pressure injuries are common in patients with paraplegia. Even if surgical reconstruction is performed, ischial pressure injury often recurs. The gracilis musculocutaneous pedicled flap in ischial pressure injury reconstruction is more useful as a surgical treatment option for recurrence after the first reconstructive surgery than the other ones.

Method: This study was performed on patients with ischial pressure injury who had paraplegia. 11 patients who underwent more than one ischial pressure injury reconstruction on the same site, excluding gracilis musculocutaneous pedicled flap, underwent ischial pressure injury reconstruction with gracilis musculocutaneous pedicled flap.

Results/Discussion: The patients were 8 males and 3 female, all had paraplegia. In all 11 patients, the ischial pressure injury reconstructions were performed with gracilis musculocutaneous pedicled flap on the ipsilateral side. Three of them had no complications over at least 6 months after surgery at the surgical site. One patient had some skin disruption due to mild flap congestion immediately after surgery, but it recovered soon after only dressing treatment. The other one patient had full dermis necrosis due to flap congestion, and recovered by negative pressure wound treatment and skin graft.

Conclusion: The gracilis musculocutaneous pedicled flap with a large surgical range and possible complications such as flap congestion is not useful as a primary surgical option. However, Recurrent ischial pressure injury reconstruction, the gracilis musculocutaneous pedicled flap can be a good surgical option to reduce tension when seated while providing sufficient soft tissue volume in the ischial pressure injury.

EP240 The effects of PUP rounding on neurosurgery patients in acute care hospitals

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Aim: Patients in the neurosurgical ward of acute hospitals have reported more pressure ulcer than other disease groups due to disease. This is to verify the effect of PUP (Pressure Ulcer Prevention) rounding applied as a strategy to reduce the incidence of bedsores in neurosurgery wards in acute hospitals.

Method: PUP rounding refers to a PUP rounding in which appropriate interventions are performed on the risk factors of PU in target patients through a multidisciplinary approach. From February 1st to June 30th, 2023, we conducted regular rounding once a week to prevent PU with unit manager, WOCN, medical residents, nurses, and nutritionists for high-risk patients with PU in the neurosurgery ward. We made preventive interventions through PUP rounding and analyzed the rounding results. We analyzed risk factors through PUP rounding cases (n=59) and shared appropriate preventive interventions.

Results/Discussion: As a result of analyzing 59 cases from February 1 to June 30, 2023, PU occurred in one case. This decreased to 75% compared to the number of PU that occurred during the same period in 2022. Through the results of the risk factor analysis, we found that immobility (59.3%) was the most risk factor, followed by motor power reduction (25.4%) and diaper wearing (25.4%).

Conclusion: Through PUP rounding, we learned the importance of a multidisciplinary approach to preventing PU, and by identifying risk factors for neurosurgery patients, we can increase the efficiency of application of preventive intervention. We also think it will help prevent PU in patients with other diseases.

EP241 Efficient pressure sore management through operation of a pressure sore team in public hospital

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Aim: This study addresses the challenges posed by pressure sores, prevalent and severe in patients with low socioeconomic status, impacting hospital management. Despite intensive care needs, hospitals lack specific charges for pressure ulcer management, affecting patient stays and hospital operations. The aim is to introduce and highlight the practices of a pressure sore management team at the National Medical Center in Korea, focusing on objective data acquisition, patient and guardian education, and medical staff training for efficient in-hospital monitoring and treatment.

Method: From November 2022 to July 2023, prevalence and incidence data were collected. The patient management protocol involves basic information collection, assessment, dressing by nursing team and reporting to plastic surgeons. Surgeons perform debridement or select appropriate dressing method and materials. Statistical analysis includes monthly and cumulative prevalence and incidence statistics analyzed by various parameters.

Results/Discussion: Hospital-wide pressure sore prevalence was 4.80% and an incidence rate was 0.14%. General wards exhibit lower rates (2.11% prevalence, 0.05% incidence) than intensive care units and hospice wards (15.6% prevalence, 0.67% incidence). While the Department of Infectious Diseases has the highest prevalence (20.18%), and the Department of Family Medicine (Hospice) has the highest incidence at 0.92%, statistical significance is not observed.

Conclusion: Operating a pressure ulcer management team facilitates data accumulation and targeted education, enhancing in-hospital care and providing post-discharge follow-up and local area management. The study underscores potential societal impact by improving public medical care quality, especially for medically underprivileged groups through effective pressure sore management.

EP242 The use of polymeric membrane dressings in treatment of grade 1 and grade 2 occipital pressure injuries in neonates

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Aim: To study the efficacy of polymeric membrane dressing (PMD) in treating grade 1 and grade 2 occipital pressure injury (OPI) in neonates.

Method: 40 cases of neonates referred over a period of 4 years from neonatal intensive care unit for OPI grade 1-2 was treated with application of PMD every 3 days till the wound was completely healed. The exclusion criteria is grade 3-4 OPI and infected OPI

Results/Discussion: Every OPI was healed within 1-3 weeks of polymeric membrane application. Neonates are more prone for OPI and account for 40% of all occipital pressure in pediatrics. PMD has mild, non-toxic wound cleanser, moisturizer (glycerin), superabsorbent polymer and semi-permeable membrane. This unique properties facilitates healing by stimulating effective autolytic debridement, balancing moisture, limiting inflammation and reducing pain

Conclusion: The result of this study has showed that application of PMD has successfully healed all neonates with OPI within a short span of time which reduces cost as well as the need for surgical intervention. However more studies such as randomized clinical trials must be conducted to have more conclusive justification in the usage of PMD in treatment of OPI in neonates as well in the prevention of OPI.

EP243 Cubbin-Jackson Scale vs Braden Scale on pressure ulcer risk assessment in critical patients: scoping review

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Aim: To map the available scientific evidence about advantages and disadvantages between Cubbin-Jackson and Braden Scales for pressure ulcer risk assessment in critical patients.

Method: Scoping review based on the principles advocated by the Joanna Briggs Institute. We carried out searches on CINAHL, MEDLINE, PubMed, Scopus, and Web of Science. All available free access articles, published in Portuguese, English and Spanish were included.

Results/Discussion: Seventy-five studies were retrieved. Eighteen met the inclusion criteria. Cubbin-Jackson Scale was specifically developed for critical patients, evaluates specific risk factors and it is described as better tool for the assessment of the risk of pressure ulcer development than Braden Scale. But multiple versions of the scale and short samples are considered disadvantages. It is less known, complex, and hard to use. The Braden Scale is most used and has more validation studies. Some authors describe it as inaccurate, contributing to overpredicting the risk. However, it is a generalist scale that doesn't consider specific risk factors, which makes it less adequate. It's easier to apply and reliable.

Conclusion: There's little evidence about Cubbin-Jackson Scale validity which makes it difficult to assess whether it is the most adequate. The Braden Scale is the most known scale and the one with more validity studies in critical patients which validates its utilization. There's need of more validation studies with bigger samples of Cubbin-Jackson Scale and more comparative studies between both scales to identify which one is the best assessing tool for pressure ulcer risk in critical patients.

EP244 Epidemiological differences of pressure ulcers during the pre-covid, covid, and post-covid periods in an intensive care unit in Portugal

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Aim: This study examines epidemiological changes in pressure ulcers (UP) within a Portuguese Intensive Care Unit (ICU) across pre-COVID (Jan 2017-Dec 2019), COVID (Jan 2020-Dec 2021), and post-COVID (Jan 2022-Jun 2023) phases. It aims to profile critically ill patients with UP and identify specific risk factors.

Method: A retrospective observational cohort study was conducted by reviewing ICU patient records from January 2017 to June 2023. Data on UP, either present upon admission or acquired later, were extracted from the ICU's electronic registry. The study used a non-probabilistic convenience sample, including patients with over 24-hour ICU stays and excluding those with incomplete records.

Results/Discussion: Between January 2017 and June 2023, 345 UPs were recorded, averaging a 6.73% prevalence. Pre-COVID prevalence was 8.37%, reducing to 6.79% during COVID and further to 3.85% post-COVID. Male patients exhibited higher UP incidence pre-COVID (72.9%) and during COVID (67.4%), with more balanced rates post-COVID. Sacrum and heels were the most affected areas, while UPs on the nose, head/forehead, face, and ears were less frequent than expected during COVID. The most common were Category 2 UPs. Age and pressure emerged as consistent intrinsic risk factors, with pressure being a significant extrinsic factor.

Conclusion: This study provides vital insights into the epidemiological shifts in UPs in an ICU setting, underlining the importance of adapting clinical practices for better UP prevention and management. Variations in UP incidence and characteristics across different periods, particularly concerning gender and anatomical locations during the COVID era, highlight the need for targeted prevention strategies.

EP245 Deep tissue injuries among hospitalized patients: An explorative audit study

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Aim: (1) To study the accuracy of deep tissue injury assessment done by nurses through auditing the wound care record, (2) To classify the types of error associated with the inaccurate pressure injury (PI) classification.

Method: This is a cross-sectional study of wound document record audit. Wound data of patients with deep tissue pressure injuries (DTIs) were extracted from the hospital PI dashboard patient's records between August 2022 to October 2023. The study team reviewed the patients and compared their findings with the ward nurses' wound documentation.

Results/Discussion: A total of 100 unique patient's wound document records were audited followed by bedside assessment by a wound care nurse. A total of 149 DTIs were reported. Among the patients, 71% had at least one DTI reported. Most of the DTIs were located at the sacral (n=42; 28.18%), followed by the heels (n=36; 24.16%). Among the 149 reported DTIs, only (n=58; 38.9%) were accurately assessed and documented as DTI when compared with the wound nurse review. The remaining wrongly assessed and reported DTIs (n=91; 61.1%), (n=31; 34.1%) were wrongly staged, when the actual staging was stage 2 (n=10; 32.3%), stage 1 (n=10; 32.3%), unstaged (n=10; 32.3%) and stage 3 (n=1; 3.2%). A total of 60 DTIs (65.9%) were not of a PI aetiology. In 30.0% of cases (n=18), neither a PI nor DTI was present on the patients and 23.3% (n=14) primarily exhibited hyperpigmentation on the skin. Another 30.0% (n=18) demonstrated wounds unrelated to PI, displaying different aetiologies.

Conclusion: Accurate staging and diagnosis of PIs is important as it will help in identifying other conditions with similar morphologic findings. Appropriate education on PI is important to improve nurses' knowledge in PIs and ensure correct treatment and management.

EP246 Development of a pig model of spontaneous pressure injury: A randomized self-controlled study

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Aim: Preclinical studies on pressure injury use induced models but a standard model needed for preventive intervention studies. This study aimed to develop a pig model of spontaneous pressure injury that reflects the clinical situation in humans.

Method: This is an in vivo, randomized self-controlled study. Approval was received from the animal ethics committee, animal welfare were provided at all stages. Data were collected from a total of three male Yorkshire pigs (2-hour n=1, 4-hour n=1, 6-hour n=1). The pigs were positioned on a standard hospital mattress in the left lateral position for 2, 4, and 6 hours. Interface pressure, skin temperature, moisture, and tissue perfusion were measured before and after positioning. After positioning, the pigs' forelimbs and hindlimbs were evaluated macroscopically, dermoscopically and histologically.

Results/Discussion: Interface pressure, and skin temperature and moisture levels were also similar before the procedures. Macroscopic evaluation revealed the development of blanchable erythema on the left hindlimb at the end of 4 and 6 hours of positioning. Dermoscopic findings were rare at 2 hours but frequent and similar in intensity at 4 and 6 hours. Mild hemorrhage was observed in the muscle tissue of the 4-hour group and severe hemorrhage in the 6-hour group. Histologic scores were statistically significantly higher in the 6-hour group than in the 2-hour group (p<0.05).

Conclusion: A model of spontaneous pressure injury using male Yorkshire pigs placed in the same position on a standard hospital mattress for 6 hours can be used to induce spontaneous pressure injury.

EP247 A Bibliometric analysis of the global trend of nursing research on clinical decision support systems for pressure injury management from past to present

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Aim: To evaluate global evolution of nursing research on clinical decision support systems for pressure injury management and to analyze conceptual areas of knowledge development in this field.

Method: R software used for the quantitative evaluation and visualization of the knowledge areas of studies on the subject. Studies were evaluated by statistical and text mining analysis methods.

Results/Discussion: 3828 articles published between 1980 and 2024 analysed. Annual growth percentage is 2.53, International co-authorships percentage is 12.46. Most studies on the topic (n = 1186) have been published in the journal, Journal of Wound Ostomy and Continence Nursing. Pressure injury prevention (n=460), care (n=394), prevalence (n=375), fields have all evolved over time as the key concepts of research. The United States (1682), Brazil (219), Australia (168), and are the three nations with the highest number of publications. Two conceptual clusters were formed. The first cluster includes program development, quality of life, pressure injury risk factors. The other cluster includes guide development, guide implementation, and nurses' attitudes and obstacles towards it.

Conclusion: It has been determined that studies on pressure injuries are mostly studies on prevalence, determining risk factors, prevention, and care, while decision support systems are studies on program development and implementation.

EP248 Investigation of palliative care nurses' level of knowledge on pressure ulcer prevention

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Aim: Pressure ulcer is a common problem in palliative care units. The treatment process is long, difficult and highly costly. Wound care is important in the treatment of pressure ulcers, which is a problem that must be overcome for the patient, the patient's relative and the healthcare professional. This study was conducted to evaluate the knowledge levels of nurses working in palliative care units on preventing pressure ulcers.

Method: The data of this study was collected via an online connection. The created survey link was shared with palliative care nurses and filled in online by the nurses. Two different online adapted surveys were used to collect the data. Nurse Introductory Characteristics Form and Modified Pieper Pressure Sore Knowledge Test were used to collect data regarding the study.

Results/Discussion: It was found that 85.5% of the participants were female, 14.5% had postgraduate education, 40.8% did not have a standard care protocol for pressure ulcer care in the unit where they worked, 80.3% did not know about the Prevention of Pressure Ulcers - Quick Reference Guide, 89.5% had not read this guide before. 60.5% of the participants found their practices to prevent pressure ulcers partially sufficient.

Conclusion: In this regard, it is recommended to provide all kinds of in-service training to nurses, indicating the importance of the subject and increasing their awareness, and to inspect the suitability and use of institutions by determining evidence-based practices and pressure ulcer care protocols in accordance with international standards.

EP249 Associated risk factors and barriers of pressure injury wound healing process

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Aim: The main aim of this study was to identify risk factors and barriers that may confer on poor wound healing.

Method: This is a retrospective study, which was carried out in Dubai Hospital, Dubai Health Authority.

Results/Discussion: The present study consisted of 146 patients. Paired t test revealed statistically significant improvement in pressure injury healing in terms of length and width at discharge compared to pressure injury ($p < 0.05$). On the other hand, depth improvement was not statistically significant ($p > 0.05$). 2 test revealed a statistically significant relationship between pressure injury healing and low albumin levels, diabetes, and advanced age ($p < 0.05$), while there was no statistically significant association between the location of the pressure injury and the healing process ($p > 0.05$). Furthermore, there was no statistically significant relationship between Braden category, length of stay, or patient hospitalization and pressure injury healing ($p > 0.05$)

Conclusion: The healing process might be influenced by single or multiple factors. The findings of this retrospective study revealed that low albumin levels, diabetes patients, and age all had an impact on the healing of pressure injuries. When planning and implementing a complete pressure injury treatment strategy, health care practitioners should keep these things under consideration. On the other hand, pressure injury's location, Braden category, length of stay, and patient hospitalization did not reveal a significant effect on wound healing, despite the fact that other studies showed an effect of these factors on the healing process

EP250 Addressing dark skin tones

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Aim: As a Tissue Viability Specialist Nurse (TVN) my experiences have demonstrated patients with a dark skin tone are more likely to develop pressure damage and experience wound miscaterogrisation. After reading the BPS from Wounds UK 'Addressing Skin Tone Bias', I was inspired to make a change.

Nursing education has historically relied on looking for 'redness' however redness may not always be visible for dark skin tone and requires touching the skin. There is a lack of education around this and requires identifying the knowledge of TVN's and how to update the education delivered.

Method: A service evaluation to establish and recognise and the knowledge of TVN's in the trust was carried. The learning would impact on clinical practice for service users with dark skin tones and how to identify the risk of pressure ulcers earlier.

Results: This would include the themes and comments around the understanding and knowledge of tissue viability specialist nurses caring for patients with a dark skin tone in current practice.

Discussion: Implementation of a teaching intervention based on the responses will help to cater to the needs of TVN's and build upon the confidence and competence of skin tone bias. This learning would be cascaded to trust staff as the tissue viability nurses provide regular teaching to trust staff.

Conclusion: The themes would help to summarise how this teaching intervention has contributed to caring for patients with a dark skin tone. This would help to implement change in clinical practice based on clinical knowledge.

EP251 Qualitative perspectives on the early identification of pressure ulcers in people with dark skin tones

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Aim: Existing literature acknowledges that the identification of pressure damage in people with dark skin tones when addressed if at all, is mainly focused on ethnic background or race rather than skin tone diversity (Oozageer Gunowa et al., 2018). The study aims to examine community nurses' experience of identifying early-stage pressure ulcers among people with dark skin tones in the Kent, Surrey and Sussex area.

Method: After gaining University Research Ethics interviews with community registered nurses were conducted to explore how they assessed early-stage pressure ulcers among people with dark skin tones. All interviews were carried out online, transcribed, and then analysed using advanced qualitative software to help develop themes.

Results/Discussion: The findings indicated that many community registered nurses experienced guilt that they had not thought of the risks to people with dark skin tones earlier, the nurses recognised a gap in their knowledge and that more needed to be done in the form of education and listening to people with dark skin tones to support the early identification of pressure ulcers.

Conclusion: The findings offer first-hand insight into how early-stage pressure ulceration is identified among people with dark skin tones. The findings will be used to reduce health inequality by influencing and informing clinical policies and strategies in practice. Findings will also lead to the development of educational strategies that will enable the early identification of pressure ulcers among people with dark skin tones.

EP252 MPPT control of soft tissue infection caused by osteomyelitis

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Aim: Osteomyelitis releases infectious debris into the tissue surrounding the infected bone. The body will form a draining fistula, i.e. a canal, between the bone and the skin surface to remove this debris. The debris is infectious and typically lead to extensive soft tissue infection, which can cause sepsis.

MPPT (micropore particle technology; Amicapsil-SCI, Willingsford Ltd., UK) is a passive immunotherapy effective in treating wound infections. It has demonstrated benefits in controlling soft tissue infections caused by draining fistulas. The aim was to evaluate patients-benefits achieved using it for this purpose.

Method: Individual with confirmed osteomyelitis were followed for 1- 3 years, and the benefits gained from their use of MPPT were determined.

Results: No adverse events were reported. MPPT removed the soft tissue infection, promoted regeneration, and transformed the wound into a narrow stable draining fistula. Participants reported considerable reductions in exudate levels, reduced frequency of sepsis, reductions in frequency and severity of autonomic dysreflexia episodes, and overall improvements in health. The combination of MPPT being suitable for telemedicine and no requirement for bed-rest meant that participants were able to resume an active life-style, including exercising.

Conclusion: MPPT effectively controlled the soft tissue infections resulting from the presence of an osteomyelitis. It is ineffective in treating the osteomyelitis itself, but can alleviate many of the consequences of osteomyelitis until surgery is possible. In cases, where surgery is not possible due to comorbidities, MPPT can be used palliatively to reduce the risk of sepsis and to improve quality of life.

Acute Wounds

EP253 Paediatric wound management: A series of case studies in ICU patients

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Aim: Discuss the evaluation of a Polyabsorbent fibres dressing with technology lipido-colloid and silver and a stabilized hypochlorous acid solution in the management of neonatal and paediatric population.

Method: This case series aims to establish evidence-based wound care practices for neonatal and paediatric populations, demonstrating the safety, efficacy, and appropriate use of tailored wound care management.

Three complex wounds in the ICU cases due to medical device related pressure ulcers (MDRPU).

1. 23-month-old with a 3-day old peri-tracheostomy Medical device-related pressure ulcer (MDRPU) previously treated with saline solution and gauze
2. Peri tracheostomy 5-month-old moisture and pressure related wound previously treated with saline solution, gauze and foam with PHMB.
3. 8-month-old transferred from another hospital with occipital 3-week-old PU associated with a period of extracorporeal membrane oxygenation (ECMO) treatment. No record of previous treatment is available.

Results/Discussion: All cases showed good improvement and healing with the evaluated protocols.

Conclusion: Developing evidence-based institutional guidelines for treating wounds in neonates and children is imperative, involving the assessment of existing adult-oriented wound care protocols and exploration of newer technologies suitable for the paediatric population. The results show the safety, efficacy, and appropriate use of the evaluated wound care protocols.

EP254 Observational, prospective, multicentre study to examine clinical performance of a silicone-coated transparent postoperative dressing* in patients with fragile skin

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Aim: Despite being preventable, medical adhesive-related skin injuries (MARSIs) are under-recognized and occur in various care settings and among all age groups. This study evaluates the clinical performance and safety parameters of a silicone-coated transparent postoperative dressing on lacerations, surgical wounds, and the surrounding skin, especially designed for fragile skin.

Method: From 06/2021-11/2022 an observational, prospective, uncontrolled, multicentre post-market clinical follow up study was conducted in 3 centers in Germany in daily clinical practice. Patients with fragile skin conditions were treated with the silicone-coated transparent postoperative dressing. Patients were assessed at initial treatment and after 7 days for dressing adherence, pain during dressing removal, condition of the wound and peri-wound skin before and after dressing removal, easiness of handling were documented.

Results/Discussion: 42 patients with fragile skin and surgical wounds (n=35) or lacerations (n=7) and a median age of 78 were analysed.

No skin stripping, blister, skin tears, maceration, irritant contact dermatitis or allergic dermatitis occurred, while the peri-wound skin remained intact or improved.

Most patients reported minimal pain at removal, reduced wound pain, and high satisfaction with the comfort during the seven-day wear time. Dressing handling, particularly with gloves, was rated above average or excellent.

Conclusion: The study demonstrates the clinical benefits using a silicone-coated transparent postoperative dressing for the treatment of acute wounds among patients with fragile skin. This approach not only reduces the risk of MARSIs but also ensures minimal discomfort and almost pain-free dressing change for patients.

*Leukomed® T SkinSensitive/Leukomed® T plus SkinSensitive, BSN medical GmbH-Essity

EP255 Managing complex wounds in paediatric patients with medical-grade honey

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Aim: Children and neonates are at high risk of sustaining wounds of different aetiologies and are extremely sensitive patients due to their immature immune systems. Therefore, a safe and clinically efficient wound care product should be used. Here we show the successful use of medical-grade honey (MGH) on complex wounds in paediatric patients.

Method: Seven patients (3♀/4♂) presented to the clinic with wounds of various aetiologies, including a burn, balanitis xerotica obliterans, amputation, vasculitis, extravasation injury, and two lacerations. The average age of the patients was 6.1 years (range 4 days-18 years). MGH monotherapy was started immediately using an ointment¹ or gel². Hospital staff performed dressing changes for neonates in the hospital, while parents were responsible for changing their children's dressings at home.

Results/Discussion: MGH successfully prevented infection, even in wounds in unsterile locations such as the genitalia. In none of the cases, surgical debridement was performed to reduce stress in patients. MGH stimulated autolytic debridement and resolved inflammation in all cases. The average healing time was 23.1 days (range 10-56 days) without further pain or complications due to the treatment. In all cases, minimal scarring was present following MGH treatment. Treatment at home by parents reduced stress for both patients and parents.

Conclusion: Overall, treatment with MGH-based products^{1,2} resulted in successful healing of these complex wounds regardless of their aetiology or the patient's age. Therefore, MGH could be used as an efficient and safe treatment for complex wounds in paediatric patients.

¹L-Mesitran Ointment

²L-Mesitran Soft

EP256 Fournier's gangrene in post-surgical management through the use of Negative Pressure Wound Therapy. A complex wounds. A hospital care setting. A case series

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Aim: Fournier's gangrene (FG) is a Necrotizing Soft Tissue Infection (NSTI) of the perineal region characterized by high morbidity and mortality even if appropriately treated. The main treatment strategies are surgical debridement, broad-spectrum antibiotics, hyperbaric oxygen therapy, NPWT (Negative Pressure Wound Therapy), and plastic surgery reconstruction. This report is intended to demonstrate the effectiveness of NPWT, in the management of acute wounds.

Method: In 2023, 10 patients with Fournier's gangrene were treated. All patients underwent surgical debridement of necrotic tissue and they had been treated with NPWT starting from the first operating session. All patients were admitted to the urology department and for the first 3 weeks, the dressing was changed (2 a week) under analgesic therapy. Upon discharge, patients underwent dressing changes 2 a week at the vulnology outpatient clinic. The following data were recorded at each dressing change, ulcer appearance (WBS) Pain (NRS). The period examined from the onset of the injury had to be superior 2 weeks and less than 6 months.

Results/Discussion: The observation allowed to highlight a reduction of volume and undermined section, control of bacterial load and pain. Furthermore, it was observed an increase of WBS (10 % in one week, till 30% in 2 weeks)

Conclusion: NPWT has demonstrated impact on healing process (reduction in volume and in an increase of WBS during the following weeks).

The global process led to these results, thanks to the collaboration of the Urology department, through early diagnosis and preventive intervention.

EP257 Autodermoplasty of large defects in children

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Aim: To evaluate the results of autodermoplasty with closing large wounds in children.

Method: Between 2019 and 2023, 17 patients were treated in our department with extensive crush wounds. 5 patients were treated by primary surgical treatment of the wound and autodermoplasty. In 3 cases vacuum drainage was applied to reduce and sanitize the wounds. 9 cases were treated by autodermoplasty after surgical treatment of wounds and dressings. In case of fractures, AVF fixation was performed in 4 cases, flexible nails - 3 cases, wire synthesis (foot injury) – 1 case. The follow up period was 1 year.

Results/Discussion: 14 patients (82%) obtained a good result - the transplant completely recovered, function was restored, in 3 patients (18%) a satisfactory result - the transplant recovered, but joint contracture of movements remained. For one of them with a defect of the medial malleolus, the second stage of surgical treatment is planned - plastic surgery with a full-thickness flap on a pedicle. In this case, a secondary varus deformity of the ankle joint develops due to primary damage to the growth plate.

Conclusion: Active surgical tactics with primary autodermoplasty are the method of choice, reducing the time of hospital treatment and early functional recovery. Timely and adequately performed primary surgical treatment using ultrasonic cavitation of cavities and vacuum drainage of wounds helps prevent the spread of purulent infection and prepare wounds for closure. Early stabilization of fractures in children using AVF promotes better healing of both wounds and fracture healing.

EP258 The Efficacy of Piscine Acellular Dermal Matrix for Treating Acute Traumatic Full-Thickness Wounds

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Aim: Piscine acellular dermal matrix (pADM) is a decellularized skin matrix derived from fish skin, and it represents an innovative approach to wound healing. It has been reported that pADM possesses antimicrobial and anti-inflammatory properties, beneficial for treating conditions such as chronic and diabetic wounds. It is also anticipated for use in acute full-thickness wounds to promote infection prevention and wound healing.

Method: Our study spanned from April 2021 to July 2022, targeting patients with acute traumatic skin and soft tissue defects sustained within the preceding 14 days. The wounds of these patients were ≥ 1 cm², penetrated the subcutaneous layer or deeper, and primary closure was unfeasible, prompting the consideration of surgical interventions. After performing debridement and wound irrigation to clean the wound bed, we applied pADM within 7 days. Dressings were subsequently changed every 3-4 days.

Results/Discussion: The study included a total of 17 patients. On average, it took 30.18 days for total epithelialization to occur. The average wound size decreased from 6.82 cm² to 0.46 cm² at the 3-week mark. Total epithelialization was achieved within 3 weeks in 12 patients, accounting for 70.6% of the cases. The average NRS score was decreased from 5.77 to 2.92 in 7 days. Also, statistically significant differences in healthy granulation formation and marginal contracture were observed.

Conclusion: pADM can also be a significant treatment option in acute traumatic wounds by promoting wound healing, modulating pain, and preventing infection.

EP259 Significant predictors of radial forearm flap donor site complications for head and neck reconstruction

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Aim: Although various perforator flaps gaining popularity still radial forearm free flap (RFFF) is the most commonly used method in head and neck reconstructions. However, complications at the donor site are a major drawback various methods are being attempted to reduce this. Nevertheless they continue to occur, so in this study, the factors affecting these complications are to be investigated.

Method: A retrospective chart review was performed on consecutive patients who underwent RFFF for head and neck cancer reconstruction between 2015 and 2022. Demographic variables, clinical process and postoperative complications were collected. Sensory recovery and cosmetic result also were evaluated by questionnaire. All the variables were analyzed by univariate and multivariable analysis and statistical significance was set at a $P < 0.05$.

Results/Discussion: Thirty seven patients underwent RFFF and all patients received split thickness skin graft on the donor site. 14 patients (37.8%) experienced delayed skin graft healing, while 5 patients (13.5%) sensory changes at the donor site. The possibility of delayed wound healing was found to be marginally significantly higher in hypertensive patients. The incidence of hand swelling was related to the graft area, and the occurrence of paresthesia was found to be marginally significantly higher in patients with diabetes and when ADM was not used. Even in the patient group with controlled hypertension, the incidence of paresthesia was significantly low.

Conclusion: Recognizing the factors associated with postoperative donor site complications and applying appropriate surgical techniques may help reduce the incidence of donor site complications in RFFF.

EP260 Associating Hyaluronic acid sodium salt 0.2% in the treatment of acute wounds

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Aim: The aim of this review is to emphasize the importance of synergism between surgical and topical treatment in acute wounds.

Method: The authors retrospectively reviewed 40 patients with acute wounds, hospitalized in their trauma center, in 2023. Participants, aged 23-72 years (mean age of 45), mainly working men, were offered the medical and surgical approach, following the hospital protocol. They were divided in two groups. Group A (20 patients) received the standard treatment, while participants in Group B were treated with Hyaluronic acid sodium salt 0.2 % (HA) cream, applied at least 12 days postoperatively, two times a day, on both the wound and the donor site. Patients were followed up for at least one month.

Results/Discussion: Most subjects healed in less than three weeks, with the exception of three patients with limited skin necrosis in each group. For the chemical debridement of the lesions, in Group A the authors used the standard treatment with Silver Sulfadiazine 1% (SS) cream for seven days, while subjects in Group B received the SS cream, enriched with HA for seven days, as well. The researched have noticed a faster healing time in Group B, with three days. Furthermore, half of the wounds in both groups requested skin grafts and all donor areas healed with a softer, more pliable scar in Group B.

Conclusion: The management of acute wounds is often challenging. The quality of the renewed tissue is important to take into account when choosing the appropriate therapeutic options.

EP261 Cleansing of traumatic wounds. A systematic review

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Aim: To evaluate the effects of cleansing traumatic wounds on the healing, as well as wound cleansing solutions available and cleansing techniques used.

Method: A systematic review in 3 databases (Pubmed, CINAHL, Cochrane) was carried out filtering by language (English / Spanish) and by date (January 2011 and December 2021). Diagram PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was the base for filtering and evaluating the peer review quality. EQUATOR Network norms were used selecting only the randomised clinical trial (RCT) and high or medium quality systematic reviews (SR).

Results/Discussion: A total of 4087 articles were identified. Of them, 12 articles met all the inclusion/exclusion criteria (6 RCT and 6 SR) and were selected for quality assess. 7 articles had enough quality (PRISMA / CONSORT assessment) and were finally analysed (6 RCT and 1SR).

Conclusion: There is none cleansing solution superior to others. Both tap water and distilled water are safe compared to saline solution. The gravity force would be enough to do an effective cleaning. Chlorous acid and polyhexanide-based cleansing solutions may be an alternative to clean traumatic wounds.

EP262 Analysis of bacteria, inflammation, and exudation in epidermal suction blister wounds reveals dynamic changes during wound healing

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Aim: Determine how wound bacteria develop over time in epidermal wounds, and how they interact with inflammatory processes during wound healing.

Method: We collected dressing and swab samples from 48 epidermal suction blister wounds in 24 healthy volunteers followed over a time period of 15 days. We analyzed bacterial levels and species, protein content, and cytokine levels.

Results/Discussion: We found that bacterial numbers, measured in swabs and dressing fluid, increased rapidly after wounding and stabilized by day 8. The composition of bacterial species identified by MALDI-TOF differed between wounds, but generally consisted primarily of commensal bacteria and remained largely stable over time. Inflammation and neutrophil activity, measured by quantification of cytokines and neutrophil proteins in dressing fluid, peaked on day 5. Exudation, measured by quantification of protein content in dressings, also peaked at this time and strongly correlated with cytokine and neutrophil protein levels. Inflammation, neutrophil activity, and exudation were not correlated with bacterial counts at any time, indicating that in normally healing wounds, these processes are primarily driven by the host and are independent of colonizing bacteria.

Conclusion: Our analysis provides a comprehensive understanding of epidermal wound healing dynamics in the host and the role of the microbiome in healthy wound healing.

EP263 Image-based non-invasive assessment of suction blister wounds for clinical safety and efficacy

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Aim: To provide a comprehensive methodology for implementing and evaluating photography-based imaging techniques when utilizing the suction blister wound model.

Method: The suction blister model was used for wound induction on healthy volunteers due to its simplicity, reproducibility, and scarless healing. A standardized protocol captured consistent, high-quality photographs using a DSLR camera modified with a distancing stick. A newly developed visual wound healing score and computer-assisted color analysis of wound exudation and wound redness using the CIElab color space were used for image quantification. We employed this methodology on 16 suction blister wounds, followed for 15 days, on 8 volunteers used as controls in a clinical phase-1 trial.

Results/Discussion: Our method enabled us to discern and quantify subtle differences between individual wounds concerning healing progress, erythema, and wound exudation. The wound healing score exhibited a high inter-rater agreement. There was a robust correlation between the spectrophotometer-measured erythema index and photography-based wound redness. Photography-based wound redness also demonstrated a significant correlation with the amount of myeloperoxidase and neutrophil elastase measured in wound fluid. Furthermore, protein content measured in wound fluid had a robust correlation with the photography-based dressing yellowness.

Conclusion: By employing this methodology, we distinguish differences that may otherwise be challenging to observe, and which also correlated with more validated outcomes. Although the methodology has limitations in its generalizability outside highly controlled trials utilizing the suction blister wound model, this approach could yield benefits for future studies in wound research and for the development of new wound treatments.

EP264 Strategic use of biodegradable temporizing matrix in wound healing

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Aim: Biodegradable temporizing matrix (BTM; NovoSorb; PolyNovo Ltd) is a synthetic skin substitute and was recently introduced to Taiwan. Compared with other dermal templates, the clinical efficacy and performance of BTM are not well established, especially among Asian population. This study is aimed to share our experience of using BTM in various wound condition.

Method: Between 2022 and 2023, patients who underwent skin and soft tissue reconstruction with BTM were reviewed. Patient demographics, wound characteristics, surgical details and complications were recorded.

Results/Discussion: Thirty-four patients were included with mean age of 52.5 years (range, 22–86 years). Wound etiologies included trauma (64.7%), burn (11.8%), necrotizing soft tissue infection (20.6%) and scar excision (2.9%). The mean BTM size was 54.5 cm² (range, 22–180 cm²). Eight patients received concomitant flap surgery and BTM implantation. Nineteen patients (55.9%) underwent subsequent skin grafts while the other 15 patients had smaller wounds (20.8±11.8cm²) healed by secondary intention. The most common complication was infection (n=6 [17.6%]), and all were treated conservatively. 30 over 34 patients (88.2%) had well BTM take while only 4 patients had BTM failure and required further reconstruction. At the last follow-up, 33 of 34 patients (97.1%) achieved successful wound closure with satisfactory scar condition. Vigorous wound debridement and negative pressure wound therapy might increase the BTM take rate and lower the complication.

Conclusion: BTM is effective and feasible in treating various wounds with relatively low complication rates. BTM can be considered as an alternative in the skin and soft tissue reconstruction.

EP265 Extravasations in hospitalized pediatric patients; single center experience

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Aim: Extravasation is defined as the unintentional release of a drug or fluid from the vessels into surrounding tissues. We aimed to share our experience with extravasations occurring in children.

Method: Patients between the ages of 0-18 years who were hospitalized between 01.04.2022 and 30.09.2023 and consulted the pediatric wound unit (PWU) were included in study, and their data was evaluated retrospectively. Patients with extravasations were identified compared with other wound patients. $P < 0.05$ considered significant.

Results /Discussion: Fifty-two extravasations were detected in 51 of 297 patients (17.2%) who were consulted to PWU. Twenty-eight (54.9%) of the patients with extravasations were male, and their average age was 2.15 (min: 0.1- Max: 16.69) years. The mean-age of extravasation group was younger than with other wounds (2.15 years vs. 7.20 years, $P < 0.001$). Extravasations were mostly observed in neonatal units ($n=22$, 43.1%). The most extravasated fluid was total parenteral nutrition (TPN) ($n=11$, 21.56%), and the most extravasation observed area was the foot and ankle ($n=20$ wounds, 39.21%), followed by hands and wrists ($n=17$ wounds, 33.33%) and the scalp ($n=7$, 13.7%). One patient's toes were amputated, and an autologous-split-thickness skin graft was performed on the dorsum and sole. Three-patients died for unrelated reasons to wounds.

Conclusion: Especially patients in neonatal units and pediatric intensive care units are at high-risk for the development of extravasations. In our study, it was observed that in children, extravasations occurred mainly on the feet and then on the hands. Central venous catheters should be preferred for high-risk drugs and TPN.

EP266 Chronic wound debridement in an acute setting to facilitate improved management objectives utilising Bioactive Microfibre Gelling (BMG) technology

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Aim: Chronic wounds can be serious, have a negative impact on individuals, their families and healthcare services. Chronic wounds often contain necrotic or sloughy tissue, which can harbour bacteria and biofilm acting as a barrier to healing. Debridement is an integral part of wound management.

In 2023 the Tissue Viability Team was presented with the opportunity to evaluate a 100% grade A Chitosan dressing, derived from chitin. Studies have found chitosan to have several properties that aid wound healing (Dai Tet al 2011). The aim of this study was to investigate the potential for debridement using Bioactive Microfibre Gelling (BMG) technology to facilitate wound healing within our service.

Method: Evaluation of 10 inpatient case studies over a 2-week period in the acute setting.

Wound types included Venous Leg Ulcer (1) Surgical wounds (3) Basal cell carcinoma (1) Pressure ulcers (4) Amputation (1).

Results/Discussion: In 8 cases there was a visible reduction in devitalised tissue, decrease in wound size and improvement of the wound bed.

A noticeable change in signs of infection was observed and odour eliminated due to the dressing's antibacterial anti biofilm properties.

In one patient the use of BMG dressing facilitated earlier application of Negative Pressure Wound Therapy (NPWT) after one week due to improved wound bed status.

Conclusion: In two weeks the BMG dressing demonstrated an effective option for wound debridement, facilitating the maintenance of a healthy wound bed.

Early and appropriate wound debridement facilitates healing, reduces infection risk, and improves patients' quality of life.

EP267 Successful use of decellularized piscine graft in a pediatric extensive wound reconstruction

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Aim: Closing large wounds in children can be difficult. Plastic surgeons may need to use different techniques to achieve final closure. In this case, two forms of fish skin graft (FSG) were used to help fill a significant, resected defect in a pediatric patient.

Method: A 5-year-old boy with giant cell fibroblastoma had a surgical defect after an extensive resection of his right shoulder, neck, and chest. FSG was applied to fill the large areas of resected muscle and soft tissue. The reconstruction involved first approximating edges using a closure-assisted device and negative pressure wound therapy (NPWT). The meshed FSG was stacked to fill the defect, and a mixture of FSG particulate and medical-grade honey was used along with NPWT. The patient returned to the operating room for each dressing change until appropriate granulation was achieved for the final split-thickness skin graft (STSG).

Results/Discussion: The FSG was incorporated into the wound, and granulation increased with each dressing change. The FSG allowed the filling of muscle and soft tissue defects to achieve final closure with STSG.

Conclusion: Closing extensive wounds can be challenging and may require several techniques. The use of FSG in this case shows its benefits in filling large complex wounds and contouring defects in pediatric patients. Decellularized piscine skin grafts can be used in different forms to fill complex wounds and reconstruct defects in pediatric patients.

EP268 Moist Exposed Burn Ointment Dressing in Open Wound From Lower Limb Infection

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Aim: Wound debridement causes disruption in skin integrity resulting in moisture lost through evaporation from superficial layer of wound. Moist Exposed Burn Ointment (MEBO) prevents moisture lost while assisting granulation from the wound surface.

Method: Between Sept 2022 till August 2023, a total of 9 wounds from 9 patients (4 necrotising fasciitis and 5 infected diabetic foot ulcer); ages 35-65, were retrospectively treated with MEBO dressing. 8 of 9 patients have pre-existing diabetes mellitus. All patients admitted to hospital had undergone surgical debridement or minor amputations. Patients were treated with systemic antibiotics according to bacteriological results. MEBO dressing was initiated when infection was clinically resolving. For each dressing change, wound was debrided mechanically and cleansed with super oxide solution, MEBO was then evenly applied on wound bed and edges at 1-2mm thickness. Subsequently, wound covered by sterile dressing and secured by bandage. All wounds were assessed for granulation, peripheral epithelialization and wound closure during each dressing change.

Results/Discussion: All wounds have achieved significant granulation and peripheral epithelialization. All patients have improved pain tolerance with subsequent MEBO dressing. 8 of 9 wounds have achieved wound closure; 4 of these patients underwent skin graft surgery. The duration of wound healing to achieved closure range from 3 to 12 weeks; Average 4 weeks with skin graft surgery. None re-infection cases were reported during treatment.

Conclusion: Results revealed that wound healing was significantly improved with MEBO dressing. It concluded that MEBO dressing provide optimal physiological environment for wound bed preparation.

Dressings 2

EP269 What factors influence clinical decision-making in wound treatment within rural Community Nursing?

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Aim: Primary qualitative research explored factors that influence clinical decision-making in wound treatment, to identify strategies for reduction of unwarranted variations.

Method: With ethical approval, a purposive sample of seven community nurses were selected. Semi-structured interviews (conducted on MS Teams) using Grounded Theory methodology were recorded and transcribed verbatim, using an interview schedule to address the research question.

Results/Discussion: Three main themes and 10 sub-themes are illustrated in the graphic below.

Observations noted by participants include: The Patient - “the dressing isn’t the thing that’s gonna heal your wound”(N-7), “building rapport” (N-4); The Team – “time well spend” (N-7), “understanding wound symptoms” (N-6); The Nurse – “novice to expert” (N-7), “under-prepared for the role” (N-5), “it’s your pin!” (N-3).

The most compelling findings built on the notion of the MDT approach to supporting clinical decision-making in wound treatment. Participants described the use of a team approach to decision-making which appears to reflect the concept of a Community of Practice, but where all team members (novice to expert) contribute to the development of the collective knowledge. Merging of community and secondary services has created a space for better collaborative working enabling a joined-up approach to patient care. Some participants’ perceptions concurred with existing evidence/knowledge available, with added environmental context.

Conclusion: These community nursing participants offers insight into the multifaceted influences on wound treatment decisions. This data set provided key recommendation for practice related to improved patient partnership, MDT approach and staff education, and potential areas for future inquiry.

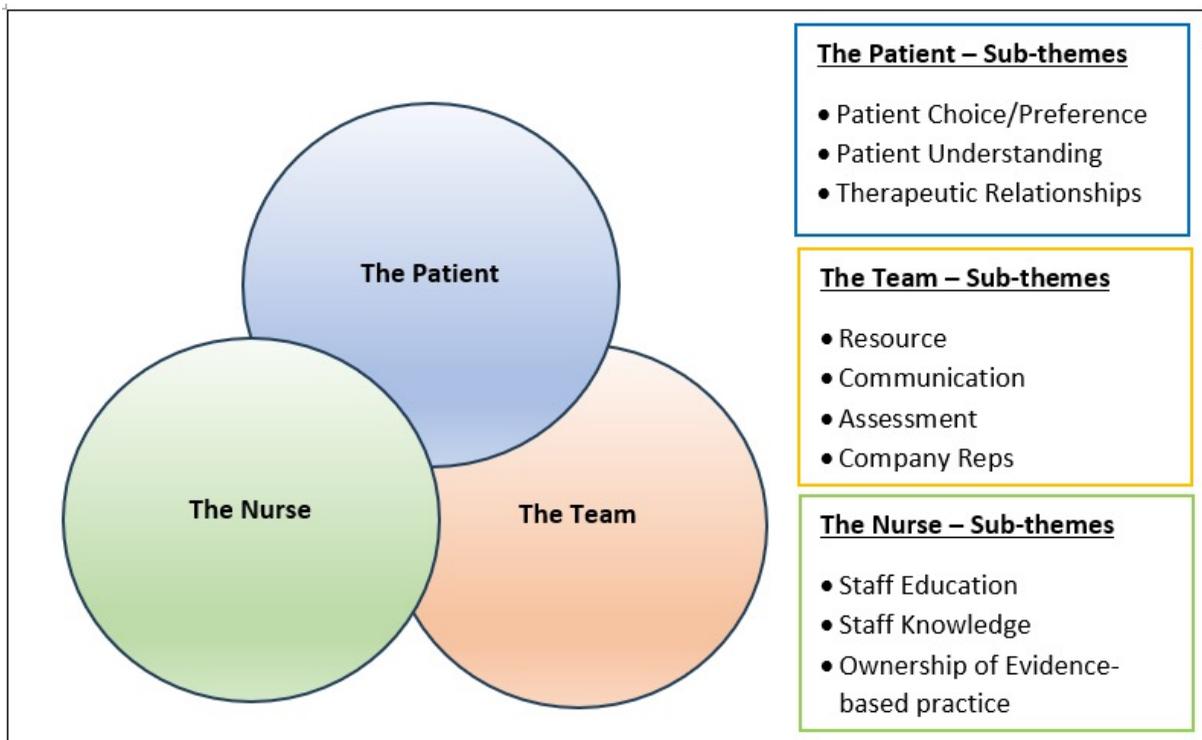


Figure 4.2– Key themes and sub-themes

EP270 Effectiveness of Suprathel® to burn injury: a systematic review.

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Aim: Determine the effectiveness of the use of Suprathel® against other medicated dressings for the management of superficial and deep partial thickness burn injuries.

Method: A systematized review was carried out with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria. The search began in December 2021 and concluded in February 2023.

Results/Discussion: We obtained 24 original studies, 9 randomized clinical studies (6 were prospective), 2 prospective observational studies, 2 retrospective studies, 1 study descriptive ambispective, 1 prospective non-inferiority study, 3 comparative studies and a pilot study. Table 1 shows the generated database and the search strategy. The included studied studies agree that the dressing Suprathel® decreased considerably reduces pain in the first 5 days after its placement in patients with deep superficial thickness burns, as well as reduces wound bleeding and achieves better adhesion to the bed after debridement with Versajet. Economically the cost value of Suprathel® is higher than other dressings, but in the long term according to the number of changes, the cost-benefit leans more towards Suprathel®. Economically the cost value of Suprathel® is higher than other dressings, but in the long term according to the number of changes, the cost-benefit leans more towards Suprathel®.

Conclusion: The use of the Suprathel® patch is proposed in public and private institutions for the treatment and management of superficial partial thickness burns, since as it promises, it reduces the patient's immobilization time, as well as the pain and therefore the use of analgesics.

EP271 A return to traditional medicine using Kawakawa to treat venous leg ulcers

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Aim: To investigate the efficacy of dressings with topically administered Kawakawa (*Macropiper excelsum*) extract, in promoting healing.

Method: As part of the Ministry of Health (1999) standards for traditional healing, patients selected for study had to meet the criteria.

Ensure the patient has no contraindications.

Wound bed has been cleaned and Kawakawa extract applied with appropriate secondary dressing to cover.

Wound dressings to be continued daily for up to four weeks, preparing the wound bed for granulation.

Gold standard venous leg ulcer treatment was adhered to as in application of compression bandaging or compression hosiery.

All wounds were measured and photographed weekly during the evaluation with the frequency of redressing depending on the clinical need.

The following outcomes were recorded:

Clinical signs of wound bed/stage of healing

Wound size/site/location

Edges/margins of the periwound

Type/amount of exudate level to wound.

Ease of product application

Patient comfort
Ease of removal

Results/Discussion: The clients involved in this study became involved in the healing of their venous leg ulcer with some self-managing the application of the Kawakawa extract and redressing their venous leg ulcer. Increased healing rates and anti-inflammatory reduction of the wound bed was observed in the venous leg ulcers.

Conclusion: Due to the emergence of multi-resistant organisms and a decreased advancement in antibiotics, perception toward traditional medicine needs to change. Kawakawa grows in abundance in New Zealand making the extract easy to produce and perhaps an effective alternative or in conjunction with modern medicine.

EP272 Evaluation of the effectiveness of a autologous dressing obtained from a combination of I-PRF and S-PRF in difficult-to-heal wounds

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Aim: Evaluation of efficiency a biological membrane dressing made from a combination of I-PRF and S-PRF in hard-to-heal wounds.

Method: 19 people (F 12; M 7) aged 69.8 +/- 13.9 years with hard-to-heal wounds were qualified for the study (2 pressure sores, 9 venous ulcers, 8 diabetic foot). All patients qualified for the study had an ABI of at least 0,9. The average duration of the wound was 77 weeks +/- 132 weeks. The average duration of care in a specialized wound care clinic was 26 +/- 19 weeks. At the time of inclusion in the study, the average wound length was 33 +/- 23 mm, width 18 +/- 13 mm, depth 4 +/- 4 mm. Dressings were changed every 7 days. Depending on the etiology of the wound, causal treatment was continued (offloading, compression therapy, absorbent dressing depending on the amount of exudate). No antibacterial dressing was used). The treatment duration was 3 to 6 weeks.

Results/Discussion: A significant reduction in wound size was observed. At the last visit, the average wound length was 21 +/- 19 mm, width 9 +/- 11 mm, depth 1 +/- 1 mm, a reduction of 36%, 50%, 67%, respectively, with statistical significance p 0.04; 0.01; 0.01. Only in one case was a deterioration resulting from insufficient offloading. The dressing was well tolerated.

Conclusion: An autologous dressing that is a combination of I-PRF and S-PRF significantly accelerates the healing of chronic wounds, regardless of the etiology and causal treatment.

EP273 Application of bio-cellulose membrane in hard-to-heal surgical wounds

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Aim: Hard-to-heal wounds have a very prolonged healing process, delaying closure, directly interfering with the patient's quality of life. These wounds are characterized by a prolonged inflammatory phase, with elevated metalloproteinases, destruction of the extracellular matrix and delayed formation of epithelial tissue. The use of a bio-cellulose membrane, with the ability to mimic the extracellular matrix, can reduce closure time and associated costs in these wounds.

Method: Application of bio-cellulose membrane in hard-to-heal wounds, in patients with surgical wound dehiscence and complex wounds of venous etiology. Used in 10 patients with more than 8 weeks of treatment, without infected wound, with an average rate of closure in 10 days, without complications and without recurrence.

Results/Discussion: This membrane was used in wounds with a bed covered in granulation tissue, but with very slow evolution, with the risk of regression. It was applied without inflammatory signs and serous exudate, flat edges. Treatment was carried out every 4 days, with one patient only needing one treatment and another 4 treatments, with an average of 2 for each patient. After closure there was no recurrence and the scar presented high level of quality.

Conclusion: The use of bio-cellulose membrane had a significant effect on patient care. No pain or allergic reaction to the components of this material was reported. The quality of the scar is significant, being very functional and not presenting tissue fragility. The costs associated with treating these injuries were reduced with faster closure, increasing the patient's quality of life.

EP274 The efficiency of hyaluronic acid silver powder spray topic for skin grafts donor zones treatment – a clinical study

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Aim: To evaluate the efficiency of a topical spray, combining the antimicrobial action of silver ions with the effect of hyaluronic acid, for skin grafts donor zones (sgdz) treatment.

Method: We monitored the healing process of sgdz on 36 patients with burns (10-20% total body surface area- tbsa), treated during 18 months. We compared two protocols for postoperative treatment: 1) hyaluronic acid silver spray, in 18 cases; 2) calcium alginate dressings (for 72 hours after surgery) and sterile non-medicated ointment dressing (for days 4th to 14th after surgery) in 18 cases. The thickness of the skin grafts was 0.3 mm and the average varied between 3-8% tbsa, as a result of 1-2 surgery sessions.

Bacteriological surveillance of the wounds showed no colonization or infection in all the cases during the hospitalisation period.

Results/Discussion: We evaluated the healing period duration and the local bleeding, local pain, constriction sensation and difficulty in walking.

The progression of the healing process, both in surface and thickness, was estimated using a Laser Doppler Blood Perfusion imagery system (day one, day 7, day 14, the discharge day).

The healing duration varied between 10 - 14 days, for the first group of patients, respectively 15 – 23 days for the second group, with good functional and aesthetic results in all the cases.

Conclusion: The hyaluronic acid silver spray creates a micro-environment suitable for rapid wound healing, reduces the local bleeding and pain.

EP275 The effectiveness of the use of bioactive dressings based on heterologous type I horse collagen and hyaluronic acid in the treatment of hard-to-heal wounds in the elderly

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Aim: The elderly population faces significant risks of developing hard-to-heal wounds, often of vascular, post-traumatic, or pressure ulcer origin. Biological status is marked by dehydration, nutritional deficits, difficult mobilization with a high risk of falls. Skin biology is drastically altered. The use of bioactive dressings for the treatment of wounds in these patients represents a lifesaving solution.

Method: We studied a group of 32 patients aged between 65 and 94 years (26 females and 6 males) with wounds persisting for over 4-6 weeks. In 8 cases, there were decubitus or pre-malleolar heel sores, in 9 cases trophic ulcers in the context of diabetes mellitus, in 7 cases post-orthopedic surgery, and in 8 cases minor post-traumatic skin injuries. In all cases, associated comorbidities did not allow for major surgical interventions to cover soft tissue defects. Chemical cleansing and debridement of wounds were performed using bioactive dressings based on bovine collagen and hyaluronic acid. The frequency of changing the dressings ranged from 3-5 days.

Results/Discussion: In all cases, healing with the closure of soft tissue defects was achieved within a time frame of 3 to 8 weeks. Scar care continued with local topicals based on hyaluronic acid.

Conclusion: Although the healing of hard-to-heal wounds was achieved in a relatively long time frame, patients were not exposed to surgical risks, did not require hospitalization and did not need prolonged bed rest. The regular change of bioactive dressings every few days provided real comfort to the patients and, especially, to their families.

EP276 Prospective, multi-centre clinical study to assess the performance and safety of a novel silicone-based foam dressing to treat venous leg ulcers

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Aim: Venous leg ulcers (VLU) are often highly exudative; dressings with various absorptive capacities are available to address this challenge. However, little attention is given to the ability of dressings to work against gravity. We report on preliminary results of a study to evaluate performance and safety of a new, silicone-based, non-bordered foam dressing* in treatment of exudative VLU.

Method: We enrolled adults with moderate-to-severely exudative VLU into a prospective, multi-centre, investigation. The overall objective was to follow wound progress for up to 6 weeks or until healing, while using the new product as the primary dressing. Progress was assessed based on objective measurement of wound area and subjective evaluation of wound condition at scheduled visits by comparing the status to that observed at the previous visit. Secondary outcome measures included: wound condition, exudate (amount/consistency), dressing change-related pain, and patient quality of life. An interim analysis of the data was undertaken.

Results/Discussion: Data relating to 21 subjects were analysed. At 65.7% of visits, wound progress was judged to have improved compared to the previous visit (27.4% not changed, 7% deteriorated). Overall, the wound-related secondary endpoint measurements were in alignment with the reported primary outcome. At 86% of visits, the overall use of the dressing was rated as 'good' or 'very good' by the investigators. None of the reported adverse events raised unknown or unexpected dressing-related safety issues.

Conclusion: The findings indicate that the new dressing is suitable for the management of exuding VLUs.

*Mepilex UP, Molnlycke Health Care

EP277 Inter- and extracellular communication - need for recovery time

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Aim: To demonstrate the need for recovery time of the wound.

Method: An almost unmanageable amount of dressings for all types of wounds and all stages during healing are well known. Experts are forced to stay updated in a rapidly growing market. Do we respect the intracellular signaling, the period of application, do we pay attention to the important recovery time between an interval of dressing change?

7 different dressings and healing methods with different periods of application were evaluated and observed to show, how variable these products are in relation to the application rate recommended in the package insert and the effective processes of the wound.

- Nets with lipid-colloid
- Carbon-dressings
- negative pressure therapy
- fish skin
- autologous blood pads
- bioactive material
- hyaluronic acid

Results/Discussion: The timely and successful function of a cell depends on the intra- and extracellular communication. Cell growth needs a metabolic coordination. Prosperous wound healing comes along with observing a wound and patients.

Conclusion: Wound recovery time should be a specific patient and wound centered goal, sometimes without debridement, a low frequency of dressing change or applying other materials, when tissue show a critical situation. The recognition of the right moment when a wound needs to rest in order to start its own activities, must be discussed.

EP278 The antibiofilm activity of antimicrobial dressings against dual-species biofilms

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Aim: To compare the antibiofilm activity of silver-containing dressings against dual-species biofilm grown in a stringent simulated wound biofilm model.

Method: Test dressings (carboxymethylcellulose dressing containing ionic silver, ethylenediaminetetraacetic acid and benzethonium chloride ['CISEB'], non-adherent polyethylene mesh with polyester core dressing containing silver oxysalts ['PPSO'], cellulose ethyl sulphonate fibre dressing containing ionic silver ['CESIS'], and polyacrylate (polyabsorbent) fibre dressing with acrylic core and silver sulphate ['PSS']) were applied to a simulated wound assembly (SWA) containing biofilm-gauze inoculated with *Klebsiella pneumoniae* and Methicillin-resistant *Staphylococcus aureus* (MRSA). The SWA was incubated at 35±3 °C for 6, 24, 48 and 72 hours. Enumeration of surviving biofilm bacteria was performed in triplicate for each test dressing and equivalent control. Two-sample t-test was used to compare dressings ($p < 0.05$ classed as significant).

Results/Discussion: CISEB resulted in significantly greater reduction in biofilm than PPSO and PSS at 24 and 48 hours ($p < 0.05$). At 72 hours, CISEB resulted in significantly greater reduction in biofilm than all other test dressings ($p < 0.05$). PPSO demonstrated an initial reduction of ~2 log₁₀ at 6 hours but was unable to further reduce the biofilm population after this time. CESIS slightly and gradually reduced biofilm population over the test period (~2.5 log₁₀ by 72 hours). PSS had little to no impact on the dual-species biofilm with levels remaining similar or greater than that recovered prior to dressing application.

Conclusion: Using a novel dual-species biofilm model comprising *K. pneumoniae* and antibiotic-resistant MRSA, CISEB demonstrated significantly greater antibiofilm activity than the other silver-containing dressings.

EP279 Improved clinical outcomes in the management of toe Lymphorrhoea with a highly conformable superabsorbent dressing

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Aim: Lower limb lymphovenous disease affects the lower leg, foot, and toes. Wet leaking legs has a significant impact on quality of life and is a burden for the community nursing teams (Anderson 2016). Whilst leg Lymphorrhoea can be treated effectively with superabsorbent dressings and compression, toes are more challenging.

Individual toe bandaging and moccasin boot style application are not always appropriate if levels of exudate are high and community-nursing teams may not have the skill set to apply.

We wanted to consider our options to improve both management and outcomes for patients with toe Lymphorrhoea.

Method: Patient case study series using a highly conformable superabsorbent dressing which we currently use under compression to manage leg Lymphorrhoea, to see if the dressing could prove effective in the management of toe Lymphorrhoea?

Patients who presented in clinic with wet leaking toes and suitable for compression, were trailed with the 7.5 x7.5 cm dressings folded between the toes. Compression bandaging started from the tip of the toes instead of the base. This was an alternative to toe bandaging or moccasin boot application.

Results/Discussion: The superabsorbent dressings slotted extremely well between each toe and proved to be an excellent alternative to toe bandaging and an effective method of managing heavily exuding toes. Medical imagery supports these results.

Conclusion: This method of dressing wet leaking toes is simple, effective and improves patients' quality of life as exudate is adequately managed, and oedema is reduced.

EP280 Digital printing antibiofilm complexes onto moisture sensitive wound dressings

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Aim: Advanced wound dressings are designed to perform many functions beyond simply acting as a protective barrier on the surface of a wound or managing exudate. Advanced dressings can gel to conform to the surface of the wound or actively combat the presence of biofilm with the inclusion of antimicrobial/antibiofilm agents, reducing the likelihood of infection. Fabrication can be challenging, especially where aqueous active components need to be included in a dressing that gels. This work investigates the use of digital printing for coating a gel forming carboxymethyl cellulose (CMC) dressing with an advanced aqueous antibiofilm complex¹.

Method: CMC dressings were coated with solutions of silver/zinc antibiofilm complexes¹ using inkjet printing. The dressing structure was assessed using optical microscopy and the distribution of the complex quantified using X-ray computed tomography. The efficacy of the dressings was tested against planktonic *Pseudomonas aeruginosa* in a direct contact assay and against biofilms in a drip flow bioreactor.

Results/Discussion: The antibiofilm complex could be easily coated onto the CMC dressing fibers without causing gelation or changes in physical structure. The coating was located throughout the upper layers of the dressing. A probabilistic model was created to explain the observed distribution within the dressing. The coated dressings showed high levels of both antimicrobial and antibiofilm activity.

Conclusion: Inkjet printing can be used as a highly controlled and effective method for coating aqueous solutions of active materials onto water sensitive dressings.

EP281 Monitoring the antimicrobial efficacy of a silver wound dressing

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Aim: Antimicrobial wound dressings play a vital role in the management of at risk and infected wounds. As antimicrobial agents release into the wound/dressing environment they are exposed to exudate and slough, and their efficacy decreases over time. Here we correlate the antimicrobial activity of silver in simulated wound fluid (SWF) with its physical state and electrochemical response to show the potential for monitoring the antimicrobial activity of a wound dressing in real-time.

Method: The antimicrobial activity of silver in SWF was evaluated against *Pseudomonas aeruginosa* in planktonic and sessile(biofilm) phenotypic states. The form of silver present was determined using turbidity and ICP-MS: available Ag⁺/AgCl precipitate/Bovine Serum Albumin (BSA)-bound and correlated with electrochemical measurements. The availability of silver in an antimicrobial carboxymethyl cellulose dressing was monitored in an accelerated exuding wound model using a sensor.

Results/Discussion: At low silver concentrations (<10ppm), most bound to BSA with minimal available Ag⁺ and sub-therapeutic activity. At intermediate concentrations (30-100ppm) silver remained bound to BSA, AgCl precipitates, more silver was available (1.5-5ppm) and antimicrobially active. Additional silver formed precipitate without increasing therapeutic levels of ionic silver.

In the exuding wound model, there was significant ionic silver available at short timescales. This reduced over time, to below the 1.5ppm therapeutic level.

Conclusion: Silver ion activity in simulated wound fluid is strongly modulated by BSA. The bioavailability of antimicrobials can be measured using a wound-dressing based sensor, which could help determine when a dressing is no longer effective with significant positive impact on patient treatment.

EP282 Decreased weekly dressing changes with a five-layer foam dressing in mixed aetiology wounds: a systematic literature review and meta-analysis

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Aim: The primary objective of this study was to investigate the frequency of weekly dressing changes in wounds of mixed aetiology, specifically comparing the efficacy of a five-layer hydrocellular polyurethane foam dressing (HPFD)* with previously utilised dressings, including other foam dressings.

Method: A systematic literature review was performed using Pubmed, Embase and the Cochrane Library to identify published articles. Randomized controlled trials (RCTs) and observational studies comparing the HPFD with other dressings reporting objective data for dressing change frequency when used on any wound type were included. Meta-analyses were performed to determine mean differences (MD). The primary outcome was mean weekly dressing changes.

Results/Discussion: Five studies were included: one RCT and four observational studies (807 wounds). The HPFD resulted in a statistically significant reduction in mean weekly changes compared with other previous foam dressings (from 2.91 to 2.06, MD: -0.85 [95% CI: -1.62 to -0.09]; p=0.029) or previous dressings generally (from 3.12 to 1.96, MD: -1.21 [95% CI: -1.96 to -0.46]; p<0.01), when used with or without an education program.

Conclusion: The HPFD studied reduced the frequency of dressing changes compared with other previous foam dressings or other previous dressings. The HPFD has unique features that can help reduce premature changes compared with other dressings, such as a change indicator. Use of the HPFD can promote undisturbed wound healing and may help release nurse time during visits or reduce visit frequency and save costs.

*ALLEVYN™ LIFE (Smith and Nephew, Hull, UK)

EP283 Examining the mechanical debridement properties of a debridement pad for effective microbial removal to aid wound bed preparation

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Aim: An ergonomically shaped debridement pad has been developed to aid wound bed preparation. The microfibre construction of the device enables slough and microorganisms to be removed from chronic and necrotic wounds via controlled mechanical action.

The aim of the study was to assess the device, and other debridement products, regarding their performance at effectively removing microorganisms within a slough wound model environment.

Method: Slough wound model bioassay plates were prepared using molten agar and inoculated with wound isolates. The debridement products were used to mechanically debride an area of the bioassay plate utilizing a coefficient of friction rig in conjunction with a tensometer in order for controlled pressure to be applied over a controlled area.

Analysis and subsequent quantification was performed on the pad to determine the amount of microorganisms removed.

Results/Discussion: The testing has demonstrated the debridement pad to remove the microorganisms present within the slough wound model, as a high percentage was quantified on the pad, in addition to a decrease in the microbial bioburden being observed on the area of the wound model that was subjected to debridement.

Conclusion: Use of a debridement pad offers an alternative treatment, that is non-invasive, for the gentle removal of non-viable tissue and microorganisms present in chronic wounds, that can be easily performed by a healthcare provider.

The *in vitro* test has enabled the performance of several debridement pads to be evaluated for their ability to effectively remove wound bioburden, based on the overall composition of the pad.

EP284 Developing a national wound care formulary for leading uk charity working with people experiencing homelessness

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Aim: A leading charity working with people experiencing homelessness in the United Kingdom (UK) recognised a gap in their services for people who attended at risk of/living with a wound.

The majority of wounds related to the lower limb and were associated with injecting illicit substances in the groin and complications from vascular injuries. Service users engaging with the charity preferred to have their wounds cared for by their clinicians.

Tissue viability worked closely with the charity to develop a wound care policy and formulary to ensure all people accessing the charitable service would receive timely, evidence-based wound care treatment.

Method: Over twelve months the tissue viability nurse visited areas around London to establish the need for wound care and listened to service users about "what mattered to them". There was an obvious gap in training and limited supply of appropriate dressings and suitable dressing packs to care for people attending clinics.

The strategy included the design and implementation of a successful skin and wound care formulary, a new wound care pack and training.

Discussion: Service users were able to attend local clinics and have appropriate dressings applied underpinned by evidence-based care. This had a positive impact on service user experience, engagement and concordance.

Conclusion: People who experience homelessness may not access mainstream healthcare for a number of reasons including flexibility, convenience and familiarity. The development of a wound care formulary specific to skin health and wound care has greatly improved access and service user quality of life.

EP285 How to select an extracellular matrix for wound repair: a comprehensive review

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Aim: Researchers have reproduced the extracellular matrix (ECM) through evolving technologies, developing products that accelerate healing times, minimize scarring, and reduce pain. While comparison trials between different types of ECMs exist, there lacks a thorough investigation that assesses a majority of ECMs against each other. We aim to create a guideline on how to select the best ECM for patients.

Method: We conducted a literature review using the PubMed database and utilized 71 articles to identify the best ECM for wound healing and positive outcomes. The search terms included extracellular matrix, xenograft, porcine, bovine, allograft, bioengineered matrix, acellularized fish skin, wounds, wound healing, and wound care. We did not exclude any specific type of research, but predominantly reviewed clinical trials, case series, and review articles. We constructed our results into the Table.

Results/Discussion: Allografts suffice as a treatment choice and are superior to exposure healing. However, they do not produce healing at the same rate or quality as bioengineered matrices, xenografts, or acellularized fish skin (AFS). Bioengineered matrices and xenografts offer antimicrobial properties, low immunogenicity, cost effectiveness, and availability. Acellularized fish skin (AFS) provides diverse utility, antimicrobial activity, low immunogenicity, faster healing times, and cosmetic superiority.

Conclusion: Our findings remove the subjectivity component of selecting an ECM and suggest further comparison or head-to-head trials would yield a more algorithmic approach to wound healing. We suggest considering the utilization of the Disabilities of the Arm, Shoulder, and Hand (DASH) score as an additional objective comparison method in future trials.

EP286 Use of maltodextrin to close a full-thickness wound after drainage of a large hematoma

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Aim: We share our experience with maltodextrin (MD) wound dressing powder to promote wound healing in a large full-thickness wound.

Method: MD is a polymer composed of D-glucose units linked primarily by alfa-1,4 glycosidic bonds, with a small proportions of alfa 1,6 glycosidic bonds at branch points. MD promotes fibroblast proliferation, epithelial formation, and exerts a chemotactic effect on polymorphonuclear leukocytes.

Results/Discussion: 75-yr-old woman with atrial fibrillation and transitory ischemic attacks, treated with warfarin. No history of diabetes mellitus, hypertension, or PVD. On evaluation, she presented with a large hematoma to her right leg after a minor trauma three days prior to consultation.

Physical exam: she presented with a large full-thickness wound to her right calf, s/p drainage of hematoma. Her right leg showed ++ pitting edema, pedal pulses present, normal capillary refill, and no loss of protective sensation.

Wound: 12 x 8 x 1 cm, wound bed covered with a thin layer of yellow slough, moderate amount of serosanguineous drainage, no foul odor, no tunneling, no undermining, and mild periwound maceration.

Treatment: gentle removal of additional blood clots. Maltodextrin was applied to the wound bed and covered with a highly absorbent dressing, followed by a short-stretch compression wrap. The patient had follow-ups twice a week until healing.

Conclusion: We share our experience with MD as an effective dressing to promote granulation tissue growth, epithelial proliferation, and wound closure.

It is vital to conduct further large-scale studies to confirm the effectiveness of MD in wound healing.

EP287 The effectiveness of a flexible and antimicrobial all-in-one post-op dressing

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Aim: The use of a post-op dressing is an important factor in the overall satisfaction and recovery of the patient. According to the literature, 20% of all hospital infections are SSIs.¹ A Flexible and Antimicrobial All-In-One Post-Op Dressing Flexible and Antimicrobial impregnated with silver sulphate particles has shown to reduce bioburden after 30 minutes of application². In addition to the antimicrobial effects of this dressing, it also has the benefits of a proprietary silicone layer that minimizes dressing-related skin damage and is designed to decrease pain associated with removal, has excellent waterproof capabilities, and has more conformability which decreases blistering³.

Method: This was a case-control study where 60 participants answered eight questions at their two-week post-operative visit. The Flexible and Antimicrobial All-In-One Post-Op Dressing was placed by a Physician Assistant after closure to the patient. The closure was with either a surgical glue mesh layer or staples. Instructions had patients leave dressing intact for seven days. Inclusion criteria included Primary UKA, TKA, THA, or Periacetabular Osteotomy. Exclusion criteria included revision arthroplasty. Patients aged 17 to 82 years old, male and female. The patients were evaluated at two weeks post-op.

Results/Discussion: Out of 60 participants, 98.6% of patients had no signs of blistering. 100% of individuals in the study did not have a dermatologic reaction. 96.6% of patients had no saturation or drainage during the 2-week time period. 90% of patients experienced no pain with removal. Regarding the waterproof efficacy, 96.6% of patients indicated Flexible and Antimicrobial All-In-One Post-Op Dressing was fully waterproof for seven days. The satisfaction levels showed that 96.6% were very satisfied, and the remaining 3.4% were mostly satisfied.

Conclusion: Data obtained from the patient questionnaire concludes that the Flexible and Antimicrobial All-In-One Post-Op Dressing was an excellent dressing that had minimal blistering, minimal pain with removal, remained on up to 7 days, did not become saturated with showering, and had high patient satisfaction levels.

References:

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3. White R. Evidence for atraumatic soft silicone wound dressing use. *Wounds UK*. 2005;1(3):104- 109.

EP288 Innovative application of the moist exposed burn ointment (mebo) in management of grade iv pressure injury wounds

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Aim: The prevalence of chronic wounds is increasing due to the aging population and compounding chronic non-communicable diseases¹. Pressure injuries accounted for increased morbidity and length of stay of patients². Moist Exposed Burn Ointment (MEBO) has been traditionally used for burn wounds but is also effective for chronic wounds³.

Method: This is a case series describing 10 cases in year 2023 managed by the wound care service in a tertiary hospital. Eligible cases were grade IV pressure injury over sacral or gluteal areas with an average follow-up period of 3 months. The wound size ranged from 100 cm³ to 1820cm³.

Results/Discussion: The patients were managed using SSKIN bundle with the application of MEBO as primary dressing. This resulted in the reduction of wound size ranging from 50-1820 cm³ at the end of follow-up. Dressing frequency (alternate day) was comparable to other modern wound dressing.

Conclusion: The innovative usage of MEBO has demonstrated effectiveness in managing chronic wounds especially in grade IV pressure injuries management.



EP289 Clinical effectiveness of regenerative therapy in the treatment of wound

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Aim: Wound healing is complex and wound dressing is integral to the healing process. Covered wounds heal more quickly than open wounds. We have used moist exposed burn ointment in this patient to evaluate its efficacy.

Method: 30 years old female with an abscess in right leg. The abscess appeared on 16th March and she was hospitalized in a private clinic. In that clinic, bacteriological examination of wound showed MRSA and she was given oral Vancomycin for 10 days. An incision was made in the abscess on the 21st of March and patient was discharged from the clinic on 30th of March. Patient then was admitted to our hospital on 1st April, and we started moist exposed burn ointment. For each daily dressing change, moist exposed burn ointment was applied on wound directly and covered with 1 layer of the ointment impregnated gauze, and secured with soft elastic bandage.

Results/Discussion: After 99 days, her wound was regeneratively repaired. There was some scar formation in the deeper area but without function disturbance.

Conclusion: Moist exposed burn ointment could quickly regenerate large cavities of dirty wounds. This is a good example of how moist exposed burn ointment could help other kinds of wound apart from burn wounds.

EP290 Use of moist exposed burn ointment in healing of various chronic wounds

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Aim: To introduce Moist Exposed Burn Ointment as an alternative dressing for Chronic Wounds.

Method: 60 patients with chronic wounds were enrolled in the study. Patients with infection and highly exudative wounds were not included. Following cleansing and debridement, Moist Exposed Burn Ointment was applied (1mm thickness), and patient and/or companion were instructed to apply every 4- 6 hours and left open (Exposed Method). Another dressing method option involves mixing the ointment with a sterile gauze and apply the fully impregnated gauze to the wounds every 8 -12 hours (Semi-Exposed Method). The third method is to apply the ointment at 2-3mm thickness and covered with ointment impregnated gauze then secured with gauze and a bandage. (Bandage Method)

Options for dressing changes were selected depending on the external environment, patient's general condition, wound severity and wound site, etc.

Following weekly follow-ups, these wounds were evaluated and measured. Size, level of exudates and signs of infection were documented.

Results/Discussion: Weekly documentation of these patients showed improvement of their wounds based on these parameters. Of the 60 patients, 49 showed improvement in 2-4 weeks thus the weekly follow-ups were discontinued. Those with minimal progress in 2 weeks were shifted to another type of dressing.

Conclusion: With regards to the efficacy and healing effects of Moist Exposed Burn Ointment in treating chronic wounds, it can be used as an alternative safe wound dressing. It promotes healing of chronic wounds with significant decrease in size, amount of exudates and infection.

Quality of Life

EP291 Quality of life with chronic wounds

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Aim: According to the definition, a wound is a break in the anatomical and functional continuity of tissue. Chronic wounds are those that do not heal within the expected period. They are an increasing public health, social and economic problem, and occur in 1-2% of the population. The aim of this study was to research the effect of chronic wounds on the quality of life.

Method: A total of 100 respondents participated in the research, which lasted from January to November 2023. The Wound-QoL-17 questionnaire was used to measure the disease-specific quality of life (HRQoL) of patients with chronic wounds.

Results/Discussion: In the questionnaires, the respondents highlighted the pain in the wound area as the factor that most negatively affects their quality of life, followed by the unpleasant smell from the wound that they felt, as well as sleep disturbances. Most of the respondents were burdened by long-term treatment, and the chronic wound had a negative effect on their mental state and caused concern and fear of deterioration of the condition and injury in the wound area. In most of the respondents, the wound led to problems in their daily activities and activity limitations, due to which some of them were dependent on other people's help.

Conclusion: The effect of chronic wounds on the physical, emotional, social, lifestyle and financial domains of quality of life among people with chronic wounds was observed to be negative in the majority of respondents.

EP292 Body image and self esteem in patients with chronic wounds

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Aim: The aim of the project is to find out what effects chronic wounds have on the body image of patients with chronic wounds. It is known that chronic wounds influence body image and can lead to a more negative self-perception.

Method: We handed out a standardized questionnaire (Dresden Body Image Questionnaire DKB-35) to 20 ulcer patients and evaluated the results. Five dimensions of body image were measured: Vitality, self-acceptance, body narcissism, body contact and sexual fulfillment. Additionally, clinical data were correlated and the State Self-Esteem Scale (SSES) was collected.

Results/Discussion: There was a clear restriction of body image with varying degrees in the different areas. Body image distress did not always correlate with the severity of the clinical manifestations.

Conclusion: The effects of chronic wounds are also reflected in the patient's self-perception and are often not adequately taken into account by the practitioner. More support for patients should be developed in this area in the future.

EP293 Efficacy of a new novel cinnamon odour control dressing in managing malodour in malignant wounds: a case series

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Aim: Wound healing in cancer patients can be affected by the disease and further complicated by treatments such as radiotherapy and chemotherapy culminating in 5–10% of patients developing a malignant fungating wound. These wounds can be malodorous. The malodour has been shown to have an adverse effect on patients and carers quality of life. The aim of this case series was to assess the effect of a new cinnamon-based odour control dressing.

Method: Seven patients with malignant wound types were assessed by a specialist nurse using a pre-defined odour scoring system. Previous odour control methods had been used. Assessments were over a maximum 14-day period. The cinnamon dressing was applied as a secondary dressing. Primary dressings also utilised as appropriate to wound conditions and the patients were monitored.

Results/Discussion: Post-application of the Cinnamon dressing, all patients experienced a significant and consistent reduction in wound odour. Qualitative feedback was collected through interviews, revealing increased social activity and enhanced quality of life. One patient initially benefitted but became non concordant due to difficulties in communication.

Conclusion: These cases support the efficacy of the Cinnamon dressing, as a secondary dressing, in effectively managing malodour particularly in malignant wounds. Additional benefits observed include increased social engagement and improved psychological well-being among most patients, apart from one in which the importance of effective communication to aid concordance was highlighted. These results suggest that this Cinnamon dressing could be an option for use to minimise malodour in wounds.

EP294 Nursing vulnology clinic: a bridge between hospital care and home care

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Aim: Many patients in hospital, in addition to the underlying pathology for which they are hospitalized, have one or more skin lesions among their comorbidities and this can make hospitalization and also discharge more complex. Sometimes the pathway of these patients is complicated due to “bureaucratic times” and delays, which concern, for example, the activation of home care services and/or the supply of wound dressing materials.

The aim is to discharge patients safely while ensuring continuity of care.

Method: Activation of a hospital nursing vulnological ambulatory for the care of patients with wound in the post-discharge period while awaiting intervention of the Home Care Service and the supply of wound dressing materials.

Instruments used to assess the outcomes: Wound Bed Preparation Score - Red Cap

Results/Discussion: 46 patients were treated 1 year after opening

- Patients discharged home with venous skin lesions are taken care of by the vulnological ambulatory within 7 days of discharge in 100% of cases
- Patients with wounds discharged from Emergency Department awaiting activation of the Home Care Service are taken care of by the vulnological ambulatory within 72/96 hours of discharge in 100% of cases
- Wounds treated in the vulnological ambulatory show an improvement in 90% of cases

Conclusion: Patients are discharged safely to their home.

Wounds treated in ambulatory are started towards healing process.

The home discharge of patients suffering from skin lesions is not delayed and this also translates into cost containment and efficiency in the use of resources

EP295 Can a polyabsorbent fibre dressing improve wound symptoms and quality of life in palliative patients living with a malignant wound

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Aim: To ascertain the ability of a polyabsorbent fibre dressing to improve physical wound symptoms and quality of life for palliative patients living with a malignant wound (MW).

- **Method:** Series of Case Studies, involving 17 palliative patients with a MW.
- Participants included patients in The Pink Ribbon Project funded by The Pink Ribbon Foundation, alongside others not included in that project.
- Levels of pain, bleeding exudate, odour and psychosocial symptoms were assessed using validated tools.
- A series of Case Studies were compiled over six months, including individual participant narratives.

Results/Discussion: 82% of patients reported an improved QoL whilst using a polyabsorbent fibre dressing. All patients except one reported improved wound symptoms.

Conclusion: Due to a lack of incidence reporting the exact number of patients with MW in the United Kingdom is unknown. It is thought that 15% of palliative patients may live with a MW. MW symptoms are distressing and life changing. The impact that wound symptoms have on patients, their families and clinicians is significant, and should not be underestimated. Patients desire expert wound management input and psychosocial support. There is little evidence regarding the most appropriate type of wound dressing for MW, and a need for further research into their management. MW are complex and deterioration is often expected. It is essential to ascertain which dressings are best able to manage these debilitating wounds.

Data demonstrated that a polyabsorbent fibre dressing can improve MW symptoms and improve Quality of Life (QoL) for patients and their families.

EP296 Self-care in hard to dress wounds: Improving patients quality of life

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Aim: Hidradenitis suppurativa (HS) is a chronic skin condition that presents in hard to dress areas and usually manifests in puberty. Due to misdiagnosis and patient embarrassment, it can take 3-10 years before patients are diagnosed. In this time their wounds can progress, and surgical intervention can be required.

In this case study, a 23-year-old, female patient, presented in the complex wound clinic. This patient suffered from stage II HS and required surgical intervention in the axilla region. The case study evaluates the management of her wounds with a device specifically for HS and wounds in hard to dress areas.

Method: 4-week case study evaluation. A wound assessment was carried out at each week and the patient completed a dermatology life quality index (DLQI). HCP and Patient feedback were also captured and collated each week.

Results/Discussion: Patients wound and exudate improved over the 4-week evaluation. Improvement to DLQI scores, with significant improvements in pain, odour and exudate. Patient reported improved ease of use and improvement to self-care. By allowing the patient to manage their wound with appropriate treatment, cost savings were achieved through the reduction in nursing time and in reduced need for recurrent appointments. The case study also demonstrates further Health economic advantages by removing the need for multiple fixation devices, adhesive dressings and highlights the clinical advantages of this.

Conclusion: This case study demonstrates the benefit of a self-care wound management system to the patient, the clinician and highlights the potential cost savings to the health care system.

EP297 Skin problems in the amputated limb

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Aim: To understand the types of skin problems occurring in the amputated limb of individuals being treated at an Artificial Limb Centre.

Method: As part of pressure ulcer monitoring, we keep a database of skin problems in the amputated limb of individuals being reviewed in our centre. We performed a retrospective review of this database to identify the types of skin problems we have seen in the past year.

Results/Discussion: Between October 2022 and October 2023, we saw 84 individuals with skin problems in the amputated limb. The majority of individuals were established prosthetic users. Most problems were related to repetitive injury to the skin (pressure and friction forces) or occlusion of the skin by a prosthesis. These included callus formation or corns (n=17), pressure injuries (n=27), folliculitis (n=1), skin congestion (n=2) and irritation caused by hyperhidrosis (n=5). Of the pressure injuries, 4 were Stage 1, 15 were Stage 2, 6 were Stage 3 and 2 were stage 4. Other problems were related to amputation surgery and included delayed healing of the surgical wound (n=10) and retained sutures (n=8). Ten individuals had traumatic injuries such as falls causing skin breakdown.

Conclusion: Skin problems in the amputated limb are common and are usually related to surgical complications, pressure or friction forces caused by walking on a prosthesis or occlusion of the limb in a prosthetic socket. These problems can affect a person's ability to wear a prosthesis leading to loss of independence and reduced quality of life.

EP298 Collaborative work between tissue viability nurses and plastic surgeon: Scope and outcome

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Aim: To describe the scope and outcome of collaborative complex wounds management by Tissue Viability Nurses (TVN) and a plastic surgeon in our institution.

Method: Complex wounds jointly managed by TVN and a plastic surgeon over five years were reviewed and the outcome of such management noted. Wounds were grouped by etiology and management outcome was determined by extent of healing over their joint management period.

Results/Discussion: Collaborative management of complex wounds by TVN and a plastic surgeon in our institution blossomed in the last five years. We jointly managed variety of complex wounds resulting from trauma, Fournier's Gangrene, skin cancer, pressure sore, venous ulcers, side-effect of anticoagulants, side-effect of nicorandil, and iatrogenic skin/subcutaneous tissue infarction resulting from interventional radiology. Most cases required surgery while a few were managed conservatively. All cases healed fully apart from a case of pressure sore recurrence where patient declined offer of re-do surgery.

Conclusion: Collaborative management of complex wounds by TVN and plastic surgeon resulted in very good outcome. Clinical photographs of such managed wounds illustrating their nature, extent and joint management outcome, will be presented.

EP299 Examining the impact of standardisation on clinician confidence and patient quality of life

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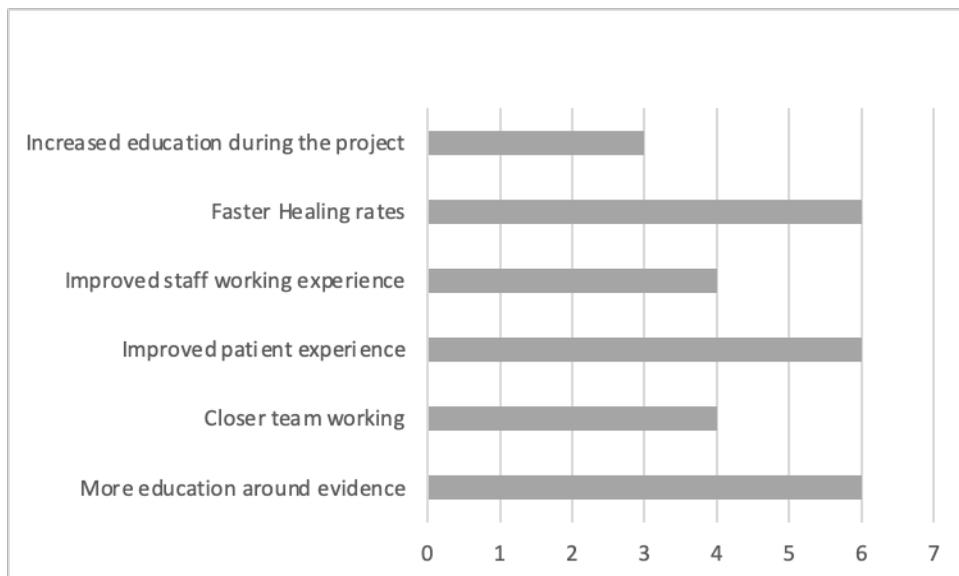
Aim: An evidence-based lower limb pathway incorporating TLC-NOSF dressings was developed and implemented in 2022 by a local district nursing team. Following a successful pilot with 100% of patients (N=9) healed by week 6, this project aims to assess the impact on staff confidence and motivation alongside patient quality of life.

Method: A pre and post pathway implementation survey was sent via survey monkey to all members of the local district nurse team. Information on both nurse confidence and motivation with wound care was included. A patient quality of life checklist was also completed both during and post-healing.

Results/Discussion: 7 staff survey responses were received prior to pathway launch and 6 responses post pathway launch.

Confidence in wound management		
	Prior to standardisation	Post standardisation
Extremely confident	0%	17%
Very confident	57%	66%
Somewhat confident	43%	17%
Motivation for wound care		
	Prior to standardisation	Post standardisation
Passionate	14%	50%
Confident	14%	50%
Competent	29%	0%
It's part of my role	43%	0%

Overall, staff reported that the quality improvement project improved multiple aspects of patient care and therefore



Patient quality of life information was obtained from 10 patients:

	During	Post
QoL Rating	50	50
	60	90
	50	90
	50	90
	50	60
	10	80
	40	80
	20	90
	80	90
	5	80
Average	41.5	80

Pain assessment:

	During	Post
Level of Pain 1-10	9.0	5.0
	9.0	0.0
	0.0	1.0
	6.0	1.0
	8.0	4.0
	10.0	4.0
	9.0	4.0
	6.0	0.0
	10.0	2.0
	9.5	4.0
Average	7.7	2.5

staff confidence:

Conclusion: The introduction of a standardised evidence-based lower limb pathway to guide care increased staff confidence and motivation leading to 100% of clinicians feeling very or extremely confident and passionate about managing wounds. With an improved patient experience and increased healing times, patients also reported improved quality of life.

EP300 Feelings and perceptions of patients with chronic wounds. Qualitative study

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Aim: To know other aspects of the comprehensive approach to wounds that are difficult to heal, specifically about the feelings of patients with chronic ulcers, and how comprehensive care in a wound unit influences their disease.

Method: It is a qualitative, descriptive and evaluative research that uses the phenomenological method to approach the object of study.

A total of 32 patients were randomly studied in a wound unit of a public hospital in the form of a semi-structured interview

Results/Discussion: Most patients are females over 65 years of age. The average time that patients have had an ulcer ranges from 4 months to 36 years, with most stating that suffering from an ulcer is “an ordeal, the worst thing that happened to them in their lives, depression, difficulties, devaluation, isolation, anguish, anxiety...”.

Conclusion: In conclusion, we can say that psychological, emotional and social factors directly influence the healing processes. Patients with chronic wounds who are socially isolated, mostly from poor economic contexts, are the ones who must obtain the greatest support from health teams, be able to accompany them on their long path of healing, make them part of a group, reinforce their self-care to achieve adequate social insertion.

EP301 Enhancing patient satisfaction and symptom reduction through a bacterial binding dressing in the circle of care for fungating wounds

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Aim: This study investigates the efficacy of a comprehensive wound management approach, incorporating a bacterial binding dressing, for complex fungating wounds. The goal is to enhance patient satisfaction measured with the Functional Assessment of Chronic Illness Therapy – Treatment Satisfaction – general (FACIT-TS-G) validated instrument¹ and alleviate symptoms related to bioburden within the framework of the “Circle of Care” approach.

Method: Following the “Circle of Care” model according to Woo K. *et al*², these four cases—three of them Breast Cancer and one a Basocelular Carcinoma—were patients with fungating wounds.

The treatment involved wound cleansers, bioburden reduction using a hydrophobic bacterial binding dressing*, exudate control with superabsorbersg, polyacrylate skin protection spray, and atraumatic fixation with a polyester adhesive dressing. Previously to treatment, they changed the secondary absorbent dressing in their homes at least three times per day. Once they started

treatment with the bacterial binding as the primary dressing, they had to change it every 24 hrs. or 48 hrs. when they used a superabsorber. All of them were asked about the perception of the bacterial binding dressing as the primary dressing after a follow-up of two to six months of satisfactory treatment, using the FACIT-TS-G instrument.

Results/Discussion: The case series demonstrated significant improvements, primarily in bioburden reduction: a notable decrease in wound area, substantial reduction in exudate production, effective odor control, and reported enhancements in quality of life measured with the FACIT-TS-G tool. Minimized dressing changes provided both practical and psychological relief for patients. Testimonials post-treatment included statements such as “*I felt like I was getting the bad out of myself*” and “*I would recommend this type of treatment to another person with the same disease as me*”.

Conclusion: Incorporating a bacterial binding dressing in the “Circle of Care” respects patient comfort, preferences, and enhances patient satisfaction, measured with a validated instrument.

This seemed to be an effective treatment in the four cases to alleviate symptoms such as wound size, exudate, odor, and dressing change frequency in patients with fungating wounds, promoting well-being in a palliative setting or a curative wound bed preparation for surgery.

¹ Peipert J. *et al*. *Development and validation of the functional assessment of chronic illness therapy treatment satisfaction (FACIT TS) measures*. *Quality of life research*. 2013.

² Woo K. *et al*. *Palliative Wound Care Management Strategies for Palliative Patients and Their Circles of Care*. *Advances in skin & woundcare*. 2015

*Cutimed® Sorbact®; γCutimed® Sorbion; φCutimed® protect; δFixomull® Stretch and Fixomull® Skin Sensitive

Images

1. Case 1: Basoceleular squamous infiltrate Carcinoma, Palliative Care.

November 2022



April 2023



Local Treatment

2. Case 2: Infiltrating Ductal Breast Carcinoma type NOS, Palliative Care.

October 2022



April 2023



Local Treatment



3. Case 3: Mucinous invasive breast carcinoma, wound bed preparation for surgery.

April 2023

August 2023.



Local Treatment



4. Case 4: Benign breast Cancer Fungating wound, wound bed preparation for surgery.

January 2023

March 2023



Local Treatment



EP302 Psychometric properties of the Norwegian Wound-QoL questionnaire

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Aim: The purpose of the study was to explore the psychometric properties of the Norwegian version of the Wound-QoL questionnaire.

Method: Wound-QoL is a 17-item disease specific questionnaire with three domains: Body, Psyche, and Everyday life. We included 204 patients with hard-to-heal wounds on the lower extremity. They completed the Norwegian Wound-QoL and SF-36 at three time points over 14 weeks. Demographic and clinical data were collected at T0 and T2. By using correlation and confirmatory factor analyses we tested the validity, reliability, and dimensionality of the Wound-QoL.

Results/Discussion: The hypothesized three-factor model of the Wound-QoL showed an acceptable fit to the observed data ($\chi^2=203.14$, $p=0.000$, $df=99$, $\chi^2/df=2.05$, $RMSEA=0.072$, $SRMR=0.059$, $CFI=0.943$), and the dimensionality is quite clear, as long we accept two correlated error variances within the factor Body. Internal consistency with Cronbach's alpha was good (.75-.92). Test-retest reliability with intraclass correlation showed acceptable to good estimates (.578**-.782**). Spearman's correlation coefficient shows moderate to strong associations between all factors, the total score of the Wound-QoL and SF-36 (-.400**--.777**). The study reveals moderate correlation between Wound-QoL and general wound pain (.435**), but weak correlations for etiology (.002), wound size (.108), pain during wound change (.340*), exudate (.030), and infection (.174*).

Conclusion: The Norwegian version of Wound-QoL demonstrate good reliability and construct validity in the present population. However, some improvements were exposed to receive acceptable fit. In mapping QoL in patients with hard-to-heal wounds, the Wound-QoL is a valid and reliable disease-specific measurement. However, wound-specific QoL questionnaires should be a supplement to clinical data and generic QoL questionnaires.

Leg Ulcer 1

EP303 Adjustable Velcro® compression devices as compared to 4-layer compression bandages for the treatment of venous leg ulcers and optimisation of patient satisfaction

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Aim: To compare the relative wound area reduction, costs to treat and user satisfaction achieved when adjustable Velcro® compression devices (AVCD) and 4-layer compression bandages (4LCB) are used in the treatment of venous leg ulcers (VLU), in community dwelling adults in the Australian context.

Method: A prospective same patient cross-over study (n=50) was conducted over a 12-week period. Patients currently receiving treatment for VLU were recruited from a large community nursing organisation. Wound size was recorded at commencement of the study and patients were randomised to receive one of two forms of compression therapy (AVCD or 4LCB) for a period of six weeks. After six weeks their wound measurements were rerecorded, satisfaction surveys were completed, and compression modality swapped over. At the end of the second six weeks, measurements and satisfaction ratings were again collected, and costs of treatment calculated.

Results/Discussion: Results showed that using AVCD to treat VLU in place of 4LCB, produced equivalent wound healing and higher patient and nurse satisfaction ratings. It was more cost effective to use AVCD when more than 17 treatments were required. Where multiple sets of compression bandages were used on a single leg, cost benefit was demonstrated earlier. Other benefits of AVCD identified include reduced physical effort to apply compression therapy, the ability to wear usual footwear and reduced dependence on clinicians for routine, ongoing care.

Conclusion: AVCD have a role to play in the treatment of VLU in the community setting, showing both financial and acceptability benefits.

EP304 Skin morphology and proteins associated with chronic venous insufficiency

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Aim: To objectively quantify changes in skin morphology and physiology, as well as changes in proteins on the lower legs of individuals with a venous leg ulcer as compared to individuals without chronic venous insufficiency (CVI).

Method: Sixty participants were recruited, 30 in each arm. Non-invasive measurements of: skin hydration, trans-epidermal water loss (TEWL), melanin, skin thickness, intensity (of ultrasound reflection), temperature and pH, were recorded at three positions, two on the lower leg and the abdomen as a control site. Skin blotting samples were collected to quantify types 1, 3, 4, 7 and 17 collagen, fibronectin, plasminogen activator inhibitor 1 (PAI1), heat shock protein 90 alpha (HSP90α), interleukin 1 alpha (IL1α) and vascular endothelial growth factor C (VEGF-C).

Results/Discussion: Melanin, TEWL, skin thickness, and hydration were elevated in the CVI group consistent with lipodermatosclerosis and oedema. Melanin levels followed the gravitational pattern of skin changes in the lower leg in CVI compared to the abdomen. Abdominal temperature was lower in the CVI group, but there were no differences at the leg sites. Skin thickness was increased in the leg in the CVI group. Collagen 1, 4, IL1α and albumin were higher in CVI compared to controls.

Conclusion: Quantification of the skin changes associated with CVI is now possible. This comparative study has demonstrated significant changes in skin morphology in individuals with CVI as compared to healthy controls which was consistent with known pathophysiology and lipodermatosclerosis. Detection of cytokine IL1α probably reflects tissue injury.

EP305 How cold plasma therapy can most effectively accelerate wound healing and germ reduction

Veronika Thiel¹

¹Die Wundbehandler, Pöttsching, Austria

Aim: The aim of this study is to assess the most effective treatment duration of cold plasma therapy for chronic wounds with regard to the highest wound and germ reduction.

Method: The wounds were treated with cold plasma over a period of 14 days, separated by stage of infection, with different exposure times and documented.

The participating patients were treated without antibiotics and/or silver-containing preparations during the study.

Results/Discussion: It was shown that treatment for 180 seconds slowed wound healing in infection-free wounds. Each treatment lasting 90 seconds accelerated the wound size reduction by 2 to 3 times. When treating infected wounds, the bacterial load multiplied with a treatment duration of 90 seconds, while wound reduction was only slightly faster. Only after a treatment period of 180 seconds was there an effective reduction in all pathogenic germs and an up to 3-fold acceleration in wound healing.

Conclusion: The results of the study conducted here show that the duration of treatment with cold plasma has a direct influence on whether increased and accelerated germ and wound reduction occurs.

EP306 How cold plasma therapy affects temperature in chronic wounds

Veronika Thiel¹

¹Die Wundbehandler, Pöttsching, Austria

Aim: The aim of this study is to investigate the influence of cold plasma therapy on the temperature in chronic wounds and the associated effectiveness.

Method: For the effective examination, 4 measurements were taken during the treatment with cold plasma. In order to obtain a large-scale image, two devices were examined in comparison. The measurements were taken 3 times per week over a period of 2 weeks each.

Results/Discussion: It was shown that in the treatments with the pure wet phase and the wet-dry phase there were significant differences in the devices used and their different application methods of cold plasma. With device 1, the reduction in wound temperature could be massively reduced, while with device 2 the temperature could not be increased using any of the methods used and resulted in a massive loss of temperature, which significantly slowed down wound reduction

Conclusion: Choosing the right device and the correctly carried out wet-dry phase was able to massively reduce the loss of wound temperature and showed a significant increase in wound reduction and reduction in pain during treatment

EP307 Clinical observation on the therapeutic effect of acupuncture combined with red oil cream in treating ecthyma qi deficiency and blood stasis syndrome

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Aim: The method of acupuncture combined with red oil ointment is used to treat patients with ecthyma of Qi deficiency and blood stasis syndrome. The change in ulcer area before and after treatment are observed, clinical efficacy and safety are evaluated.

Method: This study is a randomized controlled study, in which 60 patients who met the inclusion criteria and signed an informed consent form were randomly divided into a treatment and control group. Both were given same basic treatment, including controlling lower limb elevation, exercising appropriately, and sodium aescinate. The control was treated with red oil ointment, while treatment was treated with red oil ointment combined with peripheral needling and Yangming meridian drainage needling.

Results/Discussion: Ulcer area: ulcer area of both decreased, and treatment group showed a significant decrease. Wound quantification score: syndrome scores of both decreased, and control group indicated a deeply decrease. Traditional Chinese Medicine Syndrome Score: both showed decrease, and treatment group showed a great decrease. Clinical efficacy: cure rate of treatment group 13.33%, effective rate 26.67%, effective rate 50.00%, ineffective rate 10%, and total effective rate 90.00%; The cure rate of control group 3.33%, significant rate 16.67%, effective rate 46.67%, ineffective rate 33.33%, and total effective rate 66.67%. Inflammatory factors: both decreased compared to before, treatment group was greater than control group.

Conclusion: The treatment can reduce ulcer area. The method can reduce wound quantification score, traditional Chinese medicine syndrome score, and inflammatory factor. Acupuncture combined with red ointment has a good clinical efficacy.

EP308 Health-related quality of life in patients with chronic leg wounds and oedema: a cross-sectional multicentre study

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Aim: Oedema is a prevalent complication of chronic leg wounds. The health-related quality of life (HRQOL) of patients with chronic wounds or oedema is significantly impaired. However, few studies have assessed the HRQoL of oedema in chronic leg wounds. The aim of this study is to investigate the impact of oedema on HRQoL among patients with chronic leg wounds.

Method: A cross-sectional, multicenter study in China in 2023. Adults with clinically proven chronic wounds of the lower leg were included. Data were collected using demographic and disease characteristics, the Lymphoedema Life Impact Scale (LLIS), the Questionnaire on Quality of Life with Chronic Wounds (Wound-QoL), and the Well-Being in Wounds Inventory (WOWI).

Results/Discussion: Out of 310 patients with chronic leg wounds, 78% had oedema. Overall LLIS impairment score of 37.32 ± 17.8 indicated poor HRQOL for oedema patients. The Wound-QoL scale revealed that oedema significantly impacts the HRQOL of patients with wounds, and the scores increased with the stage of oedema. Patients with venous leg ulcers showed the greatest impairments in everyday life-related QoL, and women had worse physical QoL than males. The WOWI and Wound-QoL scales showed that patients without oedema had considerably higher levels of positive psychological status and HRQOL in comparison to patients with oedema.

Conclusion: Oedema, which has significantly impaired the HRQOL of patients with chronic leg wounds, requires adequate attention. When treating these patients, it is crucial to consider the detrimental impact that the severity of oedema, wound genesis, and gender have on HRQOL.

EP309 Optimizing clinical efficacy: a comprehensive primary wound dressing for the effective management of acute and chronic wounds

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Aim: The improper management of acute wounds may lead to chronicity and potential complications, such as skin infections. This study aimed to assess the performance and safety of a composite patch in the treatment of both acute and chronic wounds over a nine-week period.

Methods: Forty patients with wounds of various etiologies were enrolled after obtaining consent. Wounds were evaluated for healing time, rate, area, depth, wound bed tissue, exudate, pain, and infection. Digital photography documented wound progress, and assessment forms were completed during each visit. IBM SPSS Statistics 27 was used for statistical analyses.

Results: Within 21.25 days, wound area and depth decreased by 70.60% and 86%, respectively (healing rate = 5.46%/day). Complete wound healing was observed in 57.50% of cases within 23.80 days (healing rate = 5.70%/day). Infected wounds showed a 37% reduction. Significant reductions in pain and exudate levels ($P < .001$) were noted, with a decrease of two and four points, respectively. Slough and necrotic tissue decreased by $> 90\%$, and epithelializing tissue increased from 12% at baseline to 69.20% at week nine. The composite patch received predominantly “very good” or “good” ratings, with no observed dressing-related side effects.

Conclusions: The composite patch demonstrated safety and efficacy in managing acute and chronic wounds. These findings support its potential for use in future randomized controlled trials.

EP310 Assessing the efficacy of a novel wound dressing in the treatment of nonhealing diabetic foot ulcers: a clinical study

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Aim: This study aimed to evaluate the performance and safety of a composite patch in treating diabetic foot ulcers (DFUs) over a nine-week period.

Methods: Forty patients with DFUs participated after providing informed consent. Wounds were assessed for healing time, rate, area, depth, wound bed tissue, exudate, pain, and infection. Wound progress was documented through digital photography, and assessment forms were completed during each visit. Statistical analyses were performed using IBM SPSS Statistics 27.

Results: Within 23.55 days, there was a 78.03% reduction in wound area and a 76.4% reduction in depth, resulting in a healing rate of 3.31% per day. Complete wound healing was observed in 65% of cases within 24.26 days, with a healing rate of 4.12% per day. Infected wounds exhibited a 51.7% reduction. Significant reductions in pain and exudate levels ($P < .001$) were noted, with decreases of 75.4% and 58.16%, respectively. Slough and necrotic tissue decreased by over 80%, while epithelializing tissue increased by 94%. The composite patch consistently received “very good” or “good” ratings, with no observed dressing-related side effects.

Conclusion: The composite patch demonstrated both safety and efficacy in managing DFUs. These findings support its potential for use in future randomized controlled trials.

EP311 Leg ulcers associated with antiphospholipid syndrome, investigation of the mTOR pathway

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Aim: Antiphospholipid syndrome (APS) is an autoimmune disease characterized by persistently elevated levels of circulating autoantibodies against phospholipid/protein cofactors (aPL), hypercoagulability, venous, arterial, and microvascular thrombosis, and obstetric complications. The aPL antibodies, by binding to vascular endothelial cells, activate the mammalian target of rapamycin (mTOR) signaling pathway, which regulates cell growth, proliferation,

and survival. Its activation results in intimal hyperplasia and vasculopathy, which occurs despite appropriate anticoagulation.

Method: Between January 2020 and June 2023, the authors retrospectively evaluated the prevalence of aPL antibodies among patients with lower leg ulcers developed as a result of post-thrombotic syndrome (PTS-ulcer). In aPL-positive patients, samples were taken from the edge of the ulcers by punch biopsies (sample amount: 10) and examined for the activation of the 2 mTOR complexes using immunohistochemical reactions: mTORC1 - S6 ribosomal protein (S6RP), mTORC2 - through AKT (Ser473) phosphorylation.

Results/Discussion: Among 104 PTS-ulcers, aPL (lupus anticoagulant, anticardiolipin, anti-beta-2-glycoprotein) prevalence was 23%. In the endothelial cells of small vessels, cytoplasmic S6RP positivity was detected in 100% (10/10) of cases, while AKT phosphorylation was always negative, indicating the activation of one branch (mTORC1) of the mTOR pathway.

Conclusion: Currently, thrombosis prevention remains the primary therapeutic focus in APS. Literature highlights mTOR inhibitor (sirolimus) efficacy in preventing vasculopathy recurrence and graft loss in APS patients post-kidney transplantation. Based on the authors' investigations, the mTOR pathway activation in specimens from aPL-positive lower leg ulcers implies the potential use of mTOR inhibitors for preventing or treating vasculopathy and ulcers.

EP312 What is the prevalence of chronic venous disease among health care workers? A scoping review

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Aim: To assess the prevalence of CVD among health care workers, a scoping review of existing publications exploring the prevalence of CVD among health care workers was conducted in July 2022.

Method: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were used. A total of 15 papers met the inclusion criteria and these formed the basis of the review.

Results/Discussion: Among health care workers, the mean prevalence of CVD was 58.5% and the mean prevalence for varicose veins was 22.1%. There is an increased prevalence of CVD in health care workers when compared with the general population.

Conclusion: There is a need for early diagnosis and the use of preventative measures to protect health care workers from CVD and varicose vein development.

Infection 1

EP313 Relevance of nursing care to the treatment of infected wound

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Aim: To present a case study regarding nursing care in the treatment of an infected wound.

Method: Clinical case study, carried out by a nurse from the SUS network (Unified Health System) in Belo Horizonte, on a user, 52 years old, hypertensive, pre-diabetic, obese, with a dog bite wound on the left lower limb, care was initially provided by the user. Nine days after the accident, she developed headache, fever, pain with the presence of purulent secretion in the wound and phlogistic signs in the perilesional area. The care plan was prescribed by the nurse based on the user's clinical needs.

Results/Discussion: The wound presented necrotic tissue in 75% of the bed (figure 1), 25% granulation tissue, wound size 9 cm², 0.5 cm deep. Mechanical and instrumental debridement was performed, cleaning with 0.9% sodium chloride jet, use of hydrofiber with alginate. Dressing changes were carried out weekly according to professional indication and assessment. In the Second and Third procedures (figures 2 and 3), an absorbent cover with DACC (dialkyl carbamoyl chloride) was used, wound measuring 2.3 cm², flat, 100% granulation tissue. Petrolatum mesh (figure 4) was recommended, with changes every 72 hours until complete epithelialization, which occurred after 63 days the accident and 36 days the beginning of nursing follow-up.

Conclusion: Systematic nursing care is essential to monitor and manage wound treatment.



EP314 Hard to heal vascular ulcers treated with a one-off treatment of chemical debridement

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Aim: The vascular ulcers with a venous and or arterial ulcer are in general hard to heal. The patients with these types of ulcers are also commonly one to the patient type that are the lowest in compliance towards the treatment regimen. A product like Topical Desiccating Agent (TDA) is investigated as a one-off treatment to improve wound healing for these low compliant patients

Method: 38 patients with a vascular ulcer are included via the recruitment in clinic by consecutive presentation. All patients are treated with one treatment of TDA. Treatment was prepared with systemic opioid and local EMLA crème at the wound bed.

Results/Discussion: Mean age is 70 (range: 28-95), 26 were female, 9 were heavy smokers, average lesion size is 39 cm² (range: 1-90). Average lesion age 91 months (range: 5-432 months). 18 lesions fully granulated; 19 lesions showed more than 50% of granulation in 60 days. 5 lesions fully granulated under 30 days.

Conclusion: This case series of a regular Parisian clinic treating wounds show that a one-off treatment with TDA is beneficial for the onset to full wound healing in this low compliant patient group. A single intervention to remove infection with TDA shows that 37 lesions move to granulation phase and have the opportunity to move to complete healing considering the long period the lesions were already present.

EP315 Confirmation of the safety and performance of a silver alginate wound dressing and rope within the certified indications in routine clinical practice - results of the interim analysis

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Aim: Confirmation of the safety and performance of a silver alginate¹ wound dressing.

Method: Multicentre, open, single-arm cohort study on patients presenting wounds at risk of infection or infected wounds over three weeks. 70/99 Patients (2nd Interim Analysis, status: 12-09-2023) were treated with a silver alginate¹ according to clinical routine (visits d0, d10±3, d21±3). As primary endpoint the reduction and prevention of local wound infections were assessed. Secondary endpoints comprise (serious) adverse events and improvement of wound bed condition parameters.

Results/Discussion: No infection occurred in the group of wounds at risk of infection. After 10 days 56,9% and after 21 days 86.3% of infected wounds were not infected anymore (per protocol population). Therefore, primary endpoint was fulfilled. Regarding safety aspects, no device deficiencies or adverse events with a clear relationship to the study procedure or study product were reported. Fibrinous tissue reduced from 81% (d0) to 22% (d10±3) and 5% (d21±3) while granulated tissue increased from 19% (d0) to 78% (d10±3) and 95% (d21±3). Exudate levels changed from 100% "high or very high" (d0) to 53,7% "none, light or moderate" (d21±3). Median pain before application significantly decreased (5.0, d0; 3.0, d21±3; scale 0-10). These results are based on data from 2nd interim analysis (final report expected beginning of 2024).

Conclusion: Study results indicate that the silver alginate¹ Wound Dressing is safe and effective in patients with infected wounds and wounds at risk of infection in routine clinical practice.

1 Suprasorb[®] A + Ag Antimicrobial Calcium Alginate Wound Dressing

EP316 Pain perception and management during the usage of a topical desiccating agent (TDA) for chemical debridement – a retrospective case-series analysis

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Aim: A new Topical Desiccating Agent (TDA) based on methanesulfonic acid (MSA) and dimethyl sulfoxide (DMSO) has proven to be an effective biofilm- and necrosis-removing chemical debridement option. However, its application can be temporarily accompanied by severe pain perception, depending on the individual patient. This study aimed to assess application-associated pain and management strategies.

Method: A single-center, retrospective, case-series study design was used to assess pain associated with the usage of the agent. Pain was assessed using the visual analog scale (VAS). Pain was assessed before, during and 15 minutes after treatment. Also, overall wound pain, pain during dressing change in general and during last change and during last sharp debridement was assessed. Additionally, baseline pain medication, medication during treatment and local anesthetic management was assessed. Patients with peripheral neuropathy were excluded from the analyses.

Results/Discussion: A total of 31 patients treated with the agent were identified, of which 25 cases could be assessed with complete datasets. Three different local anesthetic procedures were applied using either an anesthetic crème, a form of tumescent local anesthesia (TLA) or a custom-made local anesthetic hydrogel. Application time ranged between 30-45 minutes before treatment. Chemical debridement was associated with individual pain during application (VAS range 3-8). However, using adequate pain management, pain could be effectively reduced.

Conclusion: Accompanying pain during Topical Desiccating Agent (TDA) debridement was well manageable using various ready-to-use anesthetic approaches and demonstrated a comparable or individually even lower pain perception compared to sharp or surgical debridement.

EP317 Wound hygiene in the management of infection in hard to heal post-surgical wound of the cervico-facial district

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Aim: Use the Wound Hygiene methodological approach in the management of infection in hard to heal wound of the cervico-facial district.

Method: From January 2021 to November 2023, 18 patients, who underwent to a major cervical-facial oncological surgery with surgical wound infection were treated (18 men and 3 women) aged between 42 and 86 years old. The Wound Hygiene methodology was used to manage the infection:

- Cleansing: Polyhexamethylene Biguanide (PHMB) solution
- Necrotic tissue was removed by chemical and surgical debridement
- The infection was managed with silver-based antimicrobials + EDTA and benzethonium chloride; in the most resistant cases were administered also systemic antibiotics
- The edges were always kept active and reactivated when needed with dermatological curettes.
- **Results/Discussion:** Infection resolution time: 2 weeks
- Patients treated with a combination of antimicrobial with silver and a systemic antibiotic: 6/24
- Average dressing change: 72 hours
- Average healing time: 8 weeks
- Average pain: NRS = 2 (Numerical Rating Scale)
- Healed patients: 24/24.

Conclusion: Through the application of the Wound Hygiene methodology, the surgical wound infection solved in a relatively short time. In 75% of the patients, the infection solved with the only local application of silver antimicrobial. In relation to the extent of the lesions and the difficult management of the fluids (exudate + saliva), the dressing change time was satisfactory. The healing times were more than acceptable and the complete healing occurred in all cases treated. Pain results were also good with NRS < 3.

EP318 Onicocriptosis treatment with a chemical debridement tool, a case series

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Aim: Onicocriptosis is a painful pathology at the nail bed. Nail removal, full or partly is the most common treatment. The removal of the nail can create infection of the nail bed and the extremity attached. Treatment of the nail bed to remove infection is evaluated in this case series with the use of Topical Desiccating agent (TDA)*.

Method: 5 patients have been included that suffer from onicocriptosis and nail bed infection. At first visit Phenolization is performed to remove the piece of nail that causes the onicocriptosis. One week later TDA application is performed to remove infection.

Results/Discussion: Mean age 25,4 (range 18-48), 3 female. 1 patient reported slight burning sensation.

Conclusion: The advantage of TDA compared to simple mechanical cleaning of the lesion seems less pain for the patient, greater compliance and simple home management. The results obtained are encouraging, however the study cannot be considered statistically significant, since the demographic sample treated is not sufficient. The antimicrobial effect of TDA contributed to reducing post-surgical complications of the lesion, favoring a faster healing.

*DEBRICHEM®

EP319 Pyogenic granuloma treatment with a chemical debridement tool, a case series

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Aim: Peri- and subungual pyogenic granuloma (PG) is a common pathology which frequently involves the periungual tissues and the bed nail. PG is a common and benign vascular proliferation that develops on the skin or subcutaneous tissue. Non-surgical treatment is topical application of steroids and antibiotics to reduce the inflammatory process. The purpose of this work is evaluating chemical debridement of nail granuloma using Topical Desiccating Agent (TDA)*

Method: 7 patients are included with at least one periungual granuloma from onychogryphosis present for more than three weeks. Granuloma is cleaned and then treated with TDA, a cotton swab was used to direct the gel, after 60 seconds TDA is rinsed off with sterile water.

Results/Discussion: Mean age is 20,1 (range: 18-24), 5 patients were male. 5 patients were treated in a conservative pain treatment and 2 patients with a topical anastatic. At 1 week follow-up the all lesions showed almost complete regression.

Conclusion: Within PG there is often significant bacterial infection and necrotic tissue. TDA is a proven method for wound debridement eradication the bacterial burden in a easy application process. As PG is a benign vascular proliferation that causes infection in the nail bed, infection is to be removed and this series shows signs that TDA is effective in aiding the regression of PG.

*DEBRICHEM®

EP320 Case series in university clinic of diabetic foot ulcers treated with topical desiccating agent

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Aim: Diabetic foot ulcers (DFUs) are widely known as hard to treat. The DFUs are often infected with several types of bacteria (*Pseudomonas Aeruginosa*, *Methicillin Resistant Staphylococcus aureus*, etc.). The lesions of a DFU are typically found on the lower extremities. Debridement is the main treatment of wound bed preparation for a DFU to start healing. A Chemical Debridement tool (Topical Desiccating Agent)* is investigated to be effective in a treatment with a single application.

Method: 20 patients with a complex DFU are included. Microbial swab is taken of the wound bed at timepoints; Prior to treatment; after 2 weeks; after 1 month. Follow-up is done up to 120 days, taken into account that TDA is intended for 1 single application treatment to remove infection.

Results/Discussion: 85% of the wounds showed improvement where 70% have complete healing in 120 days and 33% of which have complete healing under 40 days. In 5% of the cases a pseudomonas colonization has occurred after the Topical Desiccating Agent treatment.

Conclusion: Within the limitations of a case series, there are a couple conclusions can be drawn from this cohort. TDA is effective in local treatment of pseudomonas infection in DFU patients with only 1 application in 1 single treatment, no hospitalization is required, and intraoperative complications are reduced. Painful symptoms of treatment are easily controlled.

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EP321 Modeling of the purulent- seditious process in mice against the background of immunosuppression using hydrocortisone and 2, 6, 10, 14- tetramethylpentadecane

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Aim: To study was to reproduce the purulent wound model in mice and compare immunosuppressive methods using hydrocortisone and the drug Pristane (2,6,10,14-tetramethyl-pentadecane).

Method: several variants of modeling of the development of a purulent-inflammatory process in skin wounds in mice were performed. When conducting an experiment on mice, three groups were derived: 1. Using hydrocortisone as immunosuppression. Wounds were applied on the second day of drug administration. Based on the results of 14 individuals. 2. Using the drug Pristane as immunosuppression. The wounds were applied on the 7th day. Based on the results of 14 individuals. 3. 14 mice were used in the control group - without immunosuppression. Two types of bacteria were tested as wound-infecting microorganisms: *Staphylococcus aureus*, a representative of the normal skin microbiota, and *Pseudomonas aeruginosa*, as the most common type of pseudomonas, infectious agents in hospitals. Wound infection was carried out using a mixed suspension of the above 2 bacterial cultures.

Results/Discussion: Study demonstrated that the most optimal model for obtaining purulent wounds was using immunosuppression with the drug Pristane. Statistical data processing determined a strong correlation between the culture titer and the result of bacteriological culture from mouse wounds, and also showed a statistically significant difference in the effectiveness of immunosuppression with the drug Pristane in comparison with hydrocortisone.

Conclusion: Based on this, it was concluded that modeling of purulent wound in mice is possible with the immunosuppressive background, which can be caused with the drug Pristane as well as hydrocortisone.

EP322 Treatment of intractable ulcers with concurrent osteomyelitis of the calcaneus

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Aim: Treating chronic calcaneus osteomyelitis (OM) is a complex and challenging process. This case series describes a successful treatment using a de-epithelialized perforator flap to simultaneously reconstruct soft tissue and bone defect in chronic calcaneus OM.

Method: We retrospectively reviewed the data of eight patients with Cierny-Mader type III-IV calcaneus OM who underwent de-epithelialized free perforator flap to fill the bone defect. The patient's demographics, duration of osteomyelitis, flap outcome, recurrence and final outcome were evaluated.

Results/Discussion: We performed two cases of anterolateral thigh free flap, three cases of deep inferior epigastric perforator flap, one case of thoracodorsal artery perforator flap and one case of superficial circumflex iliac artery perforator flap. Among them, two patients were performed previous free flaps. Seven flaps survived uneventfully, and one flap showed partial necrosis that required additional full thickness skin graft. Calcaneus OM was treated successfully, and no recurrence was observed during follow-up period. The de-epithelialized perforator flap might be an effective option to reconstruct the calcaneus OM combined with soft tissue defect. While further research is needed to determine the optimal use of perforator flaps, obliteration of the dead space and the use of well-vascularized skin flap to cover the defect in one stage could achieve good functional and aesthetic outcomes.

Conclusion: Perforator flaps have emerged as a useful tool in the treatment of chronic OM, offering a viable option for filling dead space in cases where chronic infection has compromised the blood supply.

Wound Assessment

EP323 Improving wound assessment objectivity through the use of technology

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Aim: The accurate assessment of a patient's medical condition is dependent on the objective measurement of the individual's signs, symptoms, and other measurable physiological parameters. Reliance on subjective assessment could result in inaccuracies due to inter-rater variability, gross approximation, and observer skill deficiencies. This study aims to identify subjective descriptors used in contemporary wound assessment and to identify simple to complex instruments which may provide more objective wound information relevant to the wound characteristic.

Method: A review of accessible literature was conducted in November 2023. The search criteria include the most common wound assessment tools such as TIME and MEASURE. Each assessment tool is then reviewed to identify which among its parameters still rely on subjective assessment. Once these subjective descriptions have been recognized, an alternative objective measuring tool is identified through a literature search.

Results/Discussion: Wound assessment parameters such as skin temperature, wound exudate volume, swelling amount and wound bed characteristics still rely on subjective assessment. Alternative tools such as measuring tapes, weighing scales, infrared thermometers, spectrophotometers, and digital image recognition technologies can provide a more objective assessment of wound condition.

Conclusion: Using instrumentation to measure wound characteristics increases the reliability of wound assessments as compared to subjective descriptions. Tools and instruments should be used in wound assessment especially if they are available. Future research hopefully would enable the objective measurement of pain and odour which for centuries and until now still rely on subjective assessment.

Pressure Ulcer 2

EP324 Revalidation of the Acero–Kurtz Perioperative Skin Bundle

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Aim: The purpose of this study was to test whether Operating Room (OR) related Hospital Acquired Pressure Injuries (HAPIs) could be reduced with perioperative HAPI risk screening tool which triggers an OR skin prevention bundle and soft silicone multi-layered foam dressings for at-risk surgical patients.

Methods: A pre/post-test design was used. The baseline period was 10/2019-9/2020 and the intervention period was 10/2020-9/2021. The Acero – Kurtz Perioperative Skin Bundle was implemented for all surgeries under general anesthesia. The bundle includes standard prevention measures and the application of a soft silicone multi-layered foam dressing. The bundle consists of six risk indicators requiring a yes/no response. Any 1 “yes” answer triggers OR standard prevention measures which include pre-surgical skin assessment, safe patient handling and use of positioning devices. Any 2 “yes” answers during the same admission is a stand-alone criterion identifies the patient as high risk and triggered the use of a soft silicone multi-layered foam dressing in addition to the OR standard prevention measures. Statistical significance of pressure injury outcomes was determined using Fisher’s Exact Test.

Results: 100% staff education attendance was achieved. Thirty-five surgical patients met the modified PRAMS criteria for high-risk and received OR skin bundle and prophylactic dressing. OR-related HAPI incidence was 0% compared to 1.9% in the baseline ($p=.0001$).

Conclusion: HAPI can be reduced with staff education and preventative care including prophylactic soft silicone multi-layered foam dressings triggered by an OR-specific risk screening process.

EP325 Severe pressure ulcer debridement in the acute sector: case study series to support a change in clinical practice

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Aim: Pressure ulcers (PUs) rank within the ‘top ten harms’ in the NHS in England (Fletcher, J 2022) and remain a concern for both patient and health professionals. Patients with PUs typically experience pain, increased risk of infection, morbidity, and mortality rates with category 3 and 4 sacral PUs affecting underlying tissues bringing about extensive destruction. (Borojeny et al., 2020). It has been reported that PU development extends hospital stays by an average of 5 to 10 days per PU (Graves et al, 2005; Theisen et al, 2012).

The aim of this series was to evaluate the celerity of a Bioactive Microfibre gelling (BMG) used in direct contact with the wound bed to debride devitalised tissue, manage exudate, reduce bioburden, promote granulation and reduce odour/pain. Standard PU care (pressure removal and redistribution) also applied.

Method: The case study series was completed over two weeks across our acute hospital trust with patients being reviewed weekly by the tissue viability team.

Results/Discussion: Patient 1 Rehydrated, reduced bioburden and necrosis extension. Treatment continues.

- Patient 2 Detached necrosis from edges, enabled CSD. Treatment continues.
- Patient 3 Effectively debrided, reduced odour/pain and enabled commencement of VAC.

Medical photography supports these clinical outcomes.

Conclusion: Effective wound debridement removes devitalised tissue, senescent cells and bacteria, stimulating growth factor activity and promoting healing. The introduction of the BMG dressing accelerated wound debridement, reduced odour and pain. As a result we are considering its addition on to our specialist woundcare formulary.

EP326 The implementation of an integrated pressure relieving equipment pathway to standardise care planning, increase clinician confidence and reduce preventable harm in end of life (EOL) patients in a community setting in England

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Aim: End-of-life (EOL) patients face a higher risk of pressure damage, necessitating a proactive approach to pressure ulcer prevention. Incident reports indicated that EOL patients accounted for 30-50% of pressure damage cases within the community. Critical reviews revealed gaps in knowledge, absence of standardised practices, and failure to identify deteriorating patients.

Method: To address these gaps, a working group was formed, leading to the development of a Clinical Decision-Making Tool for pressure-relieving equipment in EOL patients. This tool simplified and standardized choices for discharge and care planning in acute, community, and hospice care settings. Multi-professional groups were consulted, and additional equipment lines and a safety netting process were incorporated. A survey ensured relevant education resources, including posters, diary cards, and lanyard pocket cards with QR codes, fostering widespread buy-in.

Results/Discussion: The Decision-Making Tool was successfully launched across acute, community, and hospice settings, with 100 key stakeholders attending. Pre and post-questionnaires showed a 94% completion rate and results indicated a substantial increase in staff confidence (from 30% to 90%) in all aspects of assessment and proactive care planning to prevent harm.

Conclusion: Implementing the tool through brief education sessions and practical workshops facilitated hands-on learning, enhancing knowledge and skills for all clinicians. A standardised approach to care planning has increased clinical confidence in decision-making. Next steps involve a three-month post-implementation audit and a follow-up questionnaire to assess the tool's usability in wider clinical practice.

EP327 A community healthcare setting in England, the prevalence of significant mucosal membrane injury (MMI) in patients requiring urethral catheters remains a concerning issue

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Aim: This study aims to enhance awareness of the associated risks, facilitating early identification and the implementation of preventive measures to reduce the incidence of extensive device-related damage from urethral catheters.

Method: A project group comprising key stakeholders was established to systematically review best practices and evidence related to MMI prevention. Although available evidence was limited, recommendations emphasised the use of appropriate catheter equipment and the enhancement of clinician knowledge to mitigate harm. Implementation measures included updates to skin/risk assessment documents and the introduction of a comprehensive catheter care plan for caregivers. The ongoing monitoring of MMI incidents was integrated into the project.

Results/Discussion: Community nurses in the targeted area demonstrated an increased knowledge and understanding of MMI prevention. While the average number of incidents has not yet decreased, early identification has improved, revealing instances of superficial erosion rather than complete tissue breakdown. This timely identification offers opportunities for additional informal education for patients and caregivers. On review, records indicate that, on average, 75% of patients now have all recommended preventive equipment in place.

Conclusion: MMI significantly impacts a patient's quality of life and may necessitate surgical intervention. Emphasising the importance of implementing preventive strategies and promptly escalating any initial damage is crucial to averting severe, lifelong cosmetic and functional changes to the urethral meatus. Further efforts are needed to develop an integrated pathway with urology, ensuring early referrals for patients requiring a suprapubic catheter.

EP328 Best Practices for pressure injury treatment and prevention at hospital discharge

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Aim: This study seeks to identify and recommend best practices for the treatment and prevention of pressure injuries during the hospital discharge process, with a primary focus on promoting effective wound healing and comprehensive condition management.

Method: Descriptive and comparative data were collected from a single-center hospital. The dataset encompassed comprehensive information regarding patient demographics, treatment modalities, and outcomes. The data included hospital records, care transition documentation, and patients' demographic details. The study compared how much difference there was in age, gender, length of stay, and types of PI.

Results: We studied approximately 2000 patients, divided into two groups: home care and SNF. Home care patients averaged 62.9 years in age, with stays ranging from 1 to 27 days, including 267 males. SNF patients averaged 71.5 years, with stays between 1 and 146 days, including 76 males. For all PI cases, we found 821 in the CAPU group and only 45 in the HAPU group. Notably, CAPU had 566 cases classified as Stage 3 or higher PI, while HAPU had just 6. Stage 3+ PI cases in CAPU had an average LOS of 10.9 days (1-373), whereas HAPU averaged 87.4 days.

Conclusion: The incidence of PI is notably higher, especially in Stage 3 and above cases in home care. The transition of patients from acute care to home or care facilities should encompass interdisciplinary wound visits, appropriate support surfaces, an agreed-upon plan, and follow-up conducted either at home or in a clinic. This emphasizes the importance of a comprehensive approach to wound care.

EP329 Pressure injury prevention bundle: An interdisciplinary high level approach

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Aim: Hospital-acquired pressure injuries (HAPI) are costly, unnecessary events resulting in patient harm. Hospitals have faced full financial burden of these harms. This hospital was affected financially due to increase number of HAPI incidence rates during pandemic. Higher incidence rates than national benchmarks led this hospital to assemble an interdisciplinary taskforce. implementation plan rooted in three elements: innovation, education, and interprofessional collaboration. Goal was to decrease rate of HAPI (stage 3, 4, unstageable) by 20% from 2019 baseline PI rate (10.5) at end of year 2022, as measured by number of PI cases in organizational visual analytics platform.

Method: Multi-level bundle approach was established to focus on improvement. Nursing Research/ Quality Improvement, Nursing Operations, Supply Chain, Risk Management, Medicine, Surgery, Clinical Engineering, Physical & Occupational Therapy, Performance Improvement, Office of Licensure, Accreditation and Regulation, Information Technology, Epidemiology worked in synchronization to improve workflow, innovate PI prevention/treatment and mitigate financial impact.

Data adjudication process utilizing electronic data capture (innovation),³ standardization of terminology and documentation of wounds (collaboration). educational sessions to a thousand nurses in PI prevention (education), use of alternating overlays in operating rooms, and use of non-contact low frequency ultrasound (NLFU) were established. (innovation/collaboration).⁵ WOC nursing team led implementation of these initiatives.

Results/Discussion: Rate of HAPIs: Yr. 2020=14.7 (44.5%↑; $p>0.05$); Yr. 2021=1.9 (81.2%↓; $p<0.01$); Yr. 2022=0.5 (95.5%↓; $p<0.01$).

Conclusion: Efforts of the taskforce despite of pandemic exceeded goal of 20% decrease in 2021, further reduction by 2022 with \$4 to \$7 million savings.

EP330 Identification of skin at risk for foot ulceration utilizing near-infrared spectroscopy imaging

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Aim: To evaluate if point-of-care near infrared spectroscopy (NIRS) can be used as an objective measure of tissue inflammation related to pressure followed by proactive off-loading to prevent ulceration.

Method: Patients with intact skin who had at-risk boney prominences were identified as high risk for ulcer development due to anatomical deformities and were imaged with NIRS. If areas of significantly elevated tissue oxygen saturation (StO₂) were identified on the image, proactive off-loading was provided. Patients were appropriately offloaded and followed to determine if a wound developed in the area identified as high risk.

Results/Discussion: In a cohort of 7 patients, 10 areas of inflammation over boney prominences in feet were identified. Areas of boney prominences included: 2 hammer toes, 3 hallux abducto valgus, 1 prominent first metatarsal head, and 3 prominent fifth metatarsal heads. Within the 10 areas of inflammation, there was significantly higher StO₂ (79.6 ± 10.5%) over the boney prominences compared to the StO₂ in the surrounding tissue (55 ± 6.6%; $P < 0.001$). On follow-up after proactive off-loading was provided, 1 area developed ulceration while the 9 other areas did not.

Conclusion: These cases demonstrate the utility of using NIRS as a preventative screening measure for ulceration. With a fast and non-contact way to screen patients, ulceration rates and overall healthcare burden may be lessened with a focus on prevention.

EP331 Chronic wound management

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Aim: This study aims to share our clinical experience of combination application of methylene blue staining (MBS), ultrasonic debridement (UD), negative pressure and maintaining a moist wound therapy for severe chronic wound. The objective is to evaluate the efficacy of our method in improving surgical precision and outcomes.

Method: 6 patients with multiple chronic wounds were included in the study. Methylene blue was topically applied to identify the dead tissue. Ultrasonic debridement was performed to remove the dead and damaged tissues. Coincidentally, negative pressure wound therapy (NPWT) is another excellent alternative adjunct to surgical debridement. Then, Moist Exposed Burn Ointment (MEBO) will provide a moist environment to wound.

Results/Discussion: The surgical debridement successfully removed the dead and damaged tissues, allowing for precise wound management. At follow-up visit 1 year after treatment, most of the patients had achieved a satisfactory restoration without significant wound complications such as extensive hyper/hypopigmentation, obvious contracture, hypertrophy or deformity.

Conclusion: Combined with MBS, UD, MEBO and NPWT, a successful paradigm is created for the treatment of severe chronic wound. The technique can be applied to various types of wounds and is easily mastered by surgeons.

EP332 Surgical treatment in the difficult-to-heal pressure ulcers

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Aim: The aim of the study was to present our experience in surgical treatment of the difficult-to-heal pressure ulcers in a group of 10 patients. The choice of the optimal surgical scheme was based on holistic and individual approach to the patient. The range of applicable procedures concerns the autologous split thickness skin grafts STSG, rotatory flaps, pedicled flaps etc. The post-operative wound management was supported by negative pressure wound therapy NPWT. The evaluation of wound healing progress was performed by laser speckle contrast analysis LASCA. Long term observation was continued in ambulatory.

Method: Patients qualified for the treatment program were evaluated by means of imaging-based studies (e.g. CT, SPECT/CT, MRI) and microbiological tests. The surgical procedure involved removing the pressure ulcers and chiseling the bones. After removal of devitalized tissue the garamicine sponge was applied on the chiseled bone. Then a specific type of flap was prepared. During the first day post-op NPWT was applied.

Results/Discussion: 80% of patients healed without major complications. In the remaining patients, minor wound dehiscence (10%) or postoperative hematoma (10%) were observed. However, these complications did not require reoperation. SPECT/CT results revealed that osteitis occurred in 50% of studied cases. Results obtained by means of LASCA depicted ongoing healing process. No postoperative wound infection occurred.

Conclusion: The surgical procedures (e.g. rotatory flaps) may be the suitable methods of pressure ulcers management. And may shorten the time of wound healing in comparison to conservative treatment.

EP333 Making pressure ulcer categorisation clearer

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Aim: To make pressure ulcer categorisation more understandable for practicing clinicians

Method: A series of images* and videos were prepared using a human cadaver clearly representing the layers of tissue in the human body and how they are overlaid. In addition a cross section of the cadaver (at the thigh) was excised to allow a demonstration of how the tissues interact when the cadaver is 'mobilised' replicating increase in the bed head elevation showing the shear between the tissues.

These images were then linked to the standard skin diagram* and line drawings of pressure ulcer categorisation so that students could see real life examples of the tissues in the diagrams.

Results/Discussion: A wealth of research describes how clinicians are unable to agree on the depth of pressure ulcers with all studies reporting poor inter rater reliability. Experience from clinical practice supports that bedside nurses find identifying the correct depth of tissue (and therefore the category) very challenging. Traditional methods of teaching focus on line drawings of the skin and depth of damage, which poorly relate to the reality of human tissue which makes translation of the theoretical knowledge complicated. The new teaching resources have been used at a large conference (approximately 1200 attendees) and in 3 smaller teaching sessions (30 - 240 attendees) feedback has so far been very positive with over 250 requests received for copies of the resources. No formal evaluation has been completed but this will commence when the resources are embedded into an update of an on line module in March 2024.

Conclusion: Linking what is drawn to real images of tissue depth and showing the interaction between them enabled students to have a clearer understanding of anatomy and relate this to their clinical practice.

* Representing Caucasian & dark skin tones.

**The standard diagram was simplified to remove layers and structures that cannot be seen by the naked eye.

EP334 Fish skin graft for closure of complex stage 4 pressure wounds of trunk in non-operative patients in the outpatient setting

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Aim: Treatment of complex pressure wounds especially those with tunnelling and undermining can be challenging. In many cases, operative debridement and complex closure with a flap is required to achieve a durable closure. We report a case series of closure of three stage 4 pressure wounds of the trunk in the outpatient wound care setting with the aid of Fish Skin Graft (FSG).

Method: Three patients with complex stage 4 pressure wounds of sacrum and ischium with tunnelling and undermining. They were deemed to be patients that were not operative candidates due to high-risk nature of their co-morbidities and so as an alternative to the standard debridement and flap closure in the operative setting FSG was used to achieve closure of these wounds in an outpatient clinic.

Results/Discussion: All three patients achieved durable closure of the wounds with serial debridement, offloading, advanced wound care and applications of FSG.

Conclusion: FSG is a novel biologic skin substitute to assist in closure of complex wounds in the OR and out. This case series demonstrates that FSG is an additional tool to assist in non-operative closure of complex wounds that traditionally require surgical intervention. In fact, these closures resulted durable scars even over weight bearing areas.

		
<p>64 yo paraplegic with tunnelling stage 4 ischial wound with flap closure at that site 45 years ago</p>	<p>Three applications total.</p>	<p>Three months after initial presentation.</p>
		
<p>33 yo male with Duchenne's Muscular Dystrophy with two year history ischial wound with ct concerning for osteomyelitis. Six weeks antibiotics.</p>	<p>10 grafts placed. He had a wheelchair cushion malfunction halfway through treatment resulting in extensive tissue injury</p>	<p>Nine months after presentation he was healed.</p>

		
<p>64 yo male with stage 4 sacral wound s/p MI requiring ecmo. Ef 20%. On dialysis. Risk of sudden cardiac death with surgery- on three anti-coagulants.</p>	<p>Five grafts placed.</p>	<p>Three weeks after fifth graft Eight weeks after first application</p>

Leg Ulcer 2

EP335 Preliminary results in the use of mononuclear cells from peripheral blood (PB-MNC) for the treatment of chronic, difficult lesions. The 'Immuno-Centric' vision

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Aim: Peripheral Blood Mononuclear Cells (PB-MNC) play a fundamental role in angiogenesis. Cell therapy is rapidly spreading in Italy and around the world. Our study collect data after implantation of PB-MNC in non-healing lesions in patients with chronic vascular and post-traumatic lesions.

Method: 40 patients, M/F, 18-85 y.o. were treated. EXCLUSION CRITERIA: cancer patients, who had radiotherapy at the site of intervention in the last 5 years and those with systemic infection. PRIMARY AND SECONDARY END POINTS: the percentage of patients healed at 1, 3, 6, 12 months after the end of treatment and to evaluate the actual healing time (in days); assessment of a 50% reduction in lesion area; pain (VAS scale); need for major surgery and recording of adverse events. TECHNIQUE: PB-MNC are obtained and under spinal anesthesia, patients undergo a cycle of three treatments every 30-45 days; bumps of 0.25 cc of concentrate are performed with a 21G needle both with intra and perilesional injections.

Results/Discussion: A high VAS score and rapid healing characterize all treatments performed. 45% of the patients healed before the end of the cycle. The method is easy to replicate, the learning curve is very short, and it helps contain costs. We need a greater number of patients with follow-up longer than 12 months.

Conclusion: PB-MNCs are effective with advantages in the management of the patient and economically. We believe the ongoing study will confirm our preliminary results, which would represent a significant leap forward in the management of these lesions.

EP336 pH changes in chronic wounds treated with different bandages: a monocentric prospective study

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Aim: Wound healing process is affected by physiological and biological parameters, including pH and temperature. The study aimed to assess the effectiveness on pH measurement of three different bandages in subjects with chronic venous insufficiency.

Method: We enrolled 30 patients with lower extremities ulcers and stasis eczema evaluated at baseline (T0) and after 1 week (T1). 10 patients treated with the elastic bandage impregnated with an oxygen-enriched oleic matrix, covered by cohesive bandage (Group 1); 10 patients with short stretch bandage (Group 2); 10 patients with zinc oxide bandage and cohesive bandage (Group 3). pH

measurements were performed on the lower limb at 3 points [ankle (A), pretibial (B) and subpatellar region (C)] and on the wound bed.

Results/Discussion: After 1 week, Group 1 showed a greater reduction in pH values in the lower limb (A: 26.22%, B: 28.6%, C: 27.5%) compared to Group 2 (A: 9.4%, B: 12.35%; C: 7.35%) and Group 3, which demonstrated increase in pH values (A: +4.85%, B: +7.38%, C: +8.81%). Furthermore, a greater reduction in pH wound bed was demonstrated in Group 1 (17.85%) compared to Group 2 (increase of 12.75%) and Group 3, which showed no difference from baseline.

Conclusion: The use of bandages may impact pH values: the oxygen-enriched oleic matrix bandage and the short stretch bandage created a pH environment favourable for tissue repair both on the wound bed and perilesional skin. A longer follow-up will be necessary to assess whether this reduction is associated with clinical improvement.

EP337 Use of multilayer multicomponent bandage systems with application indicators to improve outcome in the therapy of difficult phlebostatic ulcers

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Aim: This paper is to present the result of systemic use of a multicomponent pressure-controlled bandage system for the management patients with phlebostatic wounds.

Method: 48 patients (of which 25 with BMI>35) with phlebostatic non-healing ulcers were treated as home-patients. All patients were already undergoing restraint and compression therapy performed differently by non-specifically trained healthcare professionals (HCPs). The bandage system introduced was a multicomponent compression bandage with pressure indicators guiding the application in proper stretching and overlapping of the bandage because of its particular ease of use and good tolerability by patients, as well as the ease of combining it with different dressings, including negative pressure. 43 patients enrolled had phlebostatic wounds (19 with primary reflux of saphenous axes and 24 with post-obstructive reflux of deep circulation) and 5 had mixed wounds but with good arterial flows on Doppler. Wound management didn't change significantly from the pre-enrollment period.

Results: In all enrolled patients, there was significant clinical improvement in about 30 days with a 90% wound healing rate in six months. At the end of the study period, HCPs confirmed the ease of use of the bandage with good confidence when applying it, while patients reported good tolerability.

Conclusion: The use of multicomponent bandages in this experience has shown it is possible to significantly improve the efficacy of compression therapy especially in obese patients and patients with post-obstructive type reflux due to increased confidence of HCPs and less fear in giving the bandages the right tension to achieve adequate pressures.

EP338 Using medical-grade honey as a novel approach to treat venous leg ulcers: a case series

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Aim: Venous leg ulcers (VLUs) can last and recur for years, significantly impacting the patient's quality of life. Therefore, innovative treatment options should be considered. Here, the efficacy of medical-grade honey (MGH) for the treatment of VLUs was evaluated.

Method: Eight patients (7♀/1♂) developed VLUs (87.5% unilateral, 12.5% bilateral) of grade II (62.5%) and III (37.5%) mainly aggravated by limited mobility or permanent immobility. The average age of the patients was 84.5 (range 79-91) and the most common comorbidities included chronic venous insufficiency (100%) and arterial hypertension (100%). Most wounds were considered chronic (>4 weeks) with clinical signs of infection. Multiple previous treatments, including povidone-iodine and topical antibiotic creams, were ineffective. All wounds were treated with MGH wound gel¹ and MGH-impregnated non-adherent gauze¹ and dressings were changed every two days.

Results/Discussion: The mean length of the ulcers was 7.1cm (range 3-17cm) and the mean width was 4.4cm (range 3-10cm). MGH provided a moist wound environment, stimulated autolytic debridement, was anti-inflammatory, and promoted re-epithelialization. Clinical signs of infection, such as malodour and delayed healing, were resolved after 2.2 weeks on average (range 1-4 weeks). The mean time to healing was 7 weeks (range 3-18 weeks). Considering the failure of previous treatments and the chronic nature of the wounds, MGH was an effective treatment.

Conclusion: MGH-based products¹ are simple to use, clinically efficient, and cost-effective for treating hard-to-heal leg ulcers such as VLUs. Thus, MGH can be recommended as an alternative or complementary therapy to the conventional methods for treating VLUs.

¹L-Mesitran

EP339 Evaluation of the impact of the local application of octenidine gel on a healing process of venous leg ulcers

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Introduction: Venous leg ulcers are one of the most common chronic diseases, resulting in disability.

Aim: The aim of this study was to compare the effects of topical application of octenidine wound gel and silver sulfathiazole cream on the healing process of venous leg ulcers.

Method: Patients were divided into 2 groups: group 1 included patients treated with the antiseptic, sterile octenidine wound gel, whereas in group 2, silver sulfathiazole cream was applied. Following the application of an appropriate dressing, compression therapy was used in all patients. A planimetric measurement of the total ulcer area was performed in all subjects prior to the treatment, and every 7 days until a complete ulcer healing

Results/Discussion: The leg ulcers in group 1 healed within 8 weeks of the treatment. In contrast, leg ulcers in group 2 healed within 14 weeks.

Conclusion: Topical application of octenidine wound gel reduces the surface area of venous leg ulcers much faster, and thus shortens the time of treatment, as compared to silver sulfathiazole cream.

EP340 The use of virtual reality as a non-pharmacological method in the treatment of chronic wounds

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Introduction: Chronic wounds affect the elderly, chronically ill and disabled, but also people after surgeries and accidents. Local wound treatment involves mechanically cleansing the wound which can cause pain. Using virtual reality will reduce the sensation of pain.

Aim: Evaluating whether the use of virtual reality will result in a reduction of the patient's pain experienced during venous leg ulcer debridement.

Method: The study enrolled 60 patients, who were randomised into two groups. Study group – 30 subjects – mechanical debridement using goggles and virtual reality. Control group – 30 subjects – mechanical debridement without using goggles and VR. The Oculus Quest 2 VR goggles were used for the study. After each wound debridement, the patient would specify their pain on a numerical pain rating scale.

Results/Discussion: There was a statistically significant difference between the severity of pain experienced after venous leg ulcers debridement by the subjects of the two groups ($p < 0.001$). It averaged 1.13 points among those in the study group and ranged from 0 to 2 points. For those in the control group, it averaged 4.73 points and ranged from 0 to 8 points.

Conclusion: The use of virtual reality in patients with venous leg ulcer results in reduced pain during their wound debridement.



EP341 Use of platelet-rich plasma in the treatment of chronic lower limb ulcers

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Aim: Venous ulcer is a pathology that is difficult to manage and high costs of health budgets. All these aspects classify venous ulcer as a true public health problem. The purpose of this study is to determine if the application of Platelet Rich Plasma in ulcers reduces healing time and improves local pain

Method: A controlled clinical trial-type study was designed that compares a new treatment with the standard therapy that is routinely administered in clinical practice. The present study is performed using a closed Hy-tissue® PRP system and compressive bandage with URGO K2. The assessment is carried out by photographic tracking.

Results/ Discussion: From 2021 to 2023, out of a total of 75 patients with venous ulcers of the lower limbs, a reduction of 100% was observed in 40 patients, 75% in 18 patients, 50% in 10 patients, and 30% in 5 patients. The expected response was not obtained in 2 patients and they were excluded. The number of sessions varies between 5 and 20 (average 12). 10 patients (4.5%) had to temporarily suspend treatment due to bacterial infection.

Conclusion: The application of Platelet Rich Plasma to ulcers healing and local pain. It's a safe technique and can be managed on outpatient basis.

EP342 Effectivity and acceptability of a monolayer multicomponent compression system bandage in real-life practice

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Aim: The gold standard for treating venous leg ulcers (VLU) is the multicomponent bandage due to its ability to maintain continuous pressure and stiffness. An innovative monolayer compression system with multiple components has shown efficacy in promoting VLU healing, reducing edema, and enhancing quality of life. This study aims to investigate the translation of clinical trial results into real-life practice and assess patient acceptance.

Method: A single-center, open, non-controlled trial was conducted involving 5 ambulatory patients with recurrent VLU confirmed through palpation of distal pulses and an Ankle Brachial Pressure Index of 0.8-1.3. The primary objective is to evaluate the acceptability of a multicomponent monolayer bandage for both patients and healthcare professionals compared to the previous bilayer multicomponent system and to assess the VLU healing time.

Results/Discussion: After 3 weeks multicomponent monolayer compression system effectively resolved edema and after 14 weeks effectively healed wounds. Patients reported increased comfort compared to the previous compression system, experiencing less heat, especially during humid summer in Barcelona, and itching. Additionally, improved mobility was observed as patients could wear shoes more comfortably and move their ankles with greater ease. Healthcare professionals noted a reduction in application time to less than 2 minutes, emphasizing the system's ease, reliability, and safety, facilitated by clear visual guidelines for correct stretching and overlap.

Conclusion: The new multicomponent monolayer compression system demonstrates effectiveness, comfort, ease of application, and quick application for VLU treatment. It should be considered as a viable alternative to existing compression systems.

EP343 Feasibility study of punch grafting technique for hard-to-heal wound management in primary care

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Aim: Chronic wounds present a substantial health challenge, inflicting severe consequences on patients and imposing significant costs on healthcare systems. This study aims to evaluate the feasibility of implementing the autologous punch grafting technique for individuals with challenging-to-heal wounds in primary care settings.

Method: A feasibility study is currently in progress, employing a non-randomized, pre-post experimental design across 64 primary care teams. Advanced practice nurses, specialized in community wound care, track the healing progression, pain levels, and quality of life in patients with difficult-to-heal lower extremity wounds. This monitoring occurs both before the punch grafting procedure and on a weekly basis thereafter. Additionally, a strategic analysis investigates internal factors like strengths and weaknesses, alongside external factors such as opportunities and threats. This analysis enriches the process before implementing and incorporating the technique into the service portfolio. The design allows for evaluating the effectiveness of the punch grafting technique in real-world clinical settings.

Results/Discussion: Anticipated outcomes encompass enhancements in the quality of life, pain alleviation, and improved wound healing progression among individuals with hard-to-heal wounds.

Conclusion: Demonstrating the feasibility of the autologous punch grafting technique could pave the way for its integration into the primary care teams of the study area, with potential applicability to other similar territories. These findings may contribute significantly to refining wound care practices, improving patient outcomes, and ultimately alleviating the burden of chronic wounds on both individuals and healthcare systems.

EP344 The role and controversy of compression therapy in lower limb cellulitis management: a retrospective analysis

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Aim: Cellulitis in the lower limb presents a critical medical concern, often characterised by erythema, acute pain, and fever, necessitating prompt diagnosis and comprehensive management. This poster aims to expose the efficacy of compression therapy in managing acute cellulitis episodes, a topic where clinical perspectives diverge.

Method: A retrospective analysis was performed on patients admitted for acute cellulitis. Medical records and pictures evidence were used to evaluate outcomes pre- and post-initiation of compression therapy, focusing on pain levels, mobility, and wound healing throughout their hospitalisation.

Results/Discussion: Findings revealed delayed implementation of compressive therapy post-admission but an early initial antibiotic treatment. However, despite diverse patient profiles, implementing compression therapy during cellulitis episodes yielded favourable outcomes. Reduced symptoms, notably decreased oedema, enhanced or complete wound healing, and regained mobility were observed without any reported adverse events.

Conclusion: The poster suggests that while debates persist regarding the safety of compression therapy during cellulitis episodes, emerging evidence points to its effectiveness in managing chronic oedema. It showcases potential benefits, including symptom alleviation, reduced inflammatory markers, and a potential preventative effect against recurrent cellulitis.

Highlighting the need for further research, this analysis emphasises the potential advantages of early implementation of compression therapy. Such proactive measures could potentially mitigate costs, reduce hospital stays, and significantly enhance patients' quality of life. The poster underscores the necessity for further investigation to consolidate evidence and advocate for the early integration of compression therapy in cellulitis management in clinical practices.

Wound Assessment

EP345 the clinical utility of auto-fluorescence imaging in detecting the presence of bacteria in wounds- A systematic review

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Aim: This systematic review aimed to determine the impact of auto-fluorescence imaging devices (AFI) for the detection of moderate to heavy bacterial loads in wounds and for guiding wound swabbing and wound debridement.

Method: Systematic Review, following the guidance of PRISMA. In July 2023, a systematic search of publications was conducted using PubMed, Scopus, Cochrane, and EMBASE databases, using the search terms 'autofluorescence', 'wound healing', 'wound assessment', and 'imaging device'. Data were extracted using a pre-designed extraction table, and quality appraisal was undertaken using the Evidence-based librarianship criteria (EBL).

Results/Discussion: A total of 17 studies were included in this review. The studies identified that Auto-fluorescence imaging (AFI) detects bacterial presence in chronic wounds. This precision is evidenced by five studies showing that AFI guides and enhances swabbing techniques, with fluorescence-targeted curettage retrieving higher bacterial counts than conventional methods like the Levine technique. Ten studies illustrated that AFI-guided debridement resulted in a significant reduction in bacterial load. Additionally, 6 studies emphasized AFI's role in informing clinicians about bacterial burden and ultimately refining treatment plans, promoting faster wound healing. Quality appraisal revealed of the 17 studies, 10 were valid, and 7 were invalid due to a lack of representation in the population domain.

Conclusion: Overall, Point-of-care Auto-fluorescence imaging improves the identification of wounds with high bacterial burden (>10⁴ colony-forming unit [CFU]/g), informing clinician decisions for targeted swabbing and debridement. Auto-Fluorescence imaging guides treatment plans, facilitating prompt detection and removal of bacterial burden to reduce wound infection and facilitate healing.

EP346 Assessing a wound's viability and neovascularization in real time using multispectral near-infrared imaging

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Aim: Here, we assessed the bed of wounds treated with novel polylactic acid (PLA) matrices using an optical device to quantify temperature and tissue oxygenation levels.

Method: 5 patients with chronic wounds received weekly applications of PLA matrices until healing. After 7 days, the wound was assessed visually and with a point-of-care multispectral near-infrared imaging device capable of quantifying tissue oxygenation level and temperature in the tissue. Week-to-week changes were recorded and correlated with wound healing.

Results/Discussion: Following the application of PLA matrices, ulcer healing improved significantly in most patients. The matrices induced a robust healing response characterized by the deposition of large content of granulation tissue and the apparition of thick epithelial borders in the wound's edge. In line with these findings, the oxygen saturation of the wound bed increased over time, as well as the temperature of the peri-wound area.

Conclusion: The lactate present in PLA matrices upregulates the production of VEGF and induces a potent neo-angiogenic response. Preclinical data have demonstrated this effect, however, for practical and ethical concerns, it is not always feasible to obtain tissue biopsies to assess the healing response in wounds. The use of novel multispectral near-infrared imaging devices capable of quantifying temperature as a proxy measure of perfusion and the oxygen saturation of a wound bed offers a powerful insight into the physiology of healing. Here, we confirm how the external administration of lactate into a wound bed leads to an increased angiogenic response that is critical for achieving healing.

EP347 Perdanakusuma score compared to falanga score for wound assesment in pressure injury

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Aim: Effective wound assessment determines the diagnosis and management of wounds. An applicable, simple and practical wound bed score is needed to evaluate. The Falanga score is commonly used in assessing pressure injuries. The Perdanakusuma score has been applied for pressure injury assessment in Dr. Soetomo as the biggest referral from Eastern Indonesia. The Perdanakusuma score is a wound bed score whom accuracy is unknown.

Method: This is a retrospective cohort study with an observational analytic design. Medical records of 142 pressure injury patients who were consulted to the Departement of Plastic, Reconstructive and Aesthetic Surgery at the inpatient ward of Dr. Soetomo general hospital on January 1st 2015 – December 31st 2019. This retrospective cohort design compared the accuracy of the Perdanakusuma and Falanga scores in the assessment of pressure injuries. Accuracy assessment will be carried out statistically with the ROC curves and AUC.

Results/Discussion: The research samples were 142 pressure injury patients. The AUC scores of Falanga vs Perdanakusuma on days 0, 5, 10 and 15 were 0.702 vs 0.769, 0.724 vs 0.721, 0.644 vs 0.637 and 0.697 vs 0.576. AUC Perdanakusuma scores were better than AUC Falanga.

Conclusion: The Perdanakusuma score has better precision than the Falanga score during pressure injury treatment in inpatient ward of Dr. Soetomo general hospital. Perdanakusuma score can replaced Falanga score as *gold standard*.

EP348 Prevalence and risk factors of painful diabetic neuropathy: A systematic review and meta-analysis

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Aim: This systematic review and meta-analysis aimed to identify, evaluate, and summarise the evidence regarding the prevalence and risk factors for neuropathic pain among patients with diabetes-related peripheral neuropathy (DPN).

Method: This review protocol was registered in PROSPERO (CRD42023443738). Four English electronic databases and three Chinese electronic databases were searched. A random-effects model was adopted to estimate the pooled prevalence of PDPN and odds ratios (ORs) of its major risk factors. Subgroup and meta-regression analysis for the continent, level of the country, gender, type of DM, mean age, mean BMI and mean duration year of DM were

performed to explore the potential sources of heterogeneity. The robustness of pooled results was assessed through sensitivity analysis. A funnel plot was used to evaluate the presence of publication bias.

Results/Discussion: In total, 45 studies involving 169,479 participants from 23 countries were included in meta-analysis. The global prevalence of PDPN was 50.6% (95% confidence interval [CI] 43.6–57.5%, I² = 99.9%, P < 0.001). The prevalence estimate was higher in North America (70.8%) than in Africa (60.6%), Europe (50.1%) and Asia (46.6%). The potential source of heterogeneity was not found in this study through subgroup and meta-regression analysis. Risk factors analysis showed that female sex (OR = 1.787, 95% CI 1.34-2.39, P=0.049) was associated with PDPN.

Conclusion: A high prevalence of neuropathic pain among patients with DPN was found identified. PDPN has become a serious health concern, especially among women with diabetes and individuals from North America and Africa.

EP349 A wearable lab-on-chip to measure the concentration of urea in chronic wounds

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Aim: Low healing rate in chronic wound is associated with an alkaline pH, which can depend by the catalysis of urea mediated by urease. Our aim was the measurement of urea concentration in chronic wounds using a wearable lab-on-chip that could be integrated with negative pressure wound therapy devices.

Method: An electronic board (7x5 cm) was designed to connect a microfluidic system with a 2D nanomaterial-based sensor that was developed to detect urea concentration without any enzymatic reaction. The electronic board is also capable of measuring pH and temperature, and includes a wireless module for data transmission to PC or smartphone. The tests were performed using a solution that included electrolytes (Na, K, Cl), lactic acid, albumin, and aminoacids as interferents.

Results/Discussion: The lab-on-chip proved suitable to measure urea concentration with a limit of detection of 2 mM for concentration until 20 mM in an alkaline setting that simulated the wound environment.

Conclusion: A wearable lab-on-chip was developed to detect physiological levels of interest for urea although a measurement campaign on patients must be performed to determine the performance in real conditions.

EP350 The wound bed preparation in the treatment of radiodermatitis of the cervico-facial district: 2008/2023 fifteen years of experience

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Aim: Assess the effects of Wound Bed Preparation (WBP) in the management of acute skin toxicity \geq G1 (RTOG scale) in patients undergoing ionizing radiation for the treatment of the head and neck malignant cancer.

Method: from January 2008 to November 2023, 69 patients were treated (57 men and 12 women) aged between 33 and 75 years old (with an average age of 61 years). Radiodermatitis (\geq G1) was managed according to the principles of WBP:

- Reassurance and emotional support with his active involvement in the treatment process
- Nutrition: oral and/or nasogastric (SNG)/Percutaneous Endoscopic Gastrostomy (PEG) tube nutrition with high calorie and protein diet + protein supplement based on Glutamine and Arginine
- Cleansing: Polyhexamethylene Biguanide (PHMB) solution

- Debridement: Surgical, mechanical and autolytic
- Management of inflammatory skin and infection: Hypericum Perforatum and Azadirachata Indica oil
- Exudate management and secondary dressing: silicone foam with silicone edges
- Pain management according to analgesic protocol: Lidocaine cream 5% and/or intravenous Tramadol 100 mg in 100 ml of saline solution, if pain NRS (Numerical Rating Scale) > 3.

Results/Discussion:

- Average dressing change: 84 hours
- Average healing time: 4 weeks
- Healed patients: 69/69
- Average pain: NRS = 3
- Treatment interruption due to skin toxicity: 0/69

Conclusion: Radiotherapy-related skin toxicity managed with WBP allowed patients to reach complete recovery without therapy interruptions. Pain and dressing change times are satisfactory. All this had positive implications on the prognosis of the underlying disease and on the patient's quality of life.

EP351 Clinical significance of early venous enhancement on Magnetic resonance angiography (MRA) of the ischemic lower limbs

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Ischemic lower limb disease is commonly evaluated by computed tomography angiography (CTA) enhanced with contrasts. However, many patients with limb ischemia have impaired renal function, and contrast agents can cause fatal damage to the kidneys of these patients. In these cases, magnetic resonance angiography (MRA), in which contrast is relatively less nephrotoxic, can replace CTA, and early venous enhancement in MRA findings is suspected of being healthier vascular status.

Medical records of patients who performed contrast enhanced MRA between December 2021 and March 2023 in our institution were reviewed respectively. The enhancement determined the degree of brightness (HU) of vessels in MRA. Early venous contrast enhancement was evaluated by the degree of enhancement compared to the normal leg. Arterial occlusion was defined as narrowing and loss of blood flow in MRA.

There were total 22 patients, 18 of whom had venous enhancement and 3 had arterial occlusion. The brightness of enhancement of veins was relatively lower than arteries. However, early venous enhancement seemed to appear more in the presence of collateral vessels which induce collateral circulation. Among our cases, the wound of the patient who has early venous enhancement on MRA was totally healed without surgical intervention.

MRA can replace CTA to evaluate vascular status in ischemic lower limb patients with decreased kidney function. An early enhancement of veins suggests a healthier status with possibility of wound healing.

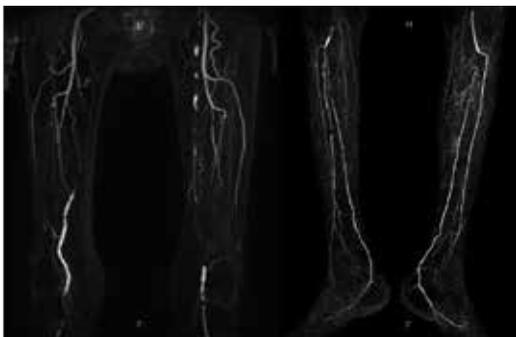


Fig. 1. Arterial occlusion was defined as narrowing and loss of blood flow in MRA.

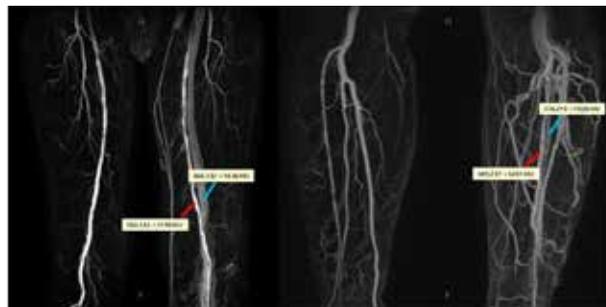


Fig. 2. Early venous enhancement was evaluated through the degree of brightness (HU) of vessels in MRA. Collateral vessels are observed around the enhanced vein.

Demographic data of the study population

Parameter	N = 22
Age, y	68.90
Sex	
Male	18
Female	4
ABI	
Right	1.047
Left	1.042
Ulcer history	
None	3
Present	19
Amputation hx.	
None	13
Present	9
HTN	
None	6
Present	16
DM	
None	2
Present	20

Table 1. Demographic data of the study population.



Fig. 3. The case where venous enhancement is observed in patient, successful wound healing is achieved without surgical intervention. A comparison before and after the treatment.

EP352 Application of the LiDAR technique based smartphone measuring size of the flap

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Aim: The ability to accurately and precisely measure the size of a wound is critical in wound assessment since it determines overall wound management effectiveness. However, physicians and nurses use the traditional method of rectangular measurement using a ruler. This ruler-based rectangular measurement tends to overestimate the actual size of the wound, and the reliability of this technique decreases as wound size increases. This technique is unreliable with up to 44% error found in the measurements. Hence, author introduce LiDAR based smartphone applications which does not require probe for calibration and its accuracy and simplicity.

Method: A total of 27 patients were evaluated for flap size in three different ways. 1) Ruler method 2) Lidar technique method 3) ImageJ analysis Descriptive statistics, box-plot analysis, Pearson correlation, and Bland-Altman plot were used to verify statistical significance.

Results/Discussion: For the three different measurements, the descriptive statistics are as follows (Table1). For the average, the values for the Ruler method, LiDAR technique, and ImageJ analysis are 112.99 cm², 73.59 cm², and 74.29 cm², respectively, and the difference between the mean values for Ruler and ImageJ is 38.7 cm², which is a significant difference of 39.4 cm² compared to the LiDAR technique. In the box plot, it can be visualized that the measurements of LiDAR technique is closer to the gold standard than the conventional ruler method

Conclusion: In conclusion, the results suggest that the LiDAR technique is statistically superior to conventional ruler methods

EP353 New application for early detection of wound infections using near-infrared fluorescence device

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Aim: In patients with diverse wounds, infections present significant obstacles to healing. Clinical confirmation involves identifying infection signs and culturing bacteria, a process taking days. Recently, the portable near-infrared fluorescence device, Fluobeam® (Fluoptics Inc, France) is employed for parathyroid gland distinction during thyroidectomy, perfusion assessment, and flap monitoring. We aim to propose novel method using Fluobeam® to detect wound colonization based on the unique autofluorescence properties of microorganisms.

Method: From September to December 2023, 21 patients (16 males, 5 females) were enrolled, covering diabetic foot syndrome, inotropic-induced necrotic changes, cancer, and burn wound patients. All patients were exposed to Fluobeam® on the initial wound without contrast agents. Autofluorescent areas were identified and recorded (Fig. 1). All examinations occurred in the same operating room environment, and post-examination, tissue cultures were performed on all wounds (Fig. 2).

Results/Discussion: Autofluorescence was observed in 11 patients (9 males, 2 females). Identified bacteria included *Pseudomonas*, fungi, *E. coli*, *Klebsiella*, and others (Table 1), with *Pseudomonas* being most frequent. Additionally, images from areas clinically suspected of fungal infection all showed identification of fungi (Fig. 3). Fluobeam® excites at the near-infrared wavelength of 780nm, detecting light emitted by tissues at 820nm or higher. This highlights the specific bacteria's colonization significantly responding at this wavelength, manifested in Fluobeam®.

Conclusion: In conclusion, this study underscores Fluobeam®'s substantial potential for early detection of microbial aggregates with autofluorescence, particularly *Pseudomonas* and fungi. This presents another valuable application of Fluobeam®, offering essential evidence for wound management decisions in clinical practice.

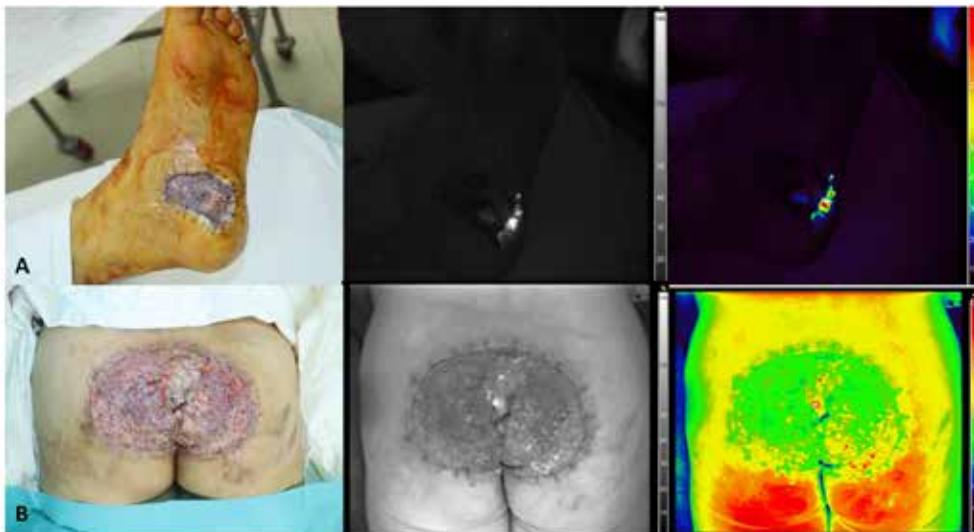


Fig. 1. Example of microorganism detection using Fluobeam®. (A) In a patient who underwent skin grafting on the sole of the foot due to inotropic-induced necrosis, autofluorescence was observed without contrast enhancement using Fluobeam®. This area later revealed the presence of *Pseudomonas*. Additionally, despite the application of Povidone-iodine to normal skin, it showed no enhancement on Fluobeam® as observed. (B) In a patient with a Marjolin ulcer in the sacral area, clinical exudate and wet debris were observed in the central part, and autofluorescence was detected using Fluobeam®. This area later confirmed the presence of *Pseudomonas*.

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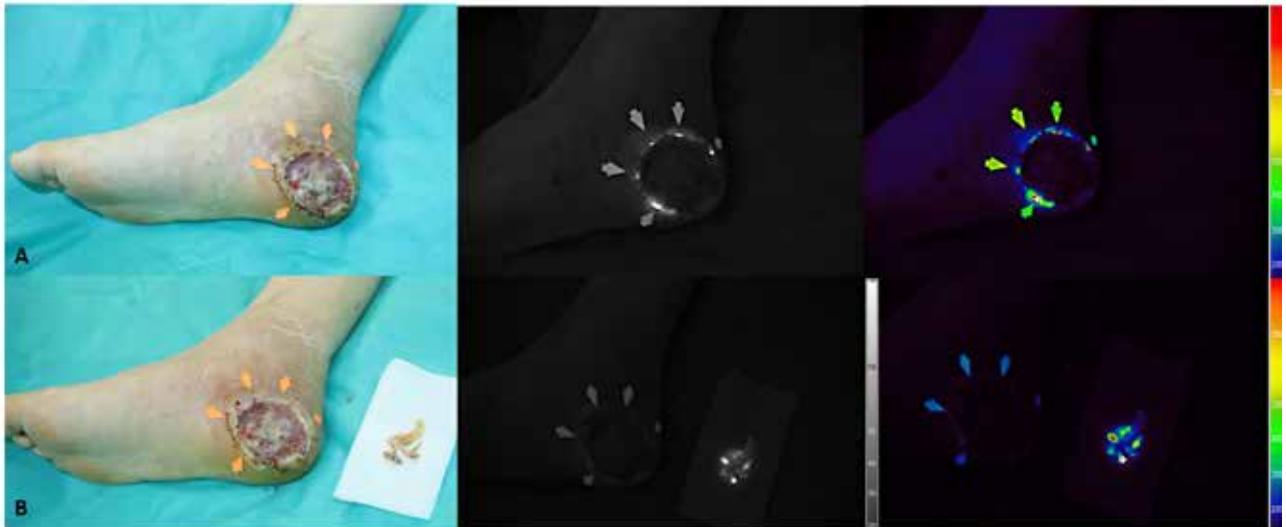
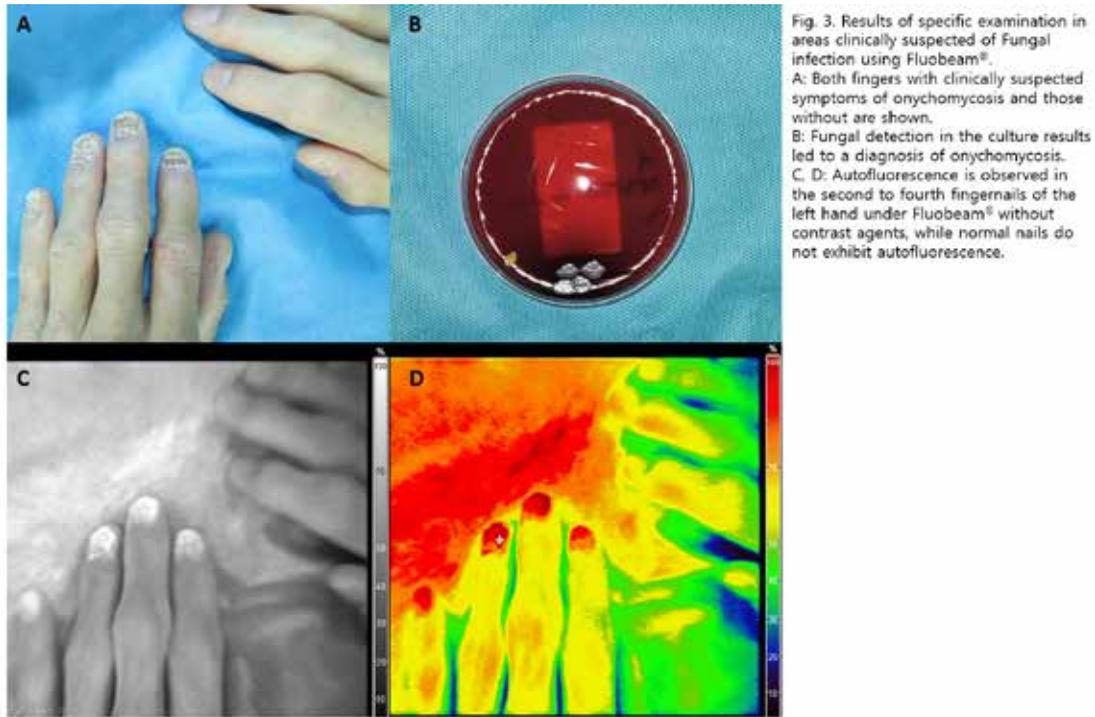


Fig. 2. Clinical example of debridement using Fluobeam® in a patient who underwent skin grafting on the heel of the foot due to contact burn. (A) While differentiation is challenging with the naked eye and exudate, Fluobeam® reveals autofluorescence in the marked area indicated by the arrows. (B) Preserving as much of the normal tissue as possible, only the autofluorescent area is removed. The removed debris exhibits fluorescence, and culture analysis confirmed the presence of *Pseudomonas*.

Table 1. Patient Demographics: The demographics of the group with autofluorescence indicate that the most frequently detected bacterium is *Pseudomonas*.

Subject	Age	Sex	Area	Diagnosis	Detected in Vitro (Genus)	Detected in Vitro (Species)	Underline disease
1	42	M	Left foot	Skin defect	<i>Pseudomonas</i>	<i>aeruginosa</i>	HTN, DM, ESRD
2	60	M	Left foot	Diabetic gangrene	<i>Escherichia</i>	<i>coli</i>	DM
3	72	M	Right foot	Skin defect	<i>Pseudomonas</i>	<i>aeruginosa</i>	HTN, DM, ESRD
4	72	M	Right finger	Skin defect	<i>Candida</i>	<i>albicans</i>	HTN, DM
5	73	F	Left foot	Diabetic gangrene	<i>Klebsiella</i>	<i>pneumoniae</i>	DM, CVD
6	72	M	Sacral area	SCC	<i>Pseudomonas</i>	<i>aeruginosa</i>	HTN, DM
7	50	M	Left foot	Diabetic gangrene	<i>Pseudomonas</i>	<i>aeruginosa</i>	HTN, DM
8	74	M	Right foot	Diabetic gangrene	<i>Enterobacter</i>	<i>hormaechei</i>	HTN, DM, HL, CVD
9	60	M	Right foot	Diabetic gangrene	<i>Pseudomonas</i>	<i>aeruginosa</i>	HTN, DM
10	78	M	Left forearm	SCC	<i>Candida</i>	<i>albicans</i>	HTN, DM
11	71	M	Left hand	Skin defect	<i>Stenotrophomonas</i>	<i>maltophilia</i>	DM

* SCC : Squamous Cell Carcinoma, HTN : Hypertension, DM : Diabetes mellitus, ESRD : End-stage renal disease, HL : Hyperlipidemia, CVD : Coronary vessel disease



EP354 Development of a protocol for taking photographs in chronic wounds from the literature review

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Aim: The photography of chronic wounds is an objective method that allows us to track and record the condition of the wound and provides us with a reliable and highly detailed data of an injury, including its precise location, size and color, among other characteristics.

Objective: To review the literature on this topic and develop a protocol for taking photographs of wounds in clinical practice, in a correct manner.

Method: Systematic review of the scientific literature in the databases: Medline, Pubmed, Cinahl, Web of science and Lilacs, without applying age filters until the date of 12/15/2018. With the search strategy: “(“ Photography “[Mesh]” AND” Wounds and Injuries “[Mesh]” OR” Skin Ulcer “[Mesh]”, later, a narrative synthesis is made and it is translated into a protocol of Take a picture.

Results/Discussion: A total of 320 articles were obtained, of which, applying the inclusion and exclusion criteria, a total of 20 articles were selected. From these it obtains information for the realization of the protocol, highlighting the following sections: Before photographing (consent), identification of the patient, cleaning of the wound, calibration method, angle and distance for taking photographs, using the zoom, flash and lighting, camera type and finally information record.

Conclusion: The present review has made it possible to propose a protocol for taking photographs, since there is no study or study in Spanish about it.

EP355 Reshaping wound care: mobile app with AI-enhanced automated wound segmentation

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Aim: Accurate wound segmentation in medical wound care imaging is essential for informed treatment decisions in clinical practice. This study introduces an automatic wound segmentation solution, elevating standards and enhancing objectivity. Integrated into mobile apps, it revolutionizes daily patient care, providing precise machine-driven measurements and setting a new standard in wound imaging.

Method: For this study, a diverse dataset of 1510 training, 500 validation, and 220 testing images was collected, encompassing various wound types, sizes, locations, and skin tones. Ethical approval was obtained, and patient consent was diligently secured. Wound region annotations, validated by specialists, ensured high-quality ground truth data, reflecting a commitment to ethical and patient-centric research. Built on the Deeplabv3+ framework with a ResNet50 backbone pre-trained on ImageNet, the model reshapes the landscape of semantic segmentation within clinical practices. Data augmentation strategies increased model generalization across diverse conditions.

Results/Discussion: Results showed high performance, with an average DICE score of 90%, IOU score of 83%, and recall rate of 88%. Quantization achieved size reduction with minimal impact on precision. Additionally, its integration into the wound App* resulted in an average inference time of 0.3 seconds when running locally on the smartphone, and the availability of an SDK allows easy integration into third-party applications. Tflite conversion and quantization reduced the model's size by 75%, facilitating integration into real-world apps.

Conclusion: The model's incorporation into clinical practice represents a significant advancement in wound documentation, streamlining measurement processes, facilitating treatment decisions, and improving patient outcomes.

* imitowound

EP356 Introducing ACHILES, a new decision tool for accurate heel ulcer diagnosis

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Aim: Estimates on pressure ulcer (PU) incidence and prevalence vary widely according to the definition and category of the ulcer, the patient population and clinical setting. An area of confusion, leading to variation in PU reporting, is how to categorise heel ulcers on patients with diabetes.

Method: The ACHILES (Aetiology, Circulation, Help, Infection, Load, Education, Score) decision tool has been designed to enable clinician's to correctly distinguish between a heel PU and diabetes foot ulcer.

Results/Discussion: A pilot of the ACHILES tool with generalist clinicians was completed in 3 stages by providing 8 foot-ulcer case studies with images and asked to provide a deferential diagnosis.

They were then provided with an overview on how to apply the tool.

This resulted in 264 possible answers.

Wound image only, total correct were 164, with 100 incorrect/missing

Correct answers slightly increased when the patient case history was provided alongside the wound photograph with 197 correct answers and 67 incorrect or missing answers.

The rationale for this was to determine if the patient's diabetes diagnosis would influence clinical judgement.

With the ACHILES, the incorrect answers reduced to 10 and the correct answers increased to 254, demonstrating not only that the tool is effective but there is frequent misdiagnosis of heel ulcers.

Conclusion: Reducing under-reporting is key to quality improvement within healthcare. Accurate assessment and diagnosis are key to effective care.

ACHILES has been designed to be simple and practical and standardisation to define, treat and report heel ulcers.

EP357 Experiences of assessing skin changes associated with chronic venous insufficiency (CVI) and peripheral arterial disease (PAD) in people with dark skin tones: A qualitative interview study

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Aim: There is an inappropriate variation in abilities to assess vascular skin changes of the lower limb in people with dark skin tones. This study aimed to explore the barriers and facilitators clinicians experience in undertaking these assessments.

Method: This study is a theory driven qualitative interview study based on the 'theoretical domains framework of behaviour change'. Invitations to participate were shared on social media. Ethical Clearance Reference: RS/DP-22/23-36610

Results/Discussion: Twenty-one clinicians working in the United Kingdom were interviewed from July - November 2023 (15 nurses, 5 doctors, 1 physiotherapist). Themes emerged relating to skills, professional role, decision making, environment and social or emotional influences.

Participants used standardised tools and guidelines to inform their assessment. However, some participants reported techniques to improve skin inspection through specific lighting and manipulating the skin. Participants felt dependent on patient reported symptoms and history to aid their diagnosis where skin changes were poorly visualised. Some perceived conversations about skin pigmentation changes uncomfortable, but this was alleviated when clinicians had similar skin tones or extensive experience. Working closely across professional groups, not relying solely on visual inspection and re-assessing to confirm diagnosis also seems advantageous.

There was a concern that early signs are missed as glancing at the legs is insufficient to recognise skin changes in dark skin tones.

Conclusion: Improving clinical assessment and education about vascular changes in the lower limb requires an inclusive approach involving patients with a range of skin tones. The efficacy of experientially developed techniques needs investigating.

EP358 Tools to aid in measuring complete wound debridement

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Aim: To create a standardized set of guidelines for what defines adequate debridement: Complete removal of non-viable tissue and/or infected tissue with the assistance of near infrared spectroscopy (NIRS) and bacteria fluorescent imaging.

Method: Patients who had an open wound or prominent callus were initially evaluated for debridement based solely on clinical assessment. NIRS and bacteria fluorescent imaging was then performed to determine if advanced imaging would change the debridement plan. Any tissue with a deoxyhemoglobin (Hb) value greater than 0.5 with NIRS was classified as non-viable and was sharply debrided to reduce infection risk. Any tissue that fluoresced red or cyan was determined to have greater than 10^4 bacteria/gram of tissue and was thoroughly cleansed or debrided to remove colonized bacteria. The wound was reimaged post-debridement to ensure completeness.

Results/Discussion: NIRS was able to detect non-viable tissue with greater sensitivity than clinical assessment alone. Bacteria fluorescent imaging was able to detect bacteria that was not clinically evident.

Conclusion: Utilizing NIRS and bacteria fluorescent imaging can be a significant aid in determining complete debridement. A routine and thorough debridement will promote re-epithelialization through removal of devitalized tissue, bacteria, and senescent cells. Advanced imaging can act as a guide as well as an assessment of adequacy of debridement.

EP359 Technical translation and content validity of the Skin Tears Knowledge Assessment Instrument (OASES) into Brazilian Portuguese

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Aim: To carry out the technical translation of the Skin Tears Knowledge Assessment Instrument (OASES) into Brazilian Portuguese and analyse the content validity of the translated version.

Method: A methodological study that included two steps according to the OASES instrument technical translation into Brazilian Portuguese and the analysis of its content validation. The authors chose a more simplified method because the instrument is for knowledge measurement and is based on previous guidelines already translated into Brazilian Portuguese. Besides that, one of the leading researchers participated in the OASES publication. The translation was performed by a Brazilian health professional who was also fluent in English and knew about the skin tears issue; the translated version was then evaluated by a committee composed of eight experts to establish its content validity. After this step, the leading researchers and the committee members adjusted the final version, which was back-translated into the original language. The final back-translated version was sent and analyzed by one of the authors of the original instrument. The data produced by the committee was analyzed using the Content Validity Ratio (CVR). The critical CVR established was 0.75. The Ethics Committee approved the research protocol.

Results/Discussion: The CVR for the whole instrument (112 items evaluated) was 0.96. Only 3 items showed an agreement less than 0.75; these were reviewed by the committee of judges, achieving a total consensus among them.

Conclusion: We now consider the OASES Brazilian version available for use in clinical practice and education.

Leg Ulcer 3

EP360 Effectiveness of four-layer bandaging in the treatment of venous ulcers

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Aim: Venous hypertension occurring in venous insufficiency is the cause of venous ulcer. The pressure generated by venous hypertension can be mitigated through various compression methods. Our aim is to assess the effectiveness of the four-layer bandaging technique in overcoming the pressure created by venous hypertension. While acknowledging the significant role of various treatment methods and wound care approaches in the healing process, continuous compression applied by four-layer bandage plays a crucial role in treatment in venous ulcers.

Method: Our study included patients treated for venous ulcers between 2021- 2022. Successful outcome was defined as complete ulcer healing. During the initial examination, specific characteristics of the wounds were identified, investigations were conducted to determine underlying diseases that could be causing the ulcers. Patients were initially treated as inpatients in hospital. After significant improvement in the ulcers, they were discharged and followed up at the wound-care unit. Surgical debridement and intravenous/oral antibiotics were provided to cases showing signs of slough and severe infection. Data collected included ulcer onset duration, prior surgeries, debridements and presence of deep vein thrombosis.

Results: The cohort, averaging 55 years (20-86), comprised 66% males and 34% females. Ulcers were predominantly on the left (52.6%) leg, with 10.2% presenting deep vein thrombosis. Diosmin-hesperidin and pentoxifylline were used pharmacologically. Negative pressure wound therapy was applied to 22.4% of the patients. 92% of ulcers exhibited complete healing during the 3.4-month average follow-up.

Conclusion: This study underscores the pivotal role of four-layer bandaging in venous ulcer treatment. Effective compression therapy, combined with appropriate wound dressings and infection control, yielded an impressive 92% healing rate. The findings highlight the significance of product selection and wound care in optimizing outcomes for venous ulcers.

EP361 Application of maggot therapy in chronic wounds

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Aim: Maggot therapy or larval therapy is a type of biotherapy that involves the application of live and healthy larvae to skin and soft tissue wounds with the aim of cleaning necrotic tissue present in the wound. The most commonly used flies for larval therapy belong to the family Calliphoridae. The most widely used species is *Lucilia sericata*, commonly known as the green bottle fly. Studies have shown the presence of *Proteus mirabilis* in the larval gut flora of this species. The four main effects of larvae can be listed as biological debridement, wound disinfection, stimulation of healing, and prevention and eradication of biofilm formation. In this study, the effectiveness of larval therapy on patient complaints and wound tissue in healing chronic wounds was investigated.

Method: In this study, 13 cases with diabetic foot ulcers and sacral decubitus ulcers who applied to our clinic between January 2023 and July 2023 and received maggot therapy were retrospectively evaluated at the University of Health Sciences Basakşehir Cam and Sakura City Hospital. The wound beds of the cases were assessed.

Results/Discussion: This retrospective study included 13 cases. The average ages were determined as 57.6 for females and 62.4 for males. The most common symptom observed was a draining and malodorous wound (90%). Eight cases (61.5%) had diabetic ulcers on the lower extremities, and five cases (38.5%) had sacral decubitus ulcers. After a minimum of 3 sessions of maggot therapy, the wound beds were observed to be richer in granulation tissue and with reduced drainage compared to before maggot therapy. The mean age of patients diagnosed with diabetic ulcers was 59.8, while it was 62.7 for patients diagnosed with sacral decubitus ulcers.

In this clinical study, after 3 sessions of maggot therapy before the operation, it was observed that an appropriate area for biological debridement and optimal granulation tissue was achieved in our cases. Thus, repair was performed with suitable skin grafts for cases requiring surgical indications. In general, similar and favorable outcomes were obtained in patient results compared to previous studies. For cases with high-risk malignant comorbidities where surgery plans could not be made, maggot therapy provided suitable area cleaning and infection control. The wound tissues were left for secondary healing. In this study, the negative aspects of this treatment modality were also addressed; complaints such as disgust and irritation towards the applied larvae were observed in 60% of our cases. This result is consistent with previous studies in the literature. Additionally, the distinct odor of these larvae can be considered as a factor contributing to this irritation. The limited number of cases and the subjective evaluation of wound healing were considered weak points of the study.

Conclusion: Non-healing wounds such as diabetic ulcers and sacral decubitus ulcers not only deteriorate the quality of life for patients but also lead to serious problems if appropriate treatment is not received. Maggot therapy, when applied non-invasively in the early stages, was observed to clean necrotic tissue in the area and stimulate granulation tissue formation. In later stages of the disease, it was shown to debride the necrotic tissues and prepare the area for surgery. Maggot therapy was used as an alternative method to surgical debridement. To highlight the positive aspects of maggot therapy, it provides minimal pain or even painless application, as the larvae directly distinguish necrotic and viable tissues, there is no need for surgical boundary-setting, no need for an operating room for debridement, and local growth factors are secreted, leading to faster wound healing. The negative aspects of maggot therapy include patients discontinuing treatment, disgust towards applied larvae, feeling larvae bites, and contamination. In conclusion, this study demonstrated that maggot therapy could be effectively used together with and as an alternative.

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EP362 Hospital clinicians' perspectives on barriers and enablers in using compression therapy as a treatment plan for inpatients with venous leg ulcers in secondary care: a qualitative systematic review

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Aim: Venous leg ulcers are enormous health problems in the UK. They cost the NHS around 2 billion pounds every year. They are painful, distressing, which negatively affecting people's quality of life. Compression therapy, the mainstay treatment for patients with venous leg ulcers, is routinely used in community care, but not in secondary care. The reasons for the lack of adherence to evidence-based practice in secondary care are poorly understood. This review aims to gather hospital clinicians' views and experiences on the use of compression therapy for inpatients with venous leg ulcers.

Method: Six databases were searched using the pre-defined eligibility criteria — Medline Ovid, Embase, CINAHL Complete, PsychINFO, ASSIA and Scopus. Other methods were also used such as grey literature search, reference and citation tracking. Only articles written in English were examined and no restrictions on publication date was included. An adapted CASP checklist was used for critical appraisal. Meta-ethnography was used for data synthesis.

Results/Discussion: 7,040 (5,707 databases, 1,333 other methods) titles and abstracts and 41 full-text papers were screened. Four papers were selected for final synthesis. The meta-ethnography revealed three key themes, which are educational needs, patient factors and organisational resources.

Conclusion: The review indicated that the management of inpatients with venous leg ulcers in using compression therapy presents challenges for hospital clinicians. Despite the barriers identified, the reviewer recognised a lack of qualitative studies primarily exploring views and experiences of hospital clinicians using compression therapy. Further research is needed to fill this evidence gap.

EP363 Evaluating a neuromuscular electrostimulation device in non-healing venous leg ulcers

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Aim: After being involved in a recent RCT, the Tissue Viability team decided to take a more pragmatic approach in evaluating the addition of a neuromuscular electrostimulation (NMES) device to standard care in 5 patients with non-healing leg ulcers, away from the constraints of a formal study.

Method: Patients were selected if they had venous leg ulcers that were not following a positive healing trajectory after receiving a minimum of 4 weeks standard care.

Patient ID	Sex	Age	Wound location	Baseline Wound status	Base wound measurements (length x width)
1	Female	72	Dorsum of foot	Static	2.7 x 1 cms
2	Female	68	Gaiter area	Increasing in size	1.8 x 1.5 cms
3	Female	67	Lateral malleolus	Static	1.8 x 1.6 cms
4	Male	59	Gaiter area	Static	2.5 x 2 cms
5	Male	60	Medial malleolus	Static	3 x 1.7 cms

Pt number	Baseline wound location	Baseline wound length (cm)	Baseline wound width (cm)	Baseline wound area (cm ²)	Review 1 28 days Wound length (cm)	Review 1 28 days Wound width (cm ²)	Review 1 28 days Wound area (cm ²)	Review 2 56 days Wound area (cm ²)	Maximum NMES therapy (days)	No. of NMES cycles completed	Healed
1	Dorsal foot	2.7	1	2.7	0	0	0	N/A	28	1	Y
2	Gaiter	1.8	1.5	2.7	0	0	0	N/A	28	1	Y
3	Lateral malleolus	1.8	1.6	2.88	1	0.7	0.7	0	56	2	Y
4	Gaiter	2.5	2	5	2.5	1.5	3.75	0	56	2	Y
5	Medial malleolus	3	1.7	5.1	0.8	1	0.8	0	56	2	Y

All 5 patients wore the NMES device for 12 hours per day, 7 days per week. Patients continued with standard care during the evaluation period.

Results/Discussion:

Patients' 1 and 2 wounds had fully healed at the end of 1 cycle (28 days) of treatment with the NMES device. Patients' 3,4 and 5 wounds had all healed by the end of 2 cycles of treatment with the device.

2 patients reported pain at baseline assessment. Both patients reported a reduction in pain with use of the device.

The positive outcomes achieved here were also demonstrated in the previously mentioned RCT1. In the RCT, adding the NMES to standard care more than doubled the rate of healing for patients with venous leg ulcers compared with standard care alone.

Conclusion: This reported case series demonstrates how the NMES device was used to manage a group of patients with non-healing venous leg ulcers in a real-world clinical setting. The above outcomes emphasise the benefit of adding the NMES device to the leg ulcer pathway, improving wound healing efficiency.

EP364 Beyond bandages, a collaborative project to develop confidence and competence in leg ulcer management

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Aim: This project was a partnership between two Community Interest Companies in England, who believe that leg ulcer management is more complex than the development of clinical skills alone.

Method: A tripartite intervention to improve outcomes for patients and practitioners working in community leg ulcer clinics.

This intervention consisted of a formal training course to ensure clinical competence. A coaching plan framed within the context of leadership to empower practitioners to embrace leadership for change. The development of a community of practice which cumulated in a service wide masterclass aimed to develop a sense of cohesion, to empower, challenge and bring critique to practice and service delivery (Eriksson, 2007).

Results/Discussion: At practitioner, level confidence in challenging senior colleagues when the treatment plan is suboptimal increased from 20% to 50%, confidence in diagnosis increased from 0% pre intervention who felt completely confident to 33.3%, and complete confidence in preparing a treatment plan increased from 16.7% to 60%.

At service level, CQUIN attainment overall increased from 2% (quarter 1) – 22% (quarter 2) and time to assessment reduced from 143 days (September) to 78 days (December) that's a 50% reduction in wait.

Sample size was small. Plans to replicate beyond the initial 2 cohorts are in place.

Conclusion: Changing practice to improve outcomes for people with leg ulcers is more complex than development of task based clinical skills. Clinicians must feel part of a cohesive community and feel empowered as leaders to create change.

Eriksson M, Lindström B. Antonovsky's sense of coherence scale and its relation with quality of life: a systematic review. J Epidemiol Community Health. 2007.

EP365 Creating a 'leg'acy through service transformation

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Aim: In recent years variations in practice and gaps in patients access to a specialist leg ulcer service were identified. Following the release of the National Wound Care Strategy Programme's Lower Leg Recommendations, changes in service provision were approved with the aim of promoting a positive culture of treating lower limb conditions.

Method: The new leg ulcer service specification addresses inequitable access to a specialist service and standardises leg ulcer care delivery. To ensure that clinicians had the right knowledge/skills, funding for a Specialist Practice Development Nurse was agreed, and an educational programme was rolled out to all Practice Nurses, Community Nurses, and nursing homes.

To overcome resistance and support the new service model, a campaign approach was adopted. The PULL Together (Preventing Ulcerated Lower Limb) aims to develop a culture with prevention/early intervention at the heart of the model.

Results/Discussion: Changing culture amongst clinicians requires a drive to tackle ineffective practices, challenge mindsets and raise awareness of the potential harm for patients who do not receive the right care at the right time.

Through education and the new service model, benefits are now evident and previously resistant staff now taking a proactive approach in managing their caseloads.

Conclusion: The PULL Campaign has captured the interest of the ICB proactive care board and funding is being sought to support prevention and care delivery beyond primary and community care.

There is a need for continued investment in the care pathway and education to make this a lasting 'leg'acy.

EP366 Reducing inequalities in lower limb management in nursing home residents through a service improvement design

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Aim: Within our local area the Tissue Viability [TV] Service have historically provided virtual advice for Nursing Home Residents. From April 2023 we have rebranded this aspect of the service to meet NICE and NWCS recommendations for lower limb management. We had already produced a quality lower limb pathway, implemented for District and Practice Nursing use. This was utilised by the TV team along side a brief Service Improvement Plan to extend this service to nursing home residents.

Method: An 'assessment and diagnostic' service was created within TV team where lower limb assessments are prioritised and carried out by TVN. NWCS/NICE recommendations are followed for ongoing management using the trust designed lower limb pathway. Support from industry was crucial for a small team to utilise a standardised, easy to use product, provide education and allow for continuity and ease of procurement.

Results/Discussion: Ongoing results are being collected in terms of case studies/wound healing rates. Increased productivity can be seen in terms of lower limb assessments being completed for patients in residential nursing home settings and more patients are in a form of compression. Compliance with NICE clinical guidance across different patient demographics reducing inequalities.

Conclusion: Proactive efforts have been implemented to reduce inequality, improve collaboration, highlighting burden of lower limb ulcerations and encouraging NH services to be able to understand compression as a prescription of care for lifelong treatment.

EP367 Implementing National Wound Care Strategy Programme leg ulcer recommendations in a community nursing setting

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Aim: To effectively implement the recommendations of the National Wound Care Strategy Programme (NWCSP) giving high quality lower limb care for patients in a community setting.

Method: A lower limb pathway had been in place guiding care for patients in the community. This was adapted to include initiation of immediate and necessary care, as recommended by the NWCSP.

Teaching sessions were conducted to raise awareness of the new pathway and nursing teams given printed information to support their learning. Mandatory update sessions have been rolled out across the trust to update and enhance practice in lower limb management.

An audit was carried out prior to implementation of the changes. A further audit was completed to evaluate the effectiveness of the education given on the new pathway. Records were also completed to monitor the number of nursing staff trained and competent in lower limb care.

Results/Discussion: Initial audit, prior to changes in lower limb care, showed 22% of patients on the caseload had been fully assessed, including doppler studies, and were being treated with therapeutic compression levels.

A year post implementation of the pathway 60% of patients were being treated following recommendations of the NWCSP.

Over the year 71 nursing staff members have completed updated training in lower limb management and have been deemed competent to provide best practice care.

Conclusion: Implementation of a Lower Limb Pathway with associated training provided to staff has enable patients within the trust to receive high quality effective lower limb care.

EP368 Improving lower limb care by making lower limb assessment and ABPI a priority for the neighbourhood team

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Aim: ABPI and lower limb assessments were routinely being deferred due to capacity and demand on the Neighbourhood team as they were not seen as a priority. This resulted in delayed wound healing as patients were not in the correct treatment. Lower limb CQUIN requirements were not being met. It was recognised that changes were needed in how the team prioritised lower limb care.

Method: Set aside a full day for a trained nurse to undertake lower limb assessments, protected time so the nurse wasn't pulled away to see urgent call outs – known as “Doppler Days”. ABPI and lower limb assessments were booked in as patients were referred onto the caseload or when a repeat ABPI was due. An equipment bag was created that contained everything the nurse required to perform a full lower limb assessment and commence the appropriate treatment at that visit. TVN facilitated refresher training for experienced staff on the lower limb assessment and performing and ABPI, new staff were encouraged to attend the full day training provide by the Tissue Viability Service.

Results/Discussion: Soon became clear that 1 day a week was not enough to bring down the backlog and new patients were still waiting 6 weeks for an ABPI. A second day was added to bring down the waiting time. Patients did not want a lower limb assessment at 8am on a morning, so the nurses were given some routine diabetic patients to see first thing, then planned in for 3 lower limb assessments. The result was 6 patients a week had a full assessment and the correct treatment commenced and the waiting list was eradicated.

Conclusion: Patients with lower leg wounds now have a full lower limb assessment with 14 days referral to the service are in the correct treatment. Nurses confidence in performing a lower limb assessment and making decisions on correct level of compression has improved. The “Doppler Day” is being rolled out to the other District nursing teams in the trust. Going forwards the team are working towards having a leg ulcer hosiery kit available at the point of assessment to be applied immediately to provide reduced or full compression.

EP369 Efficacy of hyperbaric oxygen in combination with hemoglobin spray in hard-to-heal sloughy wounds

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Aim: This study was designed to demonstrate the efficacy of combining hyperbaric and topical oxygen therapy.

Method: Patients with non-healing diabetic foot wounds with at least 20% sloughy and necrotic tissue being followed up in our clinic were included in the study. Patients were divided into two groups: 21 patients who received standard personalised wound care, hyperbaric oxygen (HBO) and hemoglobin spray (oxygen group), and 21 patients who received standard personalised wound care without HBO and hemoglobin spray (control group). Data were collected retrospectively from sources including patient information forms, clinical epicrisis notes, imaging and laboratory results. Photographs taken at regular intervals during outpatient clinic visits were used for wound assessment. ImageJ application was used to calculate the percentage of sloughy tissue. After sixteen weeks of follow-up, complete closure was considered healing.

Results: At baseline, there were no significant differences between the two groups in terms of gender, age, SINBAD score, HbA1C and CRP levels ($p < 0.05$). At the end of sixteen weeks, 85.7% of the oxygen group and 52.4% of the standard group had a complete recovery. The difference was statistically significant ($p: 0.02$).

Conclusion: Our study is the first in the literature to combine systemic and topical oxygen treatments. Considering that patients can receive HBO for two hours per day, the combination of topical hemoglobin spray may provide prolonged oxygenation of the wound. This may allow patients to maximize both the systemic and topical benefits of oxygen. This approach may shorten the wound healing process and increase healing rates.

EP370 Evaluation of patients with diabetic foot treated with topical epidermal growth factor

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Aim: Epidermal growth factor (EGF) is a protein-structured growth factor that stimulates cell division, differentiation, survival, proliferation, growth and cell migration and is involved in many physiological and pathological processes in the organism. Studies have shown that EGF accelerates wound healing by increasing fibroblast proliferation, accelerating granulation tissue formation, increasing epithelialisation and stimulating new vessel formation. In our study, we aimed to present the results of patients with diabetic foot wounds treated with topical epidermal growth factor.

Method: Diabetic foot patients who received topical EGF in our outpatient clinic were evaluated. Personalised wound care was also provided to all patients. Demographic data, HbA1C levels, healing times, wound cultures and Wagner staging were recorded. Treatment processes and outcomes of patients who were regularly followed up and documented were evaluated.

Results: Ten patients were included. The mean age of the patients was 64 ± 6.2 years. The mean HbA1C of the patients was 10.59 ± 2.58 . The patients' wounds were graded Wagner grade 3 in six patients and grade 2 in four patients. The mean time to wound closure was 10.9 ± 2.42 weeks for all patients. No side effects associated with the topical growth factor were observed.

Conclusion: Studies in the literature show that topical EGF is effective in Wagner stages 1 and 2. The cases we have followed suggest that replacing growth factors with topical EGF in diabetic foot wounds may reduce wound healing time and increase the rate of wound healing, even in Wagner grade 3 wounds. Well-designed randomised controlled trials are needed.

Diabetic Foot 2

EP371 Living dermal equivalent for the treatment of long-term non-healing wounds in patients with diabetic foot

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Aim: To evaluate the clinical results of application of living dermal equivalent (LDE: human allogeneic plasma-based hydrogel and cultured adipose-derived stem cells) and its effectiveness in wound healing in patients with diabetic foot syndrome (DFS).

Method: Clinical, histological, morphometric, immunohistochemical methods were applied; 84 patients with DFS were included in the study with postoperative wounds, before plastic closure of the defects. Out of which 44 patients (group 1) had the LDE application, 40 (group 2) – a standard treatment.

Results/Discussion: 2 weeks after primary foot surgery, group 1 showed a reduction in both the area and depth of wound defects by 46.6±12.2%, in group 2 only in 22.5±9.4% of cases there was a tendency to wound reduction. In group 1, the wound defect was filled with bright granulations by 86.1±12% of the area, in group 2 - by 46±9%. LDE effectiveness was also confirmed by immunohistochemical studies: an increase in fibroblast number in the biopsy specimen ($p<0.05$) and an increase of eNOS synthase level were noted. Patients of group 1 had autodermoplasty by 14-15 days after the primary foot surgery with a 94-96 % success rate of skin graft engraftment. In patients of group 2 autodermoplasty was performed on 24-28 days after the initial operation with a 66% success rate of a skin graft engraftment.

Conclusion: LDE application in patients with DFS can significantly reduce the time and conditions required for successful autodermoplasty.

EP372 Impact of wound hygiene incorporating an antibiofilm gelling fiber dressing on hard-to-heal diabetic foot ulcers

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Aim: To evaluate the impact of Wound Hygiene (WH), a 4-step (cleanse, debride, refashion, and dress) biofilm-based wound management strategy, on hard-to-heal diabetic foot ulcers (DFUs).

Method: A subgroup analysis of patients with DFUs in a prospective, real-world study of hard-to-heal wounds managed with WH (incorporating an antibiofilm gelling fiber dressing¹) for approximately 4 weeks, or as clinically appropriate, was performed. The primary endpoint was change in wound volume from baseline to the final assessment.

Results/Discussion: 66 patients had DFUs and were included in this analysis (median treatment duration 35 days). Of 58 patients with baseline and final wound volume assessments, 20 (34%) had complete wound closure and 86% had at least one-third volume reduction. Mean wound volume reduced from 37.9 cm³ at baseline to 3.3 cm³ (91% reduction) at final assessment ($p<0.001$). Exudate levels changed from predominantly moderate (46%) or high (26%) at baseline to predominantly low (43%) or none (21%) at the final assessment ($p<0.0003$). Signs of clinical infection were present in 49% at baseline, which had reduced to 1% at final assessment ($p<0.001$). Suspected biofilm was 84% at baseline and 24% at final assessment ($p<0.001$). At final assessment, 18% had healed and 71% had improved.

Conclusion: Management with WH resulted in healing or improvement in nearly all hard-to-heal DFUs, and a statistically significant decrease in wound volume, exudate level, suspected biofilm, and local infection. Our findings suggest that WH incorporating an antibiofilm dressing is an effective treatment strategy for DFUs.

1. Aquacel™ Ag+ Extra

EP373 Podiatric surgery and integrated diabetic foot coordinators collaborative working in secondary care reduces length of stay and improves patient outcomes

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Aim: The development of a non-surgical integrated coordinator alongside the podiatric surgery team at Great Western Hospital has optimised the care of the patient's requiring treatment within the diabetic referral pathway. As well as integrating the community with the acute services and improving access for diabetic foot complications, any acute admission of a diabetic patient with a foot wound is referred to the teams for assessment and management. This poster aims to demonstrate the service model and audit of outcomes.

Method: Data from an established database was used to review assessment, length of stay, surgical oversight, and healing rates over a 15-month period. This data was also compared with historical length of stay data from the initial development of the coordinator role.

Results/Discussion: The length of stay in 2004 was an average of 33.7 days which has reduced to an average of 6.57 days by 2022. Review of mortality and re-ulceration rates demonstrated 65% of patients alive and ulcer free at 12 weeks. This is a significant improvement in patient morbidity and mortality compared to the national average of 45%.

Conclusion: Collaborative working between the two teams has ensured patients are assessed quickly, with management optimised, surgical intervention completed if necessary and that there is sooner, and safer discharge coordinated with oversight of the discharge plan. This has ensured that patients with complex diabetic foot complications have access to the right care at the right time which is vital for maximising outcomes of this complex patient group.

EP374 Impact of Continuous Glucose Monitoring on Glycaemic control in type 2 High Risk Diabetic Foot Patients

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Background: Diabetic foot disease and its complications have substantial financial implications for the NHS. One of the primary goals in management of diabetic foot patients is to have tight glycaemic control. The use of CGM (Continuous Glucose Monitoring) and its benefits in type 1 and 2 diabetes patients has been widely explored and established however use of CGM is currently widely used only in people with type 1 diabetes.

Aim: To determine whether the use of continuous glucose monitoring in diabetic foot patients aid in improving glycaemic control in Type 2 Diabetes patients with foot ulcers.

Method: Type 2 diabetes patients who regularly attend the high risk foot clinic for the management of complex diabetic foot ulcers, were provided with continuous glucose monitoring (CGM) devices (FreeStyle Libre-2). All selected patients were switched to basal- bolus insulin regime, if not already on it, prior to starting CGM. Appropriate training in the use of the device was provided. The patients were reviewed in the foot clinic on a weekly to bi-weekly basis depending on the severity of foot ulcers and glycaemic control reviewed at each visit. Patients were advised to adjust insulin dose depending on readings from the CGM. HbA1c was checked just before and 3 months after the start of CGM. Test of Significance for HbA1c reduction was calculated by paired T-test.

Results: A total of 16 patients were included for this study. All the patients in this study had type 2 diabetes mellitus. The mean age of patients was 64.38 years (range 30-86) with 93.75% being male. The mean HbA1C prior to providing CGM was 87.63 mmol/mol (range 55-132). Mean HbA1c after 3 months of CGM use was 68.56 mmol/mol (range 49-94). Mean reduction in HbA1c for patients was 19.06 ± 22.67 ($p=0.0043$). The highest improvements were noted in those who had higher HbA1c at baseline.

Discussion: This study showed significant improvement in glycaemic control with the use of CGM, which is well known to have positive influence on wound healing. The utility of CGM in improving glycaemic control is well known and is currently widely used in T1DM and pregnancy. Its use in T2DM so far, according to the NICE guidelines, is restricted and not directly recommended for high-risk diabetic foot patients. Further follow-up and larger scale studies are needed to validate the findings and to observe the impact on wound healing.

EP375 Association of hemoglobin A1c and wound healing with application of omega-3 fatty acid fish skin

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Aim: Wound healing is a complex process often impaired in the setting of diabetic patients with elevated blood sugars. Literature shows rate and percentage of healing are decreased for each percentage above 6%. The relationship between hyperglycemia and self-repairing abilities is additionally taken into consideration. The goal of this study was to investigate how hemoglobin A1c (HbA1c) affected the treatment course in wounds with while utilizing omega-3 fatty acid fish skin xenografts.

Method: 22 subjects with a diagnosis of either type I or type II diabetes mellitus with underlying osteomyelitis were evaluated in this study to assess HbA1c in relation to wound healing. Patients had any risk for or confirmed infection treated prior to graft application. All patients received identical wound care which consisted of serial debridements followed by fish skin xenograft applications for a period of multiple weeks until wounds were completely healed.

Results/Discussion: All 22 patients made progress toward wound healing with approximately 3-4 weeks between each omega-3 fatty acid fish skin xenograft application. The average duration of wounds present were 14.2 weeks. Average HbA1c was 9.6% at the time of the first graft application. No patients developed wound reoccurrences once full epithelization took place.

Conclusion: Management of lower extremity wounds complicated by pathophysiology remains challenging and multifactorial. Results demonstrate that there is overall success in utilizing fish skin xenografts with elevated hemoglobin A1cs. Healing rates are increased in comparison to tradition wound care and grafting techniques.

EP376 Utility of fish xenograft in diabetic plantar foot ulcerations

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Aim: Study aimed to assess the utilization and efficacy of omega-3 fatty acid fish xenograft in the setting of diabetic plantar foot ulcerations. It is comprised of a durable and thickened matrix in which it provides a scaffold for proliferative cell binding making it ideal for utilization in weight bearing surfaces of the foot.

Method: Case series of 46 subjects with type II diabetes who underwent application of fish xenograft in the setting of plantar foot ulcerations between October 2020 and April 2023. All patients underwent appropriate surgical resection of infected bone and/or soft tissue with serial debridements and/or negative pressure vacuum therapy and antibiotics. Single or serial grafting was performed as indicated.

Results/Discussion: All subjects demonstrated a 100% rate of healing as defined by full epithelialization of deep or exposed soft tissue and bone with only a 5% rate of re-ulceration. Grafts were, on average, reapplied twice with full time of healing achieved at approximately 18 weeks. 32% of patients experienced full healing within 2-3 weeks after a single application. Of note, 38% of patients were not compliant with weight bearing restrictions but still continued on to experience full healing.

Conclusion: Plantar foot ulcerations pose a unique challenge to treat given the impacts of weight bearing in delaying healing time. With only 2 of 46 patients (5%) experiencing re-ulceration, not only are these xenografts effective in remodeling tissue but are also extremely durable, adding strength to plantar tissues even in the setting of non-compliance.

EP377 Topical oxygen therapy: Its time has come

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Aim: Topical Oxygen Therapy (TOT) has been used clinically for over 50 years with many case series and open label cohort studies supporting its role in wound care. While opponents inferred that TOT could not affect wound repair, recent randomized, controlled trials (RCTs) and systematic reviews clearly demonstrate efficacy in healing chronic diabetic foot ulcers (DFU). We herein summarize the most recent evidence in support of TOT as a proven advanced therapy for hard-to-heal DFUs.

Method: A review of level 1 and 2 studies published over the previous decade including only RCTs and Systematic Reviews (with meta-analyses when available) was undertaken. Observational studies were *not* considered. We summarized the high-level evidence and combined the meta-analyses to determine the odds ratio (OR) associations of TOT with complete healing of DFUs at 12 weeks compared to controls.

Results/Discussion: 4 robust RCTs were identified having been published since 2017. Three of the 4 were blinded allocations with sham controls while one was open label. Six total systematic reviews on TOT for DFUs have been published since 2019, five with meta-analyses. Although studies included in the meta-analyses differed somewhat and had different degrees of bias, all yielded a significant effect for DFU healing at 12 weeks compared to controls ranging from OR 1.59 to OR 2.49. The most robust meta-analysis of only RCTs yielded a risk ratio (RR) of 1.59; p=0.021).

Conclusion: This summary review of the highest-level evidence for TOT for healing DFUs indicates the indisputable efficacy of this adjunctive therapy.

EP378 Use of fish skin grafting in diabetic wounds with known peripheral arterial disease

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Aim: Arterial insufficiency has been discussed as a relative contraindication by some physicians for applying skin substitutes in diabetic patients. The purpose of this abstract is to evaluate the validity of using fish skin grafting (FSG) in diabetic wounds with known PAD and elevated A1C. Our hypothesis is that FSG creates vascular ingrowth and neovascularization which aids healing compromised wounds with limited arterial flow in patients with elevated A1C levels.

Method: Criteria for patient selection was only patients with diagnosed diabetes and known peripheral arterial disease. FSG was performed every 1 to 2 weeks after sharp debridement. Exclusions were made for pressure ulcerations and plantar heel wounds, HBO therapy and immunosuppressive drugs, systemic steroids, or renal

replacement therapy. Index ulcer duration was 4 weeks to less than 1 year, and ulcer size of 1 cm² to 30 cm². Inclusion criteria based on perfusion status were as follows: ankle-brachial index between 0.4 and 0.9. A1C levels were > 8% with no cut off. Largest A1C in the study was 12%. Graft was affixed with tape and wound dressing was Adaptic with foam outerlayer. Use of systemic antibiotics during the treatment phase was permitted without removing the patient from the protocol unless the local infection appeared to be a SAE. No significant use of abx noted and no difference seen between the 2 groups. Study population of 6 patients was more male than female and age ranged from 52-68 yo. Average BMI was 35.

Results/Discussion: All wounds went on to complete healing with average time to healing of the wounds in the series was 50 weeks. The minimum healing time was 30 weeks and maximum was 70 weeks. Follow up was more than one year after healing in all cases. Only 1 recurrence of wound was noted due to poor fitting shoe gear. Limitations of the study are small patient population, and single site creating less diversity. No SAE was encountered and none of the patients had to drop out.

Conclusion: Complete healing was seen in all cases despite uncontrolled diabetes and significant peripheral arterial disease diagnosed with arterial ultrasound and ankle-brachial index. Our conclusion is that FSG provides vascular ingrowth and neovascularization, likely related to omega-3 concentration based on previous studies, which aids healing in wounds with impaired arterial flow. We concluded that FSG is a viable treatment option and not contraindicated in wounds with significant peripheral arterial disease in uncontrolled diabetic patients.

EP379 A multicenter, double blind, randomized, comparative clinical study to evaluate the efficacy and safety of diperoxochloric acid (DPOCI), a wound healing solution, in patients with chronic diabetic foot ulcer

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Aim: A clinical study was conducted to assess efficacy and safety of diperoxochloric acid (DPOCI) in the treatment of diabetic foot ulcer.

Method: This study was designed as a multi-centre, double blind, randomised, parallel group comparison between 1.2 mM DPOCI and 0.9% saline solution. The study medications were administered locally on the wound dressing in a volume of approximately 0.2 ml per cm² wound area per day for a maximum of 90 days. Patients with chronic diabetic foot ulcers (Wagner grade I and II Armstrong stadium A-C) of a diameter between 1.5 to 3.5 cm (corresponding to a maximal possible wound size at baseline between 1.8 and 9.6 cm²) after debridement were included, if previously treated unsuccessfully for at least 6 weeks.

Results/Discussion: A total of 72 patients were enrolled at 10 study sites and received at least one dose of the study medication, 34 in the test group and 38 in the reference group.

The primary endpoint for efficacy was the reduction of wound measure area after 30, 60 and 90 days of treatment. In the intention-to-treat-population, the difference of the mean wound size reduction between the DPOCI group and the reference group over time was statistically significant ($p=0.0024$). Significant effects in favor of the DPOCI group were also observed for the per-protocol-population ($p=0.0052$). Numbers and types of the adverse effects were similar in both groups.

Conclusion: Based on the results from this study, DPOCI is a promising new product for the treatment of diabetic foot ulcer.

Burns 2

EP380 New perspectives after enzymatic debridement

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Aim: A novel concept consisting of selective enzymatic debridement of deep partial-thickness and full-thickness burns in combination with tissue micrografting technique using autologous micrografts, PRP and “smart” topics and dressings are used in order to avoid SOC treatment using tangential excision and split-thickness skin graft coverage.

Method: Selective enzymatic debridement was developed for the removal of thermic burn eschars which in the same time preserves the viable tissue, mainly the dermis.

Tissue Micrografting is useful when there are insufficient donor sites able to provide the required amount of skin grafts because only a small skin biopsy is necessary. The micrograft suspension obtained by mechanical disaggregation can be injected directly or in combination with collagen scaffolds.

Smart hyaluronic acid based topics and dressings generate a microenvironment that supports the healing process.

PRP promotes healing by accelerating cell migration, proliferation of fibroblasts and participates in hemostasis and coagulation.

Biotechnology microbial derived NanoCellulose wound dressing reduces the intradermal damage of the skin and creates a supportive moist environment to the wound.

Nanofibrous temporary epidermal layer obtained by portable woundcare system, uses electrospinning technology to create transient electrospun polymer nanofibrous matrix, providing a substrate of an extracellular matrix-like structure to the damaged tissue.

Results/Discussion: Burns need a new multimodal approach.

The elasticity, quality of and the aesthetic aspect of the scars are superior in comparison with SOC scar quality.

Conclusion: This novel regenerative technique has shown promising results in burn healing process, reduce hospitalization and healing time and improves quality of life.

EP381 Management of stalled wounds/burns impetigo, secondary breakdown of partial to deep thickness burns

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Aim: Reduce healing time of a stalled/burns impetigo wound within 2–4 weeks with good clinical practice.

Of 795 burns procedures in 2022, 3 patients aged 1 to 10 years reportedly suffered secondary breakdown with fragile fluid-filled blisters, painful blistering with loss of epithelium invariably 1month after their partial to deep thickness burn wound of their lower limb healed or stalled. The patients shared similar history of scratching their skin thru the dressings. Conservative management was preferred over surgical intervention.

Method: Manage procedural pain by offering oral analgesics and opioids an hour before dressing change with amide local anaesthetic gel. General anaesthesia if necessary

Use TIME wound management model to decide on appropriate dressing products, antiseptics and active anti-biofilm solutions and gels that encourage optimum healing environment.

Risk mitigation to wound breakdown.

Results/Discussion: A proactive course on the management of stalled/burns impetigo wound requires an approach like mechanical-chemical procedures such as debridement, antiseptics and antimicrobial support for full reepithelialisation to be expected within 2 weeks.

Nutrition, itchiness and climate environment may have played a part in stalled healing. Opportunity for future project i.e. reduce psychological anxiety, pain and fear experienced by patients and parents as well cost of treatment and time required due to the frequency of visits for wound dressing change.

Conclusion: Stalling/burns impetigo can occur spontaneously and unexpectedly, even with a well-thought-out dressing protocol. Correct product selection and technique is instrumental in our approach to stalled wounds and burns impetigo management.

EP382 Use of metalloproteinase modulators in second-degree burns of various aetiologies: A case series study

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Aim: To assess the use of dressings containing sucrose octasulfate in second-degree burns of different aetiologies.

Method: This study is a case series study with a prospective descriptive analysis (2022-23).

Case definition: Adults with second-degree burns of any aetiology.

Main variables and instruments used in the study: Sociodemographic profile, aetiology, total burned body surface area (TBSA - Wallace), pain assessment using the EVA scale, approach based on the TIMERS concept, RESVECH 2.0 index for the evolution of healing and quality of life measured with Wound-QoL.

The dressing type used: primary dressing of sucrose octasulfate impregnated in a matrix with lipidocolloid technology and secondary dressing of polyurethane foam.

Descriptive analysis of the sample (SPSS 21)

The ethical principles of information, voluntariness and confidentiality were ensured.

Results/Discussion: Six cases of burns were included with the following aetiologies: boiling oil, hot water, motor oil, friction burn and caustic soda. Fifty percent were women. The average age was 47,7 years (SD=19,8). The average TBSA was 3,5% (SD=2,7). The mean healing time was 2,7 weeks (SD=1,7). The frequency of dressing change averaged 2 times per week. No adverse effects were reported. Pain was controlled at all times, and quality of life was not compromised.

Sucrose octasulfate demonstrated effective and rapid management of second-degree burns regardless of their aetiology.

Conclusion: The use of metalloproteinase modulators in second-degree burns contributes to improve the inflammatory response, tissue repair, and aesthetic healing while minimizing complications.

EP383 Staged reconstruction of periorbital full thickness burns

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Aim: Full thickness burns of the periorbital area deteriorate functional and aesthetic results both in the acute and subacute period. The exact debridement time and the level of debridement is challenging for the burn surgeon due to the delicate anatomy of the region

Method: Patients (n:65) with periorbital full thickness burns are evaluated for the staged surgeries and the time of debridements. Patient characteristics are detailed in table 1.

Results/Discussion: Early debridements (2-3 days) were performed in all patients. Hydrolic debridements were favoured when available. Staged debridements were preferred. Collagen and dermal substitutes and early coverage with skin grafts were performed before 2nd week of the injuries. Lateral tarsorrhaphy sutures were placed at the first debridements. Frequent tarsorrhaphies were performed during the reepithelialization phase. Flaps were usually preferred in the subacute period.

Conclusion: Early recognition of the extent of burn injury to vital structures and early debridement usually results in better functional and aesthetic results. Tarsorrhaphies are vital to protect vision in both early and late phases of wound healing in the periorbital burn. Waste of time for self slough of necrotic tissue in this area is nonsense, due to inevitable contractures strating from the very early phases. Surgeons need to know the exact anatomy of this region and staged reconstruction of all layers of the periorbital region is required for the best results to be achieved.

EP384 Burns Associated with Kahramanmaras centered earthquakes, experience of a pediatric burn center

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Aim: Kahramanmarash-centered earthquakes dated February 6, 2023, caused the death of thousands. We aimed to share data on patients burned during these earthquakes and treated in our pediatric burn center (PBC).

Method: Children under the age of 18 years who were referred to our PBC due to burns occurring during or after earthquakes evaluated. Patients' data were evaluated retrospectively and compared to non-earthquake victims. P<0.05 was considered significant.

Results/Discussion: Of the 124 patients hospitalized between February 6 and July 31, 2023, 16 (12.9%) were earthquake victims. Mean-age of earthquake-group was higher (6.3 versus 9.5 years, P=0.041), duration between trauma and hospitalization was longer (142.07 versus 42.5 hours; P<0.001), and length-of-stay at PBC was longer (45,7 versus, 16,6 days;P=0.002). In the earthquake-group, more amputations were performed (P=0.044), more psychiatric consultations were needed (P<0.001), more physical therapy was required (P<0.001). There were no differences between groups in terms of burn causes (P = 0.511), gender (P = 0.441), graft-rate (P = 0.063), total-burned-surface-area (P = 0.124), and nationality (P = 0.502). Five-patients were burned as a result of contact with a overturned burning-stove during earthquake, or boiling water in the containers on it spilled onto them.

Conclusion: Those living in earthquake-prone areas should be advised to take the necessary precautions to prevent their stoves from tipping over, not to keep children around when heating water on the stove, or to use alternative heating methods instead of the stove. In addition, earthquake victims should be transferred to appropriate centers urgently.

EP385 The effect of arginine-carnitine drug and ulinastatin drug on the parameters of endothelial dysfunction and inflammatory process in patients with burns

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Introduction: Thermal injury disrupts immune system homeostasis, causing cytokine release, systemic inflammatory response syndrome, dystrophic processes, and dysfunction in organs and systems. Systemic damage to the vascular endothelium is a key mechanism in disorder development, with endothelial dysfunction contributing substantially to burn wound healing pathogenesis, serving as a potential target for therapeutic intervention.

Aim: to study the combined effects of the arginine-carnitine drug (CACD) and ulinastatin drug (UD) on immunological parameters and indicators of endothelial dysfunction and inflammation in burn patients.

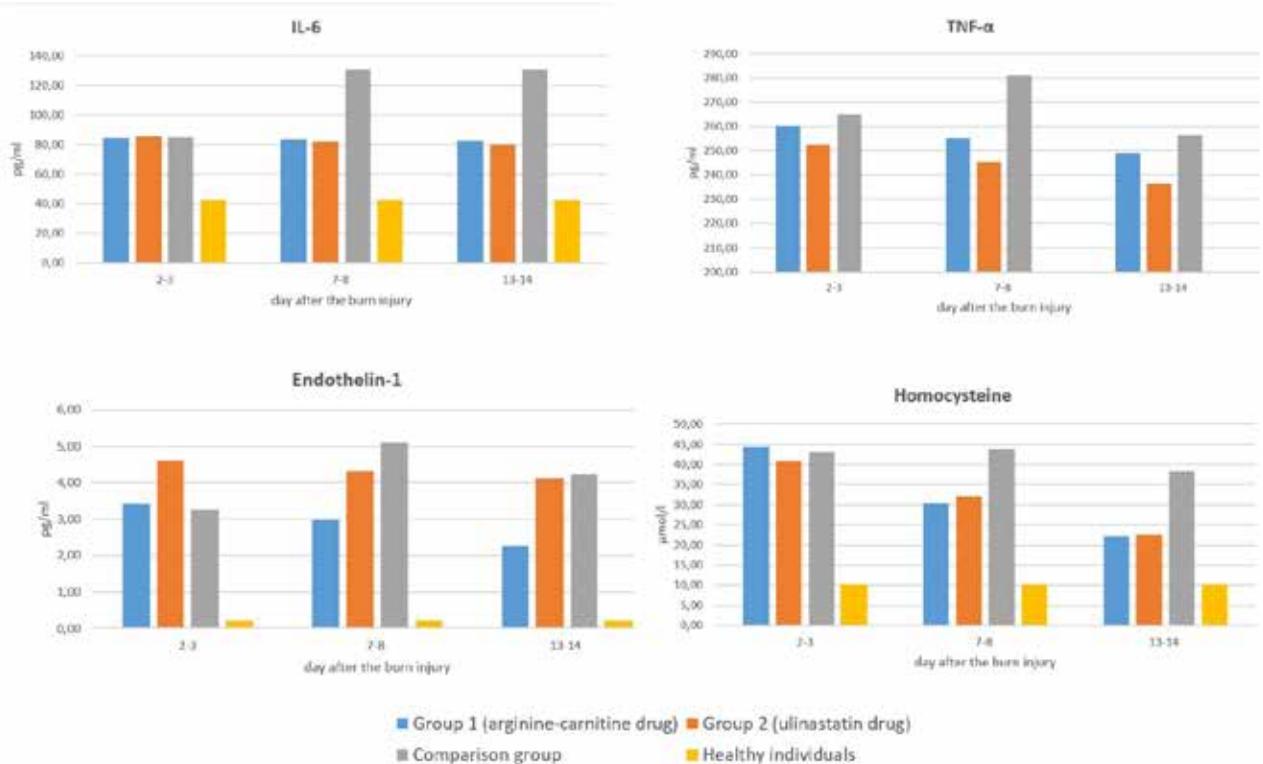
Method: The study spanned the acute period: days 2-3, 7-8, and 13-14. CACD (Group 1) was administered intravenously from days 2-3 post-burn for 5 days, 100 ml once daily. UD (Group 2) was administered from days 2-3 post-burn, 100,000 IU twice daily for 5 days. IL-6, TNF- α , endothelin-1, and homocysteine levels in blood and wounds were examined.

Results/Discussion: Results are presented in Table 1 and Pic. 1.

When using CACD and UD, IL-6 levels remain stable, while TNF- α exhibits a tendency to decrease, contrasting the comparison group where both increase relative to baseline. Endothelin-1 significantly decreases in both groups, especially in Group 1, while the comparison group shows an increase. Homocysteine significantly decreases in both CACD and UD groups compared to the comparison group.

Table 1.

Indicators	Group 1 n=23			Group 2 n=12			Comparison group n=22			Healthy individuals, n=20
	day after the burn injury									
	2-3	7-8	13-14	2-3	7-8	13-14	2-3	7-8	13-14	
IL-6, pg/ml	84,88 ±3,41	83,65 ±1,58	82,31 ±1,35	85,75 ±2,26	82,08 ±3,12	79,9 ±3,07	85,30 ±13,10	131,0 ±11,2	131,2 ±9,25	42,7 ±6,5
TNF- α , pg/ml	260,24 ±6,98	255,35 ±6,19	248,88 ±8,19	252,58 ±11,97	245,33 ±10,36	236,60 ±8,78	265,0 ±11,55	281,2 ± 14,67	256,35 ±15,70	24,2 ±6,0
Endothelin-1, pg/ml	3,43 ±0,56	2,97 ±0,56	2,27 ±0,46	4,62 ±0,22	4,30 ±0,34	4,13 ±0,33	3,25 ±0,37	5,09 ±0,36	4,23 ±0,42	0,22 ±0,9
Homo- cysteine (wound blood), μ mol/l	44,36 ±4,89	30,29 ±6,70	22,22 ±3,46	40,82 ±3,89	32,15 ±4,91	22,58 ±2,41	42,9 ±0,85	43,95 ±1,36	38,2 ±2,4	10,2 ±0,5



Pic. 1

Conclusion: Our research demonstrates that CACD and UD impact IL-6, TNF- α , endothelin-1, and homocysteine levels in burn patients' blood. These findings suggest the potential effectiveness of both drugs in reducing immunological disorders, inflammation and endothelial dysfunction, potentially crucial in enhancing burn healing processes.

EP386 Surgical treatment of large partial thickness burns

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Introduction: Restoration of the epithelium occurs from skin appendages in IIA degree burns, but part of them is involved in the paranecrotic zone.

Aim: To evaluate the effectiveness of a surgical program for the treatment of partial-thickness burns.

Method: 45 patients were under observation in the Kyiv burn center during 2021-2022, 28 patients with partial burns greater than 40% TBSA, and 17 patients with limited deep and widespread superficial skin burns.

Results/Discussion: Ultrathin excision of superficial necrotic tissue was performed in 15 patients of the main group 36.4±6.4 hours after injury, the wounds were covered with a xenograft. Partial excision was not accompanied by blood loss. Epithelization occurred within 19.5±3.5 days. Gradual exfoliation of necrotic tissues occurred using silver sulfadiazine or hydrocolloid coatings in 13 patients of the comparison group which was accompanied by endogenous intoxication and SIRS. Epithelization occurred 20.1±3.2 days.

In patients with superficial skin burns in combination with a limited deep area at the first stage in 36.4 ± 6.4 hours after injury, a very thin excision superficial necrotic tissue was performed. The wounds were covered with xenograft. In the

second stage (within 3 days after injury), radical excision of deep necrotic tissue was performed. A quick healing of superficial dermal burns was observed, decrease the level of endotoxemia, and clinical manifestations of SIRS.

Conclusion: Partial excision of dermal necrosis improves the immediate and long-term results: duration is reduced, the skin recovery time is shortened, number of complications is reduced.

EP387 Role of porous biodegradable scaffolds in modulating wound contracture: A finite element model

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Aim: Wound contracture may be mitigated by using scaffolds with physically tuned properties to improve wound healing outcomes. The proposed tissue-engineering approach requires a scaffold to match the mechanical properties of the target-tissue. However, this approach does not allow for progressive effects of cellularisation and ECM deposition to be considered. The aim of this work is to create a digital functional simulation of wound/scaffold interaction to explore potential scaffold design variables.

Method: Here we sought to develop a Finite Element Model of wound contracture. The simulation employs a neo-Hookean model to represent the material properties of the different layers of skin and the wound space. To compare wound contracture resulting from scaffold implantation in the wound space, a porous neo-Hookean material model was employed with a range 0.1 - 0.8 for solid fractions, to mimic cells filling a scaffold after implantation. A progressive force curve was used to simulate progressive cellularisation and contractile force. Natural skin tension (langer lines) was introduced into the model via prescribed uniaxial contraction.

Results/Discussion: Increasing the scaffold solid fraction mimics an increasing stiffness. Simulation results run over 40 cycles, show how as the solid fraction or stiffness of the scaffold is increased, it becomes more resistant to contracture forces, resulting in reduced stress, strain, and wound displacement.

Conclusion: Biomaterials scaffolds for wound healing with dynamic mechanical properties that vary in parallel with the wound healing phases could allow for the modulation of wound contracture. Porous biodegradable materials that allow for cell infiltration and adhesion have the potential to exhibit dynamic mechanical properties. Biomaterials formulation with these properties could help reduce scarring outcomes.

EP388 Burns Pathway and Emergency Box Implementation in a mental health setting

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Aim: The authors are Tissue Viability Nurses based in a trust that provides a range of mental health, learning disability and neurological care services across the North of England to a population of over 1.4 million. They provide a service across community and acute settings with approximately 9000 staff. The aim of the pathway (Fig 1, image of pathway to be added) was to improve appropriate referrals and patient burn outcomes. This also includes appropriate referrals to the correct department as the team has close working relationships with different disciplines (Vascular, Burns, Podiatry and Plastics). The NHS pathway development (2019) supports pathway development as it reduces health inequalities.

The project aim was also to reduce restrictive practice which is at the forefront of the author's practice. This includes Unnecessary secure transport and other forms of restrictive practice which can be found in "What is Restrictive Practices NHS guidelines" like physical and environmental practice which can all cause distress.

Method: The Pathway development included different disciplines to make it inclusive. For instance, a criteria was developed with the burns department for direct referrals that should bypass Tissue Viability. Which can be seen in Table 1.

Table 1

· Facial burns /inhalation injury
· Acutely infected burns (Spreading erythema, temperature ect)
· Burns over the size of 1%
· Any electrical injury
· Circumferential burns
· Perineum/ groin burn

Emergency Box

- Assessment of wound dressings for emergency Box.
- Dressings need to be versatile for different burns including the increase aerosol burns noted by the authors.
- One of the dressings selected was a non-adherent dressing made from polyester mesh coated with an atraumatic, hydrophobic soft silicone.

Results/Discussion: An increase in patients referred to the correct discipline.

- Improved wound outcomes.
- Cohesive multi-disciplinary working.
- Reduced healing times due to early intervention of the emergency box.
- Reduced use of restricted practice.

Conclusion: Improved patient pathway.

- Improved healing rates.
- Improved Communication between clinical disciplines.

EP389 Assessment of regenerative therapy in healing of burns in children up to 5 years: A clinical and bacteriological prospective study

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Aim: To assess the efficacy and safety of regenerative therapy using Moist Exposed Burn Ointment (MEBO) in healing of second and third-degree burns in children.

Method: The study included 20 consecutive 2nd and/or 3rd degree burned children (2.66±1.73 years) up to 5 years. 30% of burns were 3rd degree. Mean TBSA was 10.8±4.74% and the highest 20% TBSA. All patients were treated with MEBO dressing every 8 hours. Wound surface moist swabs were taken at weekly intervals and tissue biopsy was taken from deep burns only. Patients were followed up for 6 months.

Results/Discussion: Mean time of eschar separation was 6.25±3.02 days, and of healthy granulation tissue appearance 14.6±3.65 days. Superficial and deep 2nd degree burns healed in 1 week and 2-3 weeks with normal skin elasticity and no scars. Skin grafting (with 100% take) was required in 3rd degree burns only. Mean hospital stay was 12.10±5.13 days. The commonest organisms cultured were Pseudomonas Aeruginosa and MRSA, alone or in combination.

Conclusion: All 2nd degree burns healed with normal skin. Rapid eschar liquefaction and early granulation tissue formation in 3rd degree burns was achieved with complete take of skin grafts. MEBO was demonstrated to have anti-microbial action, and it is safe, easy to apply, keeping a physiological moist environment and supplying indispensable nutritional substrates and enzymes necessary for physiological wound healing.

EP390 Assessment of regenerative therapy in healing of CO2 laser, MNRF procedure or accidentally burn wounds

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Aim: Iatrogenic (CO2 laser resurfacing/MNRF) or accidental burn wounds: Skin regeneration enhanced by combining Moist Exposed Burn Ointment.

Method: Study of 60 patients of burn (iatrogenic/accidental) wound were divided in 3 groups: Group A- Acne-scar rejuvenation with micro-needling radiofrequency (MNRF); Group B- Anti-aging fractional carbon dioxide (CO2) laser resurfacing; Group C- Accidental medium to superficial cutaneous burns. Patients in each group were randomised to Moist Exposed Burn Wound Ointment (n=30) or Antibiotic ointment (n=30). Data collected prospectively included clinical, demographic and wound characteristics, every 3rd day till 30 days. All three groups were followed up over 30 days with pre and post photographs.

Results/Discussion: Traditional CO2 fractional laser resurfacing and MNRF create microscopic burn channels in skin, which have the limitations of long recovery time, pain, pigmentation, risk of infection and hence leading to variable outcomes. There was a significant reduction in healing time, surface area (SA) and post inflammatory pigmentation after combining with Moist Exposed Burn Ointment. At 3 days, 70%patients of group A&B showed ≥ 80 % reduction in SA, erythema, pain and discomfort, compared to 15% patients using antibiotic ointment. At 30 days post inflammatory pigmentation was significantly less 13% in patients receiving regenerative therapy as compared to 46% of other group.

Conclusion: Moist Exposed Burn Ointment significantly reduced wound healing time, erythema, pain, discomfort and pigmentation therefore enhanced patient compliance, quality of life and skin texture by promoting re-epithelization and collagen regeneration in all patients due to its anti-inflammatory, antimicrobial, moisturizing and regenerative properties.

Infection 2

EP391 A clinical audit of surgical site infection surveillance in a Maxillo-Facial and Oral Surgery unit in an academic hospital complex

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Aim: The clinical outcomes and financial impact of surgical site infection (SSIs) within South Africa is not well known due to the lack of an established national surveillance programme. The aim of this project was to undertake a baseline clinical audit of SSI prevention in a Maxillo-facial and Oral Surgery (MFOS) unit using the National Institute for Health and Care Excellence clinical guideline (NG125) as the benchmark standard. The primary objective was to establish a baseline incidence of SSI.

Method: This was a prospective and observational clinical audit undertaken at the MFOS unit in a University Hospital in South Africa. Thirty-seven participants who had surgical procedures during 01 November 2022- 31 January 2023 were recruited and monitored telephonically post-discharge for a period of 30 days.

Results/Discussion: The composite compliance rate to the process indicators was 39.86% (95% Confidence Interval 37.25- 42.46). The incidence rate of SSI was 14.81% (n=8). The mean age was 32.36 years (Standard Deviation 19.03) with a male gender predominance (62.9%, n=22). The resection of head and neck malignancy contributed majority of the SSI cases (50%, n=4). Five organ/space SSI cases were detected with a mortality rate of 25% (n=2).

The higher SSI rates may be associated with the lapses in the infection control practices. For example, the lack of an aseptic technique lack or structured approach to wound management.

Conclusion: The main recommendation is the development of evidence-based SSI preventative strategies that are applicable to MFOS procedures to prevent and reduce SSI.

EP392 Utilizing infrared thermometry to monitor wounds in primary care: The TIHUAP study

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Aim: Understanding the temperature difference between intralesional and perilesional skin holds the potential to predict the onset of infection in chronic wounds and ulcers. This study aims to observe this temperature difference and correlate it with wound evolution.

Method: Conducted as a prospective multicenter cohort study spanning 12 months across 64 Primary Care Centers, participants aged 18 and older with active wounds were included. With a prevalence of 0.22 for ulcers, a 95% confidence level, and an 8% error sample, 140 patients were enrolled. Selection took place in health centers, homes, or residential centers.

Temperature measurements utilized a manual infrared thermometer intralesionally and perilesionally with a millimetered grid, using frontal temperature as the control. Additional variables encompassed the Thermal Index (IT), Kundin formula, Equation as a function of area, RESVECH scale, and visual monitoring through lesion photography. ANOVA calculated temperature differences, and the intraclass correlation coefficient evaluated agreement between continuous variables.

Results/Discussion: Preliminary findings indicate 61% of the sample with a medium socioeconomic level. 43% exhibited dependence levels between 60-95 on the Barthel scale. Venous ulcers comprised 65% of treated wounds. 35% of wounds required surgical debridement. 45% of wounds presented a thermal index between 1.02 and 1.54,

showing no complications. 15% exhibited a thermal index between 0.25 and 0.76, indicating local infection or biofilm.

Conclusion: Early detection of complications, such as infection, enables localized wound treatment without the need for antibiotics. This study could signify a pivotal moment for integrating thermometry into primary care practices.

EP393 CXCL12-expressing *Limosilactobacillus reuteri* has clinically relevant antimicrobial effects of multidrug-resistant bacteria isolated from wounds of war victims in Ukraine

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Aim: High antibiotic resistance in bacteria from Ukrainian war victims is reported^{1,2}. ILP100 (emilimogene sigulatibac) is a topical drug candidate (*Limosilactobacillus reuteri* expressing the chemokine CXCL12), induces growth inhibition of wound bacteria at administration and accelerates wound healing^{3,4,5}. Here, direct antimicrobial effects of ILP100 on multidrug-resistant bacteria (MDRs) are tested.

Method: Isolates of *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Enterobacter cloacae*, *Proteus mirabilis* and *Klebsiella pneumoniae* resistant to cephalosporins, carbapenems, and colistin¹ and a *Staphylococcus aureus* (JE2)⁶ were used. Disk diffusion utilizing soft agar overlays inoculated with MDRs (1×10^4 - 1×10^6 CFU) on triplicates with spot-dropped ILP100 (High dose: 1×10^8 , Low dose: 5×10^6 CFUs) were incubated for 24h, imaged and analyzed blinded. Co-culturing for 12h was performed in ILP100:MDR ratios of 10:1 and 100:1 with 12 MDRs, where killing effect was measured as bacterial reduction relative to its control by serial dilution and plating.

Results/Discussion: The inhibition zone induced by high dose ILP100 resulted in clearance for all MDR isolates in the range of 35-268mm² and 40-299mm² for MDRs at 1×10^6 and 1×10^4 , respectively, whereas low dose ILP100 resulted in 41-98mm² and 50-269mm² respectively.

Co-culturing in the ratio of 100:1 resulted in elimination of all MDRs except for *K. pneumoniae*, which was reduced by 6 logs. Most MDRs exhibited detectable reduction already at 3h and were at 6h reduced by 1-3 logs at 100:1, whereas 10:1 showed effect only for two *P. aeruginosa* isolates (reduced 1-2 logs).

Conclusion: In addition to accelerating wound healing, ILP100 exerts direct antimicrobial effects on multi-drug resistance bacteria.

1) Ljungqvist et al 2023, Lancet Infectious Diseases, 2) McGann et al., 2023, CDC Emerging Infections Diseases, 3) Vågesjö et al., 2018, PNAS, 4) Ohnstedt et al., 2021, Pharmaceutics, 5) Ohnstedt et al., 2023, eClinicalMedicine Lancet Science Discovery, 6) Fey et al., 2013, ASM Journals.

EP394 Impact of wound hygiene incorporating an antibiofilm gelling fiber dressing on hard-to-heal wounds treated with antibiotics

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Aim: To evaluate the impact of Wound Hygiene (WH), a 4-step (cleanse, debride, refashion, and dress) biofilm-based wound management strategy, on hard-to-heal wounds treated with antibiotics.

Method: A subgroup analysis of patients treated with antibiotics in a prospective, real-world study of hard-to-heal wounds managed with WH (incorporating an antibiofilm gelling fiber dressing¹) for approximately 4 weeks, or as clinically appropriate, was performed. The primary endpoint was change in wound volume from baseline to the final assessment. Only patients who had received antibiotics before the WH evaluation were included.

Results: 230 patients had received antibiotics before the WH evaluation (median treatment duration 33 days). Of 190 patients with baseline and final wound volume assessments, 79 (42%) had complete wound closure. Mean wound volume reduced from 112.9 cm³ at baseline to 23.0 cm³ (80% reduction) at final assessment ($p < 0.001$). Exudate levels changed from predominantly moderate (42%) to predominantly low (40%) ($p < 0.001$). Signs of clinical infection were present in 74% at baseline and reduced to 3% at final assessment ($p < 0.001$). Suspected biofilm was 82% at baseline and 17% at final assessment ($p < 0.001$). At final assessment, 24% had healed and 74% had improved.

Conclusion: Among patients with hard-to-heal wounds receiving antibiotics, WH resulted in healing or improvement in most wounds, and a statistically significant decrease in wound volume, exudate level, suspected biofilm, and local infection. Our findings suggest WH is an effective complement to existing antibiotic therapy. Further research to help guide best practice for antimicrobial stewardship is warranted.

*Aquacel™ Ag+ Extra

EP395 A case series of group B streptococcus pathogen in acute admissions of diabetic foot ulceration. A growing problem in limb salvage?

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Aim: A case series to demonstrate the growing number of streptococci agalactiae (group B streptococcus (GBS)) presentations in the infected acute diabetic foot. It aims to describe the clinical presentations, the rapid spread and deterioration in these cases, and tissue damage and necrosis that is a prominent feature with this organism. It highlights the need for focused and rapid assessment, management, and treatment of this patient group to preserve limbs and life.

Method: A retrospective case review of clinical presentations, management, treatment, and outcomes of acute diabetic foot ulcerations involving GBS that presented to the Podiatric Surgery team between July 2022 and December 2023 at Great Western Hospitals NHSFT. This highlights the outcomes for this patient group with effective use of multi-disciplinary team involvement and care co-ordination, medical management, and rapid surgical intervention by the podiatric surgery team.

Results/Discussion: In the UK the diabetic foot is a major public health problem with foot complications including infections, presenting major challenges to patients and to the healthcare system. GBS is reported to be increasing in the obese and diabetic population worldwide, and this is supported by international epidemiological studies.

Conclusion: GBS is a severe and destructive pathogen that can often result in amputation and this case review demonstrates how rapid care was required and foot function was preserved with the focused skillset of the podiatric surgery team optimising the patient outcome.

EP396 Fish Skin Xenografts in the Management of Gas Gangrene Foot Infections

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Aim: Gas gangrene infections of the lower extremity can be devastating. Gas gangrene infections of the foot can lead to large soft tissue defects bringing in the question of whether limb salvage is an option. This case series explores the usage of fish skin xenografts in patients with gas gangrene infections.

Method: A retrospective case series of 8 patients with gas gangrene infections of the foot treated with fish skin xenograft applications was performed. Data was collected on age, sex of patient, comorbidities, date of presentation with gas gangrene infection, location of gas gangrene infection, surgical procedures performed, number of graft applications, time between graft applications, weight-bearing protocol, antibiotics, size of wounds with each graft application, date healed, wound vacuum application, and HemoglobinA1c.

Results/Discussion: Six patients were included in the case series with a total of 8 gas gangrene infections. All patients were placed on culture directed antibiotic regimens following. Application of fish skin xenografts ranged from 1-5 applications with 3-4 weeks between applications. Seven of the eight cases of gas gangrene went on to heal. One patient had unknown healing status. Hemoglobin A1c ranged from 6.4 to 15.1. Complete wound healing ranged from 14 weeks to 32 weeks.

Conclusion: While source control is important in gas gangrene infections, there is a lack of evidence for the most appropriate option for large soft tissue deficits following source control procedures. Fish skin xenografts appear to be a viable option for closing soft tissue deficits in gas gangrene infections.

EP397 Non healing diabetic plantar hallux wounds healed with distal medial partial plantar fasciotomy and fish skin grafting

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Aim: Plantar hallux ulcerations are known to be a difficult ulceration to heal due to weightbearing requirements and foot biomechanics. They often will go on to nonhealing despite offloading. The purpose of the case series was to evaluate a novel way to heal plantar hallux ulcerations in diabetic neuropathic patients.

Method: Plantar hallux ulcerations greater than 0.5 cm were included in the study. All patients were diabetic and showed decreased 10 g monofilament sensation to the forefoot. Only patients with hemoglobin A1c less than 9.0 were included in the study. Distal medial partial plantar fasciotomy was performed at the start of treatment. This was performed minimally invasively with an 18-gauge needle. Fish skin grafting (FSG) was then initiated and re-applied every 1-2 weeks until healing occurred. Patients with known PAD were not removed from the study population.

Results/Discussion: Complete healing was appreciated in every patient selected for the case series. 10 patients met the criteria. Average time to healing was 6 weeks. Average increased loaded and unloaded dorsiflexion of the hallux achieved was 5 degrees in the patient population with distal medial partial plantar fasciotomy with a 18 gauge needle minimal invasively.

Conclusion: Distal medial partial plantar fasciotomy combined with FSG is a low risk way to heal plantar hallux ulcerations. By increasing the amount of dorsiflexion the procedure effectively offloads the wounds. FSG was combined to rapidly heal the wounds. By using a 18 gauge needle this can even be performed on patients with PAD.

EP398 Optimising outcomes with NovoSorb BTM® in complex wound reconstruction, learning points and outcomes from a case series in a tertiary plastic surgery service

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Aim: Biodegradable Temporising Matrix (BTM) is a synthetic bilayer skin substitute licenced for reconstruction of full thickness skin defects. To achieve the best patient outcomes after BTM reconstruction, post-operative management is paramount. We present a case series over the last two years in a tertiary plastic surgery service which has helped us to develop post-operative care guidelines.

Method: Retrospective consecutive case series review of patients reconstructed with BTM from 2021-2023. Data was collected on indications for BTM, wound size treated, % integration/loss, infection, and complications.

Results/Discussion: During the study period, 22 patients underwent wound reconstruction with BTM to a diverse range of anatomical sites. Wound aetiology included degloving, deep infection, necrotising fasciitis, full thickness burn injury, burn scar contracture, extravasation, animal bite and following free flap failure. Indications were to cover vital structures (n=11, 50%), reconstruct major tissue loss (n=9, 41%) and scar contracture (n=2, 9%). Mean wound size was 3% TBSA and ranged from 0.25% to 13% TBSA. Mean hospital stay was 12 days (0 - 81 days). Despite 60% of pre-BTM application microbiology wound swabs being positive, only 14% (3/22) developed signs of clinical BTM infection. In all cases the infection was treated successfully without BTM removal. No BTM loss was reported in this series.

Conclusion: BTM is a useful reconstructive tool to manage complex wounds from a variety of causes, either as a primary reconstruction or 'lifeboat' option and appears to be robust in the presence of prior positive wound swabs and clinical infection if identified early and treated appropriately.

EP399 Clinical evaluation of poly-absorbent dressing based on technology lipido-colloid with silver ions in the management of infected wounds in Asia Pacific

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Aim: Evaluation of Poly-absorbent dressing based on technology lipido-colloid with silver on diabetic foot ulcers (DFU) and traumatic wounds from Vietnam, India and Singapore.

Method: 4 cases that were managed with the evaluated dressing:

1. Infected toe gangrene - toe amputation was performed followed by hyperbaric oxygen treatment and application of creams and absorbent dressings for three weeks
2. Diabetic with a three-month-old wound over right lateral malleolus with signs of local infection, previously managed with creams and absorbent dressings.
3. Abscess plantar region left foot, present for 10 days and appeared with signs of local infection.
4. Male diabetic patient presented with two-week-old multiple ulcers in all the digits of the left lower limb with exposed bones and tendons.
5. Non-healing chronic ulceration of 8 months, previously treated with cadexomer iodine dressing and compression bandage with no improvement.
6. Traumatic wound sustained during a motorcycle accident, previously treated with povidone iodine and then sutured. After one month, the wound deteriorated and was showing signs of local infection.
7. Three-day old electrical burn wound on the wrist, self-treated but then self-referred as the wound started showing sign of local infection.
8. Female was admitted after a motor vehicle accident - sustained tibia and fibula fractures and an open wound on the lateral aspect of the left lower limb, malleolus area.

Results/Discussion: All wounds showed great improvement.

Conclusion: Results show that results obtained with the dressing in Europe can be replicated also in Asia.

EP400 Hyaluronate (HA) and AminoAcids (AA) in infectious wounds: now it's possible

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Aim: The mixture HA+AA already demonstrated significant efficacy in wound care except in case of infectious wounds; it can be used in colonized lesions using an antiseptic secondary dressing, but the effectiveness is slightly reduced due to the bacterial aggression against AminoAcids. Aim of this work is to demonstrate that it's possible to treat infected and critically colonized wounds with the same effectiveness as clean ones.

Method: The work is still in progress (target 25 patients); actually we enrolled 16 with infected wounds (Cutting & Harding criteria). The dressing is a "pocket" made of polyvinyllic acid (PVA) film* filled with HA-AA mixture in cream/powder formulation**. The film, with antibacterial properties, is totally biocompatible and biodegradable. Non-woven gauzes and tape as secondary dressing. Medication change, according to exudate, 2-3 times a week. Outcomes: infection removal and wound area and depth reductions (WAR-DR). Study duration: 3 weeks or worsening/serious adverse event.

Results/Discussion: In all cases infection signs have been completely removed within the study duration: 9-(56.25%) within the first week, 6-(37.5%) within the second and 1-(6.25%) within the third one. All patients achieved about 30% of WAR and 65% of DT. No worsening, no adverse events.

Conclusion: PVA film interacts with Hyaluronate-AminoAcids mixture creating a very compact fluid that fill the dead spaces of the wound and kills bacteria on the wound bed avoiding their aggression against HA-AA; there's no efficacy reduction due to the PVA biodegradation but a better performance of the dressing.

*Akeso Innovative Biotechnology Care (Italy)

**Vulnamin Cream/Powder (Professional Dietetics-Italy)

EP401 Improving the treatment and management of the lower limb in the acute sector

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Aim: Barnsley Acute Trust have been working in collaboration with L&R to implement a quality improvement (QI) programme, improving the treatment and management of the lower limb. The aims were to improve continuity across the acute and community service, provide staff with much needed education and reduce inappropriate hospital admissions. This poster will highlight the process map, actions taken and the results of implementing a best in class lower limb management programme.

Method: Due to an increasing number of patients being admitted with a suspected leg infection, the primary aim was to create a bespoke 'acute only' pathway for the management and treatment of the lower limb. The scope of this project was adult emergency department patients who were admitted to an inpatient bed with the diagnosis of a 'leg infection'.

Results/Discussion: A bespoke lower limb pathway was created for the acute sector, an often forgotten focus area. The pathway implementation was supported through a training and education platform for the acute nurses. This project has since proven to reduce inappropriate hospital admissions in excess of 260 patient in one calendar month.

Conclusion: The project team suspected many patients had been misdiagnosed as having leg infections and subsequently managed inappropriately. This led to unnecessary antibiotics (often intravenous), leading to unnecessary hospital admission and/or can have a delay in obtaining a correct differential diagnosis. This project has been well received by both nurses and consultants with a large number of acute practitioners now very interested in this project.

Leg Ulcer 3-4

EP402 Treatment patterns and outcomes of medicare enrollees who developed venous leg ulcers

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Aim: To retrospectively evaluate the comorbidities, treatment patterns and outcomes of Medicare enrollees who developed venous leg ulcers (VLUs).

Method: Retrospectively reviewed a Medicare Limited Data used to follow patient episodes who received medical care for a VLUs from October 1, 2015 through October 2, 2019. Patients diagnosed with chronic venous insufficiency and a VLU were propensity matched into four groups based on their treatment. Episode claims were used to document demographics, comorbidities, and treatments of patients who develop VLUs and outcomes including time to ulcer closure, rates of complications, and hospital utilization rates. Outcomes were compared across key propensity matched groups.

Results/Discussion: 42% of Medicare enrollees with chronic venous insufficiency (1,225,278), developed at least one VLU during the study, and 79% had their episode claim complete within one year. However, 59% of patients developed another VLU during the study period. This analysis demonstrated that only 38.4% of VLU episodes received documented VLU conservative care treatment. Propensity matched episodes which received an advanced treatment (AT) or a cellular, acellular, matrix-like product (CAMP) for hard-to-heal VLU saw the best outcomes when the CAMP was applied weekly or biweekly compared to patients that received no advanced treatments (NAT). Complications such as rates of infection (33%), and emergency department visits (>50%) decreased among patients who received CAMP following parameters for use (Figure 1 and 2).

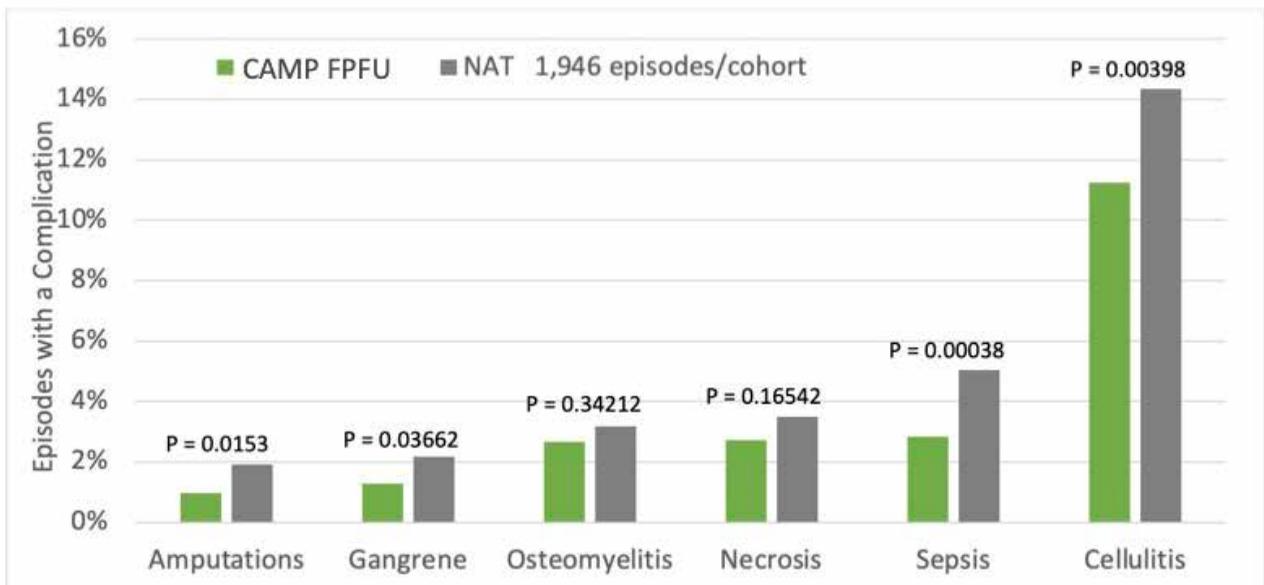


Figure 1. Rates of common episode complications from propensity-matched group 4 are graphed. When episodes are treated with CAMP following parameters for use (FPFU) notable decreases in many infections and amputations are seen.

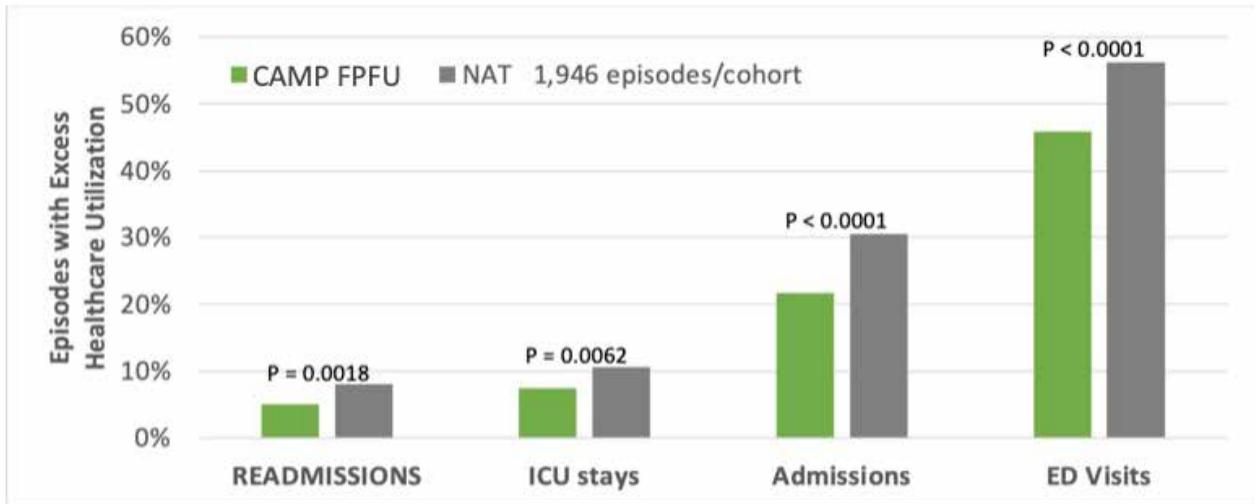


Figure 2. Healthcare utilization for propensity-matched group. Consistently, the lowest rates of hospital utilization (readmissions, Intensive care unit (ICU) stays, admissions and Emergency department visits) occurred when episodes were treated with CAMPs following parameters for use (FPFU).

Conclusion: Medicare patients at risk for a VLU who receive early identification and advanced treatment experienced fewer complication, improved outcomes and significantly reduced healthcare resource utilization.

EP403 Working against gravity in VLU exudate management: Evaluation of a novel silicone foam dressing

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Aim: In addition to wound management through debridement, wound hygiene, and compression, venous leg ulcers (VLUs) frequently have high levels of exudate that must be addressed.¹ High fluid handling capacity in the selected dressing can minimize risk of leakage and improve quality of life², however lower leg wound location often results in downward leakage which substantially increases maceration risk.

Method: This is a six patient case series from two outpatient wound centers evaluating use of a new, silicone-based, non-bordered foam dressing³ on VLUs which had stalled at the epithelization stage. The dressing has a unique dimpled surface that has the capability of spreading fluids evenly in all directions, reportedly even against effects of gravity.³

Result/Discussion: The dressing, used under compression, was able to prevent leakage in each VLU case with no maceration observed. An interesting observation was the dimpled patterning noted on the wound bed and consistent improvement of the wound surface; with epithelization noted at the edges within 1-2 dressing changes.

Conclusion: The difference seems to be in the dimpling and resulting “footprint” created by the dressing. The reason for improvement remains elusive. As the dressing was designed for exudate management the improvement may be as simple as that, however we speculate that other interactions could be involved.

1. Murphy-C. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. JWoundCare2020
2. Weir-D. The impact of venous leg ulcers on a patient’s quality of life: considerations for dressing selection. WoundsInternational2023.
3. MepilexUP, Molnlycke Health Care. Data on file.

EP404 Dialkylcarbamoyl chloride compared to silver dressing in treatment venous leg ulcers

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Aim: To compare the efficacy of Dialkylcarbamoyl chloride dressing (DACC) to silver dressing (control) in treatment of venous leg ulcers (VLU)

Method: Adults with non-infected VLU, normal ankle-brachial pressure index and who did not heal by more than 30% wound area after two weeks of standard of care treatment, were enrolled into an exploratory, single center, observer masked, active control, randomized trial. Subjects were randomized to receive weekly compression therapy and debridement followed by either DACC (Cutimed® Sorbact® Essity Inc.) or control (Acticoat® Smith+Nephew Inc.) for 6 weeks. The primary outcome was change in bacterial load. Here we report the clinical outcomes.

Results/Discussion: Of the 26 subjects who completed the study, 12 were randomized to DACC and 14 to control. The mean age, wound area, and wound duration in the DACC and control arms were: 60.5 and 60.4 years ($p=0.98$), 12.45 and 22.95 cm² ($p=0.16$), 14.25 and 30.92 months ($p=0.16$). DACC treated wounds resulted in a mean wound area reduction of 57% compared to 11% increase in the control arm ($p=0.01$). At the end of the 6 weeks treatment period 25% of the wounds in the DACC arm were healed compared to zero in the control arm ($p=0.046$). No significant adverse events were noted.

Conclusion: DACC dressing improves healing of VLU compared to silver dressing.

EP405 Efficacy of simultaneous combination compression therapy with bordered foam dressing and endovenous intervention in venous leg ulcer treatment

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Aim: Venous leg ulcer (VLU) is a hard-to-heal wound characterized by uncontrolled inflammation generated by venous hypertension. Standard care supported by evidence is compression therapy. However, VLUs are not always healed with only compression bandage. The aim of this study was to evaluate the effectiveness of simultaneous combination many modalities in VLU treatment.

Method: We enrolled 13 VLU patients who had failed with standard care from 2022 to 2023. For all patients, we applied bordered foam dressing after infection control, changed 2-layer compression bandage every 5 days and evaluated for endovenous intervention possibility (saphenous venous thermal ablation or deep vein intervention). For post-thrombotic syndrome (PTS), new oral anticoagulations (NOACs) were optimally managed. Wound area were measured with Imito application during follow-up.

Results/Discussion: Average wound area was 28,2 cm². 8 patients with saphenous vein incompetence underwent with thermal ablation, 5 PTS patients were treated with NOACs. No patient with PTS was suitable for deep vein intervention. The rates of completely healing at week 12 and 36 were 69,2% and 92,3%. At the end of this study, only 1 patient with PTS was not completely healed but was 89% reduction in wound area. The average treatment duration was 81,9 days. The mean healing duration in PTS group was longer than incompetent saphenous vein group (121 days vs 57,5 days, $p < 0,05$).

Conclusion: Combination many modalities demonstrated clinical effectiveness in VLU treatment. It seems to take more time in PTS group to achieve wound closure.

EP406 Using bridge vaccum - assisted closure (vac) as effective adjunctive therapy in venous leg ulcer: a case report

Kien Phan¹

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Aim: Traditional negative pressure wound therapy (NPWT) are not conventionally used in venous leg ulcer (VLU) because this system does not allow the use of compression bandage on wound surface. We modified this therapy to bridge VAC to ensure both purposes: venous hypertension control and wound bed preparation.

Method: Case report with a 64 year-old man presented with 6 month VLU due to post thrombotic syndrome (PTS). He didn't have venous intervention indication because of its unsuitable lesion.

Results/Discussion: Initially, from day 1 to day 14, he had been infection controlled and surgical debrided. From day 15, we applied compression bandage. Wound area had reduced 50% until day 67. The wound didn't show any progression from day 68 to 170 . We decided applying bridge VAC from day 171. Wound healing progressed and healed completely at day 247.

Conclusion: Bridge VAC can be considered as an effective adjunctive therapy in difficult venous leg ulcer.

Figure: Progression of wound healing



Day 0



Day 67



Day 170



Day 201 (30 days after VAC)



Day 247 (completely healing)

EP407 Rationalising dressing choice - an evaluation of TLC-NOSF dressings

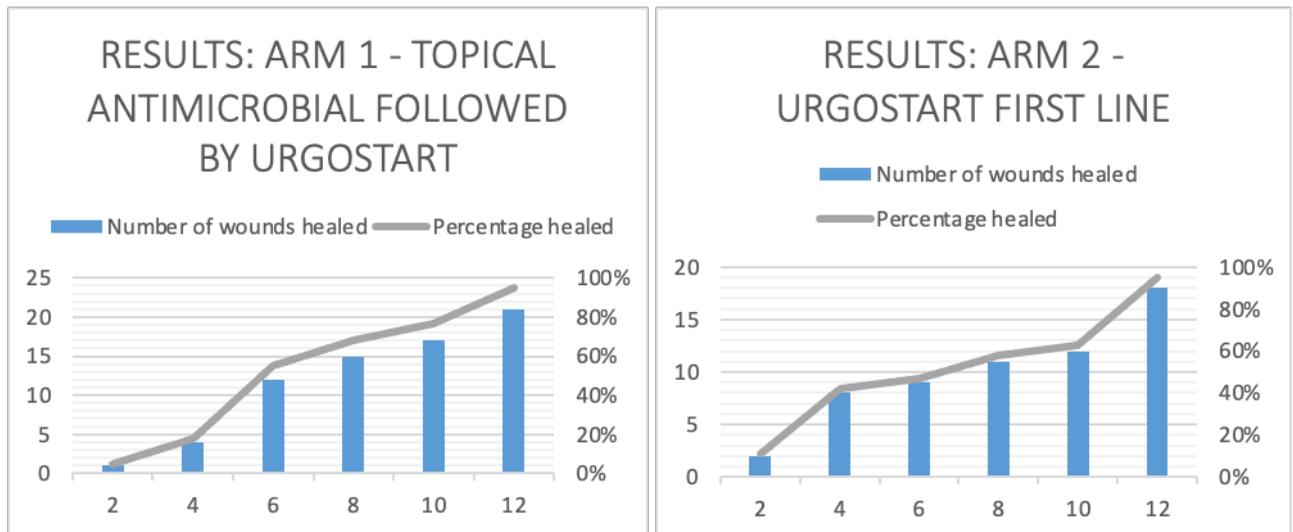
Kelly Hutchinson¹, Hollie Robinson², Sue Gray²

¹Urgo Medical UK, Loughborough, United Kingdom, ²South Warwickshire NHS Foundation Trust, Leamington, United Kingdom

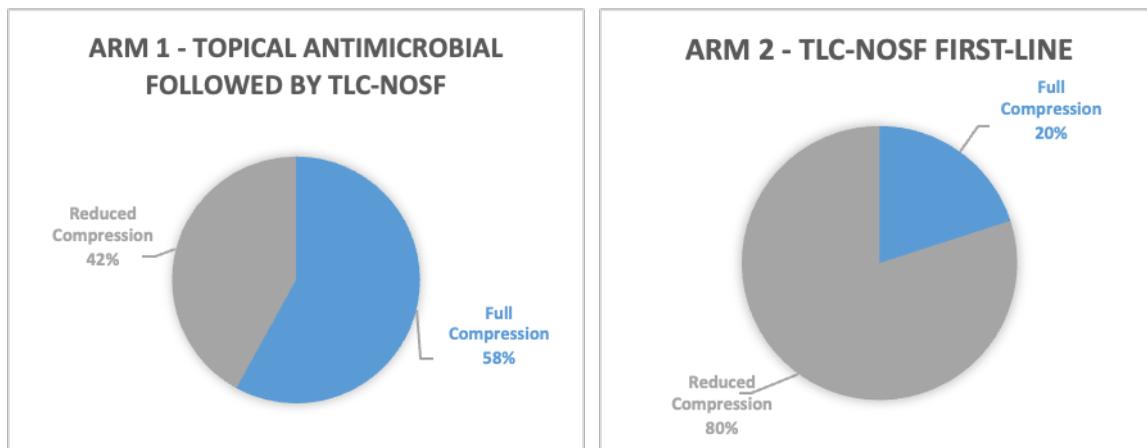
Aim: High usage of topical antimicrobials in non-infected leg ulcers led to concerns locally of increased costs and lack of antimicrobial stewardship. This project seeks to determine whether use of TLC-NOSF as an alternative to antimicrobials for non-infected venous leg ulcers can lead to increased healing.

Method: A 2-armed product evaluation within the specialist leg ulcer clinic setting commenced in July 2022 across 2 sites. Alongside compression therapy, all new patient referrals (n = 14) at clinic 1 received UrgoStart Plus Pad or UrgoStart Plus Border for 12 weeks or until healing. At clinic 2 all new patient referrals (n = 14) received 2 weeks treatment with UrgoClean Ag, followed by UrgoStart for a further 10 weeks or healing.

Results/Discussion: Healing rates at week 12 of 95% were equal in both treatment groups. In group 1 18% healed by week 4, whereas in group 2 42% healed by week 4.



58% of patients in treatment group 1 were receiving high compression treatment, versus only 18% in group 2. Therefore, more patients were receiving optimal standards of care in group 1.



Conclusion: This evaluation demonstrated that TLC-NOSF is an effective treatment for venous leg ulceration even for patients wearing reduced compression. UrgoStart has been added to a lower limb pathway and was launched in October 2023 to facilitate improved patient outcomes. The next step of this project is to work on developing an antimicrobial stewardship strategy for the Trust in conjunction with the tissue viability team.

EP408 Role of hyaluronic acid with amino acids in the treatment of hard to heal wounds. Analysis of cases

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Aim: The aim of this study is to show the healing process of hard to heal wounds. These wounds are caused by chronic venous insufficiency, neuropathy during diabetes mellitus and chronic ischemia of lower limbs. The wounds are treated using supportive therapy in the form of medications containing hyaluronic acid and amino acids.

Method: The study is based on a case study method and concerns five patients with hard to heal wounds (two cases of venous leg ulcer, two cases of diabetic foot and one case of chronic ischemia of lower limb). During the treatment the systematic cleaning and debridement of the wound bed, conventional dressings or negative pressure wound therapy, compression therapy in case of venous leg ulcer and offloading in case of diabetic foot were used. Preparations with amino acids and hyaluronic acid were used for wound preparation before split-thickness skin graft, to remove fibrin from the wound bed, and in cases where epidermalization was slowed down by chronic ischemia.

Results/Discussion: Preparations of hyaluronic acid and amino acids play an important role of therapeutic methods of hard to heal wounds. Our results have shown that the local application of medications with hyaluronic acid and amino acids has a beneficial effect on wound cleansing, granulation and epithelialization, additionally reduce the wound healing time and achieving complete healing of the wounds.

Conclusion: Application of preparations containing hyaluronic acid and amino acids accelerate the healing process in hard to heal wounds, what is more reducing treatment costs and improving patients' quality of life.

EP409 Efficacy of venous leg ulcer debridement utilising manuka honey

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Aim: "A Venous Leg Ulcer Patient Journey and Digital Service Development". It is reported within Ireland that 1 in 500 people suffer from Leg ulceration. This is noted by the author and their wound care specialist team based in Northern Ireland. They found that leg ulcers have been on the increase placing an increased burden on their wound care services. This led the author and clinical team to implement changes to the service which would increase their positive healing rates while maintaining a high standard of care. This is supported by Guest et al who explains leg ulcers cost the NHS £1.94 billion. The author focused on patient outcomes and measured the improvement which included odour management, debridement of devitalised tissue and exudate management which all have an impact on patient wellbeing. The author and clinical team highlighted the need to implement a digital advice service to offer support for healthcare professionals treating leg ulceration.

Method: Measure and document wound outcomes.

- Literature search on accessible academic search engines, with the aim of evaluating the body of knowledge and best available research on the topic
- Two patients with Venous Leg Ulcers treated by the author.
- Joint working with information governance to implement a digital advice service to support community and acute services.

Results/Discussion: Patients reported improved wellbeing to the author.

- The digital advice service had to be agreed by information governance which meant a robust secure system had to be developed.
- Case study 1 - Images below show progression of a patient with a Venous Leg Ulcer treated with, compression, skin care regime, honey and given patient advice including nutrition. (Further details will be included in e-poster)



- Case study 2 – Patient with venous leg ulcer.

Conclusion: The author found by implementing new services like the digital advice service they were able to utilize the time saved to offer the tissue viability service to more areas like outpatients. They also established suitable products to help manage patient outcomes improving patient wellbeing.

Atypical wounds

EP410 Impact facing foot and nail alterations in cancer patients: Vision performance of the podiatrist nurse

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Aim: It is common to have changes in the nail plates, skin of the feet and joints in cancer patients. This public constitutes a risk group, and it is ideal that they be attended by a professional specialized in the area, in order to correctly manage the alteration found. The Podiatrician Nurse is the specialist in the health area focused on foot care, acting at the levels of prevention, treatment and rehabilitation, through various tools of care in Podiatry

Objectives: To identify nail and foot alterations in cancer patients.

Method: This is a descriptive, explanatory and qualitative case study in a private institution in Cabo Frio, Rio de Janeiro, Brazil. During the podiatric care of cancer patients, the following skin were inspected: feet, feet and nail plates, in search of alterations, these were listed in the anamnesis forms, then tabulated in an Excel spreadsheet.

Results/Discussion: It is known that among the side effects of systemic therapies for cancer are changes in the nails. The aim of this study was to investigate foot alterations in 24 women with a history of cancer in multiple phases of treatment.

Conclusion: Although these are not serious conditions, they bring discomfort such as pain, high altered image, discomfort and decline in quality of life. It is necessary to have a different look from the Podiatrician Nurse professional to manage the care of this public.

EP411 Causal surgical treatment of infected cranionasal communication using serratus anterior muscle free flap - A case report

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Aim: The aim is to introduce a possible causal surgical option in the treatment of chronic cranionasal fistula using free flap reconstruction.

Method: We present a case report of 76 years old men (at the time of reconstruction), who suffered a frontobasal craniotrauma in 2014, followed by reconstruction of the base of the anterior cranial fossa using Palacos. There were no postoperative complications during next six years. In 2020, a pathologic communication along used material – Palacos - developed. The wound was assessed as a chronic one with the need of repeated surgical revisions, rotation flap plasty, Palacos removing and reconstruction of skull base by titanium mesh. Chronic cranionasal communication with fistulas of frontal area persisted for another three years. There was a polymicrobial colonization of the wound with massively represented *Staphylococcus aureus*. Wide debridement with removing all foreign materials was performed by neurosurgeon and otorhinolaryngologist. According to size and character of the non-healing wound, free flap reconstruction using serratus muscle free flap was performed by plastic surgeon in one stage. A skin grafting coverage was performed in the second stage.

Results/Discussion: We observed no postoperative complications, the flap was completely healed up. As a prevention of secondary bacterial infection, prolonged antibiotic therapy accompanied with peroral autovaccine based on microbial swabs was used. During the 4 months follow-up, spontaneous reduction of flap abundance was observed.

Conclusion: Free flap transfer serves for soft tissue defects reconstructions and can be also useful in reconstruction of chronic cranionasal communications or fistulas.

EP412 Evaluation of clinical performance of zinc paste dressings in wound management

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Aim: Zinc bandages, known as Unna bandages, have been shown to be beneficial in wound healing. However, data are difficult to find in the literature. In compression therapy, they are claimed to become semi-rigid and stiff after application, thus providing hemodynamic benefits. This study assess the efficacy of a zinc bandage by measuring sub-bandage pressure and static stiffness index (SSI).

Method: Many publications do not report the pressure and stiffness of zinc bandages. This paper measures pressure in the supine and standing and calculates the SSI according to the International Compression Club (ICC) consensus method (SSI baseline 10 mmHg). The SSI is compared with the reduction in bandage mass (g) over 7 days. This observation was made on 9 patients' lower limbs (n=18).

Results/Discussion: The bandages maintained a favourable (SSI) after 7 days. All patients had a supine pressure of 14-32 mmHg at the beginning and 2-20 mmHg at the end. The SSI of 7/9 patients (average 18 mmHg) was above baseline; such SSI indicates efficacy. After 7 days, 6/9 patients had an SSI (11-22 mmHg). The reduction in bandage mass, either by desiccation or other means, was 90-116 g (262 g per bandage) after 7 days. The bandages were still moist. No correlation was found between SSI (efficacy) and mass.

Conclusion: Despite starting therapy at a low pressure (14-32 mmHg), most SSIs (11-22 mmHg) were above baseline. All patients were adherent. This assessment will be repeated to obtain further data.

EP413 Malignant transformation in linear porokeratosis presenting as chronic wounds

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Aim: Chronic wounds can develop on the basis of skin diseases. If these skin diseases themselves have a tendency to malignant transformation, there is a risk of atypical malignant wounds developing, which pose a major challenge for those treating them.

We present an educational case for a better understanding of the differential diagnosis of non-healing wounds on chronic altered skin.

Results/Discussion: We report the case of a patient with porokeratosis since early childhood who presented with non-healing erosions and shallow ulcers. After taking several sample biopsies, several squamous cell carcinomas and a bowel carcinoma were found. The patient presented clinically with non-healing erosions and shallow ulcers of unknown origin.

Conclusion: Porokeratoses are rare cornification disorders that typically appear as roundish, horny plaques or papules with an atrophic center, although there are different clinical variants. Although the overall prognosis is very good, there is a risk of malignant transformation of the skin changes into skin cancer.

EP414 Revolutionizing wound management: Spatially modulated Erbium YAG laser as a novel therapeutic strategy

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Aim: The common causes of wound are diabetes, varicose veins, vascular diseases, accidents, surgical treatments etc. In current study, the laser ablation is first step which is actually the laser debridement of surface of the ulcer to remove bioburden and biofilm to clear the microorganisms. The RecoSMA mode is second step which creates resonance effect by sending acoustic waves deeper to ulcer surface leading to biostimulation to enhance neovascularisation and collagen synthesis. Aim is to introduce Erbium laser as efficient therapeutic method to heal wounds non surgically.

Method: The study period extended from November 2017 to November 2023 to include the patients with wounds attending outpatient clinic. Two modes, Laser ablation and laser bio-stimulation performed in each wound. Laser session was repeated every week till wound healed completely. Standard wound care dressing performed in between laser sessions. Patient kept in follow up to evaluate the recurrence of wound.

Results/Discussion: More than 4000 procedures performed for laser wound healing. Average 25.4 cm² wounds were healed completely without surgery in average 5.2 sessions of laser. Patients were kept in follow up on 6 monthly interval after complete wound healing. The recurrence was not observed in follow up period of 1 year.

Conclusion: Spatially modulated Erbium YAG laser is efficient technique to treat wounds on outpatient basis. Hard to heal wounds and wounds contraindicated for surgical treatments can be reinstated in active healing stage with this technique. The technique is bridging gap between standard medical and surgical management of wound healing.

Dressings 1

EP415 Assessing the effectiveness of hydroactive colloid gel in managing dermatitis among cancer patients undergoing radiotherapy

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Aim: Radiation dermatitis is a frequent and distressing side effect of radiation therapy that may necessitate a treatment interruption when evolving towards more severe forms such as moist desquamation (MD). The aim of this study was to evaluate a hydroactive colloid gel with both absorbing and moisturizing properties, in preventing this side effect in cancer patients.

Method: 10 patients evaluated and treated by a wound specialist nurse. The application of the hydroactive colloid gel occurred twice daily on the irradiated area, starting from the initial radiotherapy session and continuing until two weeks after the conclusion of the radiotherapy.

Patients instructed to apply the gel more frequently if they experiences symptoms of burning, itching, local pain or any other discomfort in the irradiated area.

Patients were asked to fill out a short questionnaire to characterize the level of pain or discomfort weekly.

To assess the skin damage caused by the radiation, the irradiated area was photographed weekly on a fixed day, from start treatment with Flamigel until two weeks after the end of treatment.

Results/Discussion: All patients experienced a reduction in pain in the irradiated area, slight dermatitis and MD occurred in number of cases, during the first week after the end of the radiation.

Conclusion: In this pilot product evaluation, a hydroactive colloid gel demonstrated reducing the risk of dermatitis and MD developing in patients undergoing radiotherapy, 10% slight MD, 50% slight redness, 30% slight itchy, 10% without effects. Further research is needed.

Atypical wounds

EP416 *Loxosceles rufescens*: a painless bite that can lead to sepsis. A new approach to healing

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Aim: In Italy, with climate change, we have witnessed the appearance of new lesions, those of *Loxosceles rufescens*. This type of spider lives mainly in the dark as it is a nocturnal animal.

Method: When the spider bites, it always injects its own venom. The injection is totally painless but what appears in the following hours is devastating. In more serious cases, the violin spider can lead to the appearance of cardiac arrhythmias, renal failure, hypertensive crisis, confusion, loss of consciousness, shock, coma and death. It causes serious effects especially in already debilitated subjects such as hemolytic anemia, myonecrosis and rhabdomyolysis. After a few hours, a vesicle appears at the injection site surrounded by an area of bruised or whitish skin, which in turn is surrounded by an area of erythematous skin. Sometimes the aforementioned vesicle breaks, giving rise to an ulcer which leads to the formation of a necrotic lesion approximately 4 mm deep.

In the last year 5 cases of violin spider bite

Four have in common a distal lesion of the lower limb, only one at the level of the buttock.

Results/Discussion: The dressing was done three or more times a week with the application of hypochlorous acid and the application of a bacterial capture dressing. Hypochlorous acid and DACC are important so the pain disappeared, the skin is less inflamed and the patient resumed his normal activity.

Conclusion: The recovery occurred in about three months.

EP417 Serum Amyloid A (SAA) and Pyoderma Gangrenosum: possible clinical-prognostic correlations

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Aim: Serum Amyloid A (SAA) is apolipoprotein produced by liver during inflammatory conditions. Pyoderma Gangrenosum (PG), a chronic autoinflammatory skin disease, has also been associated with high levels of SAA. This observation suggests a potential link between SAA and the pathogenesis of PG

Method: We analysed the SAA levels in 8 patients affected by PG correlating them with patients' clinical and anamnestic features, including the first location of PG lesions and the different treatment.

Results: Our population consisted of 2/8 (25%) males and 6/8 (75%) females with a mean age of 42 years and a mean BMI of 28,03 kg/m². Mean SSA value of the population was 32,5975 mg/L; 2/8 (25%) patients affected by hypertension showed a mean SSA value of 56,64 mg/L, while the patient with onset lesions on the face and back had a mean SSA value of 4 mg/L. Finally, 6/8 (75%) patients treated with local or systemic therapy (dapsons and corticosteroids) showed a higher mean SSA value than the 2/8 (25%) patients treated with biological agents (37,56, vs 17,7, p-value <0.05).

Conclusion: SAA seems to play a role in PG, even if an in-depth understanding of its pathophysiological and clinical implications is fundamental for the development of targeted therapies and prognostic investigations. Our future goal is then to increase the sample size of PG patients in order to provide a multivariate analysis about the statistical correlation of SAA levels and the different clinical features of the selected population.

EP418 Reconstruction of radiation ulcer related to percutaneous coronary intervention

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Aim: The number of percutaneous cardiac intervention (PCI) performed has been increasing owing to the development of the devices and technique. However, the number of fluoroscopy-induced injuries would increase simultaneously. Radiation ulcer is devastating as it's not easily treated. This study was aimed to report the treatment result of radiation ulcer caused after PCI procedures.

Method: This study is retrospective analysis of patients who underwent reconstructive surgery for radiation ulcer developed after PCI between 2018-2021. The collected data include; patient demographics, information of PCI, radiation ulcer, and each reconstructive procedure.

Results/Discussion: A total number of 8 patients were analysed. Radiation ulcers were located in right shoulder, right anterior axilla area, right upper back and left lower back. The mean number of PCI was 4 (ranging 1-8). The mean time of PCI was 137 minutes (ranging 71-281). The mean period from the last PCI to the reconstructive surgery was 335 days (ranging 289-519). Among 8 patients, two had two radiation ulcers and others had one. After radical debridement, the reconstructive procedures were performed. Right shoulder and right anterior axilla ulcers were successfully reconstructed with pedicled latissimus dorsi musculocutaneous flap except one patient who had split-thickness skin graft. Left lower back ulcers were successfully reconstructed with posterior intercostal perforator-based island flap.

Conclusion: Intractable wound in patients with the history of PCI could be fluoroscopy-induced radiation ulcer. Radical surgical debridement and reconstruction using pedicled latissimus dorsi musculocutaneous flap and posterior intercostal perforator-based island flap are helpful for the better treatment outcome.

EP419 Comparison between iodine soaked gelling fibre wound dressing (Exufiber®) and negative pressure wound therapy for treating coccyx pressure ulcers

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Aim: Treatment of coccygeal pressure ulcer (CPU) that occur in non-ambulatory patients is a challenging area for clinicians. Debridement and flap coverage can be considered, but in systemic conditions where surgical treatment is not possible, dressings are the only means. This study aims to compare the effects of Negative-Pressure Wound Therapy (NPWT) and wet-to-dry dressing using povidone-iodine soaked Exufiber® on infected Stages 3 and 4 CPU.

Method: A retrospective chart review was performed on consecutive patients who underwent povidone-iodine soaked Exufiber® or Negative pressure wound therapy for CPU with a positive culture test. Data such as demographic data, past medical history and wound characteristics with Pressure Ulcer Scale for Healing (PUSH) Tool were collected.

Results/Discussion: This retrospective study included 23 patients with a mean age of 68.3 years, comprising 69.5% women. We found that granulation tissue formation was more significant in the povidone-iodine soaked Exufiber® group ($p < .05$), and that there was more significant wound shrinkage ($p < .05$) with a more significant decrease in the PUSH Tool scores ($p < .05$). Tolerance of the dressing was good, with low levels of pain reported, both while wearing the dressing and on removal.

Conclusion: Of the many antimicrobial agents available, povidone iodine has ability to penetrate biofilms, anti-inflammatory properties and low cytotoxicity. The ability of Exufiber® to absorb and retain fluid, permitting its use even in highly exuding wounds. Wet-to-dry dressing using povidone-iodine soaked Exufiber® for infected CPU was effective, inexpensive, noninvasive practical option and technically very simple.

EP420 Navel keloids: a review of characteristics and proposal for morphologic classification

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Aim: To characterize the clinical features of Korean patients with navel keloid and further, to propose a classification according to their gross morphologies.

Method: A retrospective review on navel keloid cases was performed (2017–2023). Clinical features (demographics, location and morphology, relevant symptoms, causes, surgical history, treatments administered, complications, and outcomes) and accessible data including dermoscopy, histopathology, radiology, and surgery reports were assessed.

Results/Discussion: Navel keloids were diagnosed and treated in 45 patients (39 females and 6 males; mean 54.0 ± 15.2 years), 84.4% of whom were symptomatic at baseline, 77.8% of cases arose from laparoscopic surgery, 55.6% of cases located on the lower portion of the umbilicus, and 28.9% of cases presented with the button type morphologically. The predominant vascular patterns examined by dermoscopy were non-specific erythema (89.5%) and arborizing vessels (31.6%). Secondary bacterial infection (33.3%) and epidermoid cyst (31.1%) were occasionally complicated. Plasma cell infiltration (66.7%) and abscess formation (58.3%) were observed on histopathology.

Conclusion: Navel keloids were often seen as a result of laparoscopic surgery, and presented with distinct clinical features compared to other body sites in Korean patients.

EP421 Chemical debridement agent followed by amnion/chorion membrane as a treatment protocol for atypical wounds with slough tissues

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Aim: This study aims to evaluate a treatment protocol as chemical debridement agent followed by amnion/chorion membrane for atypical wound.

Method: prospective study targets atypical wounds with 50% and above of slough tissue and minimal exudate. A total of 736 wounds included. Limited to pressure ulcer/injury, venous ulcer, arterial ulcer, post-surgical wounds.

Results/Discussion: Chemical debridement showed efficiency in wound de-sloughing, followed by amnion/chorion membrane dressing to achieve full closure in addition to standard of care. 78% (n=567) healed within 21 days, and 20% (147) healed in 35 days. Wound bed preparation is a crucial factor to in wound care generally and in atypical wounds particularly.

Conclusion: Chemical debridement agent has a positive effect in preparing the wound for healing. Followed by amnion/chorion membrane that accelerated wound healing to reach full closure. This study encourages using advanced wound care materials that considered as a protocol to reach the targeted goal.

EP422 Successful treatment of complex lower extremity wounds with subcutaneous ossification in Heinz-Lippmann disease: Case report

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Aim: Venous insufficiency and ulceration are frequently seen and managed in the wound care setting. Heterotrophic ossification, an abnormal bone formation in extraskeletal soft tissues, is an underdiagnosed and underrecognized complication of chronic venous insufficiency leading to ulcer formation. The case presented highlights complicated wounds secondary to Heinz Lippmann disease and their successful treatment.

Method: A 62-year-old female patient with medical history including diabetes, neuropathy, PAD, and chronic venous hypertension. The patient presented after developing an anterior right tibia ulceration. Palpable masses were present. Patient underwent CT imaging, arterial and venous workup. The right anterior tibial ulceration was anesthetized and aggressively curetted to remove prominent heterotrophic bone until healthy granulating tissue was noted.

Results/Discussion: CT revealed extensive calcified masses in the subcutaneous tissues a circumferential pattern responding to venous varicosities throughout the lower leg. The individual lesions measure up to 2.5 cm in diameter and the appearance suggests heterotopic ossification rather than ordinary phleboliths, likely Heinz Lippmann disease. Aggressive curetting of the lesion site as well as advanced adjunct therapies (revascularization procedures and application of skin substitutes) in combination with conventional wound therapy achieved complete healing.

Conclusion: Increased awareness of heterotrophic ossification as a cause of chronic ulceration is important for accurate diagnosis and to initiate appropriate treatment. Advanced imaging modalities can help with the diagnosis of Heinz-Lippmann disease. Literature reports limited effectiveness with surgical debridement and skin grafts, however, this case highlights aggressive curette and removal of underlying bone deposition assist with healing difficult to treat ulcers.

EP423 Hyaluronic acid and amino acids in the treatment of wounds in pediatric patients undergoing hemato-oncological treatment. Analysis of cases

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Aim: The aim of this study is to show the beneficial effects of using products in the form of a gel or cream containing hyaluronic acid and amino acids the healing process of the treatment of wounds and skin complications of children undergoing hemato-oncologic treatment. The most common cause of wounds in this group of patients is graft-versus-host disease (GVHD), whose acute course results in skin rashes or blisters that are difficult to heal, as well as skin complications from chemotherapy and radiation therapy.

Method: The study is based on a case study method and concerns four pediatric patients (three cases of acute myeloid leukemia and one case of tongue cancer) wounds during hemato-oncological treatment caused by radiotherapy or graft-versus-host disease (GVHD).

During the treatment used the systematic cleaning of the wounds, applied preparations with hyaluronic acid and amino acids and used specialized dressings. For patients with wounds all over the body the dressings were changed in the operating room during the general anesthesia.

Results/Discussion: Cases analysis confirms that the used of preparations with hyaluronic acid and amino acids has a beneficial effect on the wound healing process in pediatric patients. Wound reduction is visible after just a few applications of these preparations, which also reduces the pain and suffering of young patients.

Conclusion: Hyaluronic acid and amino acid preparations can be successfully used to treat skin complications and wounds caused by hemato-oncology therapies. Beneficial effects of hyaluronic acid and amino acid accelerates the process of healing wounds and improve the quality of life. However, due to the lack of scientific evidence for the use of this method in pediatric patients, further research and observations are needed.

Health Economics & Outcome

EP424 Are there “medical deserts” specific to chronic wound treatment? A district-level analysis of health professionals in Austria

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Aim: The primary aim of this presentation is to profile the medical and registered nurse workforce with a continued education diploma in chronic wound treatment. The secondary aim is to identify ‘medical deserts’, geographical areas where chronic wound health services are difficult to access. Such mapping allows the analysis of the health policy choices underlying access barriers.

Method: We employ a cross-sectional, mixed-methods research design. Data describing the healthcare workforce are extracted from the national registry of health professionals and the Austrian Medical Chamber’s membership record. We use continued education diplomas in wound management to extract the specialist population. We decompose this population in terms of their base specialisation and other continued education diplomas, their form of practice (employed, independent with insurance contract, independent without insurance contract), and whether they practice in a predominantly rural or urban district. In a second step, we plot the geographic distribution of this specialised health workforce at the district level and investigate how their *relative distribution* changes if we include population-level parameters that capture known risk factors of suffering from chronic wounds (no direct prevalence measures of chronic wounds exist for Austria). We then control whether observed ‘medical deserts’ are wound-specific or overlap with generally underserved areas.

Results/Discussion: The authors have acquired the required data, established the geospatial visualisation framework, and are currently analysing the data.

Conclusion: We do not wish to communicate preliminary findings as they must be interpreted in context.

EP425 Care panel: characterization of the profile of individuals with wounds and care management in primary health care and home care services in belo horizonte

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Aim: Present the experience developed at the Municipal Health Department of Belo Horizonte through the development of a panel to manage the information obtained regarding the profile of users with wounds and their characteristics.

Method: Descriptive study, experience report type about the development of an information management panel, built with data about individuals in wound treatment, obtained through an online form, filled out by professionals from 152 Health Centers and 21 Home Care Teams, request information from users: age group, comorbidities, social conditions and descriptive characteristics of the wounds.

Results/Discussion: The predominance of adults and elderly people, 29.3% 30 and 60 years old, 48.10% between 60 and 80 years old and 18.22% over 80 years old. The most prevalent comorbidities were systemic arterial hypertension 39%, diabetes mellitus 24% and obesity 8.6%. The locations of wounds are on the lower limbs 55.03%, feet 13.2%. The most recurrent etiology, venous ulcer 36% followed by pressure injury 25%. The people live with family members, 82%. The information supports education actions for professionals, monitoring of material resources, acquisition of new technologies, management and qualification of nursing care.

Conclusion: This report is expected to highlight the importance of the relationship between care and management actions, through information analysis, with access to health technology for managerial support, systematic monitoring and qualifying nursing care.

EP426 Epidemiological investigation and analysis of inpatients with chronic refractory wounds in a wound repair center

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Aim: Analyzed the epidemiological characteristics of hospitalized patients with chronic refractory wounds by reviewing data to provide reference for the formulation of prevention and treatment strategies for the disease.

Method: The case data were collected including the patient's gender, living area, occupation, underlying disease, smoking history, wound type, age, hospital stay, hospitalization cost, treatment method and wound surface detection of pathogenic bacteria. The information data were compared by chi-square test and Kruskal-Wallis H test.

Results/Discussion: A total of 2402 inpatients were included in this study, including 66.3% males and 33.7% females, 60.7% urban population, 39.3% rural population. 74.4% patients had diabetes, 57.5%hypertension and 31.8% heart disease. 52.7% patients smoke. diabetic wounds were 62.3%, pressure wounds (13.9%). The age group with the highest prevalence rate was 61-80 years old (54.7%). pressure wounds had the longest hospitalization time, arterial wounds were the highest cost. Treated by surgery, pressure wounds had the longest hospitalization time, arterial wounds had the highest costs. 22.0% were cured, 76.3% were markedly effective. 38.6% were examined for pathogenic bacteria on the wound surface, 73.5% were positive for pathogenic wounds. Gram-negative bacteria accounted for 50.8%, Gram-positive bacteria 42.4%.

Conclusion: The inpatients with chronic wounds are mainly middle-aged and elderly people, males more than females. Diabetic wounds, pressure wounds are the main causes. The main treatment method is surgery. The center adopts a multidisciplinary diagnosis and treatment mode for wound treatment, the healing rate is high. Gram-negative bacteria are the most common pathogens on the wound surface.

EP427 Bedside vulnology is green!

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Aim: Telemedicine and telemonitoring guarantee acceptance, continuity of care and facilitate follow-up.

Method: The benefits of telemedicine are: optimizing access to clinics, reducing waiting times, reducing transport difficulties. reduce the caregiver's loss of working days, avoid isolation after the in-person visit during Covid periods, give moral relief to patients in nursing homes and staff who feel supported by the doctor. It also allows the sending of advanced medications and technologies to the nursing home and to home through our company's pharmacy and a comparison between multiple specialists.

Results/Discussion: Telemedicine is green because its use can generate environmental savings Co2 saved for each televisit, a saving for the patient because booking the remote televisit follows a different path to that of the in-person visit, saving time for the caregiver, i.e. fewer of working days lost because the telemedicine visit is by appointment and lasts a maximum of 40 minutes and finally a saving in fuel and travel time.

Waiting time In presence 40 days	Co2 reduction for 50 km	Fuel cost 1l of petrol 2 euros x 50 km for ambulances own car nurse car	Nurse time	Home service Cargiver's time
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Conclusion: The project vulnology bedside through telemedicine is important because many patients can be helped.

EP428 Integration of specialist nursing skills from the clinical network for skin lesions in ICU to improve the quality of care: experience of the South-East Tuscany Local Health Authority

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Aim: The evolution of the recognition of nurse specialist skills in Italy and the structuring of framework model in South-East Tuscany USL Company. From the retrospective analysis of the ICU on the management of lesions, their number and location, the need emerged for an integration with this level of expertise for the management of patients with skin lesions of various etiologies and at different degrees of complexity.

Method: The data relating to total lesions were extrapolated from the medical records on the Margherita 3 information system in the time interval January 2019-December 2022.

3353 lesions were analyzed out of a total of 2445 medical records.

A plan for sharing management and professional planning was set up which included:

1. Observation and analysis of data with identification of the problem for improvement
2. Carrying out a shared training session with a focus on new validated tools for assessing existing skin lesions (BWAT Scale)
3. Analysis in defined times (T15-T30) of problem monitoring with check on time

Results/Discussion: The new framework model has allowed:

1. A mapping of patients with a clear definition of taking charge of the complexity
3. Increase in the professional skills and skills related to wound care of ICU nurses
4. Improved quality of care provided with use of dressing with reactive species oxygen in DRPU

Conclusion: The evolution of specialist skills inserted into structured organizational models represents an added value for the quality of care, allowing shared professional growth even in transversal settings.

EP429 An evaluation of wounds in a correctional facility

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Aim: The main aim of this point prevalence project was to gather the data on wounds, wound aetiology, and wound management in a Maltese Correctional Facility. A secondary aim was to compare the current practice with the best evidence-based practice and clinical practice guidelines, to provide a set of recommendations which can be implemented to improve the service.

Method: A retrospective study was carried out, auditing the people with justice involvement (PWJI) medical records.

Results/Discussion: The results of the audit reported a low prevalence of wounds (0.03, 2.8%). Whilst practice met existing standards, for example no unnecessary wound swab was taken, several shortcomings in wound management were noted. To improve the adherence to the clinical guidelines in conjunction with improving the quality of the current service offered in the wound clinic, a number of short- and long-term clinical recommendations were proposed including, the incorporation of pain assessment tools and C-reactive protein blood testing for identifying infection, early referral to specialised care for individuals with diabetic foot ulcers (DFUs), the necessity for proficient personnel specializing in wound management training.

Conclusion: The deficit of literature was evident in 2022 when carrying out this project as limited studies were found that examined wound care in a prison setting. This point prevalence project provided information on the number, types and management of wounds found in a correctional facility in Malta. The results will also increase awareness that is needed to improve the wound care services in prisons.

EP430 A European direction for specialist nurses in wound care

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Aim: The aim of this presentation is to discuss the evolution of specialist nursing practice, and to highlight the paucity of information and evaluation of the nurses' role in Malta. It will also highlight areas that need to be taken into consideration if specialist nurses are to continue to develop in Europe.

Method: Three focus groups with Specialist (Practice) nurses that included tissue viability nurses were carried out in February 2023.

Results/Discussion: The results revealed similar themes to a previous study carried out in 2013 that included; concepts of advanced nursing practice, role boundaries, preparation, regulation and autonomy to practice. The research element of their role was once again noted to be limited and the confusion and lack of understanding from management was still an important element that was perceived as hindering their growth.

Conclusion: The challenges and successes will be charted and the aim would be to outline the development of specialist nurses' roles not only in Malta but in Europe. Finally, it will look at practical issues to consider when developing specialist nurses' positions such as; the needs of the population and hospital, the resources needed, and a legal framework to regulate the advancement of the roles for them to practice safely and autonomously.

EP431 Protocol for platelet rich plasma and platelet rich fibrin application in complex wounds

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Aim: As a new therapeutic approach in wound care, with a low economic impact, the use of autologous platelet-rich plasma is more used by healthcare professionals, doctors and nurses, with positive results. The decision making is very important and choosing the correct patient, with the correct wound should be done based in a protocol to standardize the interventions.

Method: The construction of this protocol was based on the most recent evidence. It aims to serve as a tool for standardizing the treatment of complex wounds with autologous platelet-rich plasma. This protocol was constructed over the course of three years, with a review of the literature on the subject.

Results/Discussion: This platelet-rich plasma application protocol has been applied for around 2 years, with 30 cases completed. Basically in pressure ulcers and leg ulcers of venous etiology, with a closure rate of over 90%. The average treatment time is around 3 months, in wounds that have been in progress for around 1 year.

Conclusion: The use of autologous platelet-rich plasma, with an evidence-based protocol, allows treatments to be carried out on wounds with a prolonged evolution time. These wounds, with complex characteristics, contribute significantly to a decrease in the patient's quality of life, as well as a substantial increase in costs associated with healthcare. This treatment, in addition to having a reduced rejection rate, can be one of the answers to reducing costs, both by promoting faster healing and by being less expensive compared to other available technologies.

EP432 The new organization of the Portuguese health system and its impact on the effectiveness of clinical practices in wound treatment

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Aim: A very recent Decree-Law establishes a new organization of the Portuguese NHS based on 31 Local Health Units (ULS). These units integrate hospitals and primary health care centres located in the same region. They concentrate the organisation of human, financial and material resources, facilitate access based on need, and reinforce health promotion and disease prevention. It presents an opportunity to improve the quality of care for chronic wounds, with an expected impact on the consumption of resources, harmonization of practices, better therapeutic innovation and health outcomes.

The aim of this article is to analyse the impact of the Associative Group for Research in Wounds (GAIF) in the ongoing advancement of wound treatment, healthcare professional training, and cooperation with regulatory bodies in Portugal.

Method: Description and impact of GAIF activities on the results of the new organization of the Portuguese NHS.

Results/Discussion: The obtained results evidence the GAIF's annual activity to improve the effectiveness of wound care provided by the various organizations that make up the new ULS. This is achieved through the production and implementation of clinical guidance standards, collaboration with therapeutic committees, and training of health professionals.

Conclusion: The impact of GAIF activities could enhance the effectiveness of wound treatment and improve the sustainability of various ULS in the Portuguese context. This could be achieved by providing greater access to more appropriate and innovative therapies, reducing the variability of clinical practices, and decreasing the number of days lived with disability.

EP433 efficiency of a multicomponent compression system compared to a short stretch system in Spain

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Aim: Multicomponent bandage is the gold-standard of venous leg ulcer (VLU) etiological treatment due to its ability of maintain pressure and stiffness. This project aims to evaluate the cost-effectiveness of a multicomponent compression bandage compared to a short-stretch bandage for treating venous ulcers in Spain.

Method: Treatment outcomes on both compression systems have been obtained by a recent comparative publication with 25.000 patients. The Markov model has simulated health states, considering clinical and economic consequences. Life Years Gained without ulcer (LYG/wu) has been used to calculate the main measure of effectiveness and all costs have been evaluated from the perspective of the Spanish National Health System. An univariate sensitivity analysis has been performed to assess the uncertainty of the model variables and to evaluate the strength of the obtained data. The results have been represented by a tornado diagram, which identifies the parameters with most impact in the variability of the model results.

Results/Discussion: The obtained results show that multicomponent system reduces the healing time and the direct costs of the compression system treatment compared to the short stretch system.

Conclusion: These results show that a multicomponent compression system based on a combination of inelastic and elastic components is more efficient than a short stretch system based on inelastic component. The main interest for the health systems is that the efficiency of the multicomponent compression system can reduce the healing time positively impacting in cost reduction of the treatment and the quality of life of patients.

EP434 10 years of experience in negative pressure therapy. Economic results

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Aim: To test the usefulness and cost-benefit profitability of TPNT.

Method: A patient selection algorithm has been developed. From 2012 to 2022, 298 patients with various pathologies from our surgical department and others have been treated. Hartmann's VIVANO device has been used to perform wound dressings

Results/Discussion: Approximately 4172 treatments were performed. The mean therapy time was 7.2 weeks. The mean interval between treatments was 3.6 days.

The average number of cures per patient was 14 cures

The classification by treated pathologies is described in Table 1. As well as the healing times and follow-up of the therapy and unfinished cases.

Conclusion: 1.- We have achieved the streamlining of the patient-bed circuit by being able to ambulatorize patients early. The length of stay of these patients has been reduced by almost 60%.

2.- In the field of management, the implementation and protocolization of the use of TPNT has led to a reduction of approximately 25 days of hospitalization. This represents a reduction of approximately €17,500 per patient. If we deduct the material expenses generated by each TPNT cure (150 euros) and the total number of cures (approximately 14), the expense generated is 2,100 euros. Overall, the return on savings stands at €15,000 per patient.

In the last year, this unit has treated 38 patients following the TPNT treatment protocols, which has resulted in economic savings of approximately 570,000 euros.

EP435 AUP1602-C: An efficient and Cost-Effective Gene Therapy for Non-Healing diabetic Foot Ulcers

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Aim: To evaluate the efficacy and cost-effectiveness of AUP1602-C, a novel Gene Therapy Medicinal Product for non-healing diabetic foot ulcers (DFUs), and to assess its potential as a promising treatment option for patients.

Method: Mode of Action was studied pre-clinically. Efficacy was assessed from completed open-label, single-arm, dose-escalation Phase-1 study with four dose-cohorts evaluated in 3+3 design. A MARKOV Model and Cost-Utility Analysis methodology were used to compare AUP1602-C and Standard Of Care cost-effectiveness based on US Medicare costs, transition probabilities from literature, efficacy rates from Phase 1 cohort data.

Results: Pre-clinical data showed AUP1602-C addresses all key aspects of chronic wound healing: inflammation, proliferation, angiogenesis, epithelization.

A Phase-1 study demonstrated AUP1602-C was safe, well-tolerated, and effective in promoting wound healing in patients with DFUs. In this study 83% of patients in the therapeutic dose cohort achieved complete wound closure with a median healing time of 65 days. None of the healed ulcers recurred during 12-months follow-up.

Cost-effectiveness model showed AUP1602-C is cost-effective versus standard of care for DFU. The incremental cost-effectiveness ratio (ICER) for AUP1602-C was \$3,909/QALY, well below the threshold of \$100,000/QALY commonly accepted in USA.

Conclusion: AUP1602-C emerges as a promising gene therapy for non-healing DFUs. It has demonstrated significant efficacy, safety, and cost-effectiveness in previous studies.

AUP1602-C safety and efficacy is now studied in ongoing multi-center, randomized, standard-of-care plus placebo-controlled DIAMEND Phase-2 study, in 60 patients with non-healing DFU. DIAMEND Study is expected to further validate the potential of AUP1602-C as a breakthrough treatment for DFU.

EP436 Cellulitis reduction in wound care and lymphoedema: A quality indicator

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Aim: As a specialist service provider offering wound and lymphoedema services, our primary objective was to advance understanding of cellulitis prevalence within our patient group and substantiate the efficacy and outcomes of our clinical interventions for this cohort. We focused on standardising the collection and reporting of cellulitis data during assessments, aiming to demonstrate a decline in incidences of cellulitis post-assessment and treatment. We used our integrated intelligent patient management system to facilitate streamlined data collection, enabling a consistent long-term methodology.

Method: A retrospective analysis of data captured was conducted across 1,297 patient assessments, these were a combination of both wound and lymphoedema patients. There were 1046 lymphoedema and 251 wound patients assessed in the 12-month period, 2022-2023. Cellulitis history and prevalence was recorded during initial assessments and then during subsequent reviews.

Results/Discussion: During this period, the overall cellulitis prevalence upon assessment for these 1,297 patients stood at 31.92% (414 patients). Post-assessment and therapeutic management, based on 3080 reviews for the 749 patients of the total followed up in this period, the incidence rate of cellulitis post treatment was 0.93%. The 749 individuals followed up underwent on average 4.11 post-assessment reviews, with 99.07% not experiencing cellulitis episodes while being cared for by us.

Conclusion: Typically, clinical services lack sufficient data to showcase the positive impact of therapeutic management for cellulitis. Refinement and consistency on pre and post-assessment collation methodologies is imperative for clinical services to demonstrate the positive impact of therapeutic management in achieving significant reduction in cellulitis occurrences.

EP437 Improving Patient Outcomes utilising the Coloplast 3 Step Approach – Assess, Prepare, Treat

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Aim: To determine the effectiveness of implementing the Coloplast 3 Step Approach - Assess, Prepare, Treat (APT) pathway on the use of antimicrobials, wound healing, and patient outcomes.

Method: Patients with hard-to-heal wounds are included in an evaluation of the Coloplast 3 Step Approach - APT pathway. A full holistic assessment is undertaken which includes the Triangle of Wound Assessment focusing upon the wound bed, wound edge and peri wound skin. All wounds are subsequently prepared using Alprep® Pad to remove any barriers to healing, following which a comprehensive wound treatment plan is implemented in line with the agreed treatment objectives.

Results/Discussion: Wound durations of an average of 18 weeks prior to commencing The Coloplast 3 Step Approach - APT pathway have been identified with 61% of patients progressing to healing within 5.8 weeks. Further analysis has shown that patients with lower limb ulceration have healed in 6.3 weeks. Patients with lower leg wounds had on average a wound duration of 21.5 weeks in addition to having co-morbidities and increased bacterial burden prior to the commencement of the APT pathway. Further results have demonstrated a reduction in wound measurements in addition to positive wound healing indicators including the reduction in exudate, pain and malodour.

Conclusion: The preliminary results from this evaluation have shown significant progress to the wound healing parameters using the Coloplast 3 Step Approach - APT pathway. This has resulted in quantifiable impacts for the patients who present with hard to heal wounds.

EP438 The role of value analysis in pressure injury prevention: A quality improvement project

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Aim: The purpose of this analysis is to describe how the consistent collection, analysis, and use of data allows hospitals to validate their clinical and economic outcomes, and to adjust pressure injury prevention (PIP) strategies accordingly. This work recognizes the important role of Value Analysis Teams, which consider a variety of factors including clinical outcomes, product quality and comparisons, financial analysis, and education.

Methods: Hospital Acquired Pressure Injury (HAPI) incidence data for acute care patients at a 280-bed regional community hospital in West Virginia was collected during the time period evaluated. Soft silicone multi-layered foam dressings from three manufacturers were used between the time period of January 2012 – July 2023 and the outcomes evaluated. Average annual HAPI incidence was calculated retrospectively to allow comparison of outcomes during the time periods that various soft silicone multi-layered foam manufacturers were used.

Results: Annual averages show that the use of Dressing 1 resulted in 10.4 HAPI per year, Dressing 2 an average of 5.56 HAPI per year, and Dressing 3 an average of 26.29 HAPI per year. Additionally, an estimated sum of \$451,233 was saved when using Dressing 2 compared to Dressing 3, and \$105,449 saved during the use of Dressing 2 as compared to Dressing 1.

Conclusion: Monitoring data over time can validate product selection decisions to ensure they are advantageous to both costs and the delivery of quality care.

EP439 Economic analysis on the use of closed incision negative pressure therapy in high-risk patients following median sternotomy

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Aim: The aim of this economic analysis is to investigate whether closed incision negative pressure therapy (ciNPT) reduces the rate of post operative resource costs following median sternotomy when compared with standard of care (SOC).

Method: A hypothetical cost-benefit model, using clinical outcomes of a previous multi-center retrospective comparative cohort trial, was generated using UK national resource costs. The trial compared the use of ciNPT and SOC on patients who underwent cardiac surgery via median sternotomy.

Results: The multi-center retrospective comparative trial included collected data on a total of 5,288 cardiothoracic patients, across 3 UK acute hospitals. Using 4 identified risk factors (age, BMI, COPD, and diabetes), the groups were propensity matched, which resulted in a total of 1,532 patients. Each treatment group consisted of 766 ciNPT patients and 766 SOC patients.

Of the control group, 119 patients had a surgical site infection (SSI) at a rate of 15.5%. Comparatively, the ciNPT group had 43 SSI patients at a rate of 5.6%. This difference in SSI was statistically significant ($p=0.0001$).

A cost-benefit analysis showed that the ciNPT had a per-procedure cost reduction of £1,852.37, related to the reduced mean cost of an SSI. For reference, the mean attributable cost of an SSI in a cardiothoracic setting in the UK is £21,644.57.

Conclusion: The preliminary findings of the hypothetical economic analysis show potential resource savings with the use of ciNPT in high-risk patients following cardiac surgery via median sternotomy.

Home Care, Nutrition & Pain

EP440 Transforming wound prevention and management in residential aged care: A strategy for success

Suzanne Kapp¹

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Aim: To develop a wound prevention and management strategy for residential aged care (nursing home/long stay homes). Organisations require a strategic approach to providing wound prevention and management services.

Method: A strategy was developed for an Australian provider of residential and other aged care services which cares for more than 7000 residents and clients throughout Australia and which has 9000 employees. Development of the strategy involved appraisal of the alignment of existing wound prevention and management services and outcomes with residential aged care and wound management standards; assessment of strengths, weaknesses, opportunities and threats; observation of care delivery; and internal and external stakeholder feedback.

Results/Discussion: The strategy aligns with relevant standards and the 10 priority areas were perceived favorably by executive. ≥85% of senior clinical nurses (n=60) agreed/strongly agreed that each of the priorities were important. Objectives, outcomes, performance measures, standards and time frames were developed for each priority. Work is underway to address all priorities, however, three in particular (clinical leadership, education and training, and exceeding standards for resident outcomes) have prompted the most immediate action.

Conclusion: The wound prevention and management strategy aims to always deliver excellent and sustainable wound prevention and management outcomes for residents and the organisation. This presentation will (a) describe the process of strategy development and how this approach can be adopted by others, (b) share the achievements and challenges to date and (c) highlight the all of organisation approach required to optimise wound prevention and management services irrespective of care setting.

EP441 Connections that heal - Challenges of primary care nurses in home care for indigenous peoples in the Brazilian Amazon: Case report

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Aim: Indigenous peoples in the Brazilian Amazon have a culture in their tribes of using natural and herbal medicine for the healing process of wounds, plants, bark teas, tree oils and animal fats.

Method: To describe which products with advanced technologies were used in the wound healing process and how indigenous peoples accepted the use of these applied technologies.

Results/Discussion: The healing process of wounds used by the indigenous people is culturally used with herbal medicines. The present study shows the cultural impact on the monitoring and use of industrialized products with the support of curative technologies in home care. The healing process was analyzed in a comparative way, according to the healing time, observing the use of technologies or not in the wounds, and reports of satisfaction or dissatisfaction with the form of treatment used in the treatment process.

Conclusion: Connections that heal has one of its pillars: support for health professionals. Providing adequate guidance and training with the support of healing technologies, with products that aim for scientific evidence. Indigenous peoples were well receptive to the positive results of the use of applied technologies and with the help of continuing education. We conclude that adding technologies, innovating with a purpose, reduced the anguish and the healing time of these wounds.

EP442 Patient empowerment program to enhance collaboration and sustainable wound care at home in primary healthcare setting

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Aim:

- Empower self-management
- Minimize waiting time
- Promote QoL
- Enhance collaboration between nurses and patients

Method: Patient empowerment program of wound care at home provided opportunity to enhance communication and stronger collaboration among nurses, patients and caregivers. Before launching this new program, a series of staff promulgation and education to frontline nurses through training sessions and onsite support were provided. Eligible wound types are identified as simple and stable wound condition. Factors including willingness, confidence, capability, visibility and dexterity are also considered. Participants were empowered through nursing education. At each follow-up, nurses reviewed patient's wound and patient actively discussed their experience.

Results/Discussion: From 4/2023 to 10/2023, 956 patients participated and 95% (n=866) could perform wound care at home and monitor wound condition. 97% complied with frequency of dressing change and 95.4% satisfied. 98.5% agreed wound care instruction was helpful and 98% agreed dressing material was easy to manage. 3.7% provided positive comments including time saving, and good for patient and family. Convenience is considerable especially during extreme weather. They appreciated nurses providing clear instruction. Few patients expressed lack of confidence but reassured by nurses. Some need caregivers to assist if wound location is not reachable. To make PEP successful, all of above comments are important. Dressing attendance on Sundays and public holidays decreased 15% approximately.

Conclusion: With patient enhanced by structured empowerment program with consideration of wound condition, patient factors e.g. confidence, a culture of stronger collaboration and sustainable wound care service was built up.

EP443 Prospective study of fifty-one patients with in-home treatment delivery

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Aim: Expensiveness of modern diagnostic and therapeutic technologies and limited medical resources have centralized care-delivery into numerous mega-hospitals in China, which have created unique bureaucratic care-giving system with low-efficacy and high-costliness for severe chronic or terminal illness. Thus, our group took a lead in China to integrate home treatment delivery into our day-to-day practice with the aim to evolve current practice of "treat-patient- in-hospital" into renewed modus operandi of "treat-patient-at-home".

Method: The relevant data of patients in the pre-designed database for in-home treatment from April 2020 to April 2022 were analyzed on the categories of the safety, feasibility, efficacy, and cost effectiveness of in-home treatment. Besides, Kaplan Meier survival analysis was performed to determine the trend of overall survival change of the enrolled patients.

Results/Discussion: Totally, 51 patients with various primary diagnosis and significant co-morbidities were required in-home treatment and care, of whom 74.5% suffered from either limited mobility or bedridden disability, and 25.5% had end-stage malignancy. Therapeutically, 31.4% of patients required limited resuscitation and life support, 19.6% had in-home chemo or immunotherapy, and 7.8% underwent in-home paracentesis for ascites from end-stage malignancies. Kaplan Meier survival analysis showed that 1, 3, and 6 -month overall survival rates were 82.3%, 29.4%, and 11.8%, respectively. Moreover, median cost for the in-home treatment was 1,700USD, with the range between 313 and 31,000 USD.

Conclusion: Our study demonstrated in-home treatment delivery has been safe, feasible, and cost-effective option for the patients with severe chronic and terminal illness.

EP444 Interest in a specific balm cleanser for cleansing skin lesions during wound healing

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Aim: Although cleansing skin lesions is essential for optimal healing, it can be painful. The study's aim is to evaluate the tolerance and interest of a specific cleanser, formulated with gentle surfactants, lipids, and polyols in a balm texture, after different skin aggressions.

Method: An intra-individual clinical study was performed under dermatological and gynecological control on 55 subjects (mean age 44) presenting different types of lesions on the head, body, intimate areas, as well as in the presence of radiodermatitis, for subjective assessment of the product applied 1 to 2 times daily for 28 days. A corneometry was also performed on the forearm of 9 subjects (25 to 68 years old) vs a control area.

Results/Discussion: In the clinical study, subjects after cesarean section (10), episiotomy (11), scalp (13) or oncological surgeries (11) and radiotherapy (11) appreciated the gentle cleansing and the ease to rinse of the product. 98% evaluated it as leaving a protective film and avoiding rubbing with the fingers. From the first application, at least 95% of the subjects judged their skin to be soothed and comfortable. On D28, at least 90% judged their skin soothed, moisturized, comfortable, protected, with their skin comfort restored. The product was very well tolerated by all the panel. In addition, the product increased skin hydration by 17.5% on D28 vs D0 ($p < 0.001$, Student t-test), unlike the untreated area (0%).

Conclusion: By avoiding friction and being easy to rinse, this balm cleanser provides a gentle cleansing, while protecting and hydrating weakened skin.

EP445 Consistent benefits of a new multicomponent compression system in the treatment of patients with leg ulcer and/or oedema regardless of the person who apply the system (patients/relatives or health-care professionals)

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Aim: To investigate the performances of an innovative multicomponent compression system using one single bandage* in the treatment of patients with leg ulcers and/or oedema, depending on the person who applied the system between medical visits.

Method: Prospective, observational study conducted in 40 centres in Germany (03/2022 – 07/2023). Main evaluation criteria included changes in wound healing and oedema progression, tolerance and acceptability of the bandage.

Results/Discussion: During seven weeks, 344 patients with oedema and/or an ulcer (mostly of venous origin) were treated with the evaluated bandage. The system was applied on average 3 times a week, exclusively by healthcare professionals (61%), by the patients or their relatives (19%), or alternately by both (20%). At the final visit, similar results were achieved regardless of the person who applied the bandage, notably in terms of wound healing rate and proportion of oedema resolved or greatly improved. The bandage was judged the most frequently 'very well accepted' by the patients and 'extremely useful' by the physicians when it was exclusively applied by the patients or their relatives and so were the intentions of broader use in the future. During the study, three cases of local intolerance related to the system were reported in the healthcare professionals and mixed sub-groups.

Conclusion: The consistent benefits reported here in the treatment of patients with leg ulcers and/or oedema regardless of the person who applies the compression system between medical visits support the use of this system in self- and home-care when appropriate.

EP446 The use of a rating scale as a framework for the treatment of chronic wounds in hospital and home care

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Aim: The phenomenon of skin lesions, especially pressure ulcers, has always represented a negative indicator of the quality of care provided and perceived. As the Joint Commission points out in its Nursing Care Center Accreditation Standards, "Pressure ulcers continue to be a high risk factor for long-term care residents and residents due to compromised body systems related to aging and/or disease. and use of medical devices.

Their presence is transversal to all care settings and is mostly present in that segment of the population over 65 years of age which numerically represents the core business in our healthcare settings: 3500-4000 patients with ulcers, >70% polyulcerated (from 2 onwards), 60% ulcers of vascular etiology – DFU in the lower limbs and foot, 30% pressure ulcers, 10% other nature [Prevalence analysis 2021]. It is necessary to improve an evaluation scale to to classify the complexity of wounds (BWAT Scale).

Method: The data relating to total lesions were extrapolated from the medical records in the year 2023 (six months). 1556 lesions were analyzed out of a total of 780 patients with chronic wounds

Results/Discussion: We analysed:

- Customer Satisfaction (MeS Laboratory)
- Number of local treatments - appropriate high-impact dressings / No. of patients treated with complex injuries (assessed with BWAT) >99% (source: medical record)
- Time of healing.

Conclusion: The use of a rating scale represents an added value in the management framework of patients with chronic wounds.

EP447 Treating traumatic wounds in the elderly with supplemented medical-grade honey in home care settings

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Aim: Elderly are prone to developing traumatic ulcers (TUs) due to the fragility of their skin and increased risk of falls, coupled with a slower wound healing capacity. Therefore, this study aimed to show the effectiveness of medical-grade honey (MGH) supplemented with vitamins C & E for treating TUs in home care.

Method: 10 elderly patients (4♂/6♀) sustained TUs of various aetiologies including several skin tears and a bite wound. The average age was 81.1 (range 65-90) and the most common comorbidity present amongst the patients was cardiovascular disease (50%). Wounds were previously treated with povidone-iodine, alginate gel, and simple gauze on average for 8.1 days (range 0-21 days) without success. Treatment with a range of supplemented MGH-based products¹, including wound gel, ointment, gauze, and foam, was started directly upon presentation.

Results/Discussion: Treatment with the MGH-based products reduced inflammation, debrided the wounds, and stimulated the formation of healthy granulation tissue. Clinical signs of infection were eliminated by MGH after 1.4

weeks on average (range 1-5 weeks). Wounds were completely healed after 2.6 weeks on average (range 2-8 weeks), thereby restoring full mobility to the affected limbs in ambulatory patients. Dressing changes were performed pain-free, and no further complications occurred due to the MGH therapy.

Conclusion: MGH-based products¹ supplemented with vitamins are simple to use, clinically efficient, and cost-effective for treating TUs in geriatric patients in home care settings. Consequently, supplemented MGH can be advised as an alternative or supplemental therapy to conventional TU treatment approaches.

¹L-Mesitran

EP448 Carer engagement in home health care through a virtual wound care service

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Aim: To engage the carer in home health care setting through a virtual wound care service.

Method: This study included 1294 participants who agreed to participate. All the participants are carer or taking care of patient living with wound. Engagement included both patient and wound assessment, management, treatment, and treatment options as well as full care plan over 8 weeks.

Results/Discussion: Virtual wound care service solved many issues instead of visiting the patients physically. 79% of the participants were satisfied with the provided service, where 39% of them believe that one home care visit per month in addition to the virtual care could be enough. However, 22% believe that even with the virtual service, a clinician must visit the patient physical at least once a week due to clinician specialty.

Conclusion: Virtual wound care service in home health care is playing a major role in carer engagement especially when it affects the patient either positively or negatively.

EP449 “Nutrition has everything to do with wound healing”: a mixed methods exploration of barriers and facilitators to nutrition assessment and management in diabetes-related foot ulceration

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Aim: This study aimed to explore perceptions of nutrition assessment and management in health practitioners who manage individuals with diabetes-related foot ulceration (DFU), and identify barriers and facilitators to nutrition assessment and management.

Method: A mixed methods design was used incorporating a multi-disciplinary cross-sectional online survey derived from current international guidelines and incorporating principles of the theoretical domain framework. A series of semi-structured interviews were also undertaken, with conventional content analysis used to gain a deeper understanding of the data.

Results/Discussion: A total of 191 participants completed the survey, including podiatrists, nursing, medicine, and dietetics, with nineteen participating in qualitative interviews. Major barriers to implementation of nutrition assessment and management were identified in both the survey and interviews as: inadequate time, lack of knowledge and lack of clinical guidance. Facilitators to implementing nutrition assessment and management included: professional development, a standardised clinical pathway and screening tool, and a resource addressing wound healing and diabetes management. Allied health practitioners and nurses were less confident in nutrition assessment, management and making recommendations for DFU (P value <0.05) compared to dietitians. Additionally, compared to dietitians, medical professionals were less confident in nutrition assessment and diabetes educators were less confident in making nutrition recommendations (p = <0.05).

Conclusion: The development of a clinical pathway standardising the need for nutrition screening, assessment, and intervention for those with DFU and further professional development for health professionals providing care to individuals with DFU is imperative to address this and improve this area of practice.

EP450 The burden of malnutrition on wound healing in the elderly population. Assessment, management and supplementation

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Aim: Even if a global consensus concerning malnutrition definition and its diagnosis criteria are still missing, the negative impact of this condition on the healing process is becoming widely accepted. According to the literature, around a quarter of the population over 65 years of age is malnourished, representing one of the most current public health challenges to be dealt with. This review aims to clarify the close relationship between malnutrition and chronic wound healing in the elderly population and investigate the types of predominantly deficient nutrients, in order to provide the knowledge needed to formulate ad hoc supplementation therapies.

Method: We performed a non-systematic review of the literature, considering papers dealing with nutritional deficiencies in the elderly population, their specific influence on wound healing, and corrective possibilities through food supplementation.

Results/Discussion: Chronic wounds affect mainly debilitated patients with other comorbidities. These are the patients more likely to be malnourished, making this clinical affection even more difficult to treat. Malnutrition may delay and alter to some degree the physiological tissue repair process, macro elements (proteins primarily), micronutrients and vitamins are crucial for proper wound healing. Assessment of the patient's nutritional state and its consequentially supplementation to eventual deficiency could significantly improve the healing rate.

Conclusion: Considering the life expectancy increase worldwide and the prevalence of elderly-related diseases causing skin ulcers, the assessment and correct management of malnutrition conditions in the elderly, takes on fundamental importance to guarantee proper wound care in this fragile patient population.

EP451 Is Sodium Bicarbonate a good friend of Lidocaine? Pain reduction in subcutaneous anaesthesia

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Aim: To determine whether the addition of bicarbonate to lidocaine is an effective method to reduce pain in the administration of subcutaneous lidocaine.

Method: A PICO question has been posed to determine the keywords and carry out a research of evidence, following the Haynes' pyramid scheme, first searching for guides and summaries in secondary databases (ClinicalKey, UptoDate) and then for articles in primary databases (PubMed and TripDataBase) to contrast with the most recent evidence. Our research was performed with the MeSH terms "Lidocaine", "Sodium Bicarbonate" and "Pain". All of them joined by the Boolean operator "AND". It was limited to publications from the last 5 years and to the human species.

Results/Discussion: The result of the research was 132 publications, 99 of which, after reading the title, were discarded because they did not fit the aim of the research and 8 of the remaining were discarded because they had been found repeatedly in different databases. Of the final 25 articles, which were read in full, we found 16 randomized clinical trials, 3 reviews, 3 clinical practice guidelines, 2 systematic reviews and 1 meta-analysis.

Conclusion: In all articles there is a reduction in pain, but its significance varies; more studies with high quality of evidence are needed. No side effect or contraindication has been described for this technique, although caution must be taken with the stability time of the resulting dilution (which can be reduced up to 24 hours). There is also a lack of studies that evaluate cost-effectiveness.

Devices & Intervention 1-2

EP452 Use of electrical stimulation therapy to reduce pain associated with hard-to-heal wounds and reduce reliance on pharmacological analgesics, including controlled analgesics

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Aim: Despite widespread use of analgesics, wound pain often remains unresolved. Study aims were to: assess the effect of EST* on pain from hard-to-heal wounds; assess the effect of EST on quantity/type of analgesic needed to manage wound pain.

Method: Nineteen patients with painful, stalled leg ulcers were treated with an EST device*. Pain scores and analgesic consumption were recorded daily for a 7-day run-in period and during treatment with EST for 24 days. Changes in pain and wound dimensions were also summarised weekly up to 6-weeks.

Results/Discussion: Median wound duration was 9 months (range 1.5 to 60 months), most wounds were venous leg ulcers. At baseline, analgesics were being taken by 18/19 (95%) of patients; controlled analgesics were being taken by 48%. Despite this, during the 7-day run-in, wound pain was unresolved in all patients, with mean pain scores of 5.7/10 with severe/moderate pain reported by 16% and 84% of patients, respectively. Within 4-weeks of treatment with EST*, mean wound pain reduced to 3.7/10 with no/mild pain reported by 7/19 (37%) of patients, reducing further to 2.8/10 (no/mild in 13/19, 68%) by 5-weeks. Mean reductions in dose between run-in period and 4-weeks after starting treatment, were observed for codeine (80% reduction), gabapentin (42%), ibuprofen (75%) and paracetamol (70%). After initiation of EST, wound size reduced on average by 45% over 4-weeks, (11.2% wound reduction per week).

Conclusion: Patients treated with EST* reported reduction in pain and corresponding reduced analgesic consumption.

*Accel-Heal Solo, Accel-Heal Technologies Limited, Kent, UK.

EP453 Evaluation study of the UCS Debridement Medical Device in the treatment of chronic skin lesions

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Aim: Recommendations for the management of a wound with the presence of biofilm include cleaning, debridement and application of an appropriate dressing to keep the number of microorganisms to a minimum. The debridement activity should be started and undertaken regularly. The study conducted is an observational study, in which each patient was a case control of himself. The total enrolment was 40 patients with chronic skin lesions of various aetiology, size, stage and status.

Method: The debridement method used is a sterile system for the initial debridement and maintenance of chronic skin lesions and for the cleansing and hydration of the perilesional edges and the entire limb. The system is designed to improve and facilitate the cleansing and mechanical debridement phase.

Results/Discussion: The aim of the study is to demonstrate the effectiveness of the devices used in removing the biofilm, reducing pain during and after the procedure, reducing operating times, reducing bleeding, improving the periwound skin and treating the wound edges due to active components present in the cloth and in the solution such as Poloxamer (P188), Aloe Barbadensis leaf extract and Allantoin.

Conclusion: All the parameters analysed showed concordant values with a significant and very significant improvement to the benefit of the overall clinical picture, with percentages even exceeding expectations. These results are highlighted in the diagrams resulting from the surveys carried out during the study.

EP454 Muscle pump activator device: A case study in chronic leg lymphedema and papillomas

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Aim: To evaluate the muscle pump activator (MPA) device to reduce chronic lymphedema and papillomas prior to initiating compression therapy

Method: 60-year-old female residing in a Long-Term Care setting. Confined to bed for 4 years, developed papillomas over the lateral aspect of the right thigh with recurring infections secondary to chronic lymphedema. Previous treatment modalities have included best practice and evidence-based therapies. MPA device was implemented as adjunctive therapy to improve venous return, reduce edema, and increase microcirculation, bloodflow velocity and pulsatility.

Results/Discussion: During 12 weeks of MPA therapy urinary output was 4-5L/day with a weight loss of 60lbs at week 4. There was no impact on the patients' serum potassium (pre MPA-3.6mmol/L, post MPA-4.8mmol/L). Resident tolerated the fluid shift well, her breathing had improved, experienced improved quality of life, and was now able to sit in a chair for 2-hour intervals. Additionally, by week 4, the papillomas were reducing in size and were scaling off with light friction during cleaning. Psychologically, the resident indicated that she "feels great", and was pleased to become more engaged in her care by moving independently in bed.

Conclusion: The outcome and potential application of an MPA device used as adjunctive therapy can significantly reduce edema and decrease pain to comfortably initiate compression therapy that wasn't previously tolerated. The staff expressed that the MPA device was easy to use and that the client was able to move independently in bed. This was positive to caregiver workload and possible reduction in work-related injury.

EP455 Comparative cohort study assessing the impact of antibiofilm dressing and dialkylcarbomoyl chloride dressing on the management of patients with hard-to-heal wounds and associated clinical outcomes

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Aim: To compare a carboxymethylcellulose dressing containing ionic silver, ethylenediaminetetraacetic acid and benzethonium chloride ('CISEB')¹ and a dialkylcarbomoyl chloride-coated dressing ('DAAC')² indicated for the treatment of venous leg ulcers (VLUs), diabetes foot ulcers (DFUs), and pressure injuries (PIs) for clinical performance and outcomes using real-world evidence in Germany (DE) and the United States (US).

Method: This study was a chart audit review of patients managed with CISEB or DAAC dressings in the 24 months prior to October 2022. Healthcare providers with access to electronic medical records and charts were asked to capture data via patient record forms. The quantitative data was analysed.

Results: Findings in DE were comparable between CISEB and DAAC with regards to wound description, management, and treatment outcomes, including percent area reduction and wound closure. A difference was a greater proportion of DAAC patients required surgery (0% vs. 11%, p=0.039). In the US, a greater proportion of wounds were worsening before dressing in the CISEB cohort (49% vs. 34%, p=0.010). A multinomial logistic regression yielded patients who received CISEB were 3.53 times more likely to have the wound completely healed (p=0.033).

Conclusion: Both CISEB and DAAC dressings are widely used in DE and the US for patients with VLU, DFUs, and Pls. Our study found two important differences: patients who used CISEB were less likely to need further surgery in DE; and in the US, there were significantly higher odds that wounds would completely heal with CISEB dressings compared to DAAC.

¹Aquacel Ag Advantage/Ag+ Extra

²Cutimed Sorbact

EP456 The efficacy of continuous topical oxygen therapy (cTOT) in the treatment of challenging diabetic foot ulcers

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Aim: To determine the efficacy of continuous topical oxygen therapy (cTOT) in the treatment of non-healing diabetic foot ulcers (DFU) where the majority of patients had a history of infections and prior amputations indicative of the severity and difficulty in healing.

Method: This observational study, examined the effect of a portable cTOT device* as an adjunct to standard care (SoC) in patients presenting with a Texas grade 2/3 DFU that failed to respond to SoC. Treatment was for up to 12 weeks or until healing. Wound healing parameters including percentage reduction in wound size, infection incidence and pain assessments, were measured weekly and recorded in an Advanced Digital Wound Care Platform (ADWCP) system.

Results: 46 patients met the required inclusion and exclusion criteria. 13 patients were lost to follow-up. In the remaining 33 cases, the wound progressed, as demonstrated by marked wound area reduction (mean 78% reduction), indicating that these wounds were now on a healing trajectory. Moreover, 13 of the wounds healed within the study (mean time to healing 10.9 weeks), with three wounds healing completely within four weeks of initiating cTOT treatment.

Conclusion: The benefits of cTOT in challenging DFU's has previously been demonstrated in a recent RCT with a 71% greater healing rate in challenging DFU compared to SoC alone.¹ This study supports these findings and highlights the benefits of cTOT as an adjunctive therapy to progress hard to heal wounds previously shown to be stagnating with standard of care.

* cTOT, NATROX® O₂ Wound Therapy

EP457 introducing novel sub-bandage pressure monitoring with compression therapy

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Aim: The proven and widely accepted treatment for venous leg ulcers is compression therapy. Accuracy of applied pressure is largely dependent on the individual applying the system. A sub-bandage pressure monitoring device could improve the standard of application and maintenance of pressure during compression therapy. The aim of the study was to assess the feasibility of introducing novel sub-bandage pressure monitoring technology¹ with compression therapy to patients.

Method: Patients receiving compression bandage therapy were introduced to a wearable, connected health technology¹ measuring sub-bandage pressures. To monitor accuracy of bandage application, clinicians applied bandages without device guidance. If pressures were sub-standard, bandages were reapplied using device guidance. To monitor maintenance of pressure over time, patients were asked to attach a data unit and transmit data twice weekly. Patient and clinician questionnaires were completed.

Results/Discussion: 3 patients were enrolled. During 9 planned visits, compression bandages were incorrectly applied on 6 occasions and reapplied using device guidance. 2 unplanned visits were required due to compression bandage pressure loss 24 hours after application. Patients successfully transferred pressure data on all occasions. Experienced clinicians reviewed their bandage application technique, inexperienced clinicians gained confidence whilst using the device as a learning tool. Patients interacted with the device beyond the study requirements leading to behavioural change which benefitted the healing process.

Conclusion: The sub-bandage pressure monitoring device¹ allowed for measurable application of evidence-based compression and showed potential to become an effective teaching tool for clinician and patient.

1. Tight Alright Device, Feeltect Limited, Galway, Ireland

EP458 The introduction of a lateral turning device to an acute trust in combination with a supporting flowchart to ensure expeditious implementation of the device for vulnerable, high-risk patients

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Aim: Patients who present to an acute hospital outside of TVN working hours may have slower pressure ulcer (PU) intervention. A lateral turning system (LTS) is available to support patients at high risk, with existing PU or at EOL (end of life). A flowchart was introduced to ensure appropriate guidance is given to staff and intervention of a LTS is implemented appropriately outside of TVN hours, ensuring patients have timely repositioning and pressure relieving reducing the risk of skin deterioration.

Method: Patient was admitted via Emergency Department following a fall and long lie of 18 hours. Patient background- Multiple Sclerosis, reduced mobility, Rockwood score of 6 before admission. On admission, they had multiple Deep Tissue Injuries across the back, sacrum, and buttocks and a large unstageable PU on right hip. The patient became EOL shortly after admission and required 30-minute repositioning which was distressing for them and added additional pressure on staff. The flowchart supported the staff indicating appropriate use of the LTS due to pre-existing harm, reduced mobility and EOL.

Results/Discussion: Having the supportive equipment available promptly ensured patient's risk of further harm reduced significantly and was less distressing than manual repositioning. This also provided comfort and dignity to the patient and family in their final hours.

Conclusion: The Introduction and use of the flowchart outside of TVN working hours in the hospital gives guidance and support to utilise the LTS appropriately. Patients receive high-quality care and support without delay and staff are confident implementing this.

EP459 Can calcium sulfate beads loaded with antifungals be effective in inhibiting drug resistant strains of *C. auris* in vitro?

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Aim: The Center for Disease Control issued an urgent threat level warning regarding *Candida auris* multi-drug resistant (MDR) yeast strains causing severe infections with high transmission rates. The aim of this study was to test the impact of antifungals loaded into a calcium sulfate bone void filling device* on three strains of MDR *C. auris*.

Method: *C. auris* strains NCPF 8971, NCPF 8977 and NCPF 8984 were obtained from the National Collection of Pathogenic Fungi. Calcium sulfate was loaded with either 200mg fluconazole, 70mg caspofungin or 100mg of

amphotericin B per 10CC paste and moulded into 6mm beads. One bead was placed on a lawn of each strain in triplicate and the zone of inhibition (ZOI) was measured after 3 days.

Results/Discussion: Strain NCPF 8971 was sensitive to caspofungin released from the calcium sulfate bead (CSB) with a ZOI of 28mm, but no zones were observed around CSBs loaded with amphotericin B or fluconazole. NCPF 8977 was sensitive to caspofungin released from CSBs with a ZOI of 29mm and amphotericin B with a ZOI of 10mm but resistant to fluconazole. NCPF 8984 had a similar resistance profile to NCPF 8977, a ZOI was observed for caspofungin (33mm) and amphotericin B (8mm) but not fluconazole.

Conclusion: All three strains were resistant to fluconazole and sensitive to caspofungin. Two of the three strains were sensitive to amphotericin B released from CSBs. These data show that antifungals released from CSBs can be effective against MDR *C. auris* in vitro.

*Stimulan Rapid Cure

EP460 Novel application of fish skin grafts in neonatal wounds

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Aim: Wounds that arise in neonatal infants often pose unique concerns when approaching options for treatment. In this case series, a fish skin graft (FSG) was applied to six infants. The aim was to assess the safety and efficacy of such a product in this unique and fragile age group. The FSGs are a derivative of intact skin obtained from North Atlantic cod. FSGs are effective in the treatment of older children, however, no prior experience with this product in neonatal patients has been reported.

Method: Hospitalized infants were included in this case series. One patient suffered open wounds following debridement of infected tissue secondary to *Aspergillus*. Five patients suffered IV extravasation injuries of the extremities. The FSG was applied at the bedside after successful debridement of nonviable tissue. The grafts were secured with non-adherent dressings. After 7-10 days, the wounds were examined.

Results/Discussion: In each case, the wounds rapidly healed after a single application of an FSG. Full closure was obtained without compromising the range of motion of the extremity. No infections or contractures developed, and residual scars were minimal.

Conclusion: This case series illustrates the first application of a FSG in the infant population. The FSG was easily applied at the bedside, required minimal maintenance, and expedited rapid wound healing after a single application. The product proved to be a safe and effective option for wound closure and supports additional larger studies for use in neonates and premature infants.

EP461 Multimodal imaging device for real-time bacterial load and thermal imaging: a study of synergy in clinical wound assessment workflow

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Aim: The development of non-healing wounds is multifactorial and impairments in blood flow/oxygenation play a major part. Thermal imaging serves as a proxy measure for various pathophysiological events, where higher temperatures may indicate potential inflammation or infection and lower temperatures suggest healing impairment possibly linked to decreased localized oxygen delivery. This pilot study evaluated the potential of a novel multimodal imaging platform* to enable a more comprehensive wound assessment via thermal imaging combined with fluorescence imaging of bacterial loads.

Method: Patients presenting for advanced outpatient wound care were imaged with the multi-modal imaging platform. The handheld device* enabled: [1]real-time mapping of bacterial load/location (fluorescence imaging), [2]real-time quantitative temperature information (thermal imaging), [3]co-registered standard images, and [4]digital wound measurement. The impact of multi-modal imaging on diagnosis, treatment planning, and workflow was recorded.

Results/Discussion: 25 patients were imaged with both modalities, where 32% (8/25) had an isolated positive fluorescence finding, 16% (4/25) had an isolated abnormal thermal finding, and 8% (2/25) had abnormal/positive findings for thermal and bacterial fluorescence. Multi-modal imaging helped inform diagnosis and guide treatment. Thermal imaging identified tunneling, undermining, and sinus tracts, supported infection diagnoses (including cellulitis), and alerted to areas of increased pressure, enabling proactive intervention. Meanwhile, the fluorescence imaging component enabled targeted hygiene/debridement for proactive bacterial-infection management.

Conclusion: Multi-modal imaging findings were found to be both complimentary and synergistic, without hindering clinical workflow. They have great potential to identify pressure and prevent infection and its complications, altogether enabling proactive chronic wound management.

*MolecuLight DX

EP462 Use of a fish skin graft with synthetic covering in lower extremity wounds - A pilot study of efficacy and cost

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Aim: Treatment of complex lower extremity wounds with Fish Skin Graft* with a Synthetic Cover material in a pilot study of efficacy and cost.

Method: 10 patients reviewed and prospectively enrolled in an IRB-Exempt clinical study at a single site center. Patients were then treated weekly with Fish Skin Graft for 12 weeks to determine wound closure and percent area reduction at week 4 and week 8. Patients with ABI < 0.6 or > 1.2 were excluded from the study. The Fish Skin Graft was anchored with the synthetic silicone cover and 1/2" steri-strips. All wounds were aggressively debrided of non-viable fibrotic and necrotic tissue before FSG application. Wound measurements were all calculated via AI digital application weekly.

Top dressings included non-adherent oil-immersion dressing, 4x4 gauze and 4" Roll gauze with a self-adherent compression wrap.

Cost analysis was performed post-closure of all patients to show payor accuracy compared to standard of care and time to close.

Results/Discussion: 10 patients completed 12 weeks of therapy. 6 of 10 patients closed prior to week 8. Average number of applications was 7.7 applications. Average PAR at 4 weeks was 53%. PAR at week 8 for the remaining 4 patients was 86%. 9 of 10 patients completed wound closure by week 12.

Conclusion: The use of FSG in this pilot study with synthetic silicone was efficacious in the therapy of wounds of the lower extremities. Overall healing rates for the 12-week course of treatment in this study was approximately 92% (n=9).

EP463 AI-powered handheld device for detecting slough, necrosis, and infection risk in wounds

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Introduction: Effective wound management necessitates accurate assessment of wound characteristics, often hampered by limited expertise and resources in clinical settings. The 'SeeWound©' device, an AI-powered handheld tool, offers a solution by providing detailed wound analysis, specifically in identifying slough and necrosis, key indicators of infection risk.

Aim: This study evaluates the algorithm's effectiveness against the gold standard of experienced plastic surgeons' assessments.

Method: The study involved 466 patients with diverse wound types from various medical units, using the AI algorithm to identify slough and necrosis. These cases were outside the algorithm's initial training dataset, ensuring a robust evaluation.

Results/Discussion: The AI model demonstrated high accuracy, correctly identifying slough in 89% and necrosis in 87% of cases. Overall, it accurately detected these conditions in 89% of patient images. The model's precision rate stood at 98% for necrosis, though its sensitivity was slightly lower at 81%. In terms of pixel accuracy, the model achieved an 80% Intersection over Union (IoU) score for slough proportion estimations.

Conclusion: The 'SeeWound©' AI algorithm shows a strong capability in detecting slough, necrosis, or their absence in wound images, with an 89% accuracy rate. This high level of precision is beneficial for enhancing clinical documentation and alerting healthcare professionals to potential infection risks. While the model's pixel-by-pixel classification for slough is less reliable, its overall performance is deemed sufficient and advantageous for patient outcomes, despite its limitations in identifying exact tissue locations within wounds.

EP464 Eye-tracked computer games as a method for pain perception alleviation in chronic wound management

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Aim: Chronic pain frequently accompanies the daily lives of many chronic wound patients. The degree of pain experienced significantly increases when performing medical procedures related to wound management. The use of eye-tracked games in order to distract the patient from the painful activities performed can be an effective procedure.

Method: 40 patients suffering from chronic wounds were qualified for the study. Patients performed eye-tracking games during dressing changes and wound cleaning. Pain sensations were surveyed. The survey concerned the pain experienced on a daily basis, when changing the dressing without use and with the use of eye-trackers.

Results/Discussion: 22 males and 18 females were included into the study (all patients were > 41 years old). The majority of patients were >71 years old (53%), with vocational, nonmedical education (93%). Patients had their wounds not healed for, respectively, <1 year (44%), 1-5 years (34%), 6-10 years (11%) and >10 years (11%). It was found that correlation between daily pain level and pain level during the dressing change without eye-tracker device ($r=0.84$; $p<0.001$) differed from the correlation of daily pain level and pain level during the dressing change with the use of eye-tracker ($r=0.6437$; $p<0.001$). It could be argued that eye-trackers significantly reduced the pain experienced during dressing changes compared to the pain caused by these procedures, but without the use of eye-trackers.

Conclusion: On the basis of the obtained results, it was proposed to introduce eye-trackers into routine clinical practice during chronic wound management.

EP465 Use of debridement of chemical debridement with a topical desiccating agent to remove biofilm in hard to heal wounds of different etiologies

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Aim: Patient safety involves both the prevention of adverse events as well as a correct approach in the treatment of the same with an adequate and rational use of existing resources.

One of the causes of stagnation in the healing process is the presence of infected necrotic tissue with biofilm, which according to the available evidence has to be debrided in a radical, adequate and effective manner.

Among the strategies for biofilm debridement today we have chemical debridement with a novel topical desiccating agent, in a procedure that quickly and effectively removes biofilm while preserving healthy tissue.

Method: We present a case series of 10 wounds of different etiologies with biofilm in which it was used a topical desiccating agent (TDA) in order to remove biofilm.

Results/Discussion: Chemical debridement with the TDA allowed a quick removal of biofilm, has proven to be a cost-effective technique, facilitating the healing of lesions of long or difficult evolution.

Female aged 93 (1 wound)	Venous leg ulcer. 16 years evolution. 5,5 x 2 cm MRSA	Granulation tissue in 15 minutes	Healed in 47 days
Male aged 76 (1 wound)	Surgical dehiscence in transmetatarsal amputation. <u>1 year evolution</u> <i>Klebsiella pneumoniae</i> , <i>Enterococcus faecalis</i> and Carbapenase	Granulation tissue in 7 days	Healed in 49 days
Female, aged 92 (1 wound)	Post trombotic Venous leg ulcer and feblolimfedema. <u>1 year evolution.</u> Green and malodorous exudate	Granulation tissue in 21 days	Healed in 35 days with skin grafting
Female aged 82 (1 wound)	Pressure ulcer category III in heel. <u>7 months evolution.</u> 4,5 x 3 cm	Granulation tissue in 15 minutes	Healed in 21 days
Male aged 55 (1 wound)	Venous leg ulcer. 2 years evolution. Coagulation disorder. 15 x 4 cm <i>Pseudomonas aureginosa</i> + <i>Staphylococcus aureus</i>	Granulation tissue in 7 days	Healed in 18 weeks using compression therapy
Female aged 92 (1 wound)	Pressure ulcer category III in heel. <u>4 months evolution.</u> 6 x 6 cm. Malodorous exudate.	Granulation tissue in 35 days	Healed in 42 days
Female aged 86 (2 wounds)	Vasculitic ulcers. <u>9 months evolution.</u> Green and malodorous and green exudate. 8 x 8 and 7,5 x 7,5 cm. <i>Morganella morganii</i> , <i>Klebisella pneumoniae</i> + <i>Staphylococcus aureus</i>	Granulation tissue in 28 days	Healed in 60 days

Female aged 63 (2 wounds)	Sacral Pressure Ulcer . Category IV. 4 <u>months evolution.</u> 8 x 7 cm. <i>Pseudomonas aureginosa</i> Heel Pressure Ulcer . Category IV. 4 <u>months evolution.</u> 3 x 7,2 cm. <i>Pseudomonas aureginosa</i>	Granulation tissue in 14 days Granulation tissue in 14 days	The patient dies due to complications in her state of health. At the time of death the ulcers are with granulation tissue and signs that the healing process is progressing.
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Based on this experience, it was possible to effectively eliminate biofilm, avoiding the use of products with potential resistance such as antibiotics. It was seen that TDA is facilitating the reduction of healing times by facilitating optimal preparation of the wound bed that allows the rapid use of other strategies such as grafts or advanced wound healing products.

Conclusion: The case series indicates improved patient health and quality of life, improved patient safety by avoiding the use of antibiotics, allowed to address slower healing and facilitated the effect other wound healing strategies.

EP466 Algorithm for approaching potential pain during chemical debridement of infected necrotic tissue

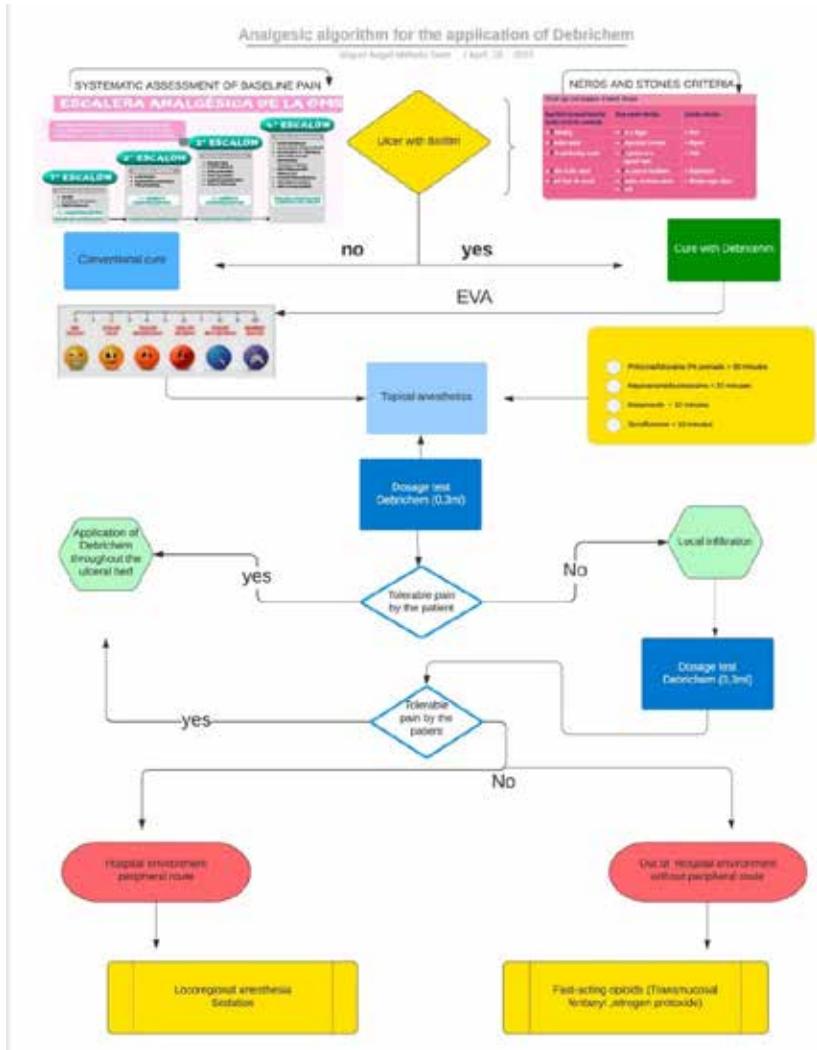
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Aim: Pain is a very important variable to consider in wound management. Some procedures such as debridement, a fundamental strategy for the removal of infected necrotic tissue (INT), can be painful if not approached in an adequate manner.

For pain management there are different strategies that allow an optimal use of the therapeutic resources available, in a scheme that should be adapted to the evolution or intensity of the pain as is the case of chemical debridement with sulfuronic acid of infected necrotic tissue.

Method: An algorithm based on evidence and the current state of knowledge is presented, which facilitates the integration of pain management in wound treatment, both in the assessment of baseline pain in a wound, as well as the step-by-step and progressive use of different strategies for approaching possible local pain during the use of sulfuronic acid in the debridement of INT.



Results/Discussion: The introduction of this algorithm in our clinical practice has allowed us to address pain during the procedure. We describe pain approach and pain evolution during sulfuronic acid topical application.

		Pain (VAS) pre procedure	Analgesia	Pain (VAS) during procedure	Pain (VAS) post procedure
Female aged 93 (1 wound)	Venous leg ulcer. 16 years evolution. 5,5 x 2 cm. MRSA	9	EMLA, Sevoflurane, Mepivacaine	3	2
Male aged 76 (1 wound)	Surgical dehiscence in transmetatarsal amputation. <u>1 year evolution</u> <i>Klebsiella pneumoniae</i> , <i>Enterococcus faecalis</i> and Carbapenase	7	EMLA, Sevoflurane Mepivacaine	2	1

		Pain (VAS) pre procedure	Analgesia	Pain (VAS) during procedure	Pain (VAS) post procedure
Female, aged 92 (1 wound)	Post trombotic Venous leg ulcer and feblolimfedema. <u>1 year evolution.</u> Green and malodorous exudate	6	Sevoflurane, Mepivacaine	Test: 9 6	3
Female aged 82 (1 wound)	Pressure ulcer cathegory III in heel. <u>7 months evolution.</u> 4,5 x 3 cm	5	Mepivacaine	1	0
Male aged 55 (1 wound)	Venous leg ulcer. <u>2 years evolution.</u> Coagulation disorder. 15 x 4 cm <i>Pseudomonas aureginosa</i> + <i>Staphylococcus aureus</i>	4	EMLA	1	0
Female aged 92 (1 wound)	Pressure ulcer cathegory III in heel. <u>4 months evolution.</u> 6 x 6 cm. Malodorous exudate.	5	Mepivacaine	2	1
Female aged 86 (2 wounds)	Vasculitic ulcers. <u>9 months evolution.</u> Green and malodorous and green exudate. 8 x 8 and 7,5 x 7,5 cm. <i>Morganella morganii</i> , <i>Klebisella pneumoniae</i> + <i>Staphylococcus aureus</i>	8	Bupivacaine, Sevoflurane	2	2

Conclusion: The described algorithm has allowed us to effectively control pain during topical application of a sulphuronic acid compound for the removal of biofilm or infected necrotic tissue in wounds of different aetiologies.

E-posters on display, all categories

EP467 Stop pain and keloid

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Aim: The aim of the treatment is to evaluate the effectiveness of an antimicrobial foam dressing with silver ions in the treatment of chronic wounds and exuding burns even in difficult anatomical areas.

Method: Between 2020 and 2023, 22 patients (14 men and 8 women) between 24 and 90 years with diversified burns were treated.

An antimicrobial layer is applied capable of releasing silver ions and transferring exudate from the wound to a secondary dressing ensuring humidity without causing pain in removal or change. It remains in situ for up to 14 days and no longer than 4 weeks.

Healing time, pain and the amount of exudate produced are evaluated.

Result / Discussion: In diabetic patients with exuding wounds, the dressing allowed tissue regeneration by decreasing inflammation.

In post-trauma and cases with lymphedema, the ulcer improved after 1 month.

In drug addicts, the lesion has healed.

In domestic accidents, the edematous tissue is improved after a few months.

In self-harm with combustibles, lesions on limbs and face with necrotic areas and exudations were reduced.

Road accident cases have healed without keloids and pain.

The exudate was eliminated in burns from industrial accidents.

Contrast lesions healed quickly without scarring.

The Covid-like burn victims, with blisters and erythema, recovered after 14 days.

Conclusion: This dressing is certainly useful in reducing wound healing times, pain and the amount of exudate produced.

EP468 Electrospun Scaffold loaded with inorganic nanoparticles for tissue engineering

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Aim: The aim of this work was to develop nanofibrous scaffolds using zein and gliadin, doped with selenium nanoparticles (SeNPs), recognized for their antimicrobial efficacy against *Pseudomonas aeruginosa*, known to cause life-threatening infections in wounds.

Method: Hydroalcoholic blends based on pullulan and prolamins were prepared, adding citric acid as crosslinker. SeNPs were added to the polymeric blends to obtain doped fibers. Scaffolds were prepared using a horizontal electrospinning, and the morphology was analyzed by means of SEM after gold sputtering. The scaffolds were analyzed before and after the crosslinking procedure and after 24 hours of hydration in distilled water. Wettability of electrospun fiber was evaluated with contact angle apparatus.

Results/Discussion: Morphological analysis reveals uniform nanofibers and a smooth surface across all scaffolds, regardless of the type of prolamins used. Additionally, the crosslinking by heating did not affect the process dimensions. After 24 hours in water and subsequent crosslinking with citric acid, SEM analysis verified the

preservation of the nanofibrous structure in the scaffolds. The individual fibers exhibited a slight swelling, with a more pronounced effect for those based on gliadin.

Conclusion: Nanofibers based on prolamins, doped with SeNPs, have been successfully developed. Their morphology, fibers dimensions and wettability have been evaluated. Current studies are ongoing to evaluate the effect of SeNPs on the chemical-physical properties of the fibers. Moreover, their biocompatibility and antioxidant properties *in vitro* on a model of human fibroblasts will be evaluated.

EP469 Scaffolds doped with magnetite for the stimulation of tendon wounds regeneration

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Aim: The aim was the development of fibrous scaffolds based on polyhydroxybutyrate (PHB) and gelatin (Gel) doped with magnetite nanoparticles (Fe_3O_4 NPs), able to mimic the hierarchical structure of the tendon and to improve the wound healing potential.

Method: The blends were spun using a centrifugal spinning apparatus obtaining PHB, PHB- Fe_3O_4 , and PHB- Fe_3O_4 -Gel fibers. The systems morphology and the surface wettability were evaluated. The scaffolds' superparamagnetic behavior, mechanical properties and weight loss in physiological medium were evaluated. Finally, cell adhesion and proliferation *in vitro* were evaluated on human fibroblasts with and without the application of static magnetic fields of different extent for 21 days of culture.

Results/Discussion: The systems were characterized by an aligned structure that could mimic the tendon hierarchical structure. Fe_3O_4 NPs were successfully incorporated into the fibrous structure, increasing the scaffolds' rigidity. Moreover, the presence of Gel increased the surface wettability. PHB- Fe_3O_4 , and PHB- Fe_3O_4 -Gel were characterized by a superparamagnetic behavior, while the PHB scaffold was characterized by a spectrum typical of not-magnetic samples. The scaffolds showed a progressive weight loss in physiological medium, while maintaining the fibers' morphology and alignment for 3 months. Finally, the application of the magnetic fields led to a significant increase in cell adhesion, proliferation, and alignment onto the systems loaded with magnetite, mimicking the tendon fascicles.

Conclusion: Fibrous scaffolds based on PHB and Gel and doped with magnetite were successfully manufactured, representing an interesting tool to enhance the wound regeneration when combined with the application of external magnetic fields.

EP470 A new antibacterial agent for wound management products: postbiotics from staphylococcus hominis eir/hs-1, an isolate from human skin microbiota

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Aim: This study aims to isolate bacteria originating from human skin microbiota and determine their potential antibacterial effects against clinically important skin pathogens.

Method: Swab samples from healthy human skin (n=22) were plated on MRS agar and incubated until colonies were observed. From each plate, phenotypically distinct colonies (n=102) were picked onto fresh media. Their antibacterial activity was determined by agar well-diffusion assay against clinically important skin pathogens. The most effective isolate which exhibited a remarkable inhibitory effect against all tested pathogens was selected and identified by molecular methods. Postbiotics of the isolate were obtained following the fermentation process. The minimum

inhibitory concentration (MIC) against all tested pathogens was determined by microtiter plate assay. Anti-biofilm activity was evaluated by crystal violet staining. Quorum sensing-related gene expressions were analyzed using RT-PCR.

Results/Discussion: The selected isolate was identified *Staphylococcus hominis* according to its 16S rRNA gene region (1,492 bp) sequencing. Postbiotics displayed an antibacterial effect against all tested pathogens and their sub-MIC value eradicated their biofilm production. It was also proven that the gene expression levels related to the quorum signal transduction system were significantly down-regulated in a dose-dependent manner.

Conclusion: This study highlights the potential effects of postbiotics against important skin pathogens and demonstrates their multifaceted roles in wound healing.

EP471 An in vitro study to visualise PHMB's effective antimicrobial capabilities and low cytotoxicity properties synergistically

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Aim: The aim of this study was to visually assess the antimicrobial efficacy and low cytotoxic profile of PHMB (polyhexamethylene biguanide) to support its use as an antimicrobial in advanced wound care products. Where effective bioburden management coupled with a low toxicity to the patient tissues is highly desirable to allow wounds to progress through the stages of healing

Method: Fibroblast cells were co-cultured with clinically relevant microorganisms and treated with PHMB. The co-cultures were fluorescently stained with live dead staining and imaged using an inverted fluorescence microscope.

Results/Discussion: The live dead stain effectively stained both the mammalian fibroblast cells and the microorganisms. In the presence of PHMB, fibroblast cells were observed as healthy, and the microorganisms had been cleared. Without PHMB present the fibroblast cells had been killed by the microorganisms, and the microorganisms appeared abundant and viable

Conclusion: PHMB offers a promising antimicrobial agent for advanced wound care products due to it being highly effective at killing microorganisms yet not cytotoxic. Conferring effective infection management without killing patient cells, to support timely wound healing in complex wounds.

EP472 The effect of hydroxyurea in wound healing, a case series

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Aim: Hydroxyurea (HU) is an antitumor and cytostatic agent¹. HU is most commonly indicated for the treatment of myeloproliferative diseases. Common adverse skin effects include xerosis, hyperpigmentation, skin atrophy and skin tumors. However, rare manifestations of leg ulcers have been reported². In this article, we report a case series outlining the healing rate of leg ulcerations for three patients while taking and after stopping hydroxyurea.

Method: Three patients who subsequently developed lower extremity ulcers while taking hydroxyurea were treated and followed at two institutions. Initial wound measurements were obtained while taking hydroxyurea and results were followed after discontinuing hydroxyurea paired with multiple local and surgical wound treatments.

Results/Discussion: All patients took hydroxyurea daily for several years before their hematologist/oncologist suggested continuing or discontinuing the drug to aid wound healing. Two patients had complete wound closure while pausing their course of taking hydroxyurea 1000mg BID. One patient obtained a 97% reduction in size based on his

last wound care visit. One of the two patients that are with complete closure continues to take hydroxyurea and did not discontinue at any point during the course of healing their wounds. The last patient's ulcer closed two weeks after discontinuing hydroxyurea. Of significance, hematological genetic testing revealed mutation for PCV and/or JAK within the patients.

Conclusion: Hydroxyurea is a common drug and despite the known cutaneous manifestations, leg ulcerations are still an anomaly. However these cases prove that HU induces leg ulcers and hinders healing.

EP473 Neoplastic wounds: Key strategies for home-based management

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Aim: To establish fundamental aspects for a holistic approach to palliative care patients with neoplastic wounds to achieve an effective management and creating personalized care plans at home.

Method: A systematic literature review was conducted on the management of neoplastic wounds, searching databases such as PubMed, Dialnet, ScieELO, EMBASE, and CUIDEN using keywords derived from the title and objectives. A selection of 15 articles was made, supplemented by three clinical practice guidelines.

Results/Discussion: It is estimated that 5-10% of patients with metastatic cancer will develop neoplastic wounds. When developing care plans, it is vital to address the five primary signs/symptoms: pain, odour, exudate, bleeding, and infection, without overlooking the profound emotional and social impact that significantly affects the patient's and their family's quality of life. Neoplastic wounds present a challenge in home care due to the lack of specialized training for healthcare professionals, scarcity of literature, and limited availability of necessary materials for effective symptom management. The role of family members or main caregivers is crucial as they often perform multiple daily care tasks and manage complications due to the wound's characteristics, which necessitates adequate training and empowerment. Social and emotional isolation is common, complicating the primary goal of home palliative care: to promote patient well-being in their family and social environment. Therefore, an interdisciplinary approach is necessary.

Conclusion: The development of interdisciplinary care plans tailored to the home setting is essential to address the multifaceted challenges presented by neoplastic wounds to enhance the quality of life for patients and their families.

EP474 Heterofunctional bacterial nanocellulose as a promising strategy for non-surgical burn debridement

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Aim: Development of proteolytically and antimicrobial active bacterial nanocellulose for enzymatic debridement of burns – removal of eschar to promote wound healing, reduce infection risk, minimize scarring and treatment time.

Method: Bacterial nanocellulose (BnC) was in situ modified by the addition of various concentrations of carboxymethyl cellulose (CMC) to the RAE bacteria growth medium and further ex situ modified with bromelain (Br) and nisin (N). Surface response methodology was applied to identify the optimal combination of processing parameters to maximize the specific proteolytic activity of immobilized bromelain. Furthermore, the co-immobilization of bromelain and nisin was done to impart BnC/BnC-CMC membranes with proteolytic and antimicrobial properties. The corresponding physicochemical, mechanical, morphological, bioactive and non-cytotoxic properties of obtained membranes were evaluated to analyze their suitability for burns.

Results/Discussion: Optimal immobilization conditions (cCMC=8.8 mg/mL, cEDC=0 mg/mL, and cBr=10 mg/mL) resulted in the hyperactivation of the immobilized bromelain, leading to a specific proteolytic activity of 2.3 U/mg. Additionally, the modified BnC membrane exhibited a more compact arrangement of fibrils with increased affinity for water, thereby improving the water rehydration ratio and elasticity compared to the unmodified BnC membrane. The in vitro cytocompatibility to human fibroblasts was observed for the BnC-N/BnC-CMC-N and non-bioactive BnC/BnC-CMC membranes.

Conclusion: Results indicate that the (modified) BnC membranes are an efficient carrier for bromelain or nisin immobilization, first having promising properties as an effective non-surgical debridement agent and second in inhibiting Gram-positive bacteria.

Acknowledgments: Financial support was received in the framework of the young researcher program P2-0118/0795 and project J2-2487, both financed by the Slovenian Research and Innovation Agency.

EP475 3D-printed bioactive dermal scaffolds for superficial partial-thickness burns – results from a porcine study

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Aim: Burn injuries are often associated with scarring, dyspigmentation, and contractures. Expediting re-epithelization and reducing wound inflammation are imperative in minimizing undesirable sequelae.

We present a novel 3D-printed dermal scaffold synthesized using a biocompatible polyester, Poly(lactic-co-glycolic acid) (PLGA), incorporating Arg-Gly-Asp(RGD) tripeptide or hyaluronic acid(HA), bioactive molecules that promote skin regeneration. These scaffolds demonstrated enhanced wound healing with reduced inflammation in previous murine trials. We hence present the results of a follow-up porcine study.

Method: A total of 18 partial thickness burn wounds measuring 25cm² each were uniformly created on 2 pigs under anaesthesia. Formulations of PLGA-RGD5%, PLGA-RGD10%, PLGA-HA5%, PLGA-HA10% scaffolds were selected based on preliminary trial results and randomly distributed to the wounds. Tulle-gras dressing and a commercial biosynthetic skin substitute were used as the negative and positive control groups respectively. The wounds were inspected on Day 4, 7, 14, 21. Skin biopsies were taken on Day 7 and 14 for histological examination and grading of inflammation.

Results/Discussion: Wounds treated with PLGA-RGD5% and PLGA-HA5% scaffolds healed with significantly less scar erythema and hyperpigmentation at 14 days. At Day 14, the PLGA-RGD5% and PLGA-HA5% groups had wound inflammation scores of 2 and 1 respectively, compared to 3 in the biosynthetic skin substitute and Tulle-gras dressing groups.

Conclusion: The PLGA-RGD5% and PLGA-HA5% dermal scaffolds demonstrated enhanced wound re-epithelization, lower levels of inflammation, and superior scar outcomes compared to commonly used burn wound dressings. The 3D-printed bioactive dermal scaffold is a valuable addition to the armamentarium of dressings for burn wounds.

EP476 Management of foot burn injury in diabetes population – case review and experience from a single center in Singapore

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Aim: To review patients with foot burn injury in diabetes population and develop a management algorithm for diabetic foot burn injury.

Method: Data was collected and analyzed including patient's medical history, diabetes control, lower limb vascular status, date and mechanism of foot burn injury, first aid, depth and total body surface area of burn, dressing material and wound care, surgical intervention and outcomes, complications and amputation rate.

Results/Discussion: Management of foot burn injury in diabetes patient poses a special challenge. These patients have reduced sensation over lower extremities which often results in prolonged exposure to heat and deeper burn injury. The management is always complicated by poor vascular status, poor healing, risk of infection and amputation. We reviewed 16 patients sustained partial thickness to full thickness foot burn injury with background of diabetes from 2020 to 2022 in a single center in Singapore. 5 of them required surgical scrub-down or excision, and 3 of them required secondary skin graft coverage. 1 patient ended up with toe amputation. Based on our experience we have developed an algorithm to manage foot burn injury in diabetes patients. Specialties such as wound nurse, vascular surgery, orthopaedic surgery and plastic surgery should be involved to achieve best outcome for patient.

Conclusion: A multidisciplinary algorithm is adopted in managing diabetic foot burn injury, which includes early and optimal wound care with proper offloading, prophylactic antibiotics, early revascularization, early surgical debridement with the utilization of negative pressure therapy followed by skin graft coverage.

Devices & Intervention 2

EP477 The evolution of the science of sub-epidermal moisture assessment

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Aim: Describe evidence-based approaches that demonstrated three distinct effects resulting from SEM assessments that enabled translating the science from the bench to bedside:

- Detection effect
- Treatment effect
- Prevention effect

Method: A clinical strategy was developed to conduct studies by independent researchers that investigated SEM assessment effects. Laboratory studies evaluated the detection effect. Controlled studies described the impact of anatomy-specific interventions and clinical actions prompted by SEM assessments. Real-world implementations were studied for the prevention effect.

Results/Discussion: Phantom modelling studies and porcine skin models validated the detection of SEM, reporting a consistent increase in SEM delta (Δ) scores, increasing volumes of injected fluid, representing increasing levels of SEM in skin tissues ($p < 0.001$).

- Early detection of PU development was reported 5* days before visual skin assessments (VSA) (N = 189; $P \leq 0.001$).
- Dual-arm study (n=175) SEM assessments reported a diagnostic sensitivity and specificity of 86.8% and 88% in detecting PUs, resulting in an Area-Under-the-Curve significantly exceeding clinical judgement ($P < 0.0001$).
- Controlled trial (n=149), the odds of reducing the risk of developing PUs were 6 times more likely when anatomy-specific treatment interventions were based on SEM data ($p < 0.0001$).
- Clinicians implementing SEM assessment in routine PU care pathways were twice likely (OR:1.99) to respond to SEM assessments and direct anatomy-specific interventions than by clinical judgement alone.
- Acting on SEM data reduced PU incidence in all population types across care settings (RR=0.38; 95% CI 0.26-0.56; $P < 0.001$).

Conclusion: SEM assessments provide objective and anatomy-specific data on the damage that is occurring invisibly, but measurably, beneath the skin. The result is data which addresses in real time the complexities of detection and interventional latency in PU care pathways. SEM readings enable HCPs to detect SEM before VSAs, providing anatomy-specific interventions to treat raised SEM deltas (Δ) and effectively prevent broken skin PUs, contributing to reducing PU incidence rates.

*Median

1. Moore, Z., et al. 2022. JWC, 31, 634-647

Case studies and professional communication on display

EP478 The impact of free flap in diabetic foot reconstruction on future reangioplasty

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Aim: Diabetic foot ulcer patients have poor condition of vascularity in lower extremities and arterial flow to their wound lesion is interfered. For resolving vascular problem to improve vascularity and healing the wound, we usually try to do Angioplasty on lower extremities. However, Diabetic vasculopathy causes recurrence of stenosis and occlusion. In this study, we analyzed various risk factors of Re-angioplasty and evaluate clinical influence of free flap reconstruction to future probability of Re-angioplasty.

Method: From January 2015 to March 2023, patients with diabetic foot ulcer treatment with surgical and conservative methods were included in this study. Re-angioplasty group is defined as the patients who had two or more angioplasty after primary-angioplasty and treatment. In the retrospective study design, we collected information such as a method of treatment, TASC level on angioplasty, PTA lesion, and patient's condition.

Results: Total of 60 patients were included in this study, and 22 patients were Re-angioplasty group. 30 of the total patients received free flap reconstruction and only 3 of the 30 patients had re-angioplasty. An univariate risk factor analysis on Re-angioplasty showed that partial amputation, ($p=0.001$), amputation($p=0.014$), free flap reconstruction($p=0.001$) as significant statistical factors. we can see the statistical result that free flap procedure and non-salvage group has positive effect on possibility of reangioplasty.

Conclusion: In this study, free tissue transfer provide the lower probability of re-stenosis and occlusion compared to conservative care. It means that free flap reconstruction with advanced angioplasty patients has a significantly lower probability of future re-angioplasty.

E-posters on display, all categories

EP479 Maintaining dressing integrity while protecting skin with a light-deactivated adhesive

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Aim: Compare a “switchable” or light-deactivated adhesive (LDA) that releases when exposed to near-UV light to common acrylic and silicone adhesives used in wound care.

Method: Peel strength testing compared the LDA (unexposed and exposed condition) to two acrylic adhesives and a silicone adhesive. Researchers adhered half of a sample on a healthy volunteer’s ventral forearm, with the other half secured to the universal testing machine (UTM). The UTM pulled each sample at a 90° angle at five mm/s. We compare the average and maximum peel strength (Newtons) using a one-way ANOVA followed by paired-wise t-tests with p-values corrected by the Benjamini-Hochberg method.

Results/Discussion: Unexposed LDA exhibited a maximum and average peel strength of 2.92+/-0.72 N and 2.80+/-0.70 N compared to Acrylic A: 2.81+/-0.96 N and 2.60+/-0.100 N, Acrylic B: 1.81+/-0.62 N and 1.66+/-0.59 N, and Silicone: 1.19+/-0.64 N and 0.99+/-0.57 N. Exposed LDA decreased in average maximum and average peel strength to 0.30+/-0.14 N and 0.19+/-0.11 N. ANOVA indicated significant differences (max: p=3.19E-06 and average: 2.81E-07). Pairwise testing found that the exposed LDA exhibited significantly lower peel strength than all other conditions (p-values=0.001-0.035). The unexposed LDA had significantly higher maximum and average peel strengths than silicone (p=0.004; p=0.004) and acrylic B (p=0.035; p=0.034).

Conclusion: The study results show a profound decrease in peel strength in the exposed light-deactivated adhesive compared to its unexposed state, acrylic, and silicone adhesives. Using the light-deactivated adhesive in wound dressings will help to address challenges in securing a dressing while preventing MARSIs.

EP480 Case series on the use of foam with ibuprofen for pain reduction

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Aim: Pain is a common issue observed in patients with chronic lower limb injuries. Another significant challenge for healthcare providers managing wounds is related to exudate control. Recently, a polyurethane foam dressing containing ibuprofen has been developed. Polyurethane foam has a 3D structure that allows for vertical exudate absorption and conforms perfectly to the wound bed even under compressive therapy. In this dressing, ibuprofen (0.5mg/cm² across the entire foam matrix) is gradually released. In this study, we highlighted how the use of this dressing has contributed to a reduction in pain and exudate control.

Method: Three cases with similar characteristics in terms of pain and exudate were considered. Pain was assessed at each dressing change using a numerical rating scale (NRS) for 6 weeks. Additionally, the presence of exudate was documented photographically.

Results/Discussion: We observed a reduction in pain in all reported cases by at least 3 points on the NRS scale after the first dressing application. This result remained consistent throughout the entire observation period. In all cases, patients reported reducing or eliminating the intake of oral pain medication. Exudate control was optimal, as patients no longer reported soaked bandages between dressing changes.

Conclusion: We can conclude that the use of foam with ibuprofen in these cases resulted in a significant and sustained reduction in pain over time. This dressing is also beneficial for exudate control.

EP481 Early healing of the donor site through silver hydrofiber

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Aim: To promote the healing of lower limb injuries, some centers facilitate wound closure by applying a portion of skin taken from a different site. In Centro di Vulnologia Istituti Clinici Zucchi di Monza in the year 2022, 53 split-thickness skin grafts (DE) were performed, and in 2023 25 procedures have been conducted. In this procedure, the most superficial layer of skin is harvested from a donor site. Proper management of the acute wound is crucial to achieve complete reepithelialization as quickly as possible with minimal complications for the patient. Silver hydrofiber is a dressing that helps control bacterial load, absorb excess exudate, and minimize pain/discomfort for the patient. As there are no clear guidelines on the best strategy for donor site healing, this study aims to demonstrate the optimal use of silver hydrofiber for the early healing of the donor site.

Method: All patients who underwent split-thickness skin grafting until the current date were retrospectively considered. All patients were treated with silver hydrofiber and a secondary dressing immediately after the grafting. The secondary dressing was checked at least once a week without removing the hydrofiber, until complete healing.

Results/Discussion: A total of 78 patients were included in the study, of whom 77 healed within three weeks. One patient required a modification in dressing due to poor compliance

Conclusion: Based on these results, it can be concluded that silver hydrofiber may be a valid dressing for the early healing of the donor site

EP482 Nanoclays as enhancers for the treatment of infected wounds

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Aim: The aim of this study was the design and the development of chitosan-based microparticles doped with clay minerals containing Cu as a powder for cutaneous application to enhance wound healing in infected skin lesions. Two different Cu-nanoclays, based on natural and synthetic clay minerals (montmorillonite and layered double hydroxides, respectively), were used to assess the different properties given by the inorganic materials to the microparticles.

Method: The Cu-based MMT was prepared by means of an intercalation solution procedure, while the Cu-based layered double hydroxide (LDH) was obtained through the coprecipitation method. Chitosan carbamate was prepared by adding NH_4HCO_3 to a chitosan acetate salt solution. Then, Cu-MMT or Cu-LDH were added to the chitosan carbamate aqueous blends to produce spray-dried microparticles.

Results/Discussion: The formation of the Cu-MMT and LDH nanoclays was confirmed by XRD analysis. Smooth and spherical water-insoluble chitosan microparticles were obtained through the spray drying process. Their morphology and dimensions were not altered by the inclusion of the clays in the blends. All the microparticles proved to support cell viability and to increase cell proliferation of Normal Human Dermal Fibroblasts when compared to cells grown in standard conditions.

Conclusion: It was possible to manufacture water insoluble microparticles based on chitosan and doped with previously produced clay minerals containing Cu. Future studies will be focused on the release of Cu from the scaffolds and the evaluation of their consequent antibacterial activity. Moreover, in vivo experiments are currently ongoing to test the safety and efficacy of the scaffolds.

EP483 Design and development of antibacterial and antioxidant scaffolds for skin tissue regeneration

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Aim: The aim of this work was the development of centrifugal spun microfibers based on polyvinylpyrrolidone (PVP) and polylysine (PLL) doped with layered double hydroxides (LDH) based on Mg and Al intercalated with gallic acid (GA) to enhance the skin tissue regeneration. These systems could promote cell adhesion and proliferation while providing antibacterial and antioxidant properties.

Method: LDH based on Mg and Al, which were also intercalated with GA, were synthesized via coprecipitation method. The LDH were isolated after centrifugation, without further washing, and dispersed in a mixture of ethanol and water (80:20). PVP and PLL were added to the dispersion, which was then processed through centrifugal spinning. The resulting microfibers were then crosslinked using thermal treatment. In vitro biocompatibility of the microfibers was assessed on Normal Human Dermal Fibroblasts (NHDF).

Results/Discussion: The intercalation of GA was successfully achieved as evidenced by the increase in the interlayer distance of the LDH. Centrifugal spinning allowed the formation of smooth and aligned fibers with a dimensional range of 10-40 µm, which was not affected by the inclusion of LDH and the following thermal treatment. Moreover, in vitro testing confirmed the biocompatibility of the scaffolds towards NHDF.

Conclusion: It was possible to produce centrifugal spun microfibers based on PVP and PLL doped with previously synthesized GA-intercalated LDH. The scaffolds proved to support cell viability. Future studies will be focused on the determination of the antioxidant and antibacterial properties of the microfibers due to the impact of gallic acid and polylysine, respectively.

EP484 Fabrication of electrospun nanofiber membranes containing human decellularized skin extracellular matrix for wound healing

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Aim: This study aims to produce electrospun nanofiber membranes containing human decellularized skin extracellular matrix (HdsECM) for use in wound healing and skin regeneration.

Method: Full-thickness skin tissues were obtained from discarded tissue under the Koc University Aesthetic and Reconstructive Surgery IRB protocol. Skin decellularization was carried out using enzymatic protocols. A polymer solution containing 2% alginate, 7% gelatin, and 1% HdsECM was used for membrane production. Voltage, distance, and flow rate parameters were optimized to obtain an ideal electrospun membrane. The porous structure was analyzed by a Scanning Electron Microscope (SEM). Mechanical properties and degradation kinetics were investigated. Bioavailability of the fabricated membrane was also performed using human keratinocyte cells.

Results/Discussion: An optimum nanoporous membrane was produced using the parameters of 1.00 mm/h, 216mm, and 22 kV for electrospinning technology. According to SEM images, it was observed that a uniform nanofiber structure was formed in the membranes. The membrane preserved its structural integrity for 7 days, and the keratinocyte cells survived for 14 days with their normal morphology.

Conclusion: The nanofiber electrospun membrane, including HdsECM as an active agent, was tested as a wound dressing to assess its fundamental biological and physical features. Based on its properties, we conclude that the membrane has the potential in skin tissue engineering for regenerative and reconstructive medicine applications.

EP485 Designing the next generation of skin tissue engineering products: sprayable hydrogels including human skin microbiota-derived postbiotics

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Aim: This study aims to fabricate a postbiotic-loaded/human decellularized skin extracellular matrix (HdsECM)/alginate sprayable hydrogel to inhibit bacterial infections and enhance wound healing.

Method: Postbiotics were obtained from *Staphylococcus hominis* EIR/HS-1, a human skin microbiota isolate, following the fermentation process. The hydrogel was formulated in a sprayable state by mixing the postbiotic with 2 wt% sodium alginate and 4 wt% CaCl₂ solution. A scanning electron microscope (SEM) was used for its characterization. Its biocompatibility was determined using human keratinocyte cells by live/dead assay. The efficiency of sprayable hydrogels was also evaluated using an ex-vivo wound model using human skin.

Results/Discussion: The SEM image of the cross-sectioned hydrogel surface confirmed the presence of a porous structure. During the cell culture periods of 1, 4, and 7 days, keratinocyte cells maintained their viability. Utilizing the ex vivo models, we demonstrate the potential antibacterial effects of sprayable gel after infecting the wounds with clinically important pathogenic bacteria. The hydrogel significantly inhibited the secretion of particular cytokines. Besides, hydrogel-treated wounds were epithelialized faster than control groups at days 5 to 14.

Conclusion: The sprayable hydrogel with its novel formulation displayed remarkable wound-healing capabilities in both in vitro and in vivo studies. These findings highlight the significant potential of novel sprayable hydrogel for advancing skin tissue engineering applications.

EP486 In Vitro assessment of the exudate management properties of gelling fibre dressings

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Aim: Exudate can vary in appearance and consistency depending on the factors associated with the wound; it is therefore important that wound dressings designed for exudate management are able to effectively manage different types of exudates whilst providing a moist wound environment conducive to wound healing progression.

This study aims to evaluate the fluid absorption properties of commercially available gelling fibre dressings when exposed to artificial exudate with varying degrees of consistency.

Method: The standard test method for primary wound dressings described in BS EN 13726 has been used with Solution A modified to various viscosities replicating variations in consistency.

Solution A viscosities have been measured using a viscometer and correlated to different types of exudate guided by a healthcare professional.

Results/Discussion: The hydrophilic properties of the dressings exhibited a predictable behavior when exposed to an unmodified solution representative of thin watery exudate; however, performance differences were observed when the consistency of the modified Solution A increased. This is attributable to how the fluid interacts with the hydrophilic materials, the intrinsic properties of the materials used and design configuration.

Conclusion: Exudate plays a key role in wound healing. However, exudate can delay healing when in the wrong amount, in the wrong place, or of the wrong composition. Effective management of exudate is therefore key to ensuring timely wound healing without complications.

Clinicians should consider the characteristics and amount of exudate being produced and accordingly choose a capable dressing aiming at minimizing dressing changes and improving healing outcomes.

EP487 Olive mill wastewaters based microparticles for wound healing

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Aim: This work aims at producing Olive Mill Wastewater (OMW) based maltodextrin microparticles to preserve and deliver bioactive molecules, such as polyphenols, in the treatment of skin non healing wounds.

Method: Maltodextrin (MD) are dissolved in OMW. MD with different Dextrose Equivalent (DE) are considered. Microparticles are produced using a mini spray-dryer equipped with 0.5 mm nozzle. Their morphology is evaluated by SEM (scanning electron microscopy) and particle size distribution by DLS (dynamic light scattering). Antioxidant properties are investigated by means of DPPH assay and cell biocompatibility is assessed on Normal Dermal Human Fibroblasts (NHDF).

Results/Discussion: Microparticles are characterized by smooth morphology and spherical shape with dimensions ranging from 17 to 18 mm and a narrow-sized distribution. All samples possess antioxidant properties due to their ability to inhibit free radicals. The radical scavenging activity for all the samples is above 50 % compared with a positive control: in particular the increase in concentration results in an increase in antioxidant activity. Moreover, the microparticles are biocompatible towards NHDF after 24h of contact.

Conclusion: Maltodextrin spray-dried microparticles loaded with OMW were successfully obtained. Their morphology, particle size, antioxidant properties and biocompatibility were evaluated. Studies are ongoing to assess cell proliferation and their anti-inflammatory properties in view of their use as a powders for cutaneous application in the wounds treatment

EP488 Evaluation of a care bundle to support healthcare workers wearing n95 masks

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Aim: This study aims to assess adverse outcomes, staff knowledge and behaviour in relation to a care bundle, designed to prevent and manage facial skin injury in healthcare workers wearing N95 masks.

Method: A quasi-experimental study design was used to compare outcomes for staff who were required to wear N95 masks and had access to a care bundle at a major metropolitan health service during the COVID-19 pandemic, compared to those who did not. Staff were invited to participate in an anonymous survey.

Results: The convenience sample included 758 participants and of these 31.3% accessed the care bundle. Post introduction of the care bundle, 59.8% developed facial injury compared to 72.7% who did not use the care bundle ($p = 0.03$). Of staff who accessed the care bundle, 28.7% developed acne, compared to 49.5% who did not access the care bundle ($p = 0.001$). Statistically significant improvements in uptake of prevention and treatment strategies were found in those who accessed the care bundle, compared to those who did not.

Discussion: This study has demonstrated the benefits of a care bundle to support healthcare workers wearing N95 masks. The bundle improved staff knowledge and reduced minor facial skin injuries.

Conclusion: Ongoing COVID-19 cases necessitate that healthcare workers continue to wear N95 masks for long and indefinite periods and as such the field remains an area for future research.

EP489 Construction of negative pressure wound therapy training model based on 3D printing technology

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Aim: To construct the negative pressure wound therapy training models based on 3D printing technology.

Method: First of all, through brainstorming and expert consultation, typical clinical cases of negative pressure wound therapy were identified. Then, according to the original data of the patient's CT scan, select the appropriate DICOM data to reconstruct the virtual wound model. By using 3D printing technology, the solid wound model of negative pressure wound therapy was printed.

Results/Discussion: Finally, imaging data collection, model design and model printing were completed for four cases: pressure injury, lower extremity traumatic ulcer, radiation ulcer, and postoperative wound.

Conclusion: The wound model reconstructed by 3D printing technology can be used for negative pressure wound therapy training, but the model is still in the preliminary exploration stage, and it is necessary to further optimize the accuracy of 3D printing and the simulation degree of the model.

EP490 Flattening the bullwhip effect of severe pressure ulcers via sub-epidermal moisture (SEM) assessments

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Aim: As PUs progress into more severe stages the demand for healthcare resources/costs increases exponentially. This amplification of the disease burden, the Bull Whip effect (Figure 1), creates a ripple effect in requiring advanced wound care management, additional staffing hours and extended hospital stays. The aim of this study evaluated the impact of implementing SEM assessments in reducing the treatment burden of hospital-acquired PUs.

The "Bull Whip" effect of increasing severity of PUs



Figure 1

Method: A decision-tree model was developed to reflect PU associated costs to the UK NHS for a representative 450-bed acute care setting. Aggregated PU incidence (6.65%) data was pooled from real-world implementation sites where SEM assessments were implemented alongside facility standards of PU care.

- Treatment costs for PUs were adjusted to 2020/21 prices using the NHS cost inflation index:
 - Stage 1 £1,536
 - Stage 2 £9,627
 - Stage 3 £10,795
 - Stage 4 £11,184
- Standard prevention protocols were assumed to require two Band 5 nurses for 10 minutes each, four times daily (£54.67 daily).
- Cost of enhanced (four-hourly) repositioning was £82.00 daily
- Cost of a Band 5 hospital nurse including overheads was £41/hour

Results/Discussion: Results are for a cohort of 12,421 p.a. admissions at risk of PUs.

- Care pathways implementing SEM assessments prevented 149 PUs more than standard pathways
- Total nursing time saved in frequent repositioning of patients via SEM pathways was 447 hours
- Overall prevention costs for SEM enabled pathways increased by 4.92% from € 3,686,621 to € 3,867,899
- Treatment costs for PU reduced by 16.1% from € 6,678,822 to € 5,604,075. Per patient cost was reduced by 10.51% from € 1,208 to € 1,081

Conclusion: SEM assessments effectively flatten the bullwhip effect by mitigating the need for enhanced PU care associated with severe broken skin PUs. Earlier detection allows for timely interventions, reducing the progression to severe stages of pressure ulcers. A decrease in hospital-acquired PUs reduces extended hospital stays, lowers the need for additional resources, reduces the overall costs associated with PU management and enables more efficient use of healthcare resources.

1. Moore, Z., et al. 2022. JWC, 31, 634-647
2. Okonkwo, H., et al. 2020. Wound Repair Regen

EP491 A service evaluation examining the role of an enhanced wound care nurse in reducing the burden of wound care in a community nursing service and improving community nurses and patient experience of wound care

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Aim: Chronic wounds represent a significant cost to healthcare providers and innovation is required to drive quality. We need to ensure patients are treated by nurses, who have the right skills and knowledge but also the opportunity to maintain and develop expertise. A city center community nursing service introduced an Enhanced Wound Care Nurse (EWCN) to provide expertise and role modelling in wound care, aiming to improve the provision of best practice and improve community nursing (CN) and patient experience of wound care.

Method: The data for the evaluation was collected at pre and post role from patient records, CN focus groups and patient feedback.

Results/Discussion: EWCN carried out 81 new patient assessments and an additional 72 follow-up visits, 146 case discussions and 29 joint visits between June and October 2023.

Prior to EWCN assessment of 66 patients with leg ulcers, 24 were receiving compression therapy. Post EWCN assessment, 48 patients were receiving compression therapy, an increase of 50%.

Prior to EWCN assessment, patients were receiving 143 visits/week (n=81). Post EWCN assessment, this reduced by 31% to 98 visits/week.

CN feedback highlighted the EWCN was accessible, provided specialist knowledge, facilitated learning and improved patient care by implementing best practice. Patient feedback was positive and highlighted improvements in quality of life and understanding of their treatment.

Conclusion: The EWCN role is evolving, but in this short period we have learnt the value and how it can provide best practice treatment for patients and support CN confidence, expertise and knowledge.

EP492 Effects of home-based chronic wound care training for patients and caregivers: a systematic review

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Aim: To review and synthesize the evidence of the interventions of patients' and informal caregivers' engagement in managing chronic wounds at home.

Method: Cochrane Central Register of Controlled Trial of the Cochrane Library, Pubmed, Embase, CINAHL, Wanfang (Chinese), and CNKI database (Chinese) were searched from inception to May 2022. The following MESH terms were used: wound healing, pressure ulcer, leg ulcer, diabetic foot, skin ulcer, surgical wound, educational, patient education, counseling, self-care, self-management, social support, and family caregiver. Experimental studies involving participants with chronic wounds (not at risk of wounds) and their informal caregivers were screened. Data were extracted and narrative synthesized from the findings of included studies.

Results/Discussion: By screening the above databases, 790 studies were retrieved, and 16 met the inclusion and exclusion criteria. Studies were 10 RCTs and 6 non-RCTs. Outcomes of chronic wound management included patient indicators, wound indicators, and family/caregiver indicators. Home-based interventions of patients or informal caregivers' engagement in managing chronic wounds at home may effectively improve patient outcomes and change wound care behavior. What's more, educational/behavioral interventions were the primary type of intervention. Besides, there are no studies entirely targeting elderly patients.

Conclusion: Home-based chronic wound care training was important to patients with chronic wounds and their family caregivers, which may advance wound management outcomes. However, findings of this systematic review were based on relatively small studies. We need more exploration of self and family-oriented interventions in the future, especially for older people affected by chronic wounds.

EP493 A systematic review of surgical site infection and wound complications in patients who received forced-air warm device during surgical procedures

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Aim: The objective of this systematic review was to identify and synthesize available evidence on the impact of forced-air warming (FAW) on surgical site infection (SSI) and wound complications.

Method: We searched CINAHL, EMBASE, Medline and CENTRAL. The primary analysis included various eligible study types (e.g., RCTs, non-randomized trials, cohort studies) comparing Forced Air Warming (FAW) devices to other warming methods in adult patients (18 years and above) undergoing elective or emergency surgery. The focus was on outcomes related to surgical site infection, surgical wound contamination, and other complications like wound dehiscence and seromas.

Results/Discussion: Fourteen primary studies were included in this review, comprising nine RCTs, one non-RCTs and four observational studies published in English from 1996 to 2022. We conducted a meta-analysis of SSI rates in nine RCTs, and subgroup analyses of 30-day SSI and 90-day SSI rates. Our pooled analysis indicated that FAW is more effective in prevent hypothermia than non-FAW warming, a reduction of 53% in the odds of having post-surgery

hypothermia compared to those patients without using FAW (Odds ratio=0.47, 95% CI 0.35-0.65, $p < 0.0001$, $I^2 = 58\%$). There was insufficient evidence to definitely prove that using FAW devices leads to rise in SSIs among patients who had undergone surgical procedures.

Conclusion: Future larger sample size of multicentre well designed RCTs should focus on individual types of surgical specialties, with well documented patients' characteristic data and anaesthetic method needed to support current practice in heterogeneous populations.

EP494 Compression therapy - How does Germany perform?

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Aim: Compression therapy is an essential pillar in the treatment of people with venous leg ulcers and oedema. Although its effectiveness has been clinically proven, there are still deficits in its practical implementation. This survey identifies approaches for optimising the usage of compression therapy.

Method: Health care providers were approached during training courses on compression therapy, at specialist conferences and congresses. They filled out a questionnaire that focused on the use of materials for phlebological compression bandagings. In addition to information on their own working field, the participants provided information on prescription, application and duration of use.

Results: The 320 participants named insufficient patient acceptance as the biggest obstacle in compression therapy (68%) and lack of cooperation between prescribers and users, insufficient diagnostics and lack of training (45-48%). According to the participants' estimation short-stretch bandages with/without padding are prescribed most frequently (62 %), medical compression stockings (29 %), multi-component systems (6 %) and other materials are prescribed by 3 %. For 79% of prescriptions of compression bandages no pressure value is given. Only 9% wear short-stretch bandages day and night. 60 % are applied after getting up and 61% are removed before going to bed. 36% of short-stretch bandages are prescribed for three months and 18% for two months.

Conclusion: Crucial for the success of compression therapy is the selection and the correct application of the available up-to-date therapy options. The basis for this is actual knowledge of providers. This ensures the success of the therapy and strengthens patients' acceptance.

EP495 The Compression-Compass - A navigation tool that guides through the phases of compression therapy

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Aim: Despite good scientific evidence, too few people with venous leg ulcers receive adequate compression therapy. Uncertainties and a lack of up-to-date knowledge lead to breaks in care, increased costs, time expenditure and lack of patients' adherence. Therefore a tool is needed, that provides therapy-relevant contents, supports communication and education and promotes patients' self-management: the Compression-Compass.

Method: The Compression-Compass provides an overview of the compression therapy process. It starts with diagnostics and continues through the therapy phases: decongestion, maintenance and prevention. Listed are typical

characteristics of every phase and adequate treatment options. Additionally, the Compression-Compass includes supportive measures, e.g. education, vein sport activities and skin/material care, that accompany all phases. For more in-depth reading, there is a supplementary Compression-Logbook with many basics and further practical tips.

Results/Discussion: The Compression-Compass is a handy, wipe-disinfectable turntable for everyday care. All presented facts are simple and easy to understand. This is a quick-guide for health care providers and additionally enables the involvement of patients and relatives. Compression-Compass and Compression-Logbook provide knowledge and are also a support for communication within the team and with the patient. Additionally, they support education of patients and their relatives.

Conclusion: For successful compression therapy, it is crucial that everyone involved in the care of people with venous leg ulcers is informed about up-to-date materials and methods and is familiar with their appropriate use. Communication is the basis for understanding and thus the key to successful compression therapy!

EP496 Use of non-elastic bandaging in arteriopathic patients: a pilot study

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Aim: Arterial pathology is characterized by reduced blood flow. Transcutaneous oxygen saturation (TCPO₂) allows for the measurement of peripheral oxygen levels. Arterial pathology is often associated with pain and edema. Edema further leads to a reduction in tissue perfusion, creating a harmful cycle for the patient. This cycle can be interrupted through compressive therapy. Rigid bandaging promoting the reduction of edema. It is crucial that bandaging is performed by qualified personnel. The aim of this pilot study is to demonstrate how the use of a non-elastic bandage may improve tissue oxygenation and reduce edema and pain.

Method: Five patients presenting with arterial pathology-related lesions and edema upon their initial visit to the ICZ were selected. Three time points were considered: t0, t1 after 7 days, and t3 after 15 days of treatment. The measured outcomes included improvements in tissue perfusion, reduction in pain and edema. Instruments used included TCPO₂, NRS scale, and measurements of limb circumference. Patients with critical ischemia were excluded. At t0, all patients were bandaged with a non-elastic bandage.

Results/Discussion: Overall, TCPO₂ levels showed improvement from the recorded results. Although this improvement did not always occur by t1, pain was consistently alleviated. Positive outcomes were also achieved in reducing edema, and improvements were noted in the healing of lesions.

Conclusion: The use of a non-elastic containment bandage, when applied by qualified personnel and in non-critical ischemic conditions, leads to improvements in terms of pain and edema. Peripheral oxygenation also benefits from this approach.

EP497 Venous leg ulcers: Development and validation of a knowledge assessment instrument for nursing students

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Aim: To develop and psychometrically validate an instrument to assess knowledge of venous leg ulcers in nursing students.

Method: A prospective study was designed to validate psychometric instruments. The study was carried out at the Basque Country University and the University of Alicante, between November to December 2022. Data collection

was carried out by an online questionnaire and all of nursing students were invited to participate (n=1972). The psychometric properties of “Knowledge of Venous Leg Ulcers Questionnaire” (KVLUQ) were evaluated. Content validity (consensus by e-Delphi method), item, construct validity and reliability were carried out using the Rasch model. **Results/Discussion:** Finally, 516 nursing students participated. The questionnaire had good Content Validity Index (CVI: 0.89). After items analysis (difficulty and discrimination), 10 items were dropped-out. KR21 coefficient was 0.90 and alpha Coefficient was 0.92 (CI 0.911-0.930). Moreover, on the Rasch analysis, separation index was 10.56 for items and 3.42 for persons, and also reliability of 0.99 for items and 0.92 for persons. Regarding infit and outfit values all of them were between 0,.79-1.46. The local independence principle was achieved by Yen’s Q3 index below 0.22. Subsequently, DIF analysis was performed recommending to delete 21 more items. Finally, this 41-item questionnaire showed very good fit and psychometrics.

Conclusion: The KVLUQ it’s a valid and reliable instrument to measure nursing students’ venous leg ulcer knowledge.

EP498 Local anesthesia without pain. Doubt, search, evidence, daily practice. The way of science

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Aim: To define methods to reduce pain during the subcutaneous administration of local anaesthesia.

Method: A bibliographic research has been carried out based on the hierarchy of evidence models of Haynes’ pyramid. Starting with secondary databases (Uptodate, ClinicalKey) then searching for the most recent evidence in primary databases (PubMed). The research has been based only on lidocaine due to its more widespread use.

Results/Discussion: The methods found can be classified into 3 groups:

1.Modify lidocaine to resemble the physiological environment, causing less burning and pain:

-Buffer pH of lidocaine (5-7) to 7.3-7.5 pH by dissolving with 1M sodium bicarbonate in a 1:9 or even 1:3 ratio. This also reduces the stability of the dilution up to 1 week for normal lidocaine and in the case of lidocaine with epinephrine to 24 hours.

-Heat the lidocaine up to a temperature between 37-38 °C. It can be heated up to 70°C without deterioration.

2.Reduce the sensitivity of the body area

-Local cold to reduce temperature and sensitivity.

-Previous promotions of topical anaesthetics.

-Use vibration devices to attenuate perceived pain according to the control gate theory.

-Combination of these measures.

3.Recommendations for a less painful injection technique:

-Puncture through a pore at a 90o angle instead of 45o.

-Use small gauge needles (25-30 G).

-Slow injection speed.

-Low volume syringes (1-3 ml) to reduce inlet pressure.

Conclusion: There is evidence on various methods, some of them easy to apply to our daily practice, to reduce pain caused by local subcutaneous anaesthesia.

EP499 A preliminary study on the occurrence of skin injuries during surgery in patients

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Aim: To explore the distribution of skin injuries in patients during surgery.

Method: Retrospective study was used to collect data from patients who suffered from skin injuries during surgery from January 2021 to November 2023. Descriptive statistics were used to collect data for age, operation time, and types of injuries that occurred on the patients.

Results/Discussion: A total of 15 cases were included, with an average age of 56.27 ± 17.45 years old patients and 388.33 ± 212.25 minutes of operation time. Among these patients, a total of 6 people (40%) suffered from medical adhesive-related skin injuries (MARSIs), and the others suffered from pressure injuries and low-temperature burns. Descriptive statistics showed that the average age of MARSIs patients were 60.67 ± 11.94 years old, which is higher than non-MARSIs patients who aged 53.33 ± 20.48 years old. It also showed that the average operation time of MARSIs patients was 300.83 ± 290.40 minutes, which was lower than non-MARSIs patients, having an average of 466.67 ± 128.67 minutes. As a result, pressure injuries may be related to patients receiving prolonged pressure, and MARSIs may be related to patients at an elder age.

Conclusion: To protect the skin, it is important to take appropriate protective measures for patients undergoing long-term surgery. Furthermore, adhesive dressings should be removed correctly to ensure the patient's safety during surgery.

EP500 Digitizing the care pathway to support SEM scanning compliance

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Aim: Implementing SEM assessments* into routine clinical practice achieves consistent reductions in pressure ulcer (PU) incidence.¹ Supporting these clinical outcomes with operational improvements such as improving SEM scanning compliance and SEM (Δ) Delta data trend analysis will give healthcare practitioners (HCPs) more context to their patient's skin health, allowing prioritization of patient care and the awareness to provide the correct interventions in a timely manner.

Aim was to create a paper-free digital tool utilizing a facilities PU prevention protocol, to automatically provide compliance prompts that SEM scanning was due/overdue as well elevated SEM (Δ) Delta data trend information.

Method: Unique cloud-based digital tool was created that integrates seamlessly into facility Electronic Medical Records (EMR) systems. Iterative HCP feedback was utilized to optimize the tool workflow and data presentation. Beta version is being piloted in clinical environments to test workflow and impact.

Results/Discussion: Integrating a digitalized tool into the clinical workflow has enabled:

- SEM (Δ) Delta trend data to be automatically available in all patient records or on the digital tool.
- SEM scanning to be added to the list of tasks HCPs perform each shift to ensure compliance.
- HCPs to take ACTION based on the prompt and see the IMPACT of their action based on the facility protocol.

Conclusion: Digitizing the care pathway improves SEM scanning compliance by giving HCPs better visibility of data trends, supports operational improvements leading to better cost-minimization outcomes by only taking appropriate action where and when necessary leading to improved clinical and financial outcomes.

References:

1. Nightingale, P. & Musa, L. 2021. Evaluating the impact on hospital acquired pressure injury/ulcer incidence in a United Kingdom NHS Acute Trust from use of sub-epidermal scanning technology. *J Clin Nurs*, 30, 2708-2717.

* Provizio® SEM Scanner.

EP501 Promising bioactivities of postbiotics derived from human skin microbiota for wound management

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Aim: Postbiotics are bioactive substances that are produced by commensal bacteria during fermentation in the matrix. This study aims to determine their promising activities important for the wound healing process.

Method: Postbiotics were obtained from *Staphylococcus hominis* EIR/HS-1, an isolate of human skin microbiota, following the fermentation process. DPPH free radical scavenging assays were used to assess their antioxidant capacity. The total phenolic and flavonoid compounds were also determined. Cytotoxic effects and migration ability were evaluated on human keratinocyte and fibroblast cells. Besides, effects on immune markers and collagen synthesis were analyzed using ELISA and RT-PCR, respectively. Finally, its metabolites were identified using chromatographic methods.

Results/Discussion: DPPH radical scavenging activity was found as 100%. Doses below 1000 µg/mL did not exhibit cytotoxic effects on cells and did not induce apoptosis. As a result of migration, scratches on cells were closed after 24 hours. Postbiotics did not induce pro-inflammatory cytokine production. However, they significantly induced collagen synthesis in human fibroblast cells. Lactic acid, B complex vitamins, glucose, palmitoleic (C16:1 cis-9) acid, galocatechin, and epicatechin were found as the most abundant metabolites.

Conclusion: Our results suggest that postbiotics obtained from *Staphylococcus hominis* EIR/HS-1 have potential bioactivities that are important for the wound healing process. Therefore, postbiotics can be used as a new source for alternative bio-control strategies.

EP502 Compression therapy: Factors impacting the patient's life

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Aim: The objective of this study is to explore how the implementation of compression therapy influences the patient's daily life.

Method: Two questionnaires were developed to be administered to patients at their initial visit and during the first dressing change. Various aspects were investigated, including physical factors, aspects of the patient's daily life and emotional aspects. All new patients seen at Centro di Vulnologia Istituti Clinici Zucchi Monza between April and September 2023 were considered. Patients with arterial pathology were excluded.

Results/Discussion: Sixteen questionnaires were analyzed. 56% of the patients had been previously bandaged. 75% of the patients presented with edema, but only 65% of them perceived it. At the first follow-up, 75% of the patients reported an improvement in the sensation of swelling. Regarding pain, a reduction was observed in the majority of cases. Levels of self-sufficiency remained unchanged before and after bandaging. An aspect that raised concern was related to the aesthetics that the bandage carries. Regarding emotional aspects, a significant portion felt calm and perceived a sense of protection. Some reported the perception of being observed or judged externally.

Conclusion: Patients recognize the importance of compression therapy through the awareness of pain and edema reduction. However, being a wearer of a bandage brings aspects of daily life and emotions that healthcare professionals should not overlook. An emerging aspect is that what the patient feels/perceives is not always what the clinician observes.

EP503 Stromal Vascular Fraction from adipose tissue: A novel frontier in wound healing - preclinical discoveries

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Aim: Etiology of nonhealing wounds may be related to impaired vascular support. The stromal vascular fraction (SVF) from the adipose tissue is a promising therapy to overcome this limitation. Through its direct and paracrine effects, SVF promotes the formation of new vascular networks.

Method: A murine model of ischemic nonhealing wounds was established. SVF cells were purified from transgenic animals to track their fate following application to ischemic wounds in combination with a clinical-grade skin substitute. SVF cells gave rise to a mature vascular network comprising arteries, capillaries, veins, and lymphatics, structurally and functionally connected with the host circulation. Additionally, SVF cells were purified from the lipoaspirate of seven healthy and four diabetic patients and implanted in a human-in-mouse model of ischemic wounds. SVF-derived endothelial cells formed hybrid human-mouse vessels, both under static conditions and using an automated, sterile bioreactor. The safety of this cell therapy was confirmed by karyotype analysis and cancer development after one year.

Results/Discussion: SVF was not associated with the development of cancer in the murine model of ischemic wounds, and karyotype analysis showed no chromosomal modifications after expansion using a bioreactor.

Conclusion: The SVF can be expanded from healthy and diabetic patients using a bioreactor, maintaining its capacity to form functional vessels when transplanted into an ischemic wound. These preclinical studies indicate the safety of this procedure.

EP504 Centrifugal spun fibers-based scaffolds for tissue regeneration

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Aim: The aim of this present study was the design and the manufacturing of PCL-collagen fibers via centrifugal spinning, intended for 3D scaffolds development for wound healing.

Method: PCL pellets were dissolved in acetic acid 96%. Solutions of concentrations ranging from 18% w/w to 30% w/w were subjected to centrifugal spinning. Hydrolyzed collagen was added to the blend and the formulation (PCL-Col) was spun using the same set up.

The fibers morphology and diameter were evaluated and analyzed by means of the scanning electron microscope. Force at break (MPa) and maximum elongation % at break point was evaluated on both dry and hydrated samples by means of a Texture Analyzer.

Results/Discussion: PCL solutions were prepared using acetic acid instead of dimethylformamide or chloroform. Fibers with a homogeneous structure were collected from blends based of PCL and PCL-Col. The addition of Col to the composition induced a statistically significant decrease of the fibers dimensions from 9.7 mm to 3.8 mm.

The addition of Col to the formulation didn't impact on the structure strength and stiffness: no statistically significant changes in the values of force at break point were observed between PCL and PCL-Col values. Similarly, the hydration process didn't affect the scaffolds resistance.

Conclusion: PCL and PCL-Col fibers have been successfully obtained via centrifugal spinning avoiding toxic solvents. The addition of collagen reduced the fibers diameter. The structure stiffness was maintained even after the addition of collagen and both PCL and PCL-Col scaffolds showed good mechanical properties.

Case studies and professional communication on display

EP505 Healing of cancerous wounds: A case study in managing squamous cell carcinoma

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Aim: This study aimed to investigate the management of cancerous wounds associated with squamous cell carcinoma, assessing the outcomes and challenges encountered in treatment.

Method: Conducted at CHU Annaba in Algeria, a retrospective study examined medical records of five patients (aged 45 to 60) diagnosed with squamous cell carcinoma causing cancerous wounds between 2022 and 2023. Wound characteristics, including location, size, appearance, and stage of progression, were noted. Treatment primarily involved total tumor excision followed by skin grafting for wound closure, with one patient directed towards palliative cleanliness care. Ethical standards were followed, obtaining informed consent.

Results/Discussion: Cancerous wounds exhibited typical squamous cell carcinoma features, such as ulcerative and vegetating lesions prone to bleeding. Excision followed by skin grafting in 4 out of 5 cases resulted in complete wound healing without postoperative complications. No local recurrence was observed during the follow-up period. Patients who received skin grafting reported a significant improvement in quality of life and self-esteem. The patient under palliative care maintained acceptable wound cleanliness.

Conclusion: This study sheds light on managing cancerous wounds associated with squamous cell carcinoma, showcasing successful outcomes and notable challenges. Total tumor excision followed by skin grafting emerged as an effective approach, promoting complete healing and enhancing patients' quality of life. Multidisciplinary collaboration among healthcare professionals proved crucial for optimal patient care. However, successful outcomes rely on individual factors and early diagnosis. The study underscores the significance of prevention and early detection of squamous cell carcinoma to mitigate severe complications.

EP506 Avoiding costly surgical intervention for a stage iv sacral pressure injury using a 0.2% hyaluronic acid and 0.1% silver sulfadiazine combination treatment

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Aim: This case study aimed to avoid surgical intervention in treating a stage IV sacral pressure injury using 0.2% hyaluronic acid and 0.1% silver sulfadiazine combination to help support autolytic debridement and prepare the wound bed for healing, reduce treatment costs and improve healing times.

Method: The patient is a 72-year-old male with a chronic stage IV sacral pressure injury, treated with daily 0.2% hyaluronic acid & 1% silver sulfadiazine combination. Due to incontinence the patient only wore a wrap pad, avoiding wound packing and the increased risk of contamination if the dressing were to be left too long. Data was obtained over a 15-week period in 2023, with regular wound measurements and photos taken. A cost comparison was developed highlighting the costs of 0.2% hyaluronic acid & 1% silver sulfadiazine combination cream applied daily to the wound versus surgical wound debridement and a daily wound packing.

Results: The patient was ecstatic his stage IV sacral pressure injury progressed to such significant wound reduction in 15 weeks thus avoiding surgical intervention. A substantial cost saving of \$2,628 was observed, where the daily application of 0.2% hyaluronic acid & 1% silver sulfadiazine combination cream treatment alone, facilitated safe autolytic debridement of devitalised tissue, preparing the wound bed for faster healing and preventing infection.



Conclusion: Treating stage IV sacral pressure injuries with 0.2% hyaluronic acid and 1% silver sulfadiazine combination cream compared to surgical intervention, indicates a likely substantial cost saving for hospitals not only in Australia but likely world-wide.

EP507 Calciphylaxis, raising awareness for clinicians, improving the identification of risk factors for Renal Patients and demonstrating how wet dressings can be used to fully heal the wounds which cause so much pain

Susan Redmayne¹

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Aim: Calciphylaxis, to raise awareness and to demonstrate how wounds were fully healed using only wet dressings in a 13-month case study involving a community based renal patient.

Method: In the absences of many published Calciphylaxis wound management literature a method was developed, reviewed and assessed whilst dressing a very deep, excruciatingly painful left lower left wound caused by Calciphylaxis, from February 2020. Four different forms of hydro-responsive wet wound dressings were used in succession through the healing process and changed three times a week. The leg wound was assessed, measured, described and photographed to monitor and reflect on the healing process. Compression bandages were not used.

Results/Discussion: Hydro-responsive wet wound dressings were successfully used to quickly debride the black necrotic and slough tissue from the leg wound, and then to support the granulation and epithelial cell growth. Hyperhydration of cells in the peri-wound area occurred using these wet dressings, which other nurses mistook as cell maceration. The hydrating feature of these dressings, with Pregabalin, was found to minimize the associated neuropathic pain. The left leg wound healed in 3 months, then right leg wounds developed and healed using same method.

Conclusion: The use of hydro-responsive wound dressings may provide prompt healing of wounds caused by Calciphylaxis for other renal patients, so avoiding delays by waiting for surgical debridement. Improved awareness for all health professionals about the Calciphylaxis condition, how to identify and diagnose wounds and minimize the risks of it developing is required.

EP508 Early experience of the use of Biodegradable Temporising Matirx (BTM) for the management of complex diabetic foot wounds

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Aim: Complex diabetic foot wounds have protracted healing time, high risk of infection and amputations despite optimal wound management. Challenges include exposed tendon or bone making coverage with granulation tissue difficult. Biodegradable temporising matrix (BTM) is a novel approach to facilitate wound closure. BTM is designed to facilitate dermis growth within a polyurethane matrix. The aim of this study was to demonstrate our early experience with BTM to facilitate split skin grafting (SSG) and early wound closure in patients with complex diabetic foot wounds.

Method: A prospective case study series. BTM was applied on surgically debrided diabetic foot wounds. Time to SSG, wound healing and failure rate were measured.

Results/Discussion: Eight patients were included in the study. Six patients (75%) had SSG following BTM integration and granulation tissue to the epidermal margin, of these, 2 (25%) have healed, at a mean of 28 weeks. BTM failed in one patient (13%) with ongoing infection requiring a transmetatarsal amputation. One patient required an above knee amputation. Five of the 8 patients (63%) had neuro-ischaemic wounds and required revascularisation procedures. The cost per application was \$988.

Conclusion: Understanding the limitations in the cohort size and heterogeneity between patients this analysis shows some efficacy of BTM to facilitate wound healing where there is a high rate of limb loss. The failure rate may demonstrate the overall patient and wound complexity. The cost is significant and further research is required for the role of BTM in the diabetic foot wound.

EP509 The use of Leucocyte-platelet rich fibrin (L-PRF) on slow healing lower leg ulcers

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Aim: Leucocyte-platelet rich fibrin (L-PRF) therapy offers a unique combination of growth factors and immune cells derived from the patient's blood. This abstract explores the application of a L-PRF membrane on slow healing lower leg ulcers.

Method: L-PRF therapy was applied on lower leg ulcers in which the healing time exceeded 3 months. In most cases previous revascularization was necessary to obtain an adequate blood supply to the ulcer. The L-PRF membrane was obtained by centrifuging the patient's own blood, drawn during an in hospital ambulant consultation. The membrane was applied on sterile wounds, in those cases where there was a high risk to secondary contamination and infection, L-PRF therapy was associated with the use of oral antibiotics. The membrane was covered by a silicone contact layer after which both the membrane and the contact layer were fixed by a transparent polyurethane film. In case of exuding wounds, the dressing was covered by an absorbent pad that had to be changed when saturated. The membrane, contact layer and polyurethane film stayed in place for 7 days.

Results/Discussion: The effect of L-PRF therapy on wounds was visible after 7 days of therapy: increased tissue regeneration, angiogenesis and modulation of the inflammatory response. After repeating the therapy for 2-3 times we obtained superficial wounds covered by granulation tissue on which traditional wound dressings could be applied until final healing.

Conclusion: L-PRF proves to be a viable, low cost and non-invasive technology in the treatment of chronic non-infected lower leg ulcers.

EP510 Use of negative pressure therapy and hyperbaric oxygen therapy in the postoperative period of ankle osteosynthesis: case report

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Aim: To report the use of Negative Pressure Therapy (NPT) and Hyperbaric Oxygen Therapy (HBOT) in the postoperative period of ankle osteosynthesis in a trauma patient.

Method: This case report was carried out through a review of the medical and photographic records, with the patient's consent.

Results/Discussion: A 73-year-old female patient with hypertension and osteoporosis suffered an extensive right ankle fracture after being hit by a car, necessitating osteosynthesis. Post-surgery, she developed two ankle injuries: one in the medial region with a risk of wound opening, serosanguineous secretion, inflammation, and local swelling; the other in the lateral region with discontinuity and serosanguineous secretion. The wounds worsened, with the risk of amputation. Treatment involved NPT starting on the 55th postoperative day. After 24 days of NPT, both wounds significantly improved, showing reduced secretion, wound edge approximation, and granulation tissue formation. Subsequent HBOT and specialized dressings were applied until complete wound healing. Ankle fractures require surgical management and antibiotic therapy. In cases of complications, NPT (using vacuum-assisted dressing) and HBOT (inhaling pure oxygen in a pressurized environment) are essential. These therapies enhance wound healing by promoting granulation tissue formation, reducing secretion, and improving blood supply, highlighting their significance in managing complex ankle fractures.

Conclusion: The use of NPT significantly aided in this case by eliminating infection and reducing bleeding, leading to wound edge approximation. This underscores its effectiveness in postoperative osteosynthesis wounds following trauma.

EP511 Use of hyperbaric oxygen therapy for diabetic ulcers after surgical correction of congenital clubfoot: case report

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Aim: To report the use of Hyperbaric Oxygen Therapy (HBOT) in the treatment of diabetic ulcers after Congenital Clubfoot (CCF) correction.

Method: This case report was made through review of medical records and photographs during treatment. The study was carried out with patient consent.

Results/Discussion: A 41-year-old male patient with hypertension, diabetes, and congenital clubfoot (CCF) history, was treated for a diabetic ulcer on his left Achilles tendon. The wound, resulting from Achilles tendon surgery, exhibited necrosis, pain, heat, and drainage of foul-smelling pyosanguinous secretion. Treatment included tenorrhaphy, HBOT at 2.5 ATA for 8 sessions, and special dressings. HBOT significantly improved wound appearance, reduced secretion, promoted granulation, and defined wound edges. Post-hospital discharge, outpatient follow-up with dressings continued. Within a month, the lesion almost healed, showing reduced drainage and inflammation. CCF, a congenital foot deformity, can be corrected with orthoses, physical therapy, or surgery. Surgical correction in diabetic patients poses a risk of developing ulcers due to neuropathy and vascular issues. HBOT, involving pure oxygen under pressure, accelerates healing by stimulating new blood vessels, enhancing tissue oxygenation, and offering anti-inflammatory and bactericidal effects, making it valuable for treating diabetic ulcers in surgical wounds.

Conclusion: The study concludes that HBOT likely enhanced the reported injury's healing process by improving tissue oxygenation, stimulating angiogenesis, and reducing inflammation. This highlights the crucial role of specialized wound monitoring in the treatment of diabetic ulcers.

EP512 Use of hyperbaric oxygen therapy in the treatment of postoperative foot fracture infection: case report

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Aim: To report the case of a patient who underwent Hyperbaric Oxygen Therapy (HBOT) in the treatment of postoperative infection following foot trauma.

Method: This study used medical records and photographs of the treatment and was carried out with patient consent.

Results/Discussion: A 43-year-old male patient, injured in a car accident, suffered a right foot fracture and injury to the right lateral malleolus, leading to suture dehiscence after repair surgery. Upon assessment by an advanced wound treatment team, he exhibited a back lesion with delimited, fragile edges, sloughs, and necrosis, exposing granulation tissue and biofilm, draining a serosanguinous exudate with characteristic odor. The right lateral malleolus lesion showed necrotic tissue, peripheral granulation, and reddish-brown exudation. HBOT was administered in 15 sessions at 2.5 ATA over 30 days. After treatment, the wounds significantly improved with edge approximation, reduced secretion, and inflammation. Automobile accidents are a leading cause of foot fractures, requiring thorough cleaning, fracture reduction, and fixation for proper healing. HBOT is effective in the treatment of post-surgical infections in trauma, involving the inhalation of pure oxygen in a pressurized environment. This increases tissue oxygenation, stimulates the formation of new blood vessels, reduces inflammation and controls infections. This approach accelerates healing and significantly improves recovery from traumatic surgical wounds.

Conclusion: The study concludes that HBOT likely contributed to the positive outcome of the reported case by enhancing oxygen supply, promoting angiogenesis, reducing inflammation, and controlling infection. This highlights the significance of advanced wound monitoring in post-operative trauma care.

EP513 Prevention of lesion in diabetic feet, with vectorized bioactive moisturizer in the glicemic self-monitoring programa, in the city of são paulo

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Aim: Diabetic foot is the most common complication of type 2 diabetes mellitus (DM2), estimated that 20 to 25% will have foot ulcers, culminating in 85% of amputations. In 2021, 6,982 amputations due to diabetes occurred in the Unified Health System (SUS). In 2022, 10,168 amputations, 3.9% higher than the previous year. Studies indicate costs of US\$ 2.1 billion/year, considering direct/ indirect expenses, which could reach US\$ 5.47 billion in 2030. Lack of foot care, with excessive dryness of the skin, can lead injuries. Glycemic Self-Monitoring Program (PAMG), in the City of São Paulo, provides 125,000 diabetic patients with supplies and medications every month, representing 70% the insulin distributed. Describe distribution of moisturizing cream with vectorized bioactives to prevent diabetic foot injuries, through PAMG, from the City of São Paulo.

Method: Descriptive report of the program implemented in 2023, in the City of São Paulo, promoting the prevention of injuries in diabetic feet. Through the program, a survey was carried out of patients who use inputs and medicines, with 3% of these expected to be at high risk of injuries to the lower limbs. After clinical evaluation, having met pre-established criteria, the product is delivered to the patient. Product promotes increased skin permeation, high hydration, acting on lipid replacement, preventing transepidermal water loss.

Results/Discussion: The distribution of the moisturizer reached 3.12% of diabetic patients (40,000/unit/month).

Conclusion: The implementation of the moisturizing cream with nanovectorized bioactives by PAMG, sensitized patients and professionals to prevent injuries, promoting foot care

EP514 Use of negative pressure therapy and hyperbaric oxygen therapy in necrotizing fasciitis: case report

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Aim: To report the use of Hyperbaric Oxygen Therapy (HBOT) in the treatment of Necrotizing Fasciitis (NF)

Method: This case report was made through review of medical records and photographs during treatment. The study was carried out with patient consent.

Results/Discussion: Male patient, 66 years old, hypertensive, and insulin-dependent diabetic with a history of previous pancreatectomy and non-dialytic chronic kidney disease, was admitted to the hospital due to extensive necrotizing fasciitis from the posterior thigh to the right calcaneus. The lesion exhibited exposure of muscles, tendons, and bones, with detached, weakened, and irregular edges, accompanied by granulating tissue and abundant serosanguinous exudate. NPT and HBOT was prescribed to aid wound recovery, in addition to appropriate local wound care, strict glycemic control, and frequent monitoring by a multidisciplinary team including specialists in surgery, endocrinology, and wound care nursing. The prognosis depends on the response to treatment and effective diabetes management. Careful assessment of the wound's progress is essential to adjust the therapeutic plan as needed. TPN was performed for approximately 2 months and HBOT for approximately 6 months since admission. HBOT was interrupted due to the good evolution of the lesion, followed by special dressings and clinical care.

Conclusion: This case indicates that HBOT likely played a crucial role in the positive outcome of Necrotizing Fasciitis by improving oxygen delivery, promoting the growth of new blood vessels, reducing inflammation, and managing infection. Furthermore, it demonstrates the importance of multidisciplinary monitoring in cases of complex wounds.

EP515 Use of dense foam sclerotherapy in venous ulcers: case report

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Aim: To report the use of dense foam sclerotherapy in the treatment of venous ulcers of the lower limbs.

Method: This case report was made through review of medical records and photographs during treatment. The study was carried out with patient consent.

Results/Discussion: A 64-year-old obese woman presented with bilateral leg ulcers for around 30 years, notable for their circumferential nature, irregular edges, granulated base, and yellowish exudate. The left ulcer exhibited diffuse fibrin islands, a foul odor, poorly defined, slightly keratotic edges, and an edematous, dehydrated, fragile, and desquamative perilesional area. The smaller right ulcer displayed similar characteristics, including irregular edges, a granulated base, and excessive yellowish/greenish exudate. Despite home dressings, both ulcers persisted, showing keratotic features. A Doppler ultrasound demonstrated reflux and dilation of the saphenous veins. Sclerotherapy with dense polidocanol foam was administered, resulting in partial ulcer improvement. The procedure, involving the direct injection of dense foam into affected veins, successfully reduced pressure and enhanced blood flow in the ulcerated areas. This intervention significantly contributed to the ulcers' improvement, indicating a positive response to the treatment.

Conclusion: This case highlights the crucial role of sclerotherapy in healing venous ulcers. The procedure induces inflammation, causing damaged veins to close and redirect blood flow, known as sclerosis. This reduces pressure, improves circulation, accelerates healing, minimizes swelling, and promotes skin tissue regeneration, leading to positive outcomes for venous ulcers.

EP516 Use of negative pressure wound therapy in diabetic foot: case report

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Aim: To report the use of Negative Pressure Wound Therapy (NPWT) in the treatment of Diabetic Foot (DF).

Method: This case report was made through review of medical records and photographs during treatment. The study was carried out with patient consent.

Results/Discussion: A 63-year-old elderly patient with a history of hypertension, diabetes, and diabetic ulcer on the right foot was admitted due to extensive gangrene in the right heel with exposed bone. He underwent surgery for wound debridement and drainage of an infected collection. After the procedure, good local perfusion was observed, suggesting the possibility of limb salvage. The wound had serosanguinous discharge and a large area of exposed calcaneus. After approximately 1 month of special dressings, NPWT was initiated, leading to significant improvement. NPWT is an effective approach in DF ulcer treatment, involving the application of controlled negative pressure to the wound, facilitating fluid removal and stimulating healing. In the context of DF, this therapy enhances local blood perfusion, reduces inflammation, and accelerates granulation tissue formation, promoting ulcer healing. Additionally, it can be combined with other treatments to optimize outcomes and preserve diabetic patient's limbs.

Conclusion: In summary, this case report emphasizes the effectiveness of NPWT for DF treatment and led to substantial improvements in the patient, reducing the ulcerated area, improving local blood flow, and speeding up the healing process. This highlights NPWT as a crucial tool in treating DF ulcers, providing not only faster healing but also preserving limbs and enhancing patients' quality of life.

EP517 Treatment of second-degree burns with bacterial cellulose membrane

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Aim: The Brazilian Society of Plastic Surgery defines Burns as “injuries to organic tissues resulting from trauma of thermal origin resulting from exposure or contact with flames, hot liquids, hot surfaces, electricity, cold, chemical substances, radiation, friction or friction”¹. The incidence in children and adolescents represents the 4th cause of death and hospitalizations in Brazil, with the most common cause being scald burns. As for the extent, they are identified according to the percentage of affected body area, “burned body surface (SCQ)”.

Method: D.J.B, 07 years old, male, victim of hand burn, 1% burned area (SCQ) due to alcohol on 03/26/23. Assessed on 03/31/23 by the stomotherapist; previous use silver sulfadiazine, without improvement. On 03/31/23, wound bed was cleaned with Phmb solution and mechanical debridement of crusts and ruptured blisters; Bacterial cellulose membrane was applied, covered with gauze and tubular mesh. On 04/03/23, cleaning was carried out with Phmb solution and a new membrane was applied. Complete epithelialization on 04/13/23

Results/Discussion: Treating children with burns requires specialized care; The tissue repair and epithelialization process can take a long time, bringing risks of local infection. The therapeutic choice must be careful, based on the characteristics of the wound, presence of infection, ensuring continuity of treatment,

Conclusion: The proposed therapy reduced treatment time and costs, respectively, to 14 days; with reduction of pain, effectiveness in stimulating angiogenesis, complete healing, highlighting the appearance of the epithelialized tissue. We found a reduction in dressing costs, using 2 cellulose membranes during treatment.

EP518 Report of the experience using negative pressure therapy in pressure injury on an elderly individual using a wheelchair

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Aim: Pressure injuries pose a contemporary public health challenge, especially in patients who are no longer hospitalized. Chronic wounds affect the quality of life and also contribute to complications related to preventable factors. The transfer of healthcare knowledge to lay family caregivers highlights an extra-hospital challenge for the prevention and control of pressure injuries. The question arises about how risk factors are managed and how health education could be enhanced.

Method: This is a descriptive study of experience report

Results/Discussion: The objective is to analyze the quality of care in the management of pressure injuries, promoting the best clinical practices, superior to conventional therapies with nursing specialized in stomatherapy in a nursing office in Rio de Janeiro, Brazil, in 2023. 60-year-old male patient, retired, suffering from spinal cord trauma 25 years ago. With a limited support network, age and wheelchair exposure increase the risk of pressure injuries. Upon examining the patient, a stage IV pressure injury was revealed in the ischial tuberosity region measuring 10 x 2.5cm, where negative pressure therapy was indicated.

Conclusion: Elderly care highlights the need to support family caregivers on the opportunity to intervene in health education in the face of limited knowledge about wound management and prevention in the post-hospital discharge period. It is necessary to combat preventive weaknesses and support family caregivers in the face of the appearance and complications of skin lesions.

EP519 The felted padding associated with tlc-nosf healing matrix for the management of diabetic foot ulcer: a case series

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Aim: Pressure redistribution and local ulcer care are essential principles for Diabetic foot ulcer (DFU) healing. Reducing mechanical stress by offloading on the region that undergoes high-pressure levels is associated with reducing the healing time. The felted padding is recommended as an offloading alternative, however, with a limited level of evidence (3). This case series report aims to describe the results using felted padding associated with TLC-NOSF healing matrix on the healing of DFU.

Method: Three male patients with neuroischemic DFU confirmed by ankle brachial index, and neuropathy confirmed by monofilament agreed to participate in this case series. The location of the ulcer was on the hallux, calcaneus and metatarsus. The usual wound care was performed; followed by the application of the TLC-NOSF healing matrix on the wound surface and the 10mm felted padding fixed on the post-op shoe. The foam was cut according to the location and shape of the DFU. Patients were treated once a week for a maximum of 12 weeks. The clinical examinations were performed with the SINBAD classification score.

Results/Discussion: One patient with ulcer on calcaneus showed a 30% reduction in wound surface and wounds healed completely in the two other patients.

Conclusion: Adding innovative advanced wound care technology with appropriate offloading, especially when the gold standard of offloading is not available or not tolerated by the patient, presents beneficial results. This case series shows that the felted padding associated with the TLC-NOSF healing matrix is potentially effectively on DFU healing.

EP520 Third-degree burn from foot scald in a patient with diabetes mellitus: a case report

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Aim: Insensitive feet by the Symmetrical polyneuropathy are susceptible to accidents and burns (1). Most burns in people with DM occur in the home, mainly due to the use of hot water (2). The severity of the burn associated with changes in immunity, vascular and glycemic levels, delay the healing process; it is an important risk factor for infection and amputations (3). This aims to report the case of a type 2 Diabetes Mellitus male patient with a loss of protective sensation, who suffered a third-degree burn on the right foot after scalding.

Method: A 53-year-old male patient, long-standing type 2 Diabetes and peripheral neuropathy confirmed by monofilament was attended in an outpatient clinic with 3rd degree burn on the toes of the right foot. Necrotic tissue was present, topical treatment was performed twice a week with appropriate wound care: cleansing, instrumental debridement, and dressings for each phase of the healing process. Firstly, we applied nanocrystalline silver dressing for one month focusing on the bacterial burden control and facilitating the wound debridement, until the granulation formation. When the health granulation tissue was observed, a non-adhering dressing was used for wound protection until the healing.

Results/Discussion: Two months later, the patient achieved the complete healing of the burn and limb preservation.

Conclusion: The present case study can alert and sensitize the health team regarding the prevention of burns, whose severity stands out in people with DM. The specialized and reference care service is essential for the positive outcome achieved.

EP521 Use of a biosynthetic membrane as a strategy to optimize epithelialization in hard-to-heal wounds: an experience report

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Aim: To report on the use of a biosynthetic membrane in stagnant wounds in the cell proliferation phase.

Method: Observational, descriptive, cross-sectional case report.

Results/Discussion: Case 1: 36-year-old victim of a motorcycle accident, with an extensive lesion, in the anterior region of the leg, with major tissue loss, detached edges and local signs of infection. After 6 months of treatment with traditional dressings, an 80% reduction in the total area was observed, but the lesion showed dystrophic, stagnant healing, with non-contracting edges, a hypergranulated bed and friable tissue. In the 7th month of treatment, the biological membrane was used. In the following two months, realignment of the granulation tissue and total epithelialization of the lesion were observed.

Case 2: 76-year-old victim of minor domestic trauma, which caused loss of skin integrity in the anterior region of the leg, superficial depth, adhered edges, with signs of local infection. At the 4th month of treatment, the lesion had granulation tissue and edges without contraction. For this reason, the biological membrane was chosen as the primary cover. Within 8 days, the lesion had completely closed, with total epithelialization. The wounds had a common characteristic: granulation tissue was formed, but the edges were far apart and there was no contraction.

Conclusion: the use of the biosynthetic membrane accelerated the healing process, bringing the margins closer together, reducing the size of the lesion, providing total healing of the stagnant wounds, and improving the patient's quality of life.

Images:



EP522 Use of low-level laser (light) therapy in the treatment of traumatic PAF injury to the face: an experience report from a teaching hospital in the interior of the state of Pernambuco, Brazil

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Aim: To report the experience of applying low-intensity laser therapy in the treatment of a complex facial injury in a patient who had suffered trauma caused by a firearm projectile (FAP).

Method: A descriptive study based on an experience report, developed by the Surgical Nursing Residency Program, with a view to supporting the proposal to implement new technologies in the public health service. The device used emits red and infrared laser light for anti-inflammatory, healing and analgesic purposes.

Results/Discussion: The patient was admitted to the emergency department with a traumatic injury to the face caused by a 12mm shot, in serious general condition, and was referred to the operating room, where he underwent a tracheostomy, reconstruction of the facial tissues, debridement of necrotic tissues and bone regularization of the mandible, maxilla and nose. In the immediate post-operative period, the wound developed signs of infection, dehiscence and fistula formation. On the 5th day, low-intensity laser therapy was applied with a 48-hour interval between sessions, as well as photodynamic therapy (PDT), using a photosensitizing agent (methylene blue). On the 33rd day, a microvascularized musculocutaneous flap was autotransplanted from the right thigh to the right buccal and cervical region. Laser therapy was maintained until the lesion was completely closed.

Conclusion: Tissue repair of an epithelialized graft was observed over a 30-day period using laser therapy and appropriate coverings for each stage of the wound's evolution.

Images:



EP523 Effect of heated saline solution on wound bed temperature during dressings changes in Leg Ulcers: crossover randomized clinical trial

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Aim: To evaluate the effect of heated saline solution used during wound cleaning on the temperature of the wound bed.

Method: This is a randomized crossover clinical trial, with 32 people with leg ulcers. The patients were allocated into two groups, submitted to the same treatment, in alternating orders. Group A (heated solution: 39.8± 0.6°C)/ B (room temperature 27.1±1.1°C), and Group B/A. The washout period between interventions was 10 minutes. The temperature of the wound bed was checked with an infrared thermometer in four moments: after removing the dressing and before the interventions; after cleaning with the saline solution at the first temperature according to the crossing order; after washout period and after cleaning with the saline solution at the second temperature according to the crossing order.

Results/Discussion: The average temperature of the wound bed before interventions was 35,5. In the intragroup analysis, the mean wound bed temperature after interventions was higher in the B/A group and lower in the A/B group, with an increase of 0.5°C and a decrease of 0.7°C. No statistically significant differences were found between treatments A and B, when we compared the baseline and post-intervention values. The isolated effect of the interventions showed no statistically significant difference in the mean temperature of the wound bed.

Conclusion: When using the heated solution, the temperature of the wound bed rose on average by only 0.5°C. It was evident that cleaning with saline at room temperature did not significantly reduce the temperature of the wound bed.

EP524 Fournier syndrome

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Aim: To describe the process of treating Fournier's Syndrome in a patient with Type 2 Diabetes Mellitus using advanced technologies.

Method: Descriptive study, case report, June 23 to September 5, 2022 in the city of São Paulo, Brazil, in a state hospital.

Results/Discussion: G.D.S, 61 years old, male, undergoing treatment for type 2 diabetes mellitus, systemic arterial hypertension, non-dialysis chronic renal failure and heart disease. He was admitted to the Hospital with a diagnosis of Fournier's Syndrome, and surgical cleaning was performed by the General Surgery Team, where he began treatment with Stomatherapy from June 23 to September 5, 2022, with advanced dressing changes every 48 hours at first and then twice a week.



Conclusion: The use of advanced technologies has helped in the treatment of Fournier's Syndrome in patients with Type 2 Diabetes Mellitus.

EP525 Use of negative pressure wound therapy in diabetic foot amputation: case report

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Aim: Foot injuries in people with diabetes are a recurrent cause of amputation worldwide. The healing time influences the patient's quality of life, return to their daily activities, and the risk of infection while the wound is open. With these factors in mind, it is necessary to develop therapies that make it possible to accelerate the healing process.

Method: This is a descriptive case study in a private institution in Cabo Frio, Rio de Janeiro, Brazil. A patient with type 2 diabetes underwent Lisfranc amputation, and treatment with negative pressure wound therapy was indicated to accelerate the healing process.

Results/Discussion: It is well known that there is a delay in the healing process in patients with diabetes. Negative pressure wound therapy is an alternative to accelerate the healing process, returning the individual to their activities faster, reducing the risk of reinfection.

Conclusion: In conclusion, this case report highlights the efficacy of negative pressure wound therapy in the management of diabetic foot amputations. The results obtained show not only an accelerated healing, but also a significant improvement in the patient's quality of life. This study strengthens the relevance and potential positive impact of negative pressure therapy as a valuable approach in the care of complex wounds such as the context of diabetic foot

EP526 A healthcare professional's experience on the use of poly-absorbent dressing with tlc-ag for burn injury treatment

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Aim: To describe the health professional's perception regarding healing and reduction of signs of infection using poly-absorbent dressings with TLC-Ag technology for burns and the cost-effectiveness for wound treatment

Method: Report of a nurse's experience on the use of poly-absorbent dressings with TLC-Ag technology in the treatment of burns caused by electric shock and the costs related to treatment for 31 days with tissue improvement for grafting. A 32-year-old male patient suffered an electric shock accident on May 18, 2023, causing a third-degree burn with 18% extension. The wound presented tendon exposure, high risk of infection and high volume of exudate. For the clinical case, the nurse calculated the cost related to the technology used to prepare the wound to receive the graft

Results: During the 31 days of treatment, the dressing provided atraumatic and painless changes, promoting acceptance of the dressing and wound healing, maintaining an ideal moist environment for the growth of granulation tissue in the exposed muscle and tendon. The use of the dressing provided a reduction in signs of infection due to complete cleaning and management of exudate. After the second week, treatment costs decreased by 70% thanks to the maintenance of the dressing

Conclusion: These results corroborate the cleaning properties, infection reduction, healing capacity and safety profile of the dressing with poly-absorbent fibers with TLC-Ag technology in the management of burns and the cost-benefit related to the treatment

EP527 Application of photodynamic therapy associated with hydrofiber

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Aim: To verify the efficiency of Photodynamic Therapy (PDT) associated with hydrofiber in exudative lesions.

Method: Case study carried out in the period of January-August 2023, in Santos, Brazil, with two male patients, the study compared TFD alone and associated with hydrofiber, applied to the Free and Informed Consent Form (ICF). The contextualization of the study was through the Capes and Scielo Periodicals database, in the period from 2021-2023. Inclusion criteria: studies related to PDT and healing with hydrofiber, patients with exudative venous ulcers. Exclusion criteria: arterial, mixed and dry lesions. Keywords: Photodynamic Therapy, Venous Ulcer, Treatment Procedure.

Results/Discussion: Result / Discussion: Photodynamic therapy consists of the method of photosensitization, associated with light and chromophore (methylene blue), which induces cell death by oxidative stress (Oliveira, 2023). The effectiveness of the therapy depends on the use of light dosage to activate the chemical/physical process, including factors such as adequate temperature and humidity and bacterial load. The absorptive dressing (hydrofiber) contributes to the accelerated healing process (Oliveira, 2023; Andrade, 2023). During the study, there was a 2-month reduction in the period of illness when using PDT associated with hydrofiber in ulcers, compared to the exclusive use of PDT. During the treatment, the clients received guidance related to lifestyle changes and care with the dressing, which was performed twice a week.

Conclusion: The study observed the importance of hydrofiber associated with PDT, as it established the reduction of microorganisms, adequate temperature, humidity control, fibroblast proliferation, acceleration of tissue repair and healing.

EP528 Management of difficult-to-heal wounds with polyabsorbent cohesive fibers impregnated with a silver lipid colloid healing matrix

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Aim: To evaluate the results of treating hard-to-heal wounds with cohesive polyabsorbent fibers impregnated with a silver lipid-colloid healing matrix.

Method: This is a descriptive study based on the experience of managing three clinical cases of difficult-to-heal wounds with different etiologies. After obtaining consent, the evolution of the wounds was monitored using photographs.

Common characteristics: elderly, aged between 70 and 80, all lesions had devitalized tissue on the bed, hyperemic edges, moderate to abundant exudate and intense local pain).

1st - diagnosis of severe peripheral arterial disease, with a stagnant ulcerated lesion on the back of the ankle.

2nd - diagnosed with skin cancer on the face, undergoing chemotherapy, debilitated, presenting a malignant neoplastic wound on hemiface E, with no prognosis of cure.

3rd - diagnosis of necrotizing fasciitis in leg E and chronic venous insufficiency, presenting with an extensive lesion with signs of local infection.

Results/Discussion: The action of the antimicrobial dressing made up of Polyabsorbent Fibers and TLC-Ag Healing Matrix promotes complete cleansing action, with removal of scabs, antibiofilm action and combating infection with broad-spectrum antimicrobial action. Excellent progress was observed in all hard-to-heal wounds, with complete epithelialization between 12 and 18 weeks, and pain reduction in all cases.

Conclusion: The results obtained in this series of cases showed a reduction in signs of infection and an acceleration of the healing process in lesions that are difficult to manage and heal.

Images:

1st



2nd

Month 1



Month 2



Month 3



3rd



EP529 Treatment of post-abdominoplasty surgical dehiscence with negative pressure therapy: an experience report

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Aim: This is an experience report detailing a complication of aesthetic plastic surgery in an overweight female patient who required the use of NPWT in the treatment of surgical dehiscence after abdominoplasty, with specific emphasis on understanding postoperative complications

Method: Treatment of post-abdominoplasty surgical dehiscence with negative pressure therapy: an experience report.

Results/Discussion: A patient with a body mass index of 29.1 kg/m² (overweight) underwent plastic surgery and after 21 days, coagulation necrosis occurred at the site of the surgical incision, requiring surgical debridement. The wound evolved into purulent exudate, macerated edges, tissue liquefaction, leading to two surgical debridements. NPWT therapy was initiated to promote granulation, remove exudate, contract wound edges, and accelerate the healing process.

The closure of the dehiscence measuring 6 cm in diameter had a satisfactory outcome in 60 days with healing by third intention. Reflections regarding nutritional re-education and the use of NPWT in the immediate post-operative period could have prevented this type of complication.

Conclusion: We highlight the growing trend of women opting for invasive procedures to improve self-image and self-esteem, even if sometimes neglecting associated risks. It highlights the importance of a holistic approach by multidisciplinary teams, addressing not only aesthetic concerns but also the general well-being of patients. Psychological and supportive interventions play a vital role in a comprehensive postoperative care strategy following cosmetic surgical procedures.

EP530 Perception of the stomatherapist nurse faced with the challenge of using negative pressure therapy in pressure injuries in an elderly wheelchair-wheeling patient in a nursing office

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Aim: Negative pressure therapy (NPWT) is gaining prominence as an effective intervention in promoting healing. Patients with pressure injuries are at greater risk of local complications. This therapy has become an important and effective tool in the fight against complex wounds, as it acts topically with a low rate of complications, provides greater comfort for the patient and multidisciplinary team, in addition to reducing hospitalization time, dressing changes and the use of antibiotics.

Method: This is a descriptive, exploratory and explanatory study of the experience report type. After nursing consultation, the treatment system used was NPWT, with emphasis on its mechanisms of action and main therapeutic indications.

Results/Discussion: 60-year-old male patient, retired, suffering from spinal cord trauma 25 years ago. A nursing consultation revealed a stage IV pressure injury in the ischial tuberosity region measuring 10 cm in depth and 2.5 cm in width, where NPWT was indicated. The scientific literature has highlighted several advantages in using NPWT in different types of wounds. The objective is to analyze the quality of care in the management of injuries of this magnitude, promoting best clinical practices, despite the costs and low cure rate associated with conventional therapies.

Conclusion: NPWT has demonstrated the stimulation and formation of infection-free scar tissue in a short time and is an excellent, fast and efficient alternative to conventional wound care methods.

EP531 The Impact of Stem Cell Therapy (One Step Technique) after severe foot crush injury

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Aim: The case concerns of a serious crushing injury of the left foot of a 57-year-old man, after blunt injuries to the dorsum of the foot and the first 3 toes. First, the patient underwent an orthopedic surgical approach, however without success, as the fractures were comminuted, with no possibility of fixation.

Method: The foot developed phlebotoma and tissue necrosis of the entire forefoot and the 3 affected toes. The ischemia was severe, but the patient had palpable dorsalis pedis and posterior tibial pulses.

Results/Discussion: Then, we proceeded with extensive and meticulous debridement. All devitalized and infected tissues were resected. The distal phalanx of the hallux was resected due to tissue unviability and bone destruction. After adequate preparation of the tissue bed (foot), we proceeded to prepare the mesenchymal cell donor (adipose tissue on the medial side of the right thigh).

We saw the right internal saphenous vein in the thigh using ultrasound to avoid venous injury. Next, we introduce the 1210 nm laser through a cannula into the donor bed and, after irradiation, we began the liposuction itself. With the lipoaspirated material in the tubes, we sent it to the centrifuge (2 centrifugation phases) and in this way we were able to get the stromal vascular fraction. With this material in hand, we inject it into the entire lesion, the edges and raw areas and finish covering it with dermal matrix.

Conclusion: This case demonstrates that regenerative medicine is essential in controlling damage and recovering limb viability.

EP532 Antimicrobial in the treatment of insect bite injuries

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Aim: Insects are a numerous class in the animal kingdom and it is inevitable that humans do not have contact with the class of insects and some insect bites end up causing humans to have wounds. Insect bites can be a means of spreading diseases, causing symptoms ranging from simple skin injuries to serious reactions. Substances in insect saliva can trigger an allergic reaction in the skin, leading to breakdown of skin tissue and large wounds. To report the experience of using the antimicrobial dialkyl carbamoyl chloride in the treatment of insect bite injuries.

Method: Descriptive study, case report carried out under home monitoring. Male patient, 44 years old, Unidentified Insect Bite Injury. Previous oral antibiotic therapy was used. Start of treatment 06/06/2023.

Results/Discussion: The choice of therapy was due to the presence of phlogistic signs, necrosis and local infection; non-cytotoxic coating. Cost-benefit of the product, using only 3 units of coverage. The proposed treatment promoted autolytic debridement, stimulated angiogenesis, maintained a humid environment, bactericidal action, without contraindications.

Conclusion: Treatment performed on the patient promoted rapid healing, combating local infection, with total reepithelialisation in 30 days.

EP533 Second degree burns on breasts treated with cellulose membrane associated with restructuring cream

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Aim: Burns are injuries to organic tissues, caused by thermal, chemical, radiation, electrical and freezing origins¹; they can be caused by direct flame, scald, contact with a heated surface, exposure to smoke and electric current^{2,3}. These injuries can generate partial/total destruction of the skin and appendages, reaching deeper layers. Classified in degrees according to depth (first, second or third degree), extent of body surface reached^{4,5}. To report the experience of using a cellulose membrane associated with a restructuring cream with bioactive, in the treatment of second-degree burns.

Method: Descriptive study, case report, in a home environment. Female patient, 18 years old, second-degree burn on her breasts, caused by a car accident and friction on the asphalt. On 10/23/21, intense pain, breasts with crusts and ruptured blisters, using silver-based ointment, without satisfactory evolution. Cleaning with 0.9% SF, restructuring cream and cellulose membrane. On 11/02/21 epithelialized.

Results/Discussion: The treatment promoted pain reduction, autolytic debridement, stimulation of angiogenesis, tissue repair and total epithelialization, in 9 days.

The cellulose membrane combined with the restructuring cream with bioactive protects nerve endings, reducing pain, controlling humidity and temperature in the wound bed, favoring the healing process, in addition to the natural

active ingredients that favor autolytic debridement, stimulating angiogenesis, maintenance of a moist environment, bactericidal action, fungicidal action and no contraindications.

Conclusion: The combined therapy of cellulose membrane and restructuring cream with bioactive proved to be effective, promoting total epithelialization of the lesion.

EP534 Management of the stomatherapist in the injuries arterial, with the use of restructuring cream with biotecnology: case report

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Aim: Peripheral artery disease is caused, in most cases, by atherosclerosis, which leads to the development of stenosis and occlusions in arteries impairing circulation in the lower limbs.

Method: A descriptive and explanatory study in the form of an experience report. It was performed at home in an elderly patient with arthropathy in the foot with complex lesions between the toes. Receiving non-specialized treatment with therapeutic use and daily dressings with 0.9% saline solution, application of dermatological cream and occlusion with gauze and bandaging.

Results/Discussion: Evaluation by a stomatherapist and previous therapeutic approach was modified. Treatment with topical use of restructuring cream with non-selective biotechnology (composition: malaleuca oil, aloe vera glycolic extract, fermented papaya extract and EDTA in infected lesions of toes due to vascular complication. The patient was submitted to dressings with advanced support: cleaning with phmb and a thin layer of non-restructuring cream, associated with a non-adherent secondary dressing. During the treatment, it was possible to observe its autolytic action, with a decrease in the devitalized tissue due to its bactericidal power, where the appearance of granulation and epithelialization tissue was effective, as well as a decrease in exudate and pain during and after the changes procedure.

Conclusion: In patients with compromised arterial disease, the lesions are severe and may progress to amputation due to lack of circulation. In this case, it was possible to offer an effective therapy with no pain and tissue recovery. due to the specialist's management and use of biotechnology products.

EP535 Application of gel and fluid composed of andiroba oil, neem, melaleuca, fermented glycolic extract of papaya and sugar cane, rosemary, aloe vera and hyaluronic acid in the treatment of oncological injury

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Aim: To report the efficiency of treatment with gel and fluid composed of Andiroba oil, Neem, Melaleuca, fermented glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid as antiseptics and debriders in the treatment of oncological lesions.

Method: This is an experience report. Followed the case through photography. Study carried out in a private wound treatment clinic in Salvador- BA, from May 2, 2023 to May 28, 2023. Respecting the ethical aspects of research involving human beings - Resolution No. 196/96 of the National Research Congress.

Results/Discussion: Patient A.R.C., male, 90 years old, diagnosed with an oncological lesion in the right thumb. The patient had used other technologies for eighteen months, without success. Irrigation was carried out with the fluid and a gel composed of Andiroba, Neem, Melaleuca oil, fermented glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid was applied, with changes every 48 hours.

Figure A: lesion with presence of liquefaction necrosis, exudate and ischemia (05/02/23), figure

B: reduction of liquefaction necrosis, presence of granulated tissue and contraction of edges (05/10/23), figure C: contraction of the lesion and granulated tissue (19/05/23), figure D: remodeled tissue (28/05/2023).

Conclusion: The efficiency of treating oncological lesions with the use of gel and fluid composed of oil can be seen Andiroba, Neem, Melaleuca, glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid, as debriders and antiseptics.

EP536 Application of a cream composed of neem seed oil, melaleuca, carica papaya extract and hyaluronic acid in treatment of second-degree burns: case report

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Aim: The cream composed of Neem seed oil, Melaleuca, Carica Papaya extract and Hyaluronic Acid stimulates the skin regeneration process, promotes normalization of the color of the remodeled tissue, has anti-inflammatory, analgesic, antifungal and antibacterial action.

Method: To report the efficiency of treatment with a cream composed of Neem seed oil, Melaleuca, Carica Papaya extract and Hyaluronic Acid in the treatment of second-degree burns. **Method:** this is an experience report. Followed the case through photography. Study carried out in a private wound treatment clinic in Salvador- BA, from May 28, 2023 to June 8, 2023. Respecting the ethical aspects of research involving human beings - Resolution nº 196/96 of the National Research Congress.

Results/Discussion: Patient C.H.C.P., male, 50 years old, diagnosed with a second-degree burn on the right forearm. Patient complained of pain at the site of the injury. Irrigation was performed with 0.9% saline solution and a cream composed of Neem seed oil, Melaleuca, Carica Papaya extract and Hyaluronic Acid with changes every 48 hours. Figure A: wound with the presence of blisters with purulent exudate (28/05/23), figure B: wound without blisters and with the presence of granulated tissue (31/05/23), figure C: presence of remodeled areas and granulated tissue (06/08/23), figure D: epithelialized and scar-free tissue (15/02/23).

Conclusion: The efficiency of treating second-degree burns using a cream composed of Neem seed oil can be seen, Melaleuca, Carica Papaya extract and Hyaluronic Acid, in the healing process, combating wound infection and reducing pain.

EP537 Application of a gel composed of andiroba oil, neem, melaleuca, fermented glycolic extract of papaya, rosemary, aloe vera and hyaluronic acid in the treatment of pressure injury: case report

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Aim: The gel composed of Andiroba oil, Neem, Melaleuca, fermented glycolic extract of papaya, Rosemary, Aloe Vera and Hyaluronic Acid promotes antiseptic action, autolytic debridement and tissue regeneration. Andiroba, Neem, Melaleuca, fermented glycolic extract of papaya, Rosemary, Aloe Vera and Hyaluronic Acid as antiseptic and debriding agent in the treatment of Pressure Injury.

Method: This is an experience report. The case was followed through photography. Study carried out in a private wound treatment clinic in Salvador- BA, from March 9, 2023 to April 28, 2023.

Respecting the ethical aspects of research involving human beings - Resolution No. 196/96 of the National Research Congress.

Results/Discussion: Patient E.O.S., female, 21 years old, diagnosed with pressure injury. Patient had used other technologies for six months, without success. Irrigation was carried out with 0.9% saline solution and a gel composed of Andiroba, Neem, Melaleuca oil, fermented glycolic extract of papaya, Rosemary, Aloe Vera and Hyaluronic Acid was applied, with changes every 48 hours.

Figure A: lesion with presence of liquefaction necrosis, exudate and foul odor (03/09/23), figure B: reduction of liquefaction necrosis, presence of granulated tissue and reduction of exudate (03/10/23), figure C: contraction of the lesion and reduction of necrosis, exudate and odor (20/03/23), figure D: remodeled tissue (28/04/2023).

Conclusion: The efficiency of the treatment of pressure injuries using gel composed with oil of Andiroba, Neem, Melaleuca, fermented glycolic extract of papaya, Rosemary, Aloe Vera and Hyaluronic Acid in autolytic debridement and antiseptics.

EP538 Application of gel and fluid composed of andiroba oil, neem, melaleuca, fermented glycolic extract of papaya and sugar cane, rosemary, aloe vera and hyaluronic acid in the treatment of oncological injury

Andrea Dutra¹

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Aim: to report the efficiency of treatment with gel and fluid composed of Andiroba oil, Neem, Melaleuca, fermented glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid as antiseptics and debriders in the treatment of oncological lesions.

Method: This is an experience report. Followed the case through photography. Study carried out in a private wound treatment clinic in Salvador- BA, from May 2, 2023 to May 28, 2023. Respecting the ethical aspects of research involving human beings - Resolution No. 196/96 of the National Research Congress.

Results/Discussion: Patient A.R.C., male, 90 years old, diagnosed with an oncological lesion in the right thumb. The patient had used other technologies for eighteen months, without success. Irrigation was carried out with the fluid and a gel composed of Andiroba, Neem, Melaleuca oil, fermented glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid was applied, with changes every 48 hours.



Figure A: lesion with presence of liquefaction necrosis, exudate and ischemia (05/02/23)



Figure B: reduction of liquefaction necrosis, presence of granulated tissue and contraction of edges (05/10/23)



Figure C: contraction of the lesion and granulated tissue (19/05/23)



Figure D: remodeled tissue (28/05/2023).

Conclusion: The efficiency of treating oncological lesions with the use of gel and fluid composed of oil can be seen Andiroba, Neem, Melaleuca, glycolic extract of papaya and sugar cane, Rosemary, Aloe Vera and Hyaluronic Acid, as debriders and antiseptics.

EP539 Advancements in wound care at a long-term care facility

Bernadette Mitchell-McDonald¹

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Aim: The purpose of this poster is to highlight the advancements in wound care at a long-term care facility spanning two sites with 641 beds.

Method: Initially, a two-month environmental scan revealed the use of multiple products with similar properties. There was a need for the staff to receive more training to ensure dependable and efficient care. Additionally, the nurses were working autonomously without collaborating with other members of the interdisciplinary team.

To address these challenges, an interdisciplinary was formed. They established a set of best practice guidelines, provided interdisciplinary education, and introduced a software program to streamline wound management across both campuses. Consequently, the number of wound care products was reduced from 337 to 39, making the process more efficient and effective.

Results/Discussion: The team successfully improved their procedures, focusing on prevention and proper product selection, resulting in a 1.9% prevalence rate and a 2% incidence rate of pressure injuries. The new program resulted in a change in the selection of products, leading to the use of appropriate and best practices-based products. This shift resulted in a 59% decrease in cost, leading to improved care delivery for the residents at both facilities.

Conclusion: The project has not only achieved its goal of improved outcomes, but it has also catalyzed a cultural transformation among the staff. The team has fostered a sense of pride and camaraderie in wound management and prevention. As a result of the initiative's success, it has expanded into a provincial-wide program.

EP540 Fifty shades of red fluorescence: What bacterial imaging of subsurface and periwound tissues can tell us

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¹MolecuLight, Inc., Toronto, Canada, ²Ceribell, Houston, United States, ³Madigan Army Medical Center, Tacoma, United States, ⁴St. Louis Foot & Ankle, St. Louis, United States

Aim: Red and cyan signals on fluorescence imaging* accurately detect and locate bacterial loads in and around the wound. Image interpretation is influenced by bacterial location which varies in depth (within the skin layers), and its distribution within tissue/wound types. This case series explores varying shades of red fluorescence and the impact of targeted treatments on the shades observed.

Method: In this multi-center 11-wound case series, images were examined for (1) nuances in red fluorescence shades, and (2) changes in locational and color tonality of red fluorescence in the wound bed/periwound after cleansing and/or debridement.

Results/Discussion: Shades of red fluorescence corresponded to varying depths at which bacterial loads were located within the wounds across different skin tones (bright red, red, blush, orange/yellow). Pre/post-interventional image analysis revealed significant changes in red fluorescence signals; eg, callus tissue around diabetic foot ulcers appeared blush red or yellow re-debridement, increasing in redness as layers of tissue were removed). The cases presented demonstrate how targeted hygiene/debridement can address bacterial loads, and the importance of periwound hygiene.

Conclusion: Understanding nuance in fluorescence signals is key to choosing the best therapeutic plan at the bedside. This study enlightens fluorescence imaging users on image interpretation nuances and approaches to fluorescence-guided treatments that support adequate and effective bacterial removal.

*MolecuLight

EP541 Using a novel polylactic acid dermal matrix for achieving closure and limb salvage in hard-to-heal diabetic wounds

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Aim: We present cases of hard-to-heal wounds where a polylactic acid (PLA) closure matrix led to full wound closure and limb salvage.

Method: Patients with hard-to-heal wounds received weekly applications of PLA matrices. These scaffolds enhance cellular growth, promote neo-vascularization, and modulate the inflammatory and acid-base environments.

Results/Discussion: Patient 1 was a 60-year-old male with diabetes, cardiovascular disease, and a foot ulcer secondary to abscess drainage with exposed bone and tendons. PLA matrices led to full closure without lost tendons and full foot function. Patient 2 was a 47-year-old type 1 diabetic with an open heel ulcer for the past 2 years. PLA matrices led to full closure after 7 weeks. Patient 3 is a 35-year-old female with diabetes, obesity, and an acute large plantar wound that closed after 9 weeks of treatment. Patient 4 is a 56-year-old male with a history of heavy smoking and Lyme disease who underwent a peroneal tendon repair. The wound experienced dehiscence and tendon exposure. PLA matrices were used to protect the tendons and promote wound healing in 15 weeks.

Conclusion: PLA closure matrices induce a robust healing response in hard-to-heal wounds. They can cover bone and tendon, maintaining tissue viability and promoting the deposition of granulation tissue on top of it. Furthermore, they can adapt a fibrous necrotic wound to a granular one that can support re-epithelization. The pH modulation of the wound bed environment reduces bacterial load and may prevent infections. Together, it helps preserve tissue integrity and avoid amputations.

EP542 Using a polylactic acid dermal matrix for achieving wound epithelization in patients with pyoderma gangrenosum

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¹Universidad Autonoma de San Luis Potosi, San Luis Potosi, Mexico, ²McGill University, Montreal, Canada

Aim: Here, we present our experience using a polylactic acid (PLA) membrane to promote the epithelization of pyoderma gangrenosum (PG) refractory wounds.

Method: Patients with PG wounds received PLA membranes designed to be used “as a second skin” for 14 days. These membranes have been demonstrated to enhance epithelial cell migration, promote neo-vascularization, and modulate the inflammatory and acid-base environments, thus leading to improved healing.

Results/Discussion: Patient 1 had two PG ulcers on the left leg for over 2 years. PLA membranes were applied, which formed a thin epithelial layer. A second application led to the full closure of both wounds. Patient 2 had a PG wound that, despite extensive treatment, proved very difficult to heal and had extensive scarring around it. However, after 3 rounds of PLA membranes, significant wound closure was achieved. Patient 3 had a PG ulcer for 9 months. After just one round of PLA matrix application, the wound was fully closed. In all cases, thermal imaging demonstrated a significant increase in the temperature of the wound area, which is highly suggestive of improved perfusion to its bed.

Conclusion: The use of PLA matrices as a skin barrier in PG wounds that have been cleaned and prepared for treatment is associated with robust epithelization. This effect can be explained by PLA's properties, which induce an anti-inflammatory, pro-angiogenic, and pH-stabilizing effect in the tissue. In the context of PG, this helps stabilize the wound's environment and promote ulcer healing.

EP543 A new negative pressure wound therapy pump: a case study reporting on the first global clinical evaluation

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Aim: This first ever use of a new traditional negative pressure wound therapy¹ (tNPWT) pump is presented as a case study to demonstrate the safe and effective use in the management of a non-healing wound.

Method: A 43-year-old male with limited mobility, presented with a non-healing stage 4 pressure ulcer (PU), right heel. Wound duration prior to specialist involvement was 4 weeks, sharp debridement of necrotic tissue performed to reveal full extent of tissue damage. Treated at a long-term care setting and received tNPWT¹ employed in conjunction with optimal wound care strategies, including holistic assessment, comprehensive patient empowerment and education.

Results/Discussion: Therapy spanned 12-weeks, wound measurements decreased with healthy granulation tissue, wound edge contraction and new epithelial tissue recorded. Improved quality of life factors were reported by the resident as: the device was quiet, lightweight, portable, has an extensive battery life, near-field communication (NFC) tag promoted and facilitated resident engagement in his own care, and a soft port attaching pump to dressing eliminated the need for bridging. Positive staff feedback included: simplified, twice-weekly dressing applications, enhanced by soft port attachment. Reported as generally user-friendly due to audible alarms, built-in tutorials for troubleshooting and NFC tag. Following 12 weeks of tNPWT using the pump, therapy transitioned to a single use negative pressure wound therapy system² (sNPWT) and total wound closure followed.

Conclusion: This new tNPWT pump assisted with total closure of a non-healing heel PU in conjunction with optimal wound care strategies. Resident and user experience exceeded expectation.

EP544 Optimizing the management of a longstanding VLU: A case report

Leslie Henriquez Aravena¹

¹*CESFAM Yobilo, Coronel, Chile*

Aim: Evaluating a standard of care (SoC) of venous leg ulcers (VLU) with a multicomponent compression therapy bandage of 40mmHg, a polyabsorbent fibre dressing with technology lipido-colloid and silver for infection management, and, once the infection is managed, a sucrose-octasulphate dressing. Throughout the treatment, wound bed preparation was performed using a hypochlorous acid solution and sharp debridement.

Method: This case report describes the implementation of the SoC in a 63-year-old patient who has a high psychosocial risk and has been suffering from an extensive VLU for 20 years.

Results/Discussion: 90% wound closure was achieved in 16 weeks, with adequate patient adherence to treatment and a significant improvement in their quality of life.

Conclusion: The management of VLU requires a comprehensive assessment of the patient and the implementation of an evidence-based SoC, where patient adherence and participation in treatment are key to successful management of these chronic ulcers.

Through this case, it is proposed to replicate this SoC for VLU management in the primary care setting, unifying management criteria for VLU, favouring the recovery of patients.

EP545 Fischer technique still works: healing a leg ulcer in a complicated lymphedema case

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Aim: This study aims to evaluate the efficacy of the Fischer Technique in treating a challenging case of lymphedema with a leg ulcer, providing insights into its potential for cases lacking surgical options, physiotherapist and an adjustable velcro system.

Method: A comprehensive examination was performed on a 77-year-old male with later primary IV stadium lymphedema and a non-healing leg ulcer. A vascular surgeon and Doppler Ultrasound assessed the patient's vascular and lymphatic function. Patient's mobility was hindered by the size of edematous legs and an uncontrollable amount of exudate. Fischer compression therapy, utilizing progressively applied multicomponent bandages and steady dressings under high compression, was implemented based on patient's tolerance.

Results/Discussion: Notable improvement in leg ulcer healing process was achieved within six weeks, accompanied with a reduction of 11cm in calf circumference and 13.5cm at the ankle. The patient, initially reliant on a walker, gained independence as leg diameter decreased. Challenges, such as the absence of manual lymphatic drainage, were mitigated through exercises and leg elevation at home. The findings highlight Fischer compression therapy's potential in managing complex lymphedema cases, particularly when combined with dressings suitable for high-level compression therapy.

Conclusion: This case report reinforces the efficacy of Fischer compression therapy, developed over 100 years ago, in addressing lymphedema-associated leg ulcers. The positive outcomes contribute to the growing body of evidence supporting this technique. Further research is needed to validate these findings and explore its applicability in a broader patient population when the gold standard treatment is unavailable.

Images

Upon admission

27th January 2023



14th March 2023



Local Treatment



Hydrophobic Antimicrobial bandage

Superabsorber

Fischer Technique



Polyester bandage

Zinc paste bandage

Short-stretch bandage

Long stretch cohesive

Edema reduction



A: Ankle Day 0 treatment: 47.5cm.

B: Ankle Day 18 treatment: 34 cm.



C: Calf Day 0 treatment: 55cm.

D: Calf Day 42 treatment: 44 cm.

EP546 Personalized strategy for complex chest wall reconstruction

Xiaoye Tuo¹

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Aim: Non-healing wounds post-thoracotomy has been a challenge to successful chest wall reconstruction. Here we aim to find personalized strategies for complex chest wall reconstruction.

Method: Patient A is a 73-year-old woman post-mastectomy radiotherapy suffered from chest wall ulceration combined with osteonecrosis and osteomyelitis. We used skin flap transplantation transferred from the other breast. Patient B is a 66-year-old woman with pleurisy and osteomyelitis after 3 years of postoperative radiotherapy for breast cancer. We removed necrotic tissue and three ribs with osteomyelitis. Bone cement was used to bridge the rib defects and latissimus dorsi musculocutaneous flap to cover the wound. Patient C is a 21-year-old boy with congenital heart defect received right ventricle and pulmonary artery conduit replacement + modified Konno Operation + AVR + subaortic diaphragm resection + TVP, the chest incision healed poorly with mediastinitis, the wound deteriorated although negative pressure and transplantation of bilateral pectoralis major myocutaneous flap were performed. We used autologous platelet-rich plasma gel to fill the exposure of chest and skin flap transplantation to cover the defect.

Results/Discussion: All patients healed well. Age, psychological factors, defect and wound conditions were all taken into design of treatment and the patients were satisfied.

Conclusion: For complex chest wall reconstruction, treatment plan should be personalized to meet both physical and psychological needs of the patient.

EP547 One unstageable pressure injury with multiple drug-resistant bacterial infection: case study

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¹Trauma Center of West China Hospital, Sichuan University, Chengdu, China

Aim: To share our experience of wound care for a patient with unstageable pressure injury accompanied by multiple drug-resistant bacterial infections.

Method: The patient, a 35-year-old man, was admitted in trauma center for multiple fractures, traumatic intestinal rupture and pulmonary infection, after admission, he was treated with ventilator-assisted ventilation, anti-infection and nutritional support. The sputum culture of the patients indicated carbapenem-resistant *Acinetobacter baumannii*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* infection, and the secretion culture of the wound secretion of abdominal incision indicated *Candida albicans* infection. The patient had an unstageable posterior occipital pressure injury of 4 cm x 3.5 cm in size, a small amount of odourless, yellow, thick exudate, irregular wound edge, mild redness and swelling of the surrounding skin.

Results/Discussion: Based on the principles of wound hygiene, wound nurses work in multi-disciplinary collaboration and performed systemic anti-infection, anti-fungal therapy, nutritional support and rehabilitation for the patient, under the framework of assessment-management-monitoring of chronic wound, local treatment including cleansing, debridement, remodeling and application were carried out to prevent microbial migration and biofilm formation. The treatment lasted 41 days, no drug-resistant infection was detected and the patient recovered completely. The patient's wound condition was evaluated as shown in Figure 1.

Conclusion: Chronic wound healing may be interfered by many factors, especially biofilm; when patients with multi-drug resistant bacterial infection coexist with chronic wound, the migration of resistant bacteria can further complicate the wound microenvironment, so wound hygiene-based management is particularly important.

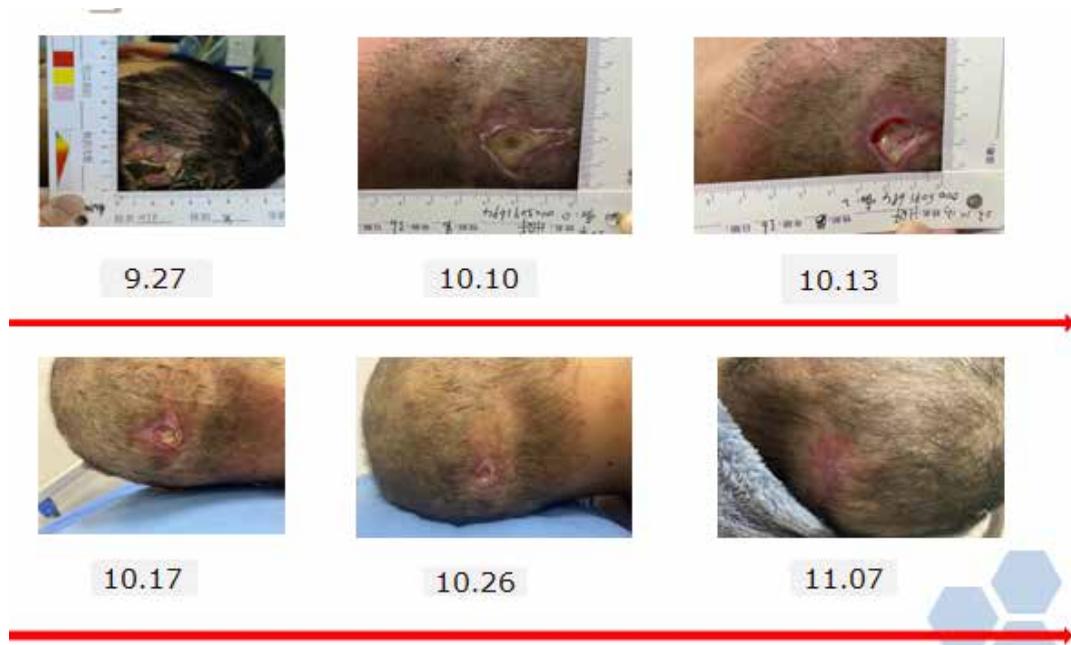


Figure 1. Treatment course of pressure injury

EP548 Modified moist occlusive burn therapy (MMOBT) for electrical flash burns: A promising treatment paradigm

Xuelei Li¹, Chao Lian¹, Xiaojun Liu², Halli Liu¹

¹Affiliated Changzhi People's Hospital of Changzhi Medical College, Changzhi, Shanxi, China, ²Southern Medical University Nanfang Hospital, Guangzhou, China

Aim: Electrical flash burns resulting from high-voltage switchboard explosions pose significant challenges for clinical surgeons. This study aims to present a typical paradigm of electrical flash burns due to high-voltage switchboard explosions and evaluate the efficacy of modified moist occlusive burn therapy (MMOBT) as a treatment approach.

Method: A case study of a 53-year-old male electrician admitted to the emergency department with electrical flash burns is presented. The patient sustained second-degree deep burns affecting 9% of his total body surface area. MMOBT, utilizing the burn cream and sterile polyethylene film, was employed for wound management. The patient's progress was monitored, and the therapeutic outcomes were evaluated.

Results/Discussion: The patient achieved a favorable aesthetic restoration without reconstructive surgery after a 2-month admission. MMOBT facilitated gradual wound healing, with ulcerations covered by black eschar, yellow exudates, swelling, and intense pain showing improvement. Laboratory examinations and chest radiography revealed no signs of complications. The use of MMOBT and systemic antibiotics resulted in a successful treatment outcome.

Conclusion: The patient achieved a favorable aesthetic restoration without reconstructive surgery after a 2-month admission. MMOBT facilitated gradual wound healing, with ulcerations covered by black eschar, yellow exudates, swelling, and intense pain showing improvement. Laboratory examinations and chest radiography revealed no signs of complications. The use of MMOBT and systemic antibiotics resulted in a successful treatment outcome.

EP549 A preferable solution for facial burns due to dust explosion

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Aim: This study aims to share our experience in using modified moist occlusive burn therapy (MMOBT) to treat severe facial burns caused by dust explosions. The objective is to evaluate efficacy of MMOBT in promoting wound healing and achieving satisfactory aesthetic outcomes.

Method: Two female workers who sustained cervicofacial or facial burns following a cornstarch explosion were included. One patient had second-degree burns with 6% TBSA, while the other had first-degree burns affecting 3% TBSA. General anesthesia and ultrasonic debridement were performed, followed by sequential application of moisture exposed burn ointment (MEBO) and a layer of sterile polyethylene film. To prevent nostril contracture or alar deformity, early utilization of a silicone rhineurynter was implemented. A 1-year follow-up visit was conducted to assess aesthetic restoration, dyspigmentation, and scarring.

Results/Discussion: MMOBT resulted in gradual wound healing within a 2-month period. The wounds showed improvement in appearance, including reduction in black eschars, yellow exudates, and scattered blisters. At 1-year follow-up, both patients achieved acceptable aesthetic restoration with slight dyspigmentation without scarring.

Conclusion: MMOBT provides advantages such as the prevention of new granulation tissue avulsion, alleviation of patient discomfort during dressing changes, and the creation of a closed and moist environment to accelerate epithelization. This study provides valuable insights for plastic and burn surgeons dealing with similar burns and highlights the potential benefits of MMOBT in improving patient outcomes. Further research and wider application of this treatment approach are warranted to validate its efficacy and explore its utility in diverse patient populations.

EP550 Modified moist occluded burn therapy for the treatment of cervicofacial burns due to splashing molten steel

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Aim: This study investigates the heightened risk of burn incidents among foundry workers due to exposure to molten metals. The objective is to present and analyze the inaugural case of hyperthermal burns in cervicofacial region as a result of molten steel exposure.

Method: The research employs an innovative approach - Modified Moist Occlusive Burn Therapy (MMOBT). This method integrates burn ointment with a sterile polyethylene film. The case study involves a 35-year-old male with second-degree burns covering 3% TBSA. The patient undergoes expeditious debridement, followed by sequential application of burn ointment and sterile polyethylene film, with bi-daily changes. Systemic administration of antibiotics (third-generation cephalosporin) is implemented, accompanied by patient monitoring. The outcomes are assessed over 54 days, with long-term aesthetic restoration evaluated during a one-year follow-up.

Results/Discussion: Following MMOBT treatment, the patient exhibits successful wound healing with commendable aesthetic outcomes. The initial presentation of burns in cervicofacial region includes ulcerations covered by brown eschar, yellow exudates, and intense pain. Subsequent to treatment, wounds undergo resolution without complications such as hyper/hypopigmentation, contracture, hypertrophy, or deformity. The one-year follow-up affirms the enduring positive outcomes of MMOBT.

Conclusion: This study concludes that MMOBT holds promise as a superior modality for thermal burns induced by molten steel exposure. The pivotal role of sterile polyethylene film in the modification of Moist Occlusive Burn Therapy (MOBT) is underscored. Further comprehensive studies are imperative to conclusively establish the heightened efficacy of MMOBT, emphasizing its potential for broader application in the realm of burn treatment.

EP552 Hyperbaric oxygen therapy in radiation-induced chronic ulcer treatment

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Aim: Chronic wounds are linked to multiple complications and rarely, malignant transformation. We present a case of 70-year-old male patient with radiation-induced chronic ulcer following the treatment of squamous cell carcinoma developing in a chronic leg ulcer due to venous insufficiency.

Method: The patient was referred to Department of undersea and hyperbaric medicine due to therapy resistant chronic wound of the lateral aspect of the right leg following fractionated radiation therapy in cumulative dose of 5200cGy leading to gradual development of large chronic ulceration affecting the treated area. There were hypostatic changes and oedema on both legs with dermatosclerosis and cicatrices due to previous venous ulcers and large, deep ulceration affecting lateral malleolar region of the right leg, 12 cm in diameter with fibro-necrotic tissue and bone at the ulcer bed, increased borders and two small ulcerations proximally 2 cm in diameter. There were no signs of improvement following 6 months of standard wound treatment with frequent infection reoccurrence requiring systemic antimicrobial treatment. Magnetic resonance of the shin revealed inflammatory changes and radiation-induced necrosis of the treated area.

Results/Discussion: In addition to standard wound treatment, the patient was treated with hyperbaric oxygen treatment 2.4ATA/60min for altogether 60 treatments, resulting in significant granulation tissue development and significant epithelialization, resulting in major ulcer size reduction.

Conclusion: The physicians treating malignant skin tumors, especially arising in the chronic wound, should be aware of radiation-induced skin reaction as the main adverse effects of radiation therapy and ulcerations being a common chronic radiation-induced reaction.

EP553 Contact sensitization to modern wound dressing in a patient with chronic leg ulcer

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¹Clinical Hospital "Sveti Duh", Zagreb, Croatia, ²University Hospital Centar Zagreb, Zagreb, Croatia, ³General Hospital Zadar, Zadar, Croatia

Aim: To warn on the possibility of allergic reactions on products used in wound care.

Method: We present a 56-year-old female with two-year history of chronic venous leg ulcer. Since *Staphylococcus aureus* was isolated in the sample, hydrofibre dressing with silver was used as the primary dressing and polyurethane dressing was used as the secondary dressing. Elastic medical compression stockings were worn. Six weeks upon introduction of the therapy a partial epithelization of the wound was achieved, the defect of ulcer was filled with granulation tissue and the size of the ulcer decreased. However, erythema of the surrounding skin persisted. We performed a patch test and readings on day 2, 3 and 7 were positive to mercapto mix (+/+/+), thiuram mix (+/+/+), epoxy resin (+/+/+++) and to two acrylate allergens, triethylene glycol dimethacrylate (TEGMA) (+/+/+++) and ethylene glycol dimethacrylate (EGDMA) (+/+/++++), both ingredients of the wound dressing that was used.

Results/Discussion: Mercapto mix and thiuram mix in rubber products are the most common source of sensitization to elastic medical compression stockings. Rarely, as in our case management of chronic leg ulcers can also lead to development of contact sensitization and contact allergy to various ingredients found in wound dressings, including acrylates.

Conclusion: It is important to perform a patch test and to identify and avoid all culprit allergens in patients who present with poor wound healing and surrounding erythema to have better therapeutic outcome and better quality of life.

EP554 Multidisciplinary approach in treatment of chronic wounds arising as a consequence of malignant diseases

Ana Majic¹

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Aim: Tumors appear as wounds that do not heal because they undergo continuous remodeling of the stroma and vascular growth with immunosuppressive features to ensure tumor spread. In order to improve results in treatment of patients with such wounds, there is an importance of multidisciplinary collaboration of different professions participating in oncological treatment of patient. The consequences of chronic wounds associated with malignant disease include pain, secretion, fear, psychological consequences. The aim of abstract is to present importance of multidisciplinary approach in chronic malignant wounds.

Method: Presentation of patient case.

Results/Discussion: Patient visited the oncologist after a biopsy of changes in left gluteal region. She is paraplegic, and she was continuously examined by plastic surgeons because of pressure ulcers. Last biopsy showed squamous cell carcinoma developed in the decubitus area. Long lasting ulcers caused pain, and impaired the quality of life. Multidisciplinary approach to treatment including oncological modalities, with the aim of achieving disease control and palliative effect with adequate local management of ulcers done by plastic surgeons, despite the advanced stage of the disease, patient had achieved prolongation of life, and maintained quality of life.

Conclusion The evidence of published data regarding malignant chronic wounds is low because poor methodology quality, incomparable cases and lack of interdisciplinary consultation. There is strong evidence that longer survival times can be achieved in patients with reduced wound size. Such patients need comprehensive holistic treatment protocols that include surgeons, oncologists and all involved in the provision of palliative care.

EP555 Distally based abductor hallucis muscle flap for first metatarsophalangeal joint coverage in the diabetic foot

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Aim: Diabetic foot reconstruction and wound healing represent a significant challenge. Exposed joints, bones and tendons require good soft tissue coverage in order to achieve satisfactory healing and durable wound closure. Pedicled muscle flaps can provide good coverage of small wounds with minimal donor site morbidity.

Method: We present a case of a 50-year-old male with long standing diabetes mellitus and full-thickness necrosis of the medial aspect of his right foot.

Results/Discussion: Surgical débridement of necrotic skin, subcutaneous tissue and necrotic medial cortex of adjacent first metatarsal bone and proximal phalanx resulted in a soft tissue defect 3 cm in diameter with exposed first metatarsophalangeal joint. After a short course of antibiotic therapy, a reconstructive procedure using distally based abductor hallucis muscle turnover flap was performed. The muscle belly in the wound bed was covered with split-thickness skin graft. The patient was ordered non-weight bearing protocol in a posterior splint. Postoperatively a partial skin graft rejection along with other signs of local infection appeared and a targeted antibiotic therapy was instituted. Finally, the complete wound healing occurred within a month. During three years of follow up the patient remained ulcer-free, and the range of motion of the first metatarsophalangeal joint is satisfactory, with minimal hallux valgus deformity.

Conclusion: This case report demonstrates the effectiveness of distally based abductor hallucis muscle flap in reconstruction of medial forefoot defects, leading to durable wound closure and excellent functional recovery upon long-term follow up.

EP556 Supportive bio-occlusive alginate dressing with medical chestnut honey in necrobiosis lipoidice treatment

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Aim: Necrobiosis lipoidica is a rare and idiopathic disorder of collagen degeneration presenting with granulomatous response. The disease is typically chronic with variable progression and scarring with small risk of SCC developing in longstanding lesions. Histopathologically, thickening of blood vessel walls and fat deposition is seen. Treatment is not very satisfactory, injections of steroid into the active inflamed borders or local potent steroids have been proven helpful. To certain individuals PUVA treatment can be beneficial.

Method: A 45-year-old female diabetic patient was admitted to our department with a 10-year-history of deep secreting chronic wounds with large fibrotic layers on both shins. She developed fever with high inflammatory parameters. Histopathology confirmed superficial and deep perivascular and interstitial granulomatous dermatitis with palisade granuloma. Pseudomonas aeruginosa was isolated in the biopsy sample.

Results/Discussion: According to antibiogram, she was treated parenterally with meropenem. Locally antiseptic dressings were applied and enzymatic debridement was performed. Afterwards sterile primary alginate wound dressing impregnated with medical chestnut honey was used. Two weeks later the wound defect was filled with granulation tissue, swelling and erythema were reduced as well as secretion, fetor and pain.

Conclusion: First-line therapy includes potent topical and intralesional steroids. Bio-occlusive alginate dressings impregnated with medical chestnut honey proved to stimulate cleansing of fibrotic layers and to accelerate granulation and epithelisation.

EP557 Combination of early hyperbaric oxygen therapy (HBOT) and negative pressure wound therapy (NPWT) as a treatment option in high pressure injection injury (HPII)

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Aim: We have decided to present a patient with a complex foot injury caused by high pressure injection energy. A 35-year-old patient was injured by water-gun while working as a technical diver. Immediately after incident, he was admitted to our hospital. In our case we used NPWT for preparing wound bed for skin grafting as a final treatment procedure and wound closure. Early HBOT was used as a supportive therapy to increase of biological potential of healing.

Method: Negative Pressure Wound Therapy (NPWT) was applied after surgical treatment. All necrotic tissue and fibrin deposits were removed. The starting therapy was continuously 125 mm Hg of vacuum. First change of the NPWT dressing was in 3th postoperative day. The NPWT was continued in intermittent mode for another three days, when transplantation of skin graft by Blair was performed. All time of preparation of wound bed and 10 days after grafting we performed HBOT in modus 2.4 bar / 60 min

Results/Discussion: After six days of NPWT the wound defects were filled with granulation tissue and split thickness skin graft was applied. Skin graft was additionally fixed with NPWT using continuous therapy at -100 mm Hg for a period of four days. Complete acceptance of all skin grafts was found after removing NPWT.

Conclusion: Combination of HBOT and NPWT as a medical treatment option in wound healing after HPII injury can be a good choice. Treating our patient with these procedures finally had a very good functional and esthetic result.

EP558 Treatment of a crushed finger - the role of supportive therapy with negative pressure and hyperbaric oxygen

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Aim: We present a patient with necrotic flap of the tip of the third finger of the right hand. He was injured while working with a meat grinder. Second day after the incident, a skin and subcutaneous tissue necrosis appeared.

Method: We performed tissue sparing debridement. Negative pressure wound therapy (NPWT) was applied in continuous mode in -125 mm of mercury, using a dressing model called “hot dog method” for 7 day. The key step for us was HBOT which we immediately included in the treatment as a supportive method for the recovery of the compromised microcirculation of the finger. We start with HBOT on second day, in modus 2.4 bar / 60 min and continued for next 15 sessions.

Results/Discussion: Second day after admittance in the surgical practice, debridement was carefully performed. We have removed necrotic soft tissue and sample for microbiological diagnostics were taken. On 4th day after removing of NPWT, wound tissue and surrounding skin had proper color and showing good healing potential. Medical examination after fifteen days showed properly healed wound.

Conclusion: Using negative pressure wound therapy in early treating period we increased oxygenation of tissue in the wound and controlled infection. HBOT increased biological potential of healing with reducing oedema and recovering microcirculation. Antibiotics were given. This combination of procedures stimulated the creation of a “healthy” granulation tissue and allowed the epithelialization from the wound edges. Combination of HBOT and NPWT must have played a significant role in crash wound healing.

EP559 Application of antibacterial foam dressing with copper oxide for the treatment of chronic post-burn wounds

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Aim: The aim of this case report is to present the benefits of using antibacterial foam dressing with copper oxide (MedCu) in a patient with a chronic post-burn wound.

Method: Wounds created after extensive burns are a great risk for complications and threaten the quality of life of the injured person. A woman (68) came to the emergency department with IIIa/IIb degree burns on the outside of the right upper arm and forearm caused with the gasoline. She was treated with cream with sulfadiazine silver, alginate and fibrous dressings with silver, hydrophobic polyester mesh with elemental silver with iodized povidone. The treatment included hyperbaric oxygen therapy (HBOT). There was no significant improvement for six months, with severe pain and significantly limited mobility of the hand in the elbow. With the application of skin-like matrix (Spincare), significant progress was immediately made with the cessation of pain and improved hand motility. A secondary MedCu dressing was applied, without a matrix in the continuation of the treatment, with accelerated wound healing, without infection, pain and other complications. The treatment was controlled by laboratory and microbiological tests, and microcirculation evaluation with hyperspectral imaging (HSI) using the TIVITA 2.0 device.

Results/Discussion: The described treatment resulted in significant regression of the wound, and then complete healing.

Conclusion: New technology, antibacterial MedCu dressing, has shown exceptional effectiveness in the treatment of a chronic wound after an extensive burn with complete protection from infection and rapid significant improvement in the quality of life until full recovery.

EP560 Successful management of NSTIs involves prompt recognition, timely surgical debridement and efficient antibiotic therapy

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Aim: Compared with intro-abdominal infections, skin and soft tissue infections (SSTIs) seem to be of a lesser concern for surgeons. Necrotizing soft tissue infections (NSTIs) are potentially life-threatening infections of any layer of the soft tissue compartment associated with widespread necrosis and systemic toxicity. They affect the elderly and polymorbid, as well as young and healthy individuals. For patient survival, rapid identification of infections requiring aggressive treatment is essential.

Method: The authors present an analysis of three patients suffering from necrotic soft tissue infection. From the pathophysiological perspective, NSTI is characterized by an inflammatory process with a fulminant course and manifestations ranging from systemic toxicity up to septic shock.

Results/Discussion: All female patients aged 42-60 years shared a common history of DM and the time period when the infection occurred. In the first two patients, the strain of *Streptococcus pyogenes* was identified and the disease developed within hours. In the third patient, *mucormycosis* infection was demonstrated, which is a very rare infection in our geographical conditions. The basic modality of NSTIs treatment is antibiotic therapy and aggressive surgical treatment. Patients with proven *Streptococcus pyogenes* infection survived and the extensive defects healed, the third patient, in whom the diagnosis took longer, succumbed to her disease.

Conclusion: The basis of diagnosis is a clinical and microbiological examination. Correct and prompt surgical treatment is essential in the treatment of SSTIs, and in the case of NSTIs, it represents the most important factor determining the success and outcomes of the treatment.

EP561 Abdominal disaster

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Aim: The correct diagnosis of an acute abdomen in a morbidly obese patient is often complicated by the large amount of subcutaneous adipose tissue that hinders abdominal examination.

The aim of this case report is to describe the case of an extremely obese patient with abdominal catastrophe and to discuss specific therapies for these high-risk patients.

Method: A young, extremely obese female patient with a BMI of 88 kg/m² and no other significant comorbidities presented with diffuse abdominal pain and markedly elevated inflammatory markers. A plain abdominal radiograph and ultrasonography were inconclusive for extreme obesity. For the same reason, it was not possible to perform a CT scan.

Results/Discussion: Morbid obesity is the most commonly cited independent predictor of the risk of developing SSI. The cause of the abdominal catastrophe was stercoral peritonitis due to perforation of the gangrenous colon and terminal ileum in a multilocular large ventral hernia. The patient underwent 16 surgical revisions and the postoperative period was complicated by multi-organ failure. After 66 days in intensive care, she was transferred to a standard ward for recovery and rehabilitation.

Conclusion: Abdominal catastrophe in extremely obese patients requires early surgical intervention and special perioperative and postoperative care, despite limited diagnostic possibilities. Despite all available therapies, it is associated with high mortality. We operate and treat increasingly complex and expensive cases.

EP562 How to facilitate healing in a dehisced surgical wound, after deep infection and reoperation of the hip, with antimicrobial barrier dressing and single use negative pressure wound therapy system (sNPWT)

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Aim: Patient case study presentation with treatment outcomes and economic calculations, to show how to facilitate healing, in a patient living with a dehisced surgical wound, after deep infection and reoperation of the hip, with Antimicrobial Barrier Dressing and Single Use Negative Pressure Wound Therapy System (sNPWT)

Method: 25 days post-surgery the patient was worried about the infection and exudate management and felt his future would see him needing a lot of help in his everyday life. Daily changes with a superabsorbent dressing were required. Therefore, a decision was made to change to Antimicrobial Barrier Dressing and sNPWT.

Results/Discussion: Within three weeks of treatment, the oedema and exudate levels reduced, and the depth had decreased. The decrease in oedema made it easier to mobilise and he no longer feared exudate would leak from the dressing. Total costs (nursing time and dressing cost) were reduced when sNPWT was introduced because the frequency of dressing changes was reduced from seven to two times per week. The cost per week continued to reduce and the wound healed with no need for re-operation or further antibiotics.

Conclusion: During sNPWT treatment, he was more independent in his daily life and after healing he was less worried about his future. Having the wound had a lot of impact on his general and psychological health as well as his social life. Additionally, treatment with sNPWT was potentially cost beneficial, and the wound healed with no further complications or readmissions.

EP563 How to facilitate healing in dehiscenced surgical wounds, after reconstruction of the breast, with single-use negative pressure wound therapy system (sNPWT)

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Aim: Patient case study presentation with treatment outcomes and economic calculations, to show how to kick-start the healing of a non-healing dehiscenced surgical wounds, after reconstruction of the breast, with Single-use Negative Pressure Wound Therapy System (sNPWT).

Method: This 55-year-old patient underwent reconstructive surgery of her breast and after five weeks, she was referred to the community nurse team for wound treatment of dehiscenced surgical wounds. The patient had open wounds at the surgical incision site, she was worried about complications and new wounds at the incision site, and what consequences this could have on her work and everyday life. As this non-healing wound was deteriorating, and with a new wound appearing six weeks after surgery, sNPWT was introduced to help promote wound healing.

Results/Discussion: Nine days after sNPWT was applied the wounds were improving. Epithelialisation was visible and exudate levels were low, therefore, only three dressing changes were carried out in the two-week period of sNPWT. Treatment was then changed to a foam dressing with border and healing was achieved after further five days.

Conclusion: The patient found that sNPWT was easy to use and very effective in promoting wound healing and progression. The change in therapy saw a rapid reduction in oedema and exudate, which reduced the amount of dressing changes per week with no leaking from the bandage.

EP564 How to facilitate healing in a dehiscenced surgical abdominal wound with single-use negative pressure wound therapy (sNPWT)

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Aim: Patient case study presentation with treatment outcomes and economic calculations, to show how to facilitate healing in a dehiscenced surgical abdominal wound with single-use Negative Pressure Wound Therapy (sNPWT).

Method: A patient with no significant past medical history was admitted to hospital with severe constipation. She underwent a Hartmann's procedure, where part of colon is removed and redirected to a colostomy. On day 13 post surgery the abdominal incision was documented as dehiscenced. The patient was sad, worried, and tired of having a large ulcer on her stomach. The wound was painful and therefore it significantly reduced her activity level.

Results/Discussion: On day 17 the wound was 6.5cm x 10.5cm and 3.5cm deep, sNPWT with gauze filler was initiated to help promote wound healing. After just nine days of therapy, the patient experienced less pain. She enjoyed being able to be more active. The wound was improving between dressing changes. During the first three weeks of sNPWT there was a reduction of approximately 80% in wound size.

Conclusion: The presence of the wound had a negative impact on the patient's general health, social life and psychological health. The clinician found sNPWT easy to use and good for exudate management. The patient had no fear of leakage or the dressing to fall off. The patient felt a reduction in pain whilst being treated with sNPWT and regained her active everyday lifestyle. Inclusive of nursing time, sNPWT was cost-effective compared to standard treatment.

EP565 A challenging case of both lower limbs extensive necrotizing fasciitis in child with congenital lymphedema

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Case description: 10 years old male presented with bilateral lower limb swelling, skin bullae, pain and fever not responding to antibiotics nor antipyretics for one.

History: Congenital lymphedema appeared 40 days after birth involved both lower limbs and scrotum. at the age of 2.5 patient presented with fever and infection on both feet surgical debridement was done. patient had recurrent attack of cellulitis every 3 month after the procedure.

Examination: General: patient was full conscious, pale with toxic face.

vital signs temp 40 BP 90/60 pulse /130.

Local: both legs showed skin bullae blue to grey patches, crepitus, sever pain and tenderness (fig 1)

Investigations: HB 6 CRP 300 TLC 35 creatinine 2.6.

Surgical intervention: Surgical exploration to evaluate fascia and soft tissue for aggressive surgical debridement versus amputation. all skin and subcutaneous soft tissues was excised from tibial tuberosity till malleoli on both LL. (fig 1).

Postoperative: patient was admitted to ICU, daily dressing was done for 10 days then VAC was used for 3 weeks. meshed skin graft used to cover rough area (fig 1 -2).

Discussion: Patient admitted to our hospital in septic shock with a decision taken outside hospital (bilateral above knee amputation). Extensive debridement, strict follow up and wound care successfully preserved the both lower limbs for this child. The message not to rush for amputation but keep the patient under strict follow up and sufficient care.



Figure 8: a) swollen both LL wit infected bullae during presentation b) after surgical debridement c) after 10 days d) during VAC therapy



Figure 9: a) after 3weeks of Vac b)split thickness skin graft c) after 2 months d)after 4 months

EP566 The role of Nurse Practitioner in a multidisciplinary team in specialized care in a dermatology ward

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Aim: Changing working conditions and the continuous development of nursing care require health professionals to become more aware of their training throughout their careers.

The aim of the study was to clarify the role of Nurse Practitioner in the dermatology department's interdisciplinary wound care team.

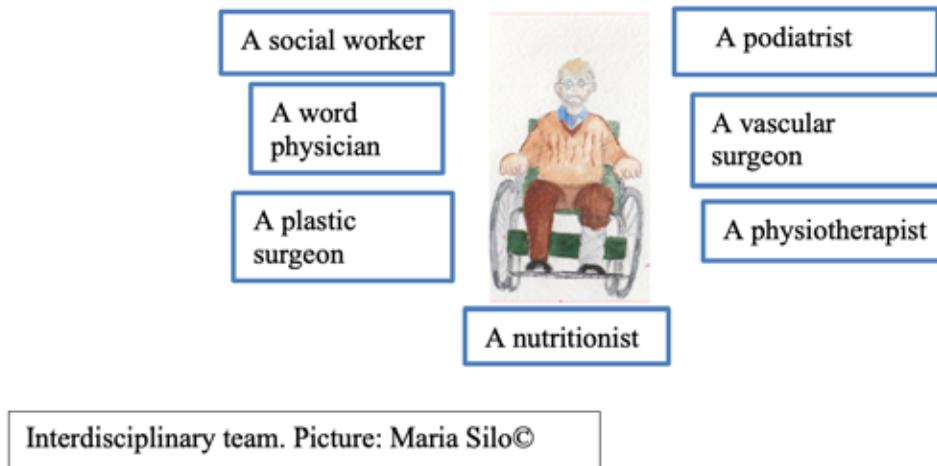
Method: Qualitative research. The study material was collected from members of the multidisciplinary team in the form of questionnaires in the summer of 2021. The questionnaire contained 5 questions.

Results/Discussion: The survey was sent to 30 people. The number of the respondents to the survey was (n=7), it was 23.3%.

The results of the research reflected the main problems of the role of Nurse Practitioner in the multidisciplinary team: the ambiguity of the terminology, a lack of the criteria for defining expert nurses and shortage of the education of nurses.

Conclusion: Based on the results of the study, it was concluded that the problems of lack of knowledge about the role and competencies of the Nurse Practitioner, are typical not only of a particular hospital department, but also of many countries. Clarity of the role NP will enable high quality and cost-effective patient care and reduce human suffering.

Further research is needed for the implementation and understanding of the role of Nurse Practitioner.



EP567 Benefits of polyabsorbent TLC-NOSF dressings in the local management of various chronic wounds after punch grafting procedure

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Aim: Chronic wounds, such as leg ulcers (LUs) (venous LUs, arterial LUs, necrotic angiodermatitis) or diabetic foot ulcers, are frequent, often painful and may take a long time to heal. Ulcers may occur at a number of different locations in a single patient, who often has several co-morbidities. Hospitalisation may be needed. In association with these chronic wounds, patients experience decreased quality of life and healthcare professionals and society bear a real burden. Although the management of these patients does not rely entirely on local wound care, local treatment has an important role in improving the time to heal and reducing the need for hospitalisation.

The treatment of chronic wounds using a polyabsorbent TLC-NOSF dressings (UrgoStart Plus Pad, Laboratoires Urgo) is shared in this poster.

Method: All patients were treated with punch grafting, polyabsorbent TLC-NOSF dressings, and appropriate compression throughout the follow-up period.

Results/Discussion: Four patient cases are presented in this poster. All the wounds treated with a protocol combining a punch graft and polyabsorbent TLC-NOSF dressings in this project improved very favourably, even reaching complete healing. The wounds successfully closed, and the dressings were well tolerated.

Conclusion: The results observed in these patients confirm the efficacy and good acceptability of TLC-NOSF dressings in the management of chronic wounds in various indications. These results are consistent with those observed in a clinical study evaluating the combination of non-adherent TLC-NOSF dressings in grafted LUs.

EP568 Management of diabetic foot ulcers with polyabsorbent fibres dressing with technology lipido-colloid and silver (Vietnam)

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Aim: The management of the diabetic foot (DFU) cases to discuss the evaluation of a Polyabsorbent fibres dressing with technology lipido-colloid and silver.

Method: Case series of four DFU that were managed with the evaluated dressing. Furthermore, in all cases except one, the management was followed with Technology Lipido-Colloid with Nano Oligo Saccharide Factor, in accordance with international best practice guidelines.

Cases are:

1. 51-year-old female – ulcer on the dorsal aspect left foot, present for 7 to 10 days, with exposed tendons, covered with slough and heavy exudate.
2. 73-year-old female – ulcer on the dorsal aspect left foot, present for 7 days, covered with slough and producing heavy exudate and exposed tendons.
3. 49-year-old female – ulcer on the dorsal aspect left foot, present for 8 days, with exposed tendons, covered with slough and necrotic tissue, heavy exudate.
4. 55-year-old male – ulcer on the dorsal aspect of the right foot and lateral malleolar region, present for seven days, covered with slough and necrotic tissue.

Results/Discussion: The results show an improvement in the wounds in a relatively short period of time.

Conclusion: Although further cases are needed to embed TLC-Ag dressings with Polyabsorbent fibres as an established part of the standard of care for DFU in Vietnam, the results are very encouraging and show that this dressing can provide an effective and evidence-based solution to manage patients with wounds at risk of infection or/ and with clinical signs of local infection.

EP569 Debrichem: an acid gel for ulcer's treatment by destroying the biofilm

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Aim: Biofilm is an extracellular layer formed by activity replicating bacteria. Bacterial overgrowth is responsible for worsening wounds by delaying healing. For this reason the lesion becomes chronic. Debrichem a new disruptive biofilm elimination method has been used in the treatment of necrotic infected wound. The interest of this treatment has grown up with the fact that more and more bacteria are resistant to the traditional therapeutic such as topical antimicrobial or silver-containing impregnated dressing. The acid gel desiccates the biofilm in one minute of application. Debrichem has a dehydrating effect by instantly capturing water molecules from any type of biological material.

Method: We present our experience with Debrichem which was used on several patients. Debrichem must completely cover the wound bed and the periwound area. After 60 seconds of application the wound is rinsed with plenty saline solution. Then the ulcer is treated by using classic dressing. All the patients were followed-up every 2 weeks for the evolution of the wound's healing with good results.

Results/Discussion: The first patient was a 82 years-old-woman with venous ulcer of the leg. Comorbidities were hypertension and diabetes. Unfortunately she always refuses to be operated of her incompetent saphenous vein. We used debrichem on the venous ulcer and after 5 months the ulcer has healed.

The second was a 65 years-old-man who was followed for a plantar perforating pain since 2 years. He has undergone an iliac stentgraft associated to femoro-popliteal reconstruction. But healing of the ulcer is difficult to obtain. For this reason, we decided to use debrichem with good results.

The third patient was a 93years-old-women with an ulcer's foot. She has gone a femoral and a popliteal stentgraft. Debrichem was used on the ulcer. After 2 months, we obtained clean ulcer and the lesion was treated by an antibacterial dressing.

Conclusion: In conclusion we found debrichem to be effective for ulcers' debridement, easy to use and well accepted by patients. It was also observed that the time to healing had decreased.

EP570 Painful deep skin necrosis after stingray sting

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Aim: The case of a 31-year-old female patient is reported, who suffered from a stingray sting in the area of her right foot during vacation in Borneo.

Method: The healthy patient developed a very painful necrotic cutaneous lesion. The patient was referred to our clinic 5 weeks after the event.

After radiological exclusion of bone involvement, it was planned to remove the necrosis plate and clean the wound under local anesthesia. However, despite the injection of a sufficient amount of local anesthetic solution, this was not possible due to the massive pain symptoms. Due to this a debridement with intubation anesthesia and the application of a vacuum therapy followed.

The vacuum therapy was also not tolerated due to the pain. The wound was treated conservatively then for at least 12 weeks.

Results/Discussion: Stingray stings are usually very dolent and not life-threatening.

They usually lead to very painful and slow-healing wounds due to the toxin and require long-term treatment.

Stingrays are mainly found in warm and tropical seas, but also in brackish and fresh water in rivers in South America and Asia.

The protein mixture of the toxin causes localized painful long lasting wounds but can also trigger severe systemic reactions and even death.

Conclusion: Due to the high number of long-distance trips to exotic countries, the special features of treating this type of exotic wounds should also be known by European health professionals and wound experts.

EP571 Acquired, reactively perforating collagenosis

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Aim: To enhance the awareness of acquired, reactively perforating collagenosis and show options of the (wound)-management.

Method: case report of a patient with acquired, reactively perforating collagenosis and the difficulties in diagnostics and treatment.

Results/Discussion: Acquired, reactively perforating collagenosis is characterized by the transepidermal rejection of collagen connective tissue. Clinically, sharply limited ulcerations with central, hyperkeratotic graft are typically shown. Diabetes mellitus and/or end-stage chronic renal insufficiency are described as associated and beneficial diseases. A Köbner's phenomenon is discussed as a triggering factor. The diagnosis is confirmed by a sample biopsy in accordance with the typical clinic. Therapeutically, the treatment of the underlying disease is in the foreground. Surgical debridement, local glucocorticoids or retinoids, various UV therapies and the systemic administration of allopurinol are used with success. We report the case of a 62-year-old patient in whom the ulcerations of a reactively perforating collagenosis could be successfully cured with the above-mentioned therapy regimens.

Conclusion: Our case illustrates that the clinical picture of acquired, reactively perforating collagenosis is quite typical and should be considered as a differential diagnosis for patients with chronic wounds and diabetes or chronic renal failure. We show that usually the combination of the possible therapy options leads to an effective treatment of the disease.

EP572 Biomaterials for wound care: Evaluating natural polymers and plant-based fibres for enhanced exudate handling in wound dressings

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Aim: This study investigates the efficacy of natural polymers and fibers in exudate management for wound dressings, focusing on calcium alginate, carboxy methyl starch, short and long cellulose fibers, and citrus fibers.

Method: Using the Washburn test, liquid binding capacity test, and settling volume analysis, the study quantified absorption characteristics, swelling behaviors, and liquid handling capabilities of these materials with a calcium- and sodium chloride solution simulating blood plasma.

Results/Discussion: The analysis indicates distinct liquid handling properties for each material, including rapid absorption for calcium alginate, variable liquid binding capacity and absorption speed for cellulose fibers based on length, and unique characteristics for carboxy methyl starch and citrus fibers. These findings emphasize the importance of selecting natural polymers and fibers tailored to specific wound care needs.

Conclusion: For the applications of these materials in advanced wound dressings, their unique features have to be understood. The study underscores the significance of selecting appropriate materials for exudate management, with implications for improving patient outcomes in wound care. This research provides valuable insights for developing innovative wound dressings by tailoring materials based on absorption speed, liquid binding capacity, and swelling behavior.

EP573 Chemical debridement of a chronic leg ulcer

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Aim: We would like to present a case with a chronic wound in which we performed chemical debridement for the first time. Based on this case, we would like to share our first experience of performing a chemical debridement.

Method: Case Report:

In January 2023 a 83 years old patient presented in our Wound Center with an extremely painful multi-year ulcerus cruris venosum on her right leg which was covered with adhering fibrin coatings. Due to the pain and the patients general conditions we decided to debride chemically instead of surgically.

We applied an acidic gel directly on the wound bed which was rinsed off after 60seconds.

Results/Discussion: Despite local anesthesia and audiovisual sedation the procedure was very painful, but the very next day, the pain had completely stopped. At first the wound was covered with dry dark necrosis. Within the next 30 days the dark necrotic coverings turned yellow and dissolved gradually showing a clean well granulating wound.

Conclusion: Compared to surgical debridement this innovative technique was easy to perform but also painful. In addition it took a relatively long time until the wound was free from coverings and ready for further treatment (e.g. skin graft).

EP574 Innovative biochemisurgical treatment for stabilisation of an end-stage chronic wound in a complex vascular compromised patient

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Aim: Treating advanced peripheral arterial occlusive disease (PAOD) poses a significant challenge, as a conventional treatment quite often fails at this stage. However, a range of interventions can be considered to postpone amputation. This study presents an advanced stage PAOD (stage IV) encompassing a history of a high thigh amputation on the left side coupled with pronounced wound healing disorders.

Method: The case presented; 55 years old male, smoker, ASA III, left sided above-the-knee-amputation situation. Amputated site presented with blistering in the stump area caused by non-proportionate pressure from the prosthesis. Revascularization was impossible due to absence of a landing zone due to PAOD IV. Multiple surgical stump revisions, left-femur shortenings and wound treatments were performed without satisfaction. Topical Desiccating agent (TDA) was used to treat these end-stage chronic wounds.

Results/Discussion: TDA is a dehydrating agent with potent desiccating characteristics upon application to organic substances. This case description results in an illustrated follow-up of the wound bed with an unconventional use of TDA. It is presented in line with the consensus-based surgical case reporting guideline recommendations.

Conclusion: The goal of achieving a secondary healing trend is to establish stability within the wound area or achieve complete healing. Progress in wound treatment measures has made it feasible to achieve this aim by fostering the formation of a dry and clean necrotic tissue. This dry and clean wound is now manageable in a patient's home situation allowing for effective care and a better chance at preventing further severe complications.

EP575 Wound management on a patient with traumatic degloving injury of the foot. A case report

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Aim: The aim of this study is to highlight that the early primary skin cover in major degloving injuries can be the final treatment.

Methods: Our patient is an 85-year-old female who presented to the emergency department with a degloving soft-tissue injury of her right foot, as a result of a car accident. She had no other significant injuries and remained hemodynamically stable. The wound extended from the metatarsal to the distal part of the tibia, covering the internal and posterior side of the extremity. An extensive irrigation and debridement to remove debris, followed by simple reattachment of the avulsed skin and musculoskeletal tissue was performed in order to maintain an immediate closure of osseous deficit. The radiological examination revealed the fracture of the lateral malleolus and a plaster cast was placed. A triple antibiotic treatment with metronidazole, cefoxitin and amikacin was given and the patient was administered in the orthopedic clinic. She continued the antibiotic therapy and was discharged on the 7th day after the accident.

Results/Discussion: The patient had an uneventful course in the clinic. No skin necrosis was identified and no secondary procedures were required.

Conclusions: This case study demonstrates that in patients with large degloving injuries an immediate reattachment of the avulsed skin can replace the need for additional plastic surgery techniques, with potential physiological and psychological complications.

EP576 Wound management on a patient with open tibial diaphyseal fracture, primary external fixation and later loss of reduction. A case report

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Aim: The aim of this study is to highlight that stability even provisionally encourages soft tissue resuscitation.

Methods: Our patient is a 67-year-old male who presented to the emergency department with an open tibial diaphyseal fracture and a large skin deficit, as a result of a car accident. The patient was hemodynamically stable and had no other significant injuries. He was treated in the operating room with a uniplanar external fixator and suturing of the wound. He received iv antibiotics and was discharged on the third postoperative day with instructions for complete unloading of the limb. The patient did not follow the instructions and bore weight on the limb. As a result he presented to the clinic a week later with loss of reduction and necrosis of the skin in the injured area. A realignment with traction and reduction was performed in the operating room. The external fixation system was removed a week later and an intramedullary nail was placed.

Results: The patient had an uneventful postoperative course. The necrotic eschar gradually resolved after the removal of the osteosynthesis without the need for excision or skin grafting.

Conclusions: This case demonstrates that in a patient with an open tibial diaphyseal fracture primary management with an external fixation can be the treatment of choice. The surgeon must remain vigilant concerning the complications of this method. The later loss of the reduction can result in formation of necrotic eschars and thus delay the final treatment.

EP577 Limb salvage of diabetic foot wound with high complexity and full thickness tissue loss on a 33years old asian adult during COVID-19 pandemic

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Aim: To illustrate successful limb salvage with multimodal wound care therapies in multidisciplinary approach on young adult during COVID-19 Pandemic in Hong Kong.

Method: 33 years old male with type 2 diabetes mellitus complicated with severe nephropathy and retinopathy who got COVID-19 positive and was suffering from bilateral foot wet gangrene after scald injury at home. Uncontrolled infection was found over bilateral feet plantar side while necrotic tissue extended to plantar deep compartment and heel compartment. Septic arthritis and osteomyelitis of plantar metatarsal joints were diagnosed. Patient refused bilateral below knee amputation but agreed bilateral feet debridement and ray amputation only. He was received polyacrylate pad with silver contact layer to prepare wound bed and negative pressure wound therapy to facilitate wound closure afterwards.

Results/Discussion: Wounds were completely healed after one month in patient stay and four months outpatient nurse wound care service follow up. Functional limb was saved. Patient walked well with heel walking sandals and stick after vigorous physiotherapy. There were no readmission and major amputation needed.

Conclusion: In conclusion, this case study demonstrated the use of NPWT to heal a complex diabetic foot wound despite full thickness tissue loss and without the need for a more proximal amputation. Using aggressive basic wound care and the liberal use of multimodal therapies in a multidisciplinary setting, we have shown that advanced wound care methodology indeed can be successful in salvaging limbs and reducing risk of major amputation in precious OT session during pandemic.

EP578 Acellular fish skin for severe hidradenitis suppurativa

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Aim: Hidradenitis suppurativa can be a debilitating condition with repeated infections. Since the introduction of biologics, surgery is rarely needed but traditionally involves resection of all affected tissue and skin grafting or flaps. We present a case report of a 63 year old male with a history of rheumatoid arthritis, treated with full doses of biologic drugs, who presents with severe fistulizing hidradenitis suppurativa of both buttocks. The aim treatment was to prevent extensive surgery and tissue loss.

Method: Fistulas were first treated with setons and smoking cessation. After all signs of infections had resolved, treatment with surgery and acellular fish skin was initiated. All fistulas on the right buttock were opened and debrided in the operating room with minimal tissue resection and the wounds packed with acellular fish skin. Reapplications were performed on POD#14, POD#26 and POD#38.

Results/Discussion: On POD#42, all wounds had completely epithelialized. This finding correlates with studies showing acellular fish skin to enhance healing of chronic wounds. Fish skin resembles human skin, allowing efficient ingrowth of dermal and epidermal cells. It also contains fatty acids, including omega-3, that have anti-inflammatory effects.

Conclusion: Surgical debridement with minimal tissue loss, accompanied with acellular fish skin, is a promising treatment choice for fistulizing hidradenitis suppurativa where treatment with biologics is not an option.

EP579 Silk dressing - a novel wound dressing for the treatment of diabetic foot ulcers

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Aim: Treatment of diabetic foot ulcers (DFU) is a challenge, as diabetes significantly affects the body's wound healing ability. Advanced wound dressings play a significant role in management of DFU. This study explores the potential of novel silk dressing for DFU treatment in five case studies.

Method: 5 patients with DFU were enrolled for the study. Wounds were treated with silk dressing. Dressing changes were administered based on evaluation of the physical and clinical condition. Tissue samples were collected non-invasively at every dressing change and the expression of early to late-stage markers of wound healing were analyzed by semi-quantitative reverse transcriptase polymerase chain.

Results/Discussion: After first dressing change, all the patients presented with significant granulation tissue formation. The progression of wound healing was markedly superior. The planned skin gaffing was not needed in some cases. This overall healing pattern is also reflected in the gene expression profiles. Marked reduction in expression of inflammatory markers such as TNF- α (15%), IL-1 β and IL-6 (40-50%) and matrix metalloproteinases (MMPs) was observed. Elevated expression of ROS scavenging enzyme, and diabetes axis related genes such as stromal cell-derived factor-1 (SDF-1) - chemokine receptor type 4 (CXCR4) and vascular endothelial growth factor receptor 2 (VEGFR-2) was also observed in all the cases after single application of silk dressing. This was further reflected in enhanced angiogenesis and improved collagen deposition at the wound site.

Conclusion: Novel silk dressing mediates wound healing via modulation of inflammation, oxidative stress, diabetes dysfunctionality axis and MMP expression.

EP580 The impact of cold atmospheric plasma therapy on wound healing in diabetic foot ulcers: a case report

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Aim: The primary goal is to provide insights into the potential of Cold Atmospheric Plasma (CAP) as a non-invasive and promising adjunctive therapy for DFUs, contributing to the development of more effective and innovative treatment approaches in the field of diabetic wound care.

Method: A 63 year old male with Type 2 DM for 15 years presented with a 2 month old Lt foot and Lt leg infected ulcer. Conventional wound care had been employed for several weeks with minimal progress. Surgical Debridement along with a Transmetatarsal amputation was done. The patient was enrolled in a novel CAP treatment protocol, involving daily 6-minute sessions over a 4-week period. Comprehensive assessments, including wound size measurements, bacterial load analyses, and patient-reported outcomes, were conducted at baseline and throughout the treatment period.

Results/Discussion: The application of CAP resulted in a remarkable improvement in the patient's wound healing progress. The ulcer's size decreased by 30% within the first two weeks with good reduction in necrotic tissues and had developed good granulation tissue cover. Pt underwent a Split Thickness skin graft and complete closure was achieved by the end of the sixth week. The patient reported a substantial reduction in pain and an overall improvement in quality of life.

Conclusion: The observed acceleration of wound healing, reduction in bacterial burden, and improvement in patient-reported outcomes suggest that CAP holds promise as a non-invasive and well-tolerated adjunctive therapy in the management of DFUs.

EP581 Management of skin graft lysis in a breast carcinoma patient post-modified radical mastectomy: a non-surgical approach of serial case

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Aim: This case study examines the effectiveness of non-surgical wound care in managing skin graft lysis in a 49-years-old patient and a 55-years-old with breast carcinoma following a modified radical mastectomy and subsequent skin grafting. The patient underwent modified radical mastectomy for breast carcinoma, followed by skin grafting. Post-operatively, 30% of the skin graft underwent lysis, leaving 70% intact. And the second patient, underwent modified radical mastectomy for breast carcinoma, followed by skin grafting. Post-operatively, 90% of the skin graft underwent lysis, leaving only 10% intact. Due to financial constraints and coverage limits by the national health insurance (BPJS), further surgical interventions were not feasible.

Method: The remaining 70% and 10% of the skin graft was managed with topical applications of Collagenase and Hyaluronic Acid over a period of four weeks.

Results/Discussion: The treatment led to successful epithelialization, and the wound closed by secondary intention without the need for additional surgical intervention. This outcome highlights the potential of enzyme-based topical treatments in managing post-surgical skin graft complications.

Conclusion: The successful management of skin graft lysis using Collagenase and Hyaluronic Acid in a patient with breast carcinoma post-mastectomy provides valuable insights into non-surgical wound care options. This case emphasizes the importance of alternative wound management strategies, especially in contexts where surgical interventions are limited due to financial or health insurance constraints.

EP582 Effective management of pressure injury in a bedridden patient with spinal trauma: A case study

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Aim: This case study aims to explore the efficacy of a non-surgical approach in treating pressure ulcers in a 54-year-old patient immobilized due to spinal trauma. The patient, with a history of spinal trauma leading to limited mobility, developed a pressure injury on the sacrum due to prolonged bed rest. The compromised mobility and inability to undergo surgical interventions necessitated an alternative treatment approach.

Method: The ulcer was treated with a regimen combining Hyaluronic Acid and Silver Sulfadiazine, followed by a period of treatment using an enzymatic preparation (Collagenase + Hyaluronic Acid). This treatment was administered over a twenty-eight days period.

Results/Discussion: The pressure injury healed completely without the need for surgical intervention. The combination therapy proved effective in wound closure, highlighting the potential of non-surgical methods in managing pressure ulcers in patients with limited surgical tolerance.

Conclusion: This case demonstrates the successful use of Hyaluronic Acid and Silver Sulfadiazine, followed by Collagenase-based enzymatic therapy, in healing a sacral pressure injury in a patient with spinal trauma. It underscores the importance of individualized, non-surgical approaches in managing complex wounds in patients with contraindications to surgery.

EP583 Versatility of anterolateral thigh free flap and superficial circumflex iliac artery perforator free flap in the reconstruction of acute full thickness defect in hand burns

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Aim: To report our experience in the reconstruction of soft tissue defects in the hand with free anterolateral thigh (ALT) flap and free superficial circumflex iliac artery perforator (SCIP) flap; and describe the clinical outcomes.

Method: Two patients with primary reconstructions of full thickness burns injuries to the hand undergoing microsurgical free tissue transfer were assessed. Salvage strategy of the extremity, post operative complications and primary reconstructive result were analyzed. Functional outcome measures (range of motion and grip strength) were assessed during out-patient follow up.

Results: In all patients, salvages of the affected extremity were achieved, further complication were venous thrombosis and hematoma. Functional outcome during follow up after 6 months was inhomogeneous, depending on the pattern of injury.

Conclusion: Free flap reconstruction can be a mandatory and valuable strategy to cover full thickness burns injuries of the hand, early in the clinical course of thermal or electrical trauma; and may provide extremity salvage by favorable means of reconstruction to achieve acceptable functional outcomes.

EP584 Cutaneous tuberculosis, a hideous cause of impaired wound healing

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Aim: Tuberculosis, one of the ancient disease on the Earth, can be divided into two forms, pulmonary and extrapulmonary. One of the extrapulmonary manifestation is cutaneous tuberculosis, a rare infection that represents 1% to 1.5% of extrapulmonary tuberculosis. Determining cutaneous tuberculosis from a patient afflicted with is challenging because of its similarity with other skin diseases. Due to the clinical presentation and diagnostic difficulties, cutaneous tuberculosis is often clinically neglected and misdiagnosed.

Method: A case report of 33-years-old woman that has been referred to the clinic due to the unhealing wound after several treatment with antibiotic and debridement. She had a history of a soliter red rash in her lower leg with surrounding induration for about 3 months. Laboratory tests reported normal. A skin ultrasonography showed skin inflammation, edema and abscess. After debridement and wound edges approximation, the wound edges were totally separated again. Microscopic observation in staining secretions revealed *Mycobacterium tuberculosis*. Open wound dressing using Hydrophillic Foam and antituberculous drugs helped her to achieve complete resolution.

Discussion: Cutaneous tuberculosis can masquerade as many other commonly encountered dermatological conditions. Investigating the pathognomonic findings through histopathological examination is important tool for diagnosis. Comprehensive treatment using antituberculous drugs and modern wound dressings is effective.

Conclusion: Cutaneous tuberculosis is a rare disease that should be considered in the differential diagnosis of patients with chronic non-healing wounds that are poorly responsive to conventional treatment methods.

EP585 Split-thickness skin graft combined with tulle dressing and moist exposed burn ointment application on chronic burn wound: A case series

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Aim: Chronic burn wound has a tendency of impaired epithelization caused by factors such as unfavorable wound bed and secondary infection. We aim to evaluate split-thickness skin graft combined with tulle dressing and Moist Exposed Burn Ointment (MEBO) application on chronic burn patients' outcome.

Method: Five chronic burn patients, admitted to Cipto Mangunkusumo National Hospital, Jakarta from April to November 2023 were included. Three patients were pediatric, the remaining were adult and geriatric. The initial burn surface area ranged between 18%-93%. All patients underwent excisional debridement and split-thickness skin graft combined with tulle dressing and MEBO application. Three of the patients also had Platelet Rich Plasma injection. The graft take and wound surface were observed for at least 2 weeks post operatively.

Results/Discussion: We compared the wound surface area percentage between pre-operative and 2 weeks post-operative. After treatment for 2 weeks, 1 patient reached complete epithelization, and another 2 patients had less than 1% TBSA wound left. After 1 month, the other 2 patients healed with less than 1% TBSA wound left.

Conclusion: Split-thickness skin graft combined with tulle dressing and MEBO application accelerated graft take on chronic wound with unfavorable wound bed. The results on pediatric, adult, and geriatric patients were satisfactory.

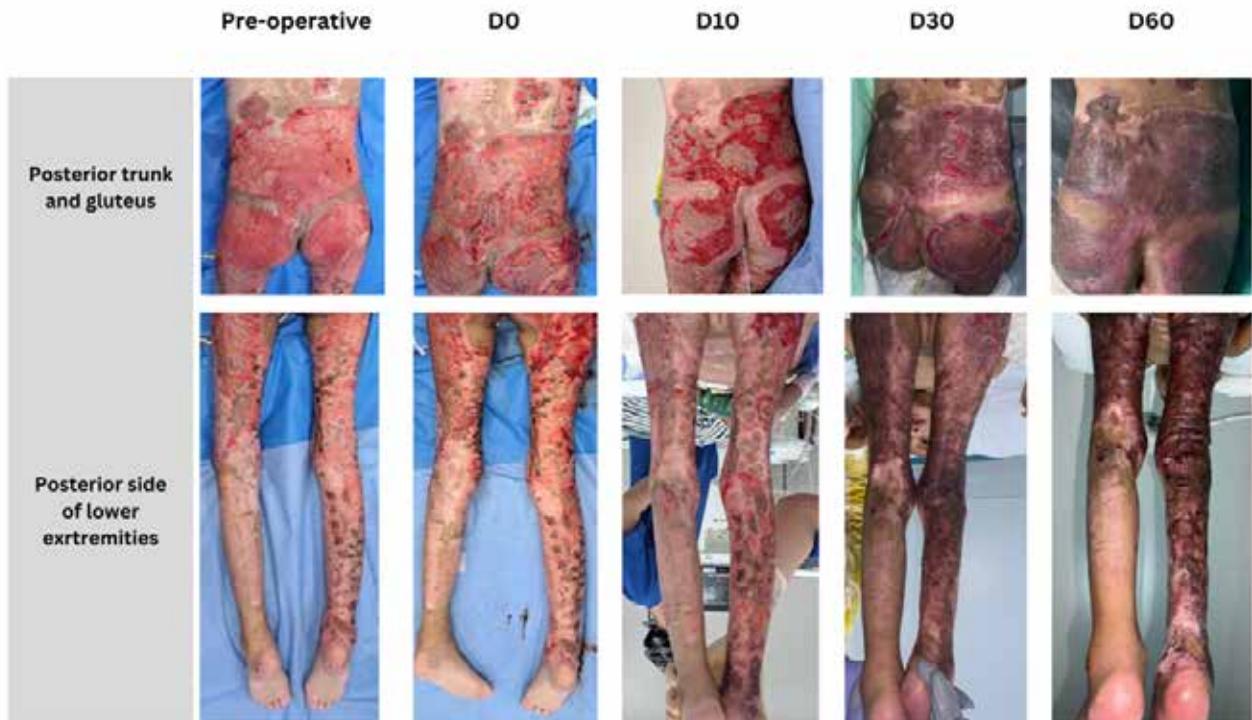


Figure 1. A 6-year-old patient, 32% TBSA.

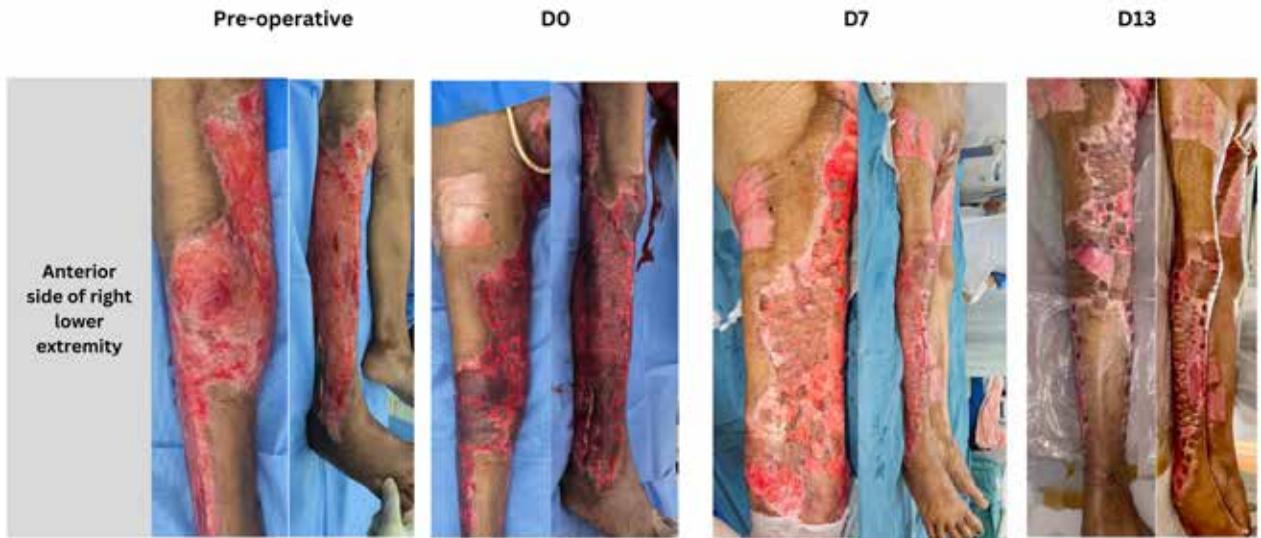


Figure 2. A 89 year-old patient, 18% TBSA.



Figure 3. A 9-year-old patient, 32% TBSA.



Figure 4. A 12-year-old patient, 93% TBSA.

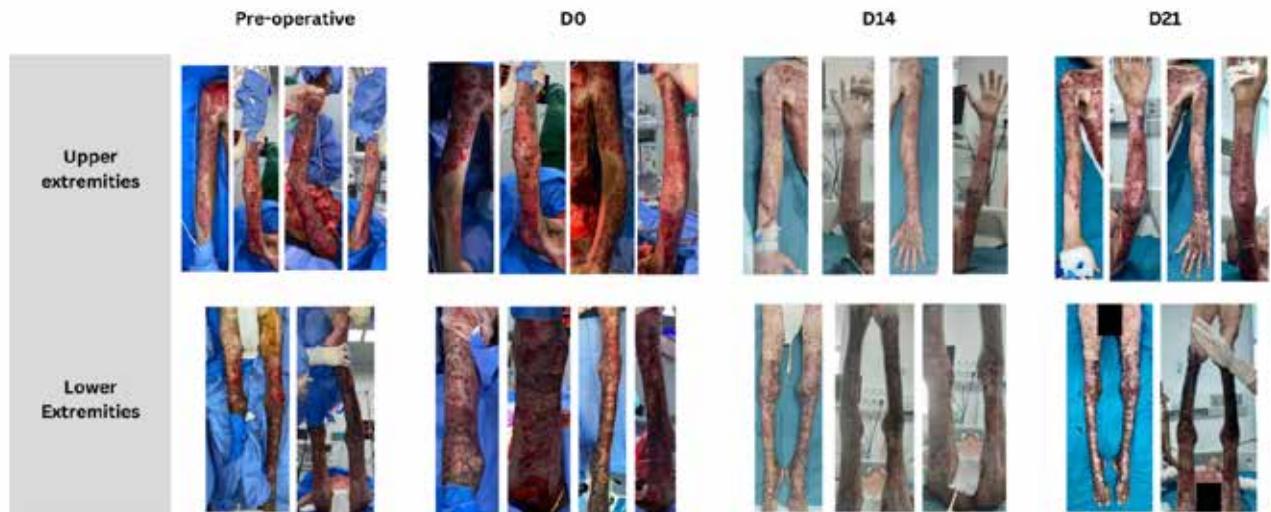


Figure 5. A 42-year-old patient, 44% TBSA.

EP586 A 54-year-old male with type 2 diabetes and achilles tendon surgery successfully salvaged a complex diabetic heel ulcer with osteomyelitis

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Aim: Diabetic heel ulcers can be challenging to manage, especially when complicated by bone infection and other medical factors. This case highlights the successful treatment of a diabetic heel ulcer caused by penetrating trauma, underscoring the importance of multidisciplinary care and innovative wound management techniques.

This case study presents the successful management and salvage of a complex diabetic heel ulcer in a 54-year-old male with type 2 diabetes mellitus.

Method: Infection & BS control: The infection was controlled systemically by broad-spectrum antibiotic therapy and locally by antimicrobial advance dressings. Adjusting blood sugar medication doses by an endocrinologist.

Wound care: Surgical debridement and osteotomy were performed to address the infected bone. Subsequent maggot debridement therapy facilitated the removal of remaining necrotic tissue and enhanced local antibiotic therapy (ALLANTOIN).

Advanced wound healing techniques: Vacuum therapy promoted angiogenesis and tissue healing.

Platelet-rich plasma (PRP) and stem cell dressings containing mesenchymal growth factors expedited wound healing.

Results/Discussion: Wound healing: After approximately six months of intensive treatment, the wound achieved complete healing.

Improved glycemic control: Collaborative efforts among healthcare providers led to improved glycemic control, with HbA1c levels decreasing from 9.6% to [5.5%].

Reduced dressing changes: Stem cell therapy reduced the frequency of dressing changes from daily to weekly.

Conclusion: This case study showcases the successful salvage of a complex diabetic heel ulcer with osteomyelitis following penetrating trauma. A multidisciplinary approach, surgical intervention, maggot debridement therapy, and innovative wound healing techniques contributed to the remarkable outcome.

EP587 Total amputation followed by referral to people without scientific qualifications

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Aim: Presenting a case report of complete amputation after referring to people without scientific qualifications

Method: The patient, a 70-year-old male smoker, referred to traditional medicine and used leech therapy since 2 months ago due to the color change in his lower limbs and pain, but there was no improvement. After one month, he underwent laser treatment and finally, due to the progress of pain and gangrene, he was put on the list of amputation surgery.

Results/Discussion: The appearance of abnormal symptoms and unusual pain is not a problem that can be easily passed over. Ischemia in the lower limb is a medical emergency, the consequences of which can be prevented if diagnosed in time. Lack of correct diagnosis and referral to people without scientific qualifications led to the amputation of a human being.

Conclusion: The appearance of abnormal symptoms and unusual pain is not a problem that can be easily passed over. Ischemia in the lower limb is a medical emergency, the consequences of which can be prevented if diagnosed in time. Lack of correct diagnosis and referral to people without scientific qualifications led to the amputation of a human being.

EP588 Vacuum therapy and its role in accelerating the healing of pressure ulcers

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Aim: Presenting a case report of vacuum therapy and its role in accelerating the healing of pressure ulcers

Method: The patient, a 34-year-old man, suffered a spinal injury due to an accident and was hospitalized in the ICU for 9 days. At home, they noticed a large wound in the sacrum area, and upon visiting the hospital, the wound was debrided and it was bandaged with silver ointment for 6 days. After feeling better, he went to the wound clinic. The treatment program was based on decompression using the offloading method and diet modification. After cleaning the wound bed, the wound healed with vacuum therapy during 4 months.

Results/Discussion: Eliminating the cause of the wound, creating bacterial balance, maintaining proper moisture and continuous debridement are the basic approaches to wound treatment. The use of auxiliary methods such as vacuum therapy can increase blood flow and discharge excess wound secretions by applying negative pressure and help speed up wound healing.

Conclusion: Eliminating the cause of the wound, creating bacterial balance, maintaining proper moisture and continuous debridement are the basic approaches to wound treatment. The use of auxiliary methods such as vacuum therapy can increase blood flow and discharge excess wound secretions by applying negative pressure and help speed up wound healing.

EP589 Presenting a case report about the risk of amputation following leech therapy in a case of diabetic foot ulcer

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Aim: Presenting a case report about the risk of amputation following leech therapy in a case of diabetic foot ulcer.

Method: The patient, a 65-year-old diabetic, has a wound on his left foot due to walking with inappropriate shoes, and he used leech therapy on the recommendation of his family. After two weeks, with the spread of the wound, he was hospitalized. The delay in referring to the multispecialty wound treatment team and the occurrence of widespread infection caused the doctor to put the patient on the amputation list. But the patient's dissatisfaction with the doctor's decision led to local interventions such as debridement, infection control and the patient's wound healed within 3 months.

Results/Discussion: The occurrence of ulcers in a diabetic person is one of the things that definitely needs basic care. Failure to refer immediately can have bad results. By visiting these centers on time, patients can get the best results in the shortest possible time. Presenting such cases in congresses and magazines can help to increase the awareness of society, patients and reduce health and treatment expenses.

Conclusion: The occurrence of ulcers in a diabetic person is one of the things that definitely needs basic care. Failure to refer immediately can have bad results. By visiting these centers on time, patients can get the best results in the shortest possible time. Presenting such cases in congresses and magazines can help to increase the awareness of society, patients and reduce health and treatment expenses.

EP590 Efficacy of active coagulation whole blood clot treatment for complex wound healing: A case series on deep and tunneling wounds

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Aim: Deep and tunneling wounds are challenging to manage and require the most advanced wound dressings to promote healing.

Autologous whole blood clot is a topical treatment, found to be safe and effective in healing acute and chronic cutaneous wounds. Active coagulation whole blood (ACWB) clot treatment uses the patient's own blood in order to treat deep and tunneling wounds, by applying the activated blood coagulation components, into the wound cavity allowing the blood to form a clot inside the wound.

This work aimed to explore ACWB treatment in hard-to-heal wounds.

Method: Five patients exhibiting surgical abdominal wounds: chronic pilonidal sinus, stage 4 sacral pressure ulcer (PU) with exposed bone, post-amputation surgical site wound, and non-healing wound dehiscence at the site of a prior hip replacement took part in the study. All patients have multiple comorbidities and have failed previous treatments. The patients were treated with ACWB until wound healing.

Results: Complete wound healing was observed in 4/5 cases. In the 5th case, there was a 70% depth and surface area reduction of the abdominal surgical wound.

Conclusion: The ACWB treatment was found to be effective in deep wounds with cavities and exposed structures. The flowable form of ACWB, by its liquid properties, can reach the entire wound, covering the deepest areas of the wound's cavities, forming a fibrin matrix, mimicking the role of the extracellular matrix.

The flowable formulation of ACWB treatment was found to be safe and effective improving the time and process of complex wound surface healing.

EP591 Injuries in athletes involved in contact sports: the case of an amateur soccer player who did not stop training sessions despite a major forearm wound with loss of substance

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Aim: In all sports played competitively, an injury can prevent participation in competitions and interrupt training sessions leading to delayed return-to-play recovery. Intensive treatment of complicated injuries with the introduction of advanced dressings, portable negative pressure devices, and neuromuscular stimulation devices can significantly reduce absence from the playing fields and recovery time.

Method: We considered an amateur soccer player who presented to the emergency department with a large left forearm wound with significant loss of substance. The wound was not treatable with stitches. The wound was dressed flat, followed by application at five days of the traumatic event with a negative-pressure appliance for ten days, and finally by application of waterproof plasters with absorbent and one way breathable properties.

Results/Discussion: Immediate treatment of the injury with early application of a portable negative-pressure device and advanced dressings allowed early resumption of training sessions and return-to-play within four weeks of the traumatic event in performing condition.

Conclusion: The need for intensive care in the treatment of athletes' injuries for an immediate return to play must enter the mindset of sports physicians and physical therapists as the gold standard to be achieved. Immediate, appropriate, and functional treatment of even non-negligible injuries with complex devices allows sports activity training sessions to be uninterrupted and healed more rapidly with the resumption of competitive activity.

EP592 Reconstruction of a foot after the explosion of the hunting cartridge

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Aim: Accidental injury, with a wild boar rifle, in a 55-year-old man with fracture from the second to fifth metatarsal of the left foot and fracture of the cuneiform, navicular and cuboid bone. The CT angiography examination demonstrates the vascularization supported by the posterior tibial artery and the plantar artery, while the anterior tibial artery is no longer visible when it passes into the dorsal artery. Having undergone surgery, the cartridge wad is removed and three Kirschner wires are positioned. The foot had a dorsal lesion (entry wound) measuring 5 by 5 cm and a plantar lesion (exit hole) measuring 10 by 6 cm, 7 cm deep.

Result/discussion: Negative topical pressure with canister and foam is positioned in the plantar area with pressure first at -80 and then at -100 mmHg while the lesion on the back is treated with bacterial-capture dressings. Once a background free of fibrin necrosis is reached, after approximately 14 days, a porous bioscaffold is applied, consisting of an advanced extracellular matrix (ECM) containing more than 150 proteins to help build new tissue and residual vascular channels capable of supporting the creation of the new vascular system and for rapid cell infiltration to close skin. Over this scaffold is applied the negative topical pressure positioned at -120 mmhg.

Conclusion: The association of the extracellular matrix with topical negative pressure led to the reduction of the wound by reducing treatment times and avoiding trapping the wound in the inflammatory phase

EP593 Home management of lower limb injuries using cellulose + PHMB in an HCV+ subject associated with cryoglobulinemic vasculitis

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Aim: Home management of lower limb injuries using cellulose + PHMB in an HCV+ subject associated with cryoglobulinemic vasculitis.

Method: A 52-year-old male patient with lower limb injuries due to venous insufficiency, HCV+ (chronic hepatitis C), and cryoglobulinemic vasculitis was selected. Studies indicate a higher prevalence of lower limb injuries in HCV patients compared to the general population. PHMB-based dressing was used in home treatment for 8 weeks with alternating threefold dressings for the first 3 weeks and subsequent weekly dressings, accompanied by compressive therapy. Dressing application followed manufacturer guideline. Compressive therapy utilized medium-stretch bandages based on studies showing improved healing rates for venous ulcers.

Results/Discussion: In the studied case, lower limb injuries completely healed after 8 weeks of home treatment with PHMB dressings, accompanied by a significant reduction in patient-reported pain. PHMB effectively controlled exudate production from the wound.

Conclusion: The case report highlights the efficacy of home management of lower limb injuries using PHMB as part of the treatment. The analyzed clinical case demonstrates complete wound healing, pain reduction, and total exudate control during the treatment period. These results support PHMB as a crucial component in home management, providing effective therapy and enhancing patients' quality of life.

EP594 An oleic matrix (organic extra virgin olive oil) enriched with oxygen capable of releasing limited quantities of reactive species of the oxygen (ROS) for the management of complications from extensive burns in children and improvement of healing outcomes

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Aim: Reduce healing times for extensive pediatric burns, improve the healing process, to control of infection, post-burn itching and scarring, through the application a device with oleic matrix (organic extra virgin olive oil) enriched with oxygen capable of releasing limited quantities of reactive species of the oxygen (ROS).

Method: Three cases of pediatric burn, consequent to hot liquid and backfire, which caused 2nd deep grade and 3rd grade burns. The children middle age was five years, and all burns were with TBSA > 15%. In the post-discharge evaluation, complications such as infection and hyper granulation were detected. For promoting the healing to areas which wasn't improved, in all cases the device was applied.

Results/Discussion: The healing outcomes were good, with resolution of the infection and prevention of the hypertrophic skar. During the period of treatment with the device, the children tolerated the medication, not reporting itching or burning sensations. No adverse events were noted.

Conclusion: The results obtained suggest that the application of the device in the context of pediatric burns, may represent a safe and effective treatment, with no significant identified negative effects. The device promoted tissue repair by managing and controlling major acute complications, primarily the infection and oxidative stress, and the related post-acute consequences, itching and scar hypertrophy.

EP595 Fluorescent light energy therapy in pediatric plastic surgery

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Aim: Numerous studies have highlighted the importance of blue light (410-430 nm) treatment in chronic ulcers but only a few studies have pointed out the effectiveness of applications of hototherapy in pediatric plastic surgery and wound healing. The aim of our study is to report the clinical observations made on children treated with fluorescent light energy in addition to standard treatment to promote healing and re-epithelialization of wounds.

Method: 9 children aged 5 months to 15 years old were enrolled. The fluorescent light energy (FLE) was used to promote the healing of composite graft in 3 children, two of them outcomes of animal bite trauma and one pressure scores by nasogastric tube.

The FLE was also used to reduce keloids in 2 children and to facilitate the burn healing process in 2 other children. Furthermore FLE was also applied to promote angiogenesis in necrotic tissues in 2 children after septic shock syndrome.

We observed the safety of the treatment, the level of pain, the trend of wound area reduction and the healing rate.

Results/Discussion: The skin lesions treatment with FLE showed a faster reduction of bacterial load and allowed to accelerate the re-epithelialization process without pain. It also reduces the inflammatory phases and modulate the scaring process promoting the healing of composite graft. This treatment can be associated with standard treatment also in outpatient setting and is safe and painless.

Conclusion: Blue light treatment in addition to standard care consistently accelerated the re- epithelialization rate of breast wounds.

EP596 Patient and healthcare professional evaluation of etiologic and local treatment for infected vascular wounds: a case report

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Aim: This work is to present the results obtained with a new multicomponent compression system in a single bandage and silver cleansing dressing in infected mixed leg ulcer (MLU).

Method: A 58 years-old man with a MLU with infection signs was treated with a multicomponent compression system in one layer while undergoing antimicrobial local therapy with polyacrylate fibers and TLC-Ag, to evaluate efficacy and tolerance of both the compression system and the dressing. This kind of compression system is used due to the presence of arterial disease contraindicating greater compression. The observation period was established at 4 weeks, according to guidelines on the use of silver dressings, with 2 dressing changes/week.

Results/Discussion: Starting from a 6x10cm wound, there was a surface's reduction, but mainly the jellifying and cleaning dressing provided a complete debridement of wound bed throughout the observation period. Also, it was possible to end the treatment with the antimicrobial dressing before the observation period, since infection signs were completely gone. The bandage was found to be quick and easy in application for the healthcare professional, resulting also effective reducing edema. Most importantly, however, the patient described the bandage as better tolerated than others in terms of reducing itching and heat sensation.

Conclusion: Compression therapy on infected vascular wounds can cause uncertainty among health professionals. Combining a compression system that ensures safe application of the correct amount of pressure and a dressing that interrupts the circulation of infection while promoting healing allowed significant results on the patient under study.

EP597 Hyaluronic acid/collagenase and equine collagen type in the management of post surgical dry gangrene on the palmar surface of the middle and distal phalanx of the third finger of the right hand

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Aim: Efficacy evaluation of Hyaluronic Acid/Collagenase and Equine Collagen type 1. Clinical history: 40 year old diabetic man working as milker with clinical history of Paronychia treated in India with incision, drainage and Onychectomy on 10th of April 2023. No bone involvement on the X ray. 12th May 2023 Initial wound size 4x 4.5 cm.



Method: Promotion of natural detachment of stable eschar. On the 9th June surgical debridement was implemented and empiric antibiotic therapy was started. Wound was covered with fibrin so treated with Hyaluronic Acid/Collagenase Ointment twice a week. From the 7th July the granulating wound bed was effectively treated with Equine Collagen type 1. Further reduction of the wound's Size 3.5x 1.5cm.

In the first week of September the wound size was 1x1. Afterwards the wound was dressed with Equine Collagen type 1 till the complete healing by end of September.



Results/Discussion: In 4 weeks we observed a significant wound bed preparation and reduction of wound size in 7 weeks 3 x 3cm. The wound reached complete healing at the end of September

Conclusion: We obtained complete healing in 3 months. Hyaluronic Acid/ Collagenase in the wound bed preparation phase Equine Collagen type 1 With Hyaluronic Acid was effective in healing phase. This strategy has avoided amputation of the finger of this right handed manual labourer.

EP598 Vulnology outpatient clinic and nursing clinic network

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Aim: In Italy Ministerial Decree 77/2022 provides for an “outpatient nursing clinic for the integrated management of chronic wounds” run directly by nurses. Many patients with vascular ulcers need both simple and/or complex dressings as well as compression therapy prescribed by the Outpatient Vulnology Outpatient Clinic Level 2, therefore the Outpatient Nursing Clinic represents a local point of reference that can provide continuity of care.

Method: Outpatient Nurse Clinic patient with difficult-to-heal lesion. After a careful and thorough assessment, the outpatient nurse considered the wound difficult to heal through standard procedures and needed a consult. Therefore, they referred the patient to the Vulnology Outpatient Clinic (level 2 outpatient clinic). The Vulnology Outpatient Clinic (level 2 outpatient clinic) assessed the situation and took charge until the wound showed signs of improvement. Then the patient was referred back to the outpatient nurse and, when needed, periodically seen by the Vulnologist’s clinic.

Results/Discussion: Patient with infected vascular ulcer on the left leg, cared for by the Outpatient Nurse Clinic since 2022 December 2022: 1st admission to the Vulnological Outpatient Clinic. February 2023, referred back to the Outpatient Nurse Clinic, undergoing periodic consultations at the Vulnologist’s Office. September 2023: ulcer healed.

Conclusion: A 9-months dressings and bandages protocol resulted in a complete healing of the of the difficult-to-heal wound thanks to networking and cooperation between the players.

EP599 PBMNCs and bio-absorbable antibiotic impregnated beads in the treatment of phlebostatic wound: case report

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Aim: Chronic wound is due to excessive levels of proinflammatory cytokines, persistent infections and senescent cells that do not respond to reparative stimuli. In particular, the polarization of macrophages from pro-inflammatory M1 to regenerative M2 is missing. To appropriately treat a chronic wound, an understanding of the pathophysiology of wound is critical. All wounds should be treated according to the TIME principle: tissue debridement, infection control, moisture balance and edges of the wound.

Method: We describe a case of chronic phlebostatic ulcer in a 74-year-old obese woman, treated in July 2023 with bio-absorbable antibiotic impregnated beads and local injection of peripheral blood mononuclear cells (PBMNCs).

Results/Discussion: Four-month results show a rapid re-epithelialization of the wound with a significant reduction in the size and an improvement in the patient’s quality of life.

Conclusion: Knowledge of the pathophysiology of chronic ulcers is critical for treatment of these wounds. Management of the infection is an important step. Peripheral blood mononuclear cell therapy is able to stimulate the proliferation phase, awakening senescent cells and advancing the wound from the inflammatory phase.

EP600 The holistic approach in the care of a patient with a large infected wound in the nape of the neck due to a suspected violin spider bite

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Aim: Wound healing with a combined methodological approach: Wound Bed Preparation (WBP) and Wound Hygiene (WH).

Method: Male patient, 62 years old, body weight 135 kg, height 175 cm. Coming from the emergency room with a large abscess drained in the operating room (1000 ml of purulent exudate). The patient, diabetic and hypertensive, coming to the ward, presents an undermined wound (15 x 10 cm) with local infection in the nape of the neck site.

Treatment:

- Reassurance and emotional support with his active involvement in the treatment process
- Oral diabetic nutrition diet with 2200 Kcal + protein supplement with Glutamine and Arginine (total of 150 g/protein/die)
- Wound cleansing: Polyhexamethylene Biguanide (PHMB) solution
- Debridement: surgical, mechanical, autolytic and chemical
- Infection management: systemic antibiotic and topical antimicrobial based on silver + EDTA and benzethonium chloride. Later, with oil based on Hypericum Perforatum and Azadirachata Indica
- Exudate management: Hydrofiber technology dressing and silicone foam reinforced at the edges with polyurethane film
- Pain management: lidocaine cream 5% and/or Tramadol 100 mg intravenous if pain NRS > 3 (Numerical Rating Scale)

Results/Discussion: Infection resolution time: 3 weeks

- Average dressing change: 96 hours
- Healing: 12 weeks
- Average pain: NRS = 2

Conclusion: The synergical management between WBP and WH allowed the patient to reach quickly the complete recovery. The dressing change and the infection resolution time were satisfactory. Good results in pain management. All this had positive repercussions on recovery times, which cannot be taken for granted, and on the patient's quality of life.

EP601 Rare case of autologous skin reject: Churg-Strauss ulcer

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Aim: Skin ulcers are a heterogenous manifestation of a vast variety of different diseases and them could be hard challenge to frame. Diabetic patients have skin local microenvironment damage and immune chemotactic response dysfunction that causing healing retard or camouflage underlying pathologies.

Method: We report a case of a diabetic male patient with non healing ulcer caused by traumatic injury with barbed wire on the lateral left side knee which was initially treated with ambulatory medication than with autologous skin graft taken from gluteus skin. This patient came to our observation after 2 years of home dressing. He is no smoker, BMI 34.5, glycated hemoglobin 6.2%, Nasal Polyposis. The ulcer had 6 cm diameter, it had hypertrophic granulation tissue grown over skin level with hyperkeratotic edge and fibrinous wound bed. We performed a microbiological Biopsy for Antibiotics selection, after we started advanced medications with Polyhexanide pack and Hydrofibre compress without benefits. Negative pressure therapy was applied for 2 weeks also without results. Blood test and local biopsy were done: hyper-IgE (1851 * KU/L), other parameters investigated were within limits. Histological examination shows perivascular eosinophils cluster and a granulomatosis formation which seems foreign body reaction. Reomathologics consultation was performed.

Results/Discussion: Clinical picture is compatible with Churg-Strauss Syndrome and the patient starts therapy with methotrexate obtaining benefits: the blood chemistry values returned to normal and the wound healed after a month.

Conclusion: When ulcers do not heal despite adequate treatment, one must think of some underlying rare pathology.

EP602 Wound hygiene in the care of a polytraumatic patient with left ear injury

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Aim: Use the wound hygiene methodological approach in the management of infection in auricle injury.

Method: Female patient, 59 years old, body weight 85 kg, height 175 cm, with crushing trauma with fractures of: pelvis, multiple ribs, spinal bones fractures (no spinal injuries). She presents also a large maxillo-facial trauma with flaying of the auricle. The wound was 5 x 4 cm (stage III EPUAP scale). Treatment:

- Cleansing: hypochlorous acid-based solution
- Debridement: surgical, autolytic, chemical
- Infection management: systemic antibiotics and topical antimicrobial based on silver + EDTA and benzethonium chloride, Polyhexanide (PHMB) solution
- Exudate management: Hydrofiber technology dressing and silicone foam with silicone edges
- The wound edges, when needed, were activated using dermatological curettes
- Enteral feeding through nasogastric tube (SNG), with the following nutritional intake: 30 Kcal/Kg; 1,3 g proteins/Kg; water 30 ml/Kg. Upon the resumption of oral feeding, 2200 Kcal of soft diet with 90 g of protein were administered.

Results/Discussion: Infection resolution time: 3 weeks

- Average dressing change: 72 hours
- Healing time: 6 weeks
- Average pain: NRS = 0

Conclusion: Traumatic injury to the auricle is not very recurrent. Given the complexity and atypical location, we wanted to use the Wound Hygiene approach. The application of this methodology made possible to manage the infection in an acceptable time (21 days). The dressing change times were satisfactory and healing occurred in a month and a half. The results are good from an aesthetic point of view with positive repercussions on the alteration of body image and patient satisfaction.

EP603 Treatment of pediatric hidradenitis suppurativa with Bimekizumab: A case report

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Aim: Hidradenitis Suppurativa (HS) is a chronic inflammatory skin disease characterized by nodules, abscesses, and draining tunnels, affecting areas rich in apocrine sweat glands. Among systemic treatments, an emerging role is played by the introduction of monoclonal antibodies (mAb) directed against the target molecules implicated in the HS pathogenesis.

Method: We report the case of a 16-year-old boy affected by severe HS, naïve to biologic therapy, successfully managed with the off-label use of Bimekizumab 160 mg subcutaneous vials (2 vials at baseline, at week 4 and week 8), a biotechnological drug that inhibits interleukin (IL) 17A and IL-17F. Systemic therapy was associated with a proper wound management, according to the principles of HS-TIME. Clinical examination was performed using the International Hidradenitis Suppurativa Severity Score System (IHS4). The physical, psychological, and emotional impact of HS was assessed using the Skindex-16 and the Hospital Anxiety and Depression Scale (HADS).

Results: The patient presented a severe form of HS (IHS4: 150) with a great impact on quality of life (Skindex16: 93; HADS: 14). After two months, there was a notable improvement of the patient's clinical condition and quality of life (IHS4: 80, Skindex-16: 62, HADS: 8). No adverse events occurred during the follow-up period.

Conclusion: This case illustrates the significant benefits of a combination therapy which includes an innovative biologic treatment with bimekizumab and a personalized wound assessment in a pediatric patient suffering from HS. However, further studies are necessary to evaluate the long-term efficacy and safety of Bimekizumab in the pediatric population.

EP604 Lymphatic venus leg ulcer treatment protocol

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Aim: The purpose of this study is to plan the pathway which lead to healing of the venous leg ulcer (VLU) is achieved with a suitable dressing procedure, with management of the venous and lymphatic system and subsequent grafting of dermal substitute and skin graft.

Method: The study took place over a period of 3 months. The patient presents with venous leg ulcer (VLU) and lymphoedema. The ulcerative wound was treated with the principles of wound bed preparation (WBP), then hydrosurgery debridement, periwound skin care and NPWT single use, plus bone marrow stem cells, plus dermal substitute and skin graft.

Lymphoedema was managed with compression bandages and/or compression stockings as clinically indicated.

Finally, dermal substitute and skin graft were performed

Results/Discussion: After 2 weeks of treatment with debridement and 30 days of NPWT the lesion was ready to proceed to dermal substitute.

21 days after the placement of the dermal substitute plus stem cells, skin graft was carried out.

In a period of 3 months, the patient recovered completely from the ulcerative lesion and lymphedema present at the first visit without complications.

Conclusion: An appropriate cycle of dressings and the use of compression bandages and/or compression plus NPWT single use plus stem cells stockings to contain lymphedema allow the venous ulcer to be completely healed, barring any complications.

EP605 Combination of micrografting and dermal substitutes in the management of post-traumatic wounds

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Aim: To evaluate the efficacy and safety of combined treatment of autologous micrografts plus dermal substitutes in the treatment of three different post-traumatic wounds.

Method: Three male patients with a mean age of 49 years with a transtibial amputation, left ankle injury and cranial tumor resection were treated with a suspension of autologous micrografts obtained by the mechanical disaggregation of a small number of skin biopsies collected by thigh using a biopsy punch. Micrografts were used in association with different dermal substitutes and applied at different step depending by the wound. To complete the medication was also used a dressing spray after the removal of dermal substitutes.

Results/Discussion: Based on the clinical experience we reported the management of 3 complex cases. In the first case micrografts application in association to dermal substitute promoted wound healing after 34 days in a patient with transtibial amputation. In this case dermal substitute was applied 6 days after micrografts. In the second case, wound healing occurred in 105 days in the patients with left ankle injury which also underwent, after 1 month of micrografts application, to a full thickness skin transplantation. In the third case wound healing occurred after 2 months in the patient with cranial tumor resection and in this case micrografts were applied on the granulation tissue after 1 month from tumor resection.

Conclusion: The simplicity of the approach, its minimal invasive nature and the good quality of healed wounds makes the micrografting technology an useful tool for the management of complex wounds.

EP606 Diabetes ketoacidosis and acute fingers ischemia in children: a case report

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Aim: Diabetic ketoacidosis (DKA) is a serious complication of relative insulin deficiency affecting primarily type-1 diabetes mellitus (DM). It is frequently present at diagnosis of type 1 diabetes (in approximately 3% percent of children in the United States and Canada) and, along with its complications, is the most common cause of hospitalization, mortality, and morbidity in children with type 1 diabetes mellitus.

Method: This work presents the case study of an 1-year-old girl admitted to the emergency department of a tertiary pediatric hospital for newly diagnosed type 1 diabetes with clinical features of diabetes ketoacidosis (DKA).

Results/Discussion: Due to her poor clinical condition, she was immediately transferred to the pediatric intensive care unit and a femoral artery catheterization procedure was performed. She developed an acute distal ischemia involving the right foot's fingers. Acute limb ischemia in pediatric patients is rare but may lead to limb or fingers loss and life-long complications.

Conclusion: Even if a paucity of evidence exists to derive treatment guidelines, conservative management seems to be the better option in pediatric wound care field. Acute treatment and long-term follow-up by a multidisciplinary team of pediatric and surgical specialists and allied health professionals is integral to achieving a successful outcome in children with acute fingers ischemia.

EP607 Successful management of postoperative complications by nurse practitioners in Japan: a collaborative approach leading to favorable outcomes

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Aim: Nurse Practitioners (NPs) in Japan, established in 2008 and currently numbering around 800. In this report, I share an experience where an NP successfully managed the wound of a postoperative complication case, resulting in a favorable outcome.

Method: A 73-year-old male diagnosed with acute diffuse peritonitis due to appendiceal perforation underwent right hemicolectomy, entering the ICU under Open Abdominal Management with Abthera. NP intervention began on the third day per the physician's request. After bowel anastomosis on the fifth day, abdominal closure was performed, and Closed Incisional Negative Pressure Wound Therapy (ciNPWT) was initiated. On the ninth day, the midline incision dehiscenced, exposing intra-abdominal organs. Consequently, NPWT with instillation and dwell (NPWTi-d) was initiated, incorporating non-adherent gauze due to midline dehiscence. To prevent horizontal separation, the midline incision was sutured with two stitches at both ends daily, totaling 12 stitches, while continuing NPWT, reducing the overall area to approximately one-third of the central area. By the 72nd day, the patient achieved healing and was discharged ambulatory.

Results/Discussion: NPWT is excellent at promoting vertical granulation tissue growth, but it often lacks horizontal wound contraction, leading to scar formation and epithelialization in cases of secondary healing. Therefore, suturing and contracting both ends expedited horizontal reduction, allowing temporary closure of the majority of the wound and minimizing scar visibility.

Conclusion: Collaborative intervention by NPs working in conjunction with physicians in managing severe postoperative complications made it possible to successfully close a midline incision departed at SSI.

EP608 Treatment of Morel Lavalée lesions using a combination of suction drain and negative pressure wound therapy

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Aim: Morel Lavalée lesions (MLL) are closed degloving injuries in which fluid accumulates between the hypodermis and deep fascia. Although the incidence is reported to be rare, once it occurs, it often progresses chronically, and is prone to recurrence. Although various treatments have been introduced, there is still no standard. The authors report successful treatment of MLL using a combination of suction drain and negative pressure wound therapy (NPWT).

Method: A total of three patients were treated with this combination. All cases were caused by blunt trauma, and the average duration was 2.3 months. Necrotic skin was excised, and the inside of the pocket was meticulously debrided. A suction drain was inserted inside the pocket, the skin wound was closed, and then NPWT was applied widely to the area. NPWT was removed after being maintained for a week, and the suction drain was removed within 2 weeks.

Results/Discussion: All cases were treated well without any specific complications. There were no signs of recurrence during the follow-up period of more than 6 months. In the case of young female patient, satisfactory cosmetic results were obtained. This combination is thought to have shown good results based on the principle of maintaining negative pressure within the pocket using suction drain and maintaining positive external pressure using NPWT.

Conclusion: MLL are difficult to treat because they tend to become chronic and recur easily. Combination of suction drain and NPWT can be a relatively simple treatment method that can reduce the recurrence rate.

EP609 A rare case of angiosarcoma secondary to lymphedema

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Aim: Angiosarcoma, a rare yet highly aggressive cancer, originates from cells lining blood or lymphatic vessels. While Stewart-Treves syndrome is linked to angiosarcomas in breast cancer patients with lymph node dissection and radiation therapy, angiosarcomas in the lower limbs of those with lymphedema are less common but noteworthy.

Method: An 80-year-old woman treated for cervical cancer developed a black skin lesion misdiagnosed as chronic ulceration due to eczema, but it turned out to be angiosarcoma. No distant or regional lymph node metastases were found, leading to wide excision and reconstructive surgery as the treatment plan.

Results/Discussion: The patient had a wide excision of the angiosarcoma with clear margins, resulting in 17x15cm wound exposing the tibia. Split-thickness skin grafts were used (17x7.5cm, 12/1000 inch thick), expanded with 1:1.5 mesher. Negative pressure wound therapy (NPWT) and leg splint were employed. NPWT dressing changes occurred on the 5th and 10th postoperative days, with successful graft integration. Due to lymphedema, the patient was discharged with the NPWT system in place.

Conclusion: This case highlights angiosarcoma in a lower extremity of a lymphedema patient. Its aggressive and fast-growing nature underscores the importance of early diagnosis and surgical intervention. Unfortunately, it usually gets misdiagnosed as a bruise or ecchymosis. Clinicians should be aware of the possibility of angiosarcoma in high-risk patients who have undergone regional lymph node dissection and radiation therapy. This case serves to share our successful experience in managing this rare but critical disease.

EP610 Arrangement of orbicularis oris muscle in complete bilateral cleft lip and palate

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Aim: The way the orbicularis oris muscle is functionally arranged is the most important factor for the surgical treatment of cleft lip. In this case, we revised the unmanaged orbicularis oris muscle during a prior cheiloplasty 18 years ago.

Method: A 18-year-old male patient had an oronasal fistula and philtrum shortening (Fig. 1). At the age of six months, he underwent palatoplasty and cheiloplasty with the Veau III procedure in order to address his complete bilateral cleft lip and palate. Under general anesthesia, cheiloplasty and rhinoplasty were performed to lengthen the philtrum and columella. In the previous Veau III cheiloplasty, the orbicularis oris muscle was not arranged transversely and was attached to the columella and alar base (Fig. 2). Therefore, the muscle was cut, moved to a horizontal position, and sutured (Fig. 3). Subsequently, an advancement flap of the columella was performed, followed by an onlay tip graft using conchal cartilage.

Results: Three days following surgery, the patient was discharged. Six months following the procedure, there were no complications, and the patient was satisfied with the cosmetic result (Fig. 4).

Conclusion: Repositioning the orbicularis oris muscle is necessary for patients with complete bilateral cleft lip because cheiloplasty without it can result in both functional and aesthetic problems. Also, secondary cheiloplasty, which includes appropriate muscle rearrangement, can be used to manage the complications resulting from unrepaired orbicularis oris muscle.



Fig 1. Preoperative photograph.



Fig. 2. Intraoperative photograph.



Fig. 3. Intraoperative photograph.



Fig. 4. Photograph of 6 months after operation.

EP611 Repetitive exposure of titanium mesh after cranioplasty

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Aim: Because of their own benefits, synthetic materials are widely used in cranioplasty. Skin defects with mesh exposure are the most common cranioplasty complications, and they are more common when titanium mesh is used. The patient who underwent titanium mesh cranioplasty and had a recurrent forehead skin defect is the subject of this report.

Method: A 32-year-old patient suffered a frontal bone fracture from a motorcycle accident that also resulted in intracranial and epidural hemorrhage. To treat these injuries, cranioplasty using titanium mesh was performed. Two years later, a latissimus dorsi-free flap was applied to address a forehead skin defect with mesh exposure (Fig. 1). However, the mesh was only partially removed. 10 months later, he had a different skin defect, a second latissimus dorsi-free flap was applied with near-total mesh removal (Fig. 2). A follow-up cranioplasty using bone cement and flap modification was performed after 6 months (Fig. 3).

Results: The result was satisfactory, and during the four-month follow-up period, there were no significant complications (Fig. 4).

Conclusion: We advise that skin defects exposing mesh should be treated by completely removing the metal, then utilizing a different material for cranioplasty and applying the proper soft tissue covering over the reconstructed cranium.



Fig. 1. (A) Photograph of the first skin defect. (B) After 10 months of the first LD free flap.



Fig. 2. Photograph obtained 6 months after the second LD free flap.



Fig. 3. Photograph obtained during cranioplasty.



Fig. 4. Photograph obtained 4 months after the revisional operation.

EP612 Reconstruction of the lower leg with percutaneous aponeurotomy and lipofilling (PALF): a case report

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Aim: PALF is a new concept creating mesh pattern needle sticks to regenerate matrix scaffold for fat grafting claimed by Khouri. It is a minimally invasive, incisionless method possibly alternative to flap operations. We report a case of a young man with soft tissue loss around Achilles successfully healed with PALF.

Method: A 19-year-old man with soft tissue defect around right Achilles due to a degloving injury (snowboarding) visited our outpatient clinic three months after trauma. He, was repaired three times primarily at a local clinic, performed transposition flap in orthopedic surgery clinic and disrupted. The soft tissue was hard from scar contraction. Traditional flap operation such as peroneal or PTA perforator propeller flap were considered, however he and his parents prefer to have PALF in advance.

Results/Discussion: After debridement, the size of the defect was 2 x 0.8 cm in neutral position (fig. 1). An 18-gauge hypodermic needle is inserted multiple times 3 cm proximally, 1.5 cm distally. The meshed area was lipotumescenced with 5 ml of dilute lipoaspirate from lateral thigh. Advancement tension was relieved in neutral position without flap undermining (fig. 2) and there is no additional scar six months postoperatively (fig. 3).

Conclusion: PALF is a good alternative for flap operation in small soft tissue defect. It offers not only tissue gain from wide mesh, but also regenerative potential of fat grafting.

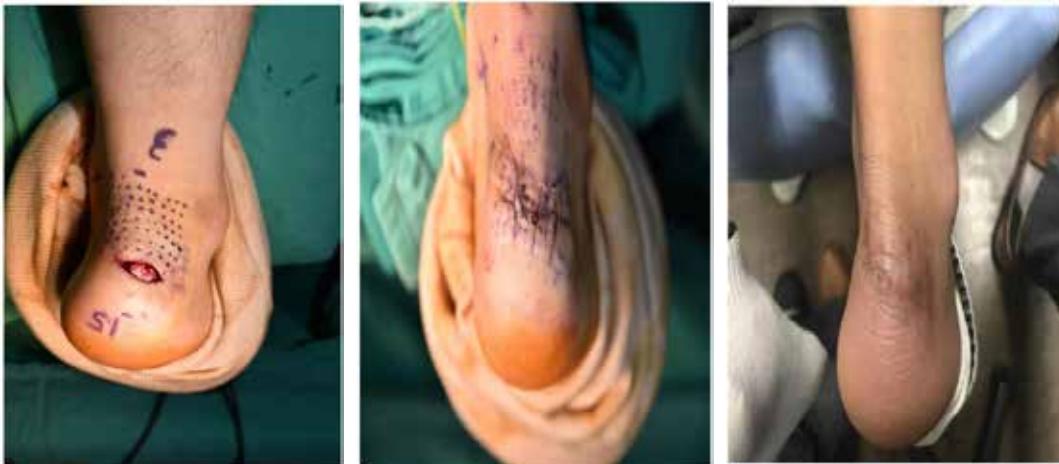


Fig. 1: After debridement

Fig. 2: After PALF

Fig. 3: 6 months postoperatively

EP613 Accidental diagnosis of primary cutaneous lymphoma (PCL) mistaken for skin tumor

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Aim: Primary cutaneous lymphomas (PCL) are rare and must be distinguished from nodal and systemic lymphomas. PCLs, which is skin-only lesion, must also be differentiated from other skin tumors or chronic wound. We introduce cases that accidental diagnosis of primary cutaneous lymphoma mistaken for skin tumor.

Method: Two patients were included in the study. One has 9 x 5 cm mass with ulceration on abdomen. She got wound management more than 4 weeks in other hospital but wound was not improved. Punch biopsy confirmed as just chronic inflammation. We performed complete excision of mass included ulceration and primarily closed. Another one has 4.5 x 3 cm mass on left upper arm. Biopsy result was undifferentiated small cell sarcoma (CDKN2A deletion). We removed mass according to sarcoma and covered with anterior lateral thigh free flap.

Results/Discussion: After removal of mass, permanent biopsy revealed as primary cutaneous anaplastic large cell lymphoma in first patient and primary cutaneous extranodal NK/T-cell lymphoma (nasal type) in second patient. In both cases, Epstein-Barr encoding region (EBER) in situ hybridization is positive. We referred them to hematologist and oncologist for further evaluation and treatment. After 6 month postoperatively, they had no complication of operative site and general conditions.

Conclusion: Clinicopathological correlation is important to the diagnosis, classification and treatment of PCLs. We should take care of diagnosis primary cutaneous lymphoma before surgical removal because it is easy to mistaken for skin tumor.

EP614 Foreign body granulation on upper eyelid by hyaluronic acid filler: a case report

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Aim: A foreign body granuloma is a non-allergic chronic inflammatory reaction, and this may occur after the administration of any dermal filler. In case of granuloma on upper eyelid, it can be caused by migration of filler on forehead. Therefore, we report an upper eyelid granuloma case following filler injection in the forehead.

Method: A 72-year-old female presented with progressive periorbital swelling and ptosis on the right upper eyelid. Past history of the patient revealed that patient had received a filler (substance unknown) injection in the forehead 15 years ago. There was no other ophthalmologic history, and no abnormal findings in pupil, extraocular movement, and in fundus examination. There was eyebrow elevation of the right upper eyelid, and the marginal reflex distance (MRD) 1 was 1 mm on the right eye compared to 4 mm on the left eye. There were a non-tender erythematous 2.0x1.0cm-sized round and firm mass on the right upper eyelid. Magnetic resonance imaging study showed infiltrative skin thickening with an ill-defined margin. Excisional biopsy and levator muscle advancement were performed on the right upper eyelid, accompanied by left upper blepharoplasty for symmetrical outcome.

Results/Discussion: Histological findings showed chronic granulomatous inflammation with fat necrosis. There was no recurrence of symptoms and infections after operation.

Conclusion: A complete history of patient with filler injection is important when a periorbital mass is encountered. Granulomatous inflammation of the eyelid may occur after filler injection in the forehead and can be related to migration of the filler.

EP615 Cutaneous T-Cell lymphoma: A case report emphasizing early diagnosis and management

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Aim: The aim of this report is to present a case of Cutaneous T-cell lymphoma (CTCL) in a patient who exhibited progressive swelling and a painful ulcerative lesion on her left lower leg. This case highlights the importance of diagnosing and managing CTCL, a rare form of non-Hodgkin lymphoma primarily affecting the skin.

Method: A 63-year-old female presented with a swelling painful ulcerative lesion on her left lower leg. Notably, there was no history of trauma or any abnormal findings in the laboratory examination. To further investigate the lesion, a magnetic resonance imaging (MRI) study was conducted, revealing an intramuscular enhancing mass lesion involving the soleus muscle with adjacent soft tissue swelling. To establish a definitive diagnosis, an excisional biopsy was performed.

Results/Discussion: The histological examination of the excised tissue revealed an atypical lymphoproliferative lesion. Immunohistochemistry studies were positive for CD30 and Ki-67. These findings supported the diagnosis of CTCL. Given the nature of the disease, the patient was promptly referred to the hematologic department to initiate chemotherapy, an essential step in managing CTCL.

Conclusion: Despite its typically slow-growing nature and limited tendency to spread to other organs, CTCL can have a profound impact on a patient's quality of life due to symptoms such as itching, pain, and disfigurement. This case underscores the significance of early diagnosis and appropriate management in improving outcomes and the overall well-being of individuals living with cutaneous T-cell lymphoma. Early intervention can help mitigate symptoms and potentially extend the patient's quality of life.

EP616 A case of total atherosclerotic perforator occlusion in bilateral anterolateral thigh flaps harvested for diabetic foot reconstruction

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Aim: Atherosclerosis and calcification of vessels is a well-known complicating factor in microsurgical reconstruction of diabetic foot ulcers. However most studies on this problem have focused on specifically named donor or recipient vessels. We present a case of total atherosclerotic occlusion of perforators rising from intact lateral circumflex femoral artery branches in bilateral anterolateral thigh (ALT) flap elevation.

Method: A 51-year-old male with a history of diabetes mellitus, ischemic heart disease and kidney transplantation presented with necrotizing fasciitis of the left foot. After initial management with serial debridement and antibiotics stabilized the patient, ipsilateral ALT free flap reconstruction of the foot was planned after computed tomography angiography (CTA) and handheld Doppler evaluation of lower extremity vasculature patency.

Results/Discussion: Although preoperative CTA confirmed patency of the left lower extremity arterial system and Doppler mapping enabled uneventful suprafascial flap elevation based on a large pulsatile perforating vessel, the perforator was severely calcified on visual inspection, and no flap perfusion was found after perforator isolation. The same findings including total occlusion of the perforator pedicle on cross-section were discovered on contralateral ALT flap elevation. Foot reconstruction was ultimately achieved using a thoracodorsal artery perforator flap, which displayed no atherosclerotic lesions.

Conclusion: Even with nonspecific lower extremity CTA and Doppler findings and clinically patent named arteries, perforators perfusing major flaps can be totally occluded in atherosclerotic patients. More sensitive diagnostic tools such as color duplex sonography or high-quality CTA should be employed for preoperative perforator mapping in atherosclerosis-risk patients.

EP617 Reconstruction of perineal defect using a deep external pudendal artery perforator flap in Fournier's gangrene

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Aim: Fournier's gangrene is a severe infection impacting the genital and perianal areas, resulting in tissue necrosis. We introduce a case wherein successful treatment involved utilizing a deep external pudendal artery perforator (DEPAP) flap for perineal reconstruction in a patient diagnosed with Fournier's gangrene.

Method: A 49-year-old male patient with diabetes and hypertension presented to the ER with diagnosed Fournier's gangrene, a complication of colon cancer. The patient, facing a septic condition, underwent debridement procedures (Fig. 1), resulting in a substantial perineal defect extending from the scrotum to the anus. Subsequent perineal reconstruction was used the DEPAP flap, with the perforator identified in the septum of the groin crease. Flap elevation, initiated from the distal end in a subfascial plane, involved a fasciocutaneous flap measuring 25 x 11 cm, enabling the direct closure of the donor site (Fig. 2).

Results/Discussion: The reconstruction proved successful, with no observed functional impairments. Following the restoration of the surgical site, chemotherapy commenced without complications even after the 8-month follow-up (Fig. 3).

Conclusion: The DEPAP flap demonstrates notable advantages in perineal reconstruction following Fournier's gangrene associated with cancer. This flap surgery, known for its reliability, minimizes operation time and yields aesthetic results. The utilization of a single-stage sensate flap technique allows for successful reconstruction and functional restoration in patients with a perineal defect.



Fig. 1. Perineoscrotal defect.



Fig. 2. Intraoperative photographs.



Fig. 3. At the 8-month follow-up.

EP618 Verrucous carcinoma that is easily mistaken as a verruca

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Aim: Verruca is a common skin condition with a low recurrence rate, often responding well to simple treatment. Nonetheless, when verrucous lesions show minimal improvement despite appropriate treatment for more than a month, suspicion should arise regarding verrucous carcinoma. Recognizing this possibility enables timely intervention for tumor management. The authors introduce a case in which a patient, initially diagnosed with verruca, underwent histopathological examination via surgical biopsy, finally diagnosed with verrucous carcinoma.

Method: A 75-year-old male patient consulted to our department with a tumor on lower lip diagnosed with verruca in punch biopsy (Fig. 1). However, its size continued to grow despite repeated cryotherapy. On physical examination, we observed a cauliflower shaped exophytic asymptomatic lesion measuring 2.5cm x 1.7cm on the lower lip (Fig. 2). We performed a wide resection and the defect was reconstructed with step-ladder techniques.

Results/Discussion: Histopathological examination of the specimen showed proliferation of well-differentiated epithelium with minimal atypia at the epithelial-connective tissue interface (Fig. 3). The findings were indicative of verrucous carcinoma. Subsequent clinical follow-up showed complete healing of the lesion, and no recurrence was observed during 18 months of follow-up (Fig. 4).

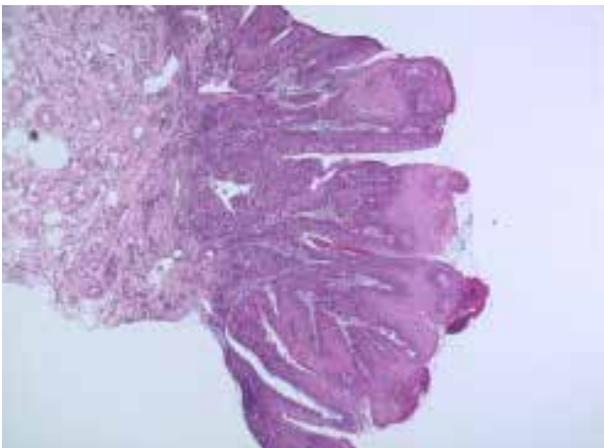


Fig. 1. H&E stain, x40



Fig. 2.

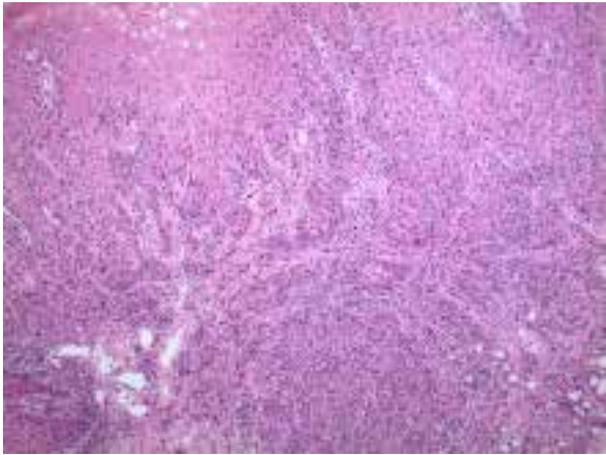


Fig. 3. H&E, x100



Fig. 4.

Conclusion: Verrucous carcinoma is an uncommon form of low-grade, well-differentiated squamous cell carcinoma of the skin, characterized by a verrucoid or cauliflower-like appearance. When verrucae exhibit limited response to appropriate treatment lasting more than a month, additional evaluation is necessary to differentiate them from verrucous carcinoma.

EP619 Mini-osteoplasty via subbrow approach for frontal sinus mass

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Aim: Frontal trephination is minimally invasive keyhole technique used to access surgical lesions located at frontal sinus. We introduce a novel method using mini-osteoplasty to create a window on the outer layer of the frontal sinus.

Method: A 46-year-old man presented to the hospital with continued frontal headache. Sinus magnetic resonance imaging showed a convoluted cerebriform patterned mass occupying right frontal sinus in contrast-enhanced T1 image (Fig. 1). We planned endoscopic sinus surgery via frontal trephination with mini-osteoplasty. After incision, blunt dissection proceeded to expose frontal bone preserving the supratrochlear nerve (Fig. 2). To make a rectangular shaped window, frontobasal burr holes were placed, and the straight line was sawed from hole to hole creating a bone flap. The tumor of the frontal sinus was easily resected through the window. Thereafter the window was covered with the resected bone flap with fixation. The biopsy of the mass indicated an inverted papilloma.

Results/Discussion: The postoperative recovery was uneventful (Fig. 3). No recurrence was observed for 1 year follow up. The patient had no complaints of forehead hypoesthesia or eyebrow asymmetry and satisfied with the scar.

Conclusion: Bicoronal approach can be used safely to access the frontal sinus, but it may be burdensome for the patient due to relatively long incision scar, alopecia and hypoesthesia. Subbrow approach with mini-osteoplasty has advantages in getting enough visual field, aesthetically minimal scar and minimal risk of hypoesthesia.

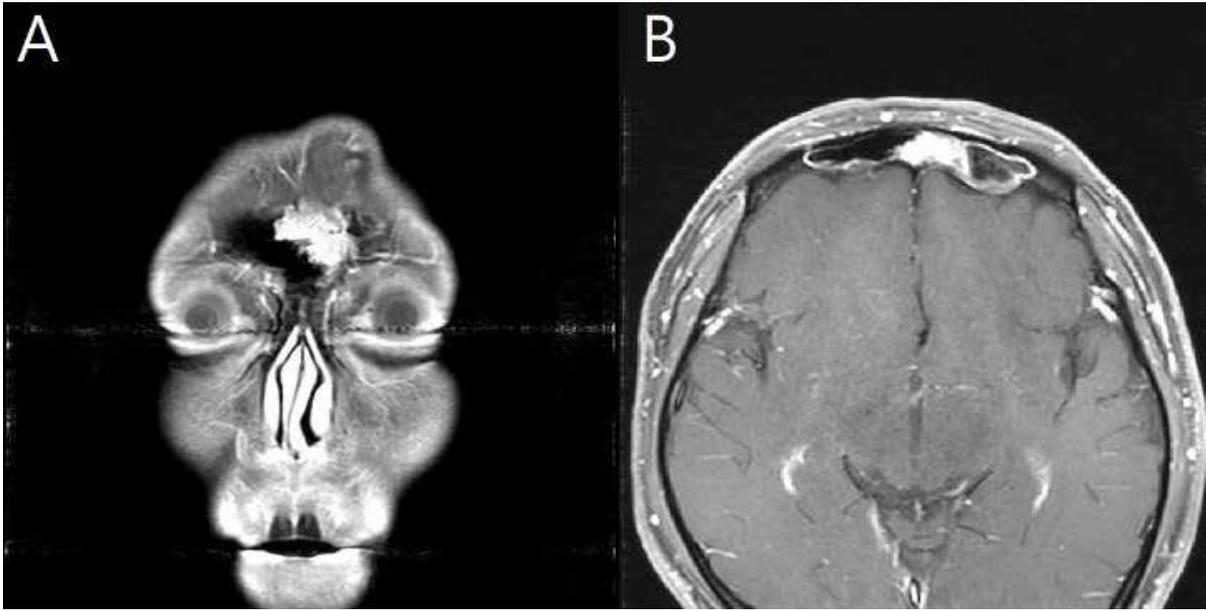


Fig. 1.



Fig. 2.

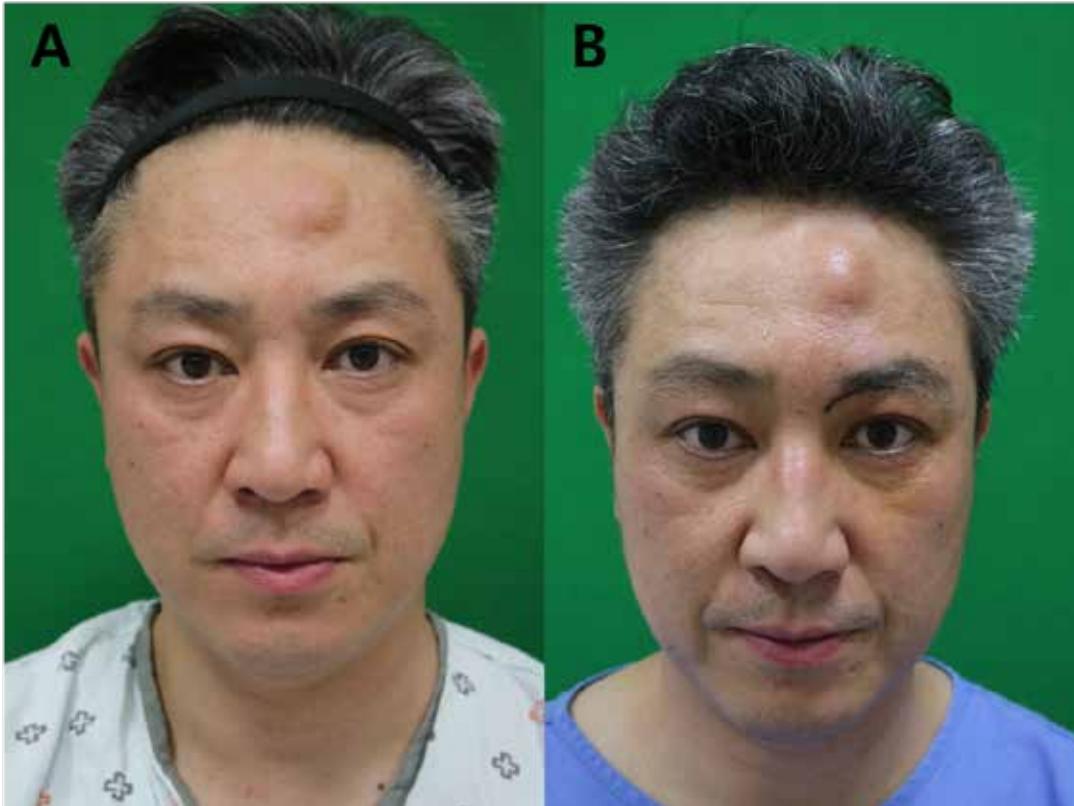


Fig. 3. (A) Preoperative photograph (B) Appearance at 5 days after operation

EP620 Reinforcement of a subcutaneous pocket for implantable cardioverter defibrillator insertion using acellular dermal matrix

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Aim: Thin people who undergo implant insertion into the chest wall face a high risk of implant exposure to the external environment. This report presents a case of a thin boy with a device implanted into his chest wall for the treatment of heart disease, and analyzes why the implantable device was at risk of exposure.

Method: Five months after an 8-year-old boy underwent implantable cardioverter-defibrillator (ICD) implantation in a subcutaneous pocket in the left anterolateral chest wall to manage long QT syndrome, ICD replacement became necessary owing to exposure risk from distal and lateral thinning of the ICD pocket. Pocket rupture and exposure would increase the risk of infection; therefore, we performed ICD removal and primary pocket closure. Two weeks later, a new suprafascial pocket was created, acellular dermal matrix (ADM) was attached to the inner wall to prevent ICD protrusion, and a new ICD was inserted.

Results/Discussion: One year postoperatively, the ADM was engrafted, and no complications were observed.

Conclusion: A thin subcutaneous layer increases the risk of ICD implantation complications. Inner wall strengthening with ADM can help prevent pocket rupture. Designing the ICD device to be smaller, and crafting the ICD to have an appropriate concave shape, could reduce the chance of the device's ends protruding from the pocket and causing skin thinning. Tilting the patient approximately 30 degrees to the right during surgery can prevent incorrect dissection angles and ensure sufficient visibility for the surgeon when dissecting areas far from the pocket opening.

EP621 Reinforcement of a subcutaneous pocket for implantable cardioverter defibrillator insertion with acellular dermal matrix in a pediatric patient

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Aim: Children have smaller thoracic cavities than adults and thinner soft tissue in the chest wall. Therefore, children are at high risk of exposure when large implants are inserted into the chest wall. Herein, we report successful reinsertion of a new implantable cardioverter defibrillator (ICD) into a new pocket using an acellular dermal matrix (ADM).

Method: An 8-year-old boy underwent ICD implantation in a subcutaneous pocket of the left anterolateral chest wall at the cardiology department 5 months previously for the treatment of long QT syndrome. The cardiology department requested ICD replacement because there was a risk of ICD exposure due to thinning of the distal and lateral portions of the ICD pocket. Therefore, the ICD was removed and the pocket was closed primarily. After confirming that there was no inflammation after 2 weeks, a new pocket was created in the suprafascial layer at the same location, ADM was attached to the inner wall of the pocket to prevent ICD protrusion, and a new ICD was inserted.

Results/Discussion: Six months postoperatively, the inserted ADM was engrafted, and no complications such as seroma, inflammation, or pocket rupture were observed. As a biological scaffold, ADM encourages angiogenesis and speeds up tissue ingrowth and cellular repopulation, leading to tissue regeneration.

Conclusion: In pediatric patients, a thin subcutaneous layer increases the probability of complications associated with ICD insertion. However, attaching ADM to the inner wall of the pocket to strengthen the subcutaneous pocket can effectively mitigate the risk of pocket rupture.

EP622 Delays in wound recovery in diabetic patients - a case study

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Aim: Delays in wound recovery in diabetic patients are caused by a wide variety of causes. Many studies are still underway on the delay in wound recovery, and various treatments are actively being studied. Also, peripheral neuropathy is common in diabetic patients. However, the occurrence of abscesses or open wounds in the trunk is uncommon, especially without a diabetes diagnosis. Therefore, we aim to share our experiences based on observations.

Method: Case A: A 33-year-old female patient presents with hearing impairment and no other underlying diseases. She visited the clinic due to the formation of a 15x4 cm-sized eschar on her back.

Case B: A 56-year-old male patient with eschar formation on the right chest and back visited the internal medicine department. Upon examination, a serum glucose level of 682 was measured, leading to hospitalization.

Results/Discussion: For Case A, the patient was diagnosed with diabetes for the first time with an HbA1c of 14% after admission. On CT imaging, abscess formation was observed in the back and around the navel. The patient underwent incision and drainage as a therapeutic intervention, followed by a skin graft. As for Case B, the patient received a first-time diabetes diagnosis with an HbA1c of 13.8% after admission. Abscess formation was identified on the right chest and back, leading to I&D. Subsequently, a skin graft was performed.

Conclusion: In the absence of other infection sources for patients with very high HbA1C, if there is a sudden increase in CRP and have fever, it is suspected of abscess formation and active furthered evaluation such as CT scans is considered necessary.

EP623 Clinical cases of treatment with moist exposed burn ointment for radiation dermatitis in skin cancer in the Kyrgyz Republic

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Aim: Evaluation of the clinical effectiveness of burn ointment (MEBO) for radiation dermatitis in skin cancer.

Method: 5 facial skin cancer patients (stage I-II) received contact radiation therapy (brachytherapy), the histological forms were basal, squamous, metatypical basal cell cancer.

A radical brachytherapy: a Freiburg flap, depth 0.3-0.5 cm, daily 4 Gy, 3 fractions/week, total 12 fractions - 48 Gy. After brachytherapy sessions, MEBO applied to the radiation area plus 1-2 cm beyond it from the start until 4 weeks after radiation therapy. By the end of brachytherapy, 4 patients experienced a radiation dermatitis of grade I, and in 1 patient - grade II (RTOG). After irradiation, after 4 weeks of using MEBO, the radiation reaction was almost completely stopped.

Conclusion: MEBO activates regenerative processes, helps prevent stronger radiation reactions, accelerates granulation of the epidermis.

Results/Discussion: 4 patients had a radiation dermatitis - grade I, and in 1 patient - grade II. After irradiation, by the end of 4 weeks of using MEBO, the radiation reaction almost completely stopped.

Conclusion: MEBO activates regeneration, granulation of the epidermis, prevents radiation reactions. The prophylactic and therapeutic use of MEBO can reduce the degree, delay the onset, shorten the duration of the radiation reaction, and improve the quality of life.



Patient Bat. #1



Patient Bat. #2



Patient Bat. #3



Patient Bat. #4



Patient Sap. #1



Patient Sap. #2



Patient Sap. #3



Patient Sap. #4



Patient Say. #1



Patient Say. #2



Patient Man. #1



Patient Man. #2



Patient Kon. #1



Patient Kon. #2

EP624 The compassionate use of integra dermal regeneration template in the surgical management of diabetic foot ulcers with concomitant underlying osteomyelitis

Mohamad Othman¹, Mahmoud Harb², Ali Al Arab²

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Aim: The Compassionate Use of Integra Dermal Regeneration Template (IDRT) in the Surgical Management of Diabetic Foot Ulcers (DFUs) with Concomitant Underlying Osteomyelitis.

Method: In this case series, we applied IDRT over DFU in 3 patients with an age range from 50 to 78 years old with multiple comorbidities. Our treatment strategy is based on obtaining wound culture from the DFUs, surgical debridement, then Initiation of Targeted Antibiotic Therapy. After 3 days, IDRT was applied and secured all around with staples.

Results/Discussion: The use of IDRT for the management of DFU is a well-recognized and a widely used methodology. IDRT is an artificial acellular dermal matrix that aids in wound healing by promoting vascularization, providing a barrier to bacteria and moist wound environment, and increases cell regeneration.

The double layer structure of this dermal regeneration template would serve to provide two main functions. The outer layer made mainly from thin silicone film provides a barrier from external contaminants thereby providing much needed protection to the healing ulcer. The inner layer constructed of a complex matrix of cross-linked fibers will provide a scaffold for the regeneration of dermal layer.

In our experience, the mean time that all cases of DFU with underlying osteomyelitis treated with debridement and antibiotics followed by IDRT require around 3 months of wound care until total epithelization happens.

Conclusion: The application of IDRT to DFU, is an additional treatment modality aside surgical debridement and antibiotic therapy for the management of non-healing infected DFUs.

EP625 The compassionate use of integra dermal regeneration template in the surgical management of diabetic foot ulcers with concomitant underlying osteomyelitis

Mohamad Othman¹, Mahmoud Harb², Ali Al Arab²

¹University of Balamand, Beirut, Lebanon, ²Clémenceau Medical Center, Beirut, Lebanon

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Conclusion: The application of IDRT to DFU, is an additional treatment modality aside surgical debridement and antibiotic therapy for the management of non-healing infected DFUs.

EP626 Two new local flaps for distal diabetic toe infection and asymmetrical adjacent toe necrosis

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Aim: To describe 2 new local flaps that could be used to cover soft tissue defects following surgery for severe distal diabetic toe infection and amputation for asymmetrical dry necrosis of adjacent toes. Also we report preliminary outcomes of the two new surgical techniques.

Method: This is a case series reporting a detailed surgical description and outcomes of two local flaps. The U-T flap is meant to be used when performing a distal toe Symes amputation for diabetic toe infection of the pulp associated with osteomyelitis of the distal phalanx. The webspace fillet flap is meant to cover the soft tissue defect after amputation of two adjacent toes with asymmetric dry necrosis.

Results/Discussion: A detailed pictorial step-by-step surgical technique for each flap is provided. Clinical outcomes for the U-T flap: Out of 6 performed cases, no flap or skin edge necrosis were encountered. In one case, a delayed wound healing of 4 weeks was observed. Clinical outcomes for the webspace toe fillet flap: Out of 4 performed cases, no total flap necrosis occurred. One partial flap necrosis was noted on its edges that healed conservatively. No wound healing delay has been observed in the other cases.

Conclusion: Both flaps are easy to perform with no need for microsurgical skills. The U-T yields less toe length discrepancy and a near-normal shape of the pulp. The webspace toe fillet flap has the potential to be the standard technique for defect closure following asymmetric amputation of two adjacent toes.

EP628 Case study of complicated traumatic hand injury treatment with negative pressure wound therapy

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²Department of Plastic and Reconstructive surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania

Aim: To share our experience and present case study of negative pressure wound therapy (NPWT) adaptability in treatment of patients with complicated traumatic hand injury.

Method: We report one case with traumatic hand injury treatment. Patient underwent wound revision and debridement surgery followed by installation of (NPWT) on the site of wound.

Results: 64 years male patient was hospitalized in Lithuanian University of Health Sciences Kaunas clinics department of Plastic and reconstructive surgery with traumatic left-hand injury. Wound revision surgery was performed: extensor tendons of first and second finger were sutured, and end-to-end anastomosis of radial artery branch was performed. Three days after surgery postoperative complication occurred: extensor tendons of first and second finger ruptured. Furthermore, wound infection symptoms occurred: febrile fever, leukocytosis and increased CRP in blood test. Antibioticotherapy was initiated. Secondary revision surgery was performed. Ruptured extensor tendons were sutured and retinaculotomy was performed. Due to damaged tissue edema and infection, wound in wrist was left to heal in secondary intention healing. The following day NPWT was applied. After two weeks autodermoplasty with Full-thickness skin graft was performed and NPWT was reapplied. One week after the surgery and NPWT application patient was discharged for further out-patient treatment and rehabilitation.

Conclusion: NPWT gives significantly positive results of improvement in the wound, as shown in our case report. Application of the NPWT was a useful method in stimulating wound healing after complicated traumatic hand injury.

EP629 Infected bullous cellulitis treated with activated carbon cloth dressing: a case report

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Aim: Aim of this study is to assess the efficacy of ACC (activated carbon cloth) dressing material in removing slough and reduce infection in a bullous cellulitis with pus.

Method: A single patient with acute infection of both hands diagnosed as bullous cellulitis identified. Patient's bullous ruptured, non- viable skin removed and pus drained. Wound bed cleansed with hypochlorus acid. ACC dressing material applied over the wound bed. Wound progress assessed and documented according to TIME (Tissue, Inflammation, Moisture, Edges) concept. Patient was done dressing 2 days once and progress recorded with digital photography.

Results/Discussion: Patients wound was reviewed after 2 day of initial debridement of blister and application of ACC. On 25-11-2023_Wound bed noted T:80% epithelized tissue and 20% granulation tissue; I: mild inflammation; M: low exudate; E: advancing. On 27-11- 2023 Wound bed noted T:100% epithelized tissue; I: no inflammation; M: dry; E: fully epithelized

Conclusion: ACC is to use contact dressing material that able to accelerate wound healing. It is also able to reduce infection and bacterial load by trapping microbes in its activated carbon pores.

EP630 Management of paediatric thrombophlebitis wounds in a tertiary hospital using polymeric membrane dressing: A pilot case series

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¹Ministry of Health Malaysia, Kuantan, Malaysia, ²Ministry of Health Malaysia, Kuantan, Malaysia, ³Ministry of Health Malaysia, Kuantan, Malaysia

Aim: Peripheral intravenous line complications resulting from intravenous infusion are common compared to those of central venous infusion especially in lower birth weight infants. The risks of intravenous infusion include infiltration/extravasation, phlebitis and obstruction. Wounds caused by thrombophlebitis in neonatal infants are managed traditionally with topical treatments.² However, there is limited data to support topical treatment in managing thrombophlebitis.

Method: This case series demonstrated the application of polymeric membrane dressing (PMD) in the management of neonatal and paediatric thrombophlebitis in a tertiary hospital in Malaysia. The patients were referred from the neonatal and paediatric intensive care units. Four cases of neonatal and paediatrics thrombophlebitis were managed with PMD successfully.

Results/Discussion: This case series demonstrated uncomplicated and accelerated wound healing using PMD. Comprehensive wound care assessment was practised with the application of PMD as protective anti-inflammatory dressings. The extent of thrombophlebitis was much reduced and the wounds healed completely within 2 weeks.

Traditional management of thrombophlebitis wound involved topical application of magnesium sulphate cream and elevation of affected limb. PMD proved to be a novel treatment option, to dampen inflammation and manage microenvironment in order to alleviate pain and accelerate wound healing.

Conclusion: A comprehensive and holistic thrombophlebitis management with the application of PMD has shown improved patient outcome and quality of life.



EP631 Surgical site infection treated with negative pressure wound therapy and surgical plasters to accelerate wound closure

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¹Wound Care Unit Hospital Tuanku Jaafar Seremban, Seremban, Malaysia, ²Hospital Tuanku Jaafar Seremban, Seremban, Malaysia, ³Hospital Tuanku Jaafar Seremban, Seremban, Malaysia, ⁴Hospital Tuanku Jaafar Seremban, Seremban, Malaysia

Aim: Surgical site infection with exposed implant needs prompt treatment to hasten the closure of wound. This case study aimed as a guide to treat the wound with negative pressure wound therapy (NPWT) to accelerate wound closure and at the same time using surgical plaster to aid faster closure by principle of macro-deformation.

Method: First patient wound at ankle secondary to SSI with exposed implant treated with NPWT and surgical plaster till complete closure of implant. Second patient wound at shoulder post endo-button procedure with exposed implant treated with same technique.

Results/Discussion: Both wounds closed completely.

Conclusion: Surgical site infection with exposed implant needs fast wound closure to retain the implant. NPWT with aided with surgical plaster able to accelerate wound closure by principle of macro deformation

EP632 Bone without flesh; Strides for hope

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Aim: To present a challenging medical case involving severe ulcers in a patient with diabetes and hypertension, and to discuss the innovative treatment approaches undertaken.

Method: The patient, initially treated at another hospital for severe sepsis and necrotizing fasciitis, underwent wound debridement. At the conference's center, further treatments included modern dressing techniques and negative pressure wound therapy, avoiding amputation.

Results/Discussion: The case study highlights the success of the treatment methods used over a twelve-week period. It discusses the clinical decisions made and the multidisciplinary approach in managing the patient's condition.

Conclusion: The case is significant for demonstrating how a seemingly impossible medical situation was turned into a manageable one with a positive outcome, emphasizing the importance of innovative medical approaches and multidisciplinary teamwork.

EP633 An effective treatment for the removal/reduction of bio-burden in heavily colonised and infected wounds using a hydroconductive dressing, demonstrated by fluorescence imaging

Vilvkumaran Karupayah¹

¹Hospital Tengku Ampuan Rahimah Klang, Klang, Malaysia

Aim: Hydroconductive dressing can be used effectively to absorb and remove to control heavy exudate and bacteria from the wound and enhance wound healing as seen using Moleculight i:X

Method: 10 patients with diabetic, pressure injury and traumatic chronic wounds were treated with hydroconductive dressing on a visualized bacteria wound bed using moleculight i:X on a contaminated and infected wound before and after treatment.

Results/Discussion: This dressing material with special property have overcome to solve the heavily contaminated/infected wound to reduce the bacterial load effectively to help in advancing the healing property of the wound. This also has reduced the frequency for invasive procedure or surgery for this patients.

Conclusion: This unique hydroconductive dressing proved to be a good and effective way to treat and reduce heavy bacterial load in a contaminated /or infected wound.

EP634 Pelvic limbs ulcers after COVID-19 vaccine

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¹Issste, Mexico City, Mexico

Aim: Demonstrate the efficacy of compression treatment in limbs ulcers after covid 19 vaccine

Method: Woman 56 yo, first consultation on 15.06.23. Diabetes mellitus type 2 diagnosed and treated 3 years since with metformin/linagliptin bid. On May 2021 in the fourth day after her first dose of Oxford-Astra Zeneca Covid 19 vaccine, developed ecchymosis and blistering in both pelvic limbs which rapidly ulcerated with active bleeding. Started to clean ulcers with soap, water, and pirfenidone ointment twice a day since, showing no improvement. On physical examination the patient had multiple superficial ulcers with bleeding centre and violaceous edge, the biggest one measured approximately 60x50 mm in the right shin. Pulses and ABI were normal in both limbs. Doppler ultrasound and blood tests resulted normal. Couldn't punch for biopsy because of chronic pain.

Results/Discussion: We started treatment with clopidogrel 75 mg qd, buprenorphine patches, pentoxifilin bid; sucralfate ointment, unna boot dressing with compression bandaging 20-30 mmHg, developing healing after 5 months of treatment.

Conclusion: Compression bandaging and sucralfate ointment in limbs ulcers after covid 19 vaccine resulted very effective besides antiaggregant and vasoactive agents.

The differential diagnosis includes vasculitic ulcers, pyoderma gangrenosum, cutaneous adverse drug reaction to vaccination.¹ For the mechanisms of adverse cutaneous reactions, it was suggested that type I allergic reactions occur due to dimerization of high-affinity IgE receptors in sensitized individuals after contact with an allergen, Cutaneous reactions of COVID-19 vaccine most often occur after the first dose² and within 7 days after injection.²



EP635 Use of SUPRA SDRM for healing of complex wounds, avoiding the passage to the operating room

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Aim: Describe three clinical cases, candidates for surgery to place a skin graft or flap due to exposure of deep wound structures.

Method: Cases report.

Results/Discussion: CASE 1. 52-year-old woman with a fracture injury to the lower third of the external ankle of the right foot, with exposure of osteosynthesis material in the avulsive wound, a SUPRA SDRM dressing was placed, which remained on the wound for two weeks continuously. At 45 the wound already had complete closure.

CASE 2. A 53-year-old male patient with an avulsive wound in the inner ankle of the right foot with exposure of the fascia, SUPRA SDRM was placed, which remained adhered to the wound for 20 days, with hermetic closure of the wound on day 40. days.

CASE 3. A 55-year-old male patient, with a history of trauma to the middle third of the leg on the right side that caused exposure of the periosteum, without signs of osteomyelitis or fracture, was placed directly in the periosteum without any type of supra procedure. SDRM so it remained adhered for 14 days, observing the proliferation of granulation tissue from the edges of the wound, subsequently with migration of keratinocytes and complete closure of the wound by re-epithelialization.

Conclusion: Thanks to the cellular scaffold properties of the SUPRA SDRM with the feasibility that there was adequate adhesion to the tissues and a progressive degradation that allowed the wounds to heal and without the need for expensive and laborious surgeries.

EP636 Is skin graft surgery really needed for all deep wounds? Presentation of complex clinical cases with the use of suprathel

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Aim: Describe clinical cases that are initially candidates for autologous graft due to the depth of the wound, and with the use of SUPRATHEL they have re-epithelialized.

Method: Cases report.

Results:

CASE 1. 49-year-old male, with diabetes mellitus of 10 years duration. With a full thickness wound on the tip of the first toe, with 6 months of evolution, a suprathel was placed for 14 days that remained adhered to the wound, after 40 days he had 100% re-epithelialization.

CASE 2. 8-year-old female with direct fire burn from home exposure, full-thickness second-degree burn in the facial region, for which a first surgical cleaning with tangential excision is performed, for which the dressing is placed. suprathel, leaving it placed without gauze or bandages on the dressing, remaining so for 14 days. Thirty days after the first surgery, reepithelialization was 100%.

CASE 3. A 55-year-old male, with a direct fire burn on the back of his right hand, to avoid sequelae, an autologous partial-thickness graft was initially proposed, which was denied, so a dressing was placed. of suprathel which remained adhered to the wound for 20 days, 30 days later the patient already had 100% re-epithelialization and was suitable for rehabilitation.

Conclusion: All of these wounds are deep second and third degree wounds where wounds measuring more than 3 cm from edge to edge do not have the opportunity to close due to epithelialization. With SUPRATHEL the opportunity to help with closure in patients who were ultimately prevented from having surgery.

EP638 Innovations in the management of complex enterocutaneous fistula

Sharryn Cook¹

¹Te Whara Ora, Blenheim, New Zealand

Aim: An enterocutaneous fistula is an abnormal tract between the bowel and the skin. One of the most challenging and resource demanding aspects of fistula management is local control of the effluent output.

Method: Ray, a retired farmer had a colonoscopy which confirmed a rectal cancer. Following an elective resection, he had a post-operative ileus. Then a wound dehiscence of both the abdominal and the perineal wounds with a small

bowel fistula developed by Day 12 post operation. Containment was achieved with the use of a wound pouch and a negative wound pressure therapy with the segregation of the fistula with the use of a baby teat and black antimicrobial foam. Within one week with the use of negative pressure wound therapy device the wound had reduced in length, width, and depth.

Two of the most important elements in preparing for definitive surgery to close a fistula are nutritional support and management of fluid and with the distal limb of his fistula now visible Ray was assessed as a candidate for re-feeding with the Insides Re-feeding device.

Results/Discussion: Re-feeding with the Inside Pump has revolutionised and simplified Ray's care. He is now on a full diet with his colostomy fully functional. Parenteral nutrition had been stopped and his albumin was within normal range and he was discharged home.

Conclusion: It is often assumed that a wound will not heal if bathed in faecal effluent. Our experience in this case study has shown that the opposite is true.

EP639 Wound healing complications after resection of a sarcoma

Sharryn Cook¹

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Aim: To reduce wound healing complications following a resection of soft tissue sarcoma

Method: A 58-year-old gentleman who had surgery to remove a sarcoma on his L) thigh/posterior knee. Prior to the surgery he has spent 6 weeks undergoing radiotherapy.

Sarcomas are serious but potentially treatable cancers. Radiation therapy and surgical resection can be curative if the disease is localised. Unfortunately, radiation can cause collateral damage, which can lead to wound healing complications after surgery.

A wound management plan was developed for the patient for the large cavity with heavy haemoserous exudate. By having the same nurse complete the wound care and developing a good rapport with the patient we were able to reduce the use of Entonox and patient was able to return to work for a few hours. This changed the patient's mood and contributed to the wound healing as the dressing was more comfortable for the patient and reduced his pain threshold.

Results/Discussion: Wound healed after 12 months, and patient returned to work. A custom-made garment was provided to assist with his leg healing and swelling lymphoedema management, along with physiotherapy strengthening.

Conclusion: Patients who experience complications have a significantly diminished quality of life. This situation can persist for many months, with multiple medical visits, increased pain and a lot of psychological distress. With the use of the negative pressure wound device this increased the blood flow and the production of granulation tissue with wound healing in a timely manner and a positive patient outcome.

EP640 Out-patient serial ultrasonic wound debridement and government health care subsidy: saving filipino lives without the loss of limbs

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Aim: To emphasize that soft tissue with bone infections in diabetic foot ulcers can be successfully managed by consecutive out-patient ultrasound-assisted wound debridement (UAWD) with support from Philippine health insurance.

Method: Using low-frequency ultrasonic generator with polyhexamethylenebiguanide (PHMB) and betaine irrigating solution, serial out-patient UAWD was done. Topical lidocaine-prilocaine is applied prior to the procedure. With settings at 40% intensity and irrigation level of 20%, UAWD of bone and soft tissue was done in contact mode. A hydrogel with PHMB and betaine was applied then packed with gauze. At home, the wound is cleansed twice daily using the same products. All fees were charged to the Philippine Health Insurance Corporation. Persons With Disability and Senior Citizen discounts still apply.

Results/Discussion: All 3 patients received prior surgical debridement and were referred to our clinic for continuation of care. Recovery was noted after a mean of 7 months (range 5-10) and a mean of 18 sessions (range 13-24). All patients were ambulatory while using off-loading shoes. One patient is employed and was able to continue work during treatment. Total charges ranged from PHP170,000 to PHP200,000 (EUR 2,850 to EUR 3,350), all of which were covered by the Philippine health insurance.

Conclusion: Loss of limbs among diabetic feet even deemed “non-salvageable” can be prevented when appropriate products and tools are used with adequate, consecutive wound debridement. Under Philippine health care laws, these expensive, serial procedures can come at no additional expense to the patient, encouraging consultation and treatment compliance.

EP641 Prioritizing quality of life in palliative care focuses on prevention of suspected deep tissue injury (sDTI) and pressure ulcer (PU)

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Aim: The aim of the study is to emphasize the role of quality of life in palliative care which consists of prevention and reduction of suspected deep tissue injury (sDTI).

Method: Case report. Patient’s conscious agreement. 45-year-old patient, glioblastoma, palliative care. sDTI at the left hip joint [1]. Goal: to prevent the progression of sDTI and PU. Procedure based on Polish Wound Healing Society, EPUAP recommendations: daily skin monitoring, including swelling and blistering, colour changes. Daily hygiene: octenidine cleansing mitts, octenidine wash lotion, vitamin E ointment. Antiseptic (octenidine) was used around and on disrupted skin. A foam silicone dressing was applied to the blister and pressure-prone areas, changing every day. Rehabilitation and massages implemented. Nutritional supplementation with ready-made preparations, parenteral hydration, corticosteroid therapy, and pain management based on TDA were administered.

Results/Discussion: The patient was in hospice for 6 weeks until death. Therapeutic strategy achieved the intended effects. At the time of death, pain symptoms were managed, and there were no occurrences of sDTI or new pressure ulcers [3]. This is the main factor facilitating the maintenance of the patient’s quality of life.



Figure 10 1 st day in hospice



Figure 11 sDTI reduction 3 weeks after



Figure 12 13 days before death

Conclusion: Prevention of ulcers in patients nearing the end of life and maintaining quality of life should be a priority for therapeutic teams in palliative centres. Deliberate actions and prioritizing goals which are different from those of non-palliative patients influence the quality of life.

EP642 Supporting the treatment process of healing wounds with application of autologous tissue dressing - case study

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Aim: Purpose of this work is to explain the case study of a patient with hard to heal wound. The wound is caused by a phlegmon of the left lower leg along with chronic venous insufficiency. The wound is treated using an autologous dressing applied as a biological membrane made from two fibrin fractions from the patient's blood: Injectable Platelet Rich Fibrin (I-PRF) and Structural Platelet Rich Fibrin (S-PRF).

Method: This case was conducted using the case study method of a patient with hard to heal wound, where from the beginning TIME method was used. Various approaches such as systematic cleaning the wound bed, targeted antibiotic therapy, conventional dressings, compression therapy of an lower leg, negative pressure wound therapy and later skin grafting did not bring any expected results. Due to the lack of results, the application of the autologous platelet rich fibrin dressing has been started.

Results/Discussion: There has been significant development in products based on platelets in healing hard to heal wounds in recent years. Dressings with platelet rich fibrin play an important role in the development of therapeutic methods using platelets, growth factories and stem cells originating from patients' blood. Results show that local application of autologous tissue dressings accelerates the process of healing wounds, achieving almost complete healing of the wounds.

Conclusion: Local application of autologous dressings made from combination of I-PRF and S-PRF, can shorten process of healing wounds. Consequently reducing treatment costs and improving the quality of life.

EP643 Autologous platelet rich plasma for chronic wounds of various etiologies : a case series

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Aim: Platelet-rich plasma (PRP) has gained attention as a potential therapeutic approach in wound treatment, as believed that accelerate the healing process through the direct administration of high concentrations of platelets, growth factors and cytokines. This case series aims to explore the application of autologous PRP, describing the results achieved in various types of chronic wounds with different clinical settings.

Method: In this retrospective case series we present a cohort of patients forwarded by a plastic surgeon to PRP treatments conducted by a single nurse based on non-healing time over 3 months. Patients with three different types of chronic wounds including pressure ulcers, surgical wounds and wounds associated with autoimmunity were included.

Results/Discussion: A total of 6 cases were included in this case series. Among the included patients, 4 were male and 2 were female. Before this method the treatment range between 3 and 36 months, and the average was 11 months. With PRP range between 1,12 and 3,94 months to total closure, and the average 2,45. In this time, the number of treatments decreases with an improvement of the quality of life. No pain is associated to this method.

Conclusion: The findings indicate that PRP can enhance wound healing and promote tissue regeneration in various types of wounds. Larger studies are required to validate these findings and establish standardized protocols for PRP administration. PRP holds promise as a new therapy in wound management, offering potential benefits for patients with challenging wounds.

EP644 Clinical experience - Case study of care of the surrounding skin of a difficult healing venous ulcer

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Aim:

- To present the effectiveness of using the Repairing Cream with Growth Factors in the treatment of ulcerated skin venous ulcer within a 2-month interval.
- Evaluate the action of the Repairing Cream with Growth Factors in repairing and remodeling the surrounding skin and wound edges.

Method: Observational, multicentric, non-comparative case study of a user with Venous ulcer in Primary Health Care. Male user, 65 years old, with a personal history of overweight, asthma, uncomplicated arterial hypertension, weight 103kg, abdominal perimeter 122cm, BMI 31.4Kg/m², cardiovascular risk 2%. He drinks 3 to 4 beers a week and has no smoking habits. Reach our unit for the first time on the 28th of September and begin to do the treatments.

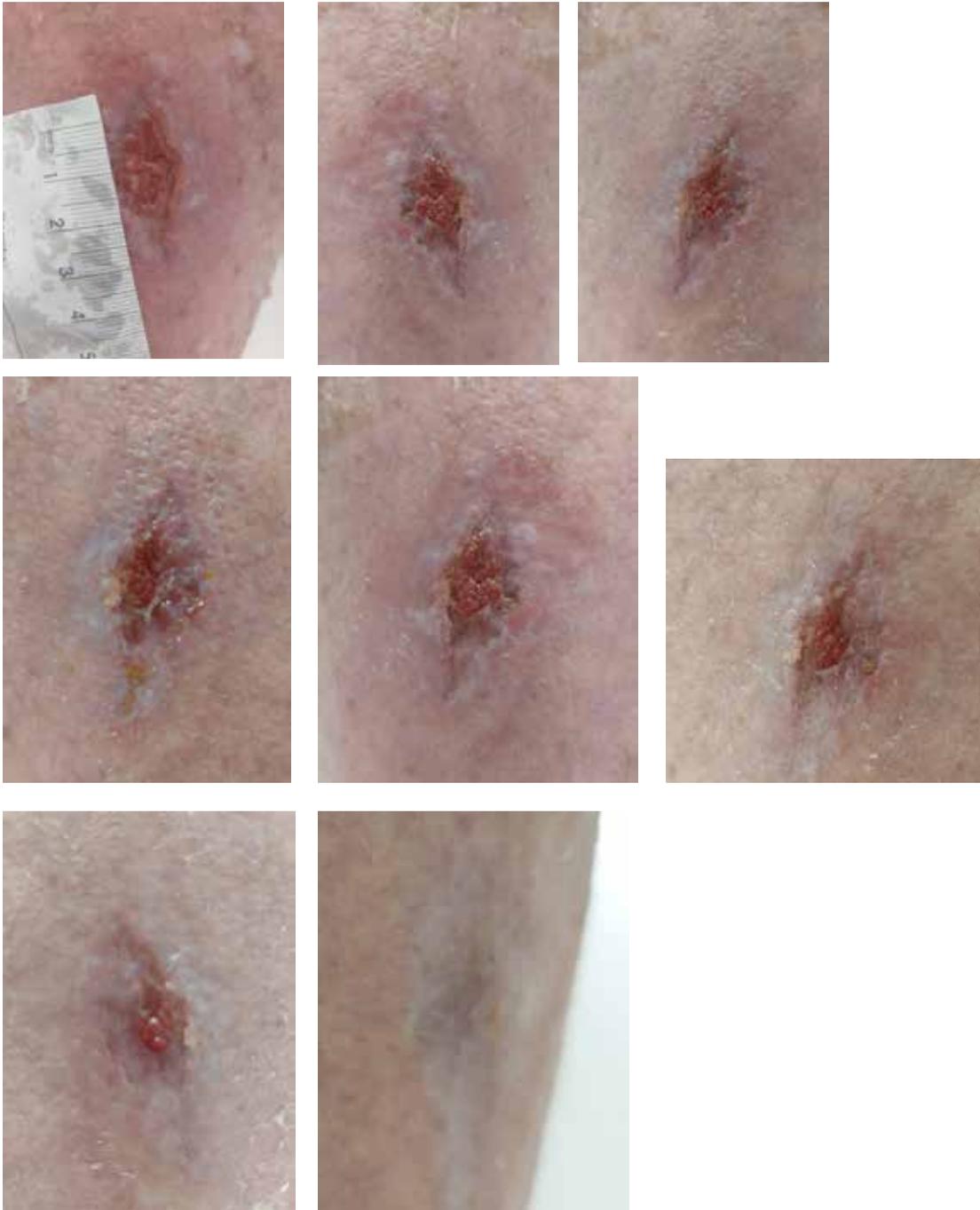
Results: The use of growth factors has proven to be an asset in the treatment of wounds, proving to be beneficial in speeding up the healing process, with a consequent decrease in the morbidity rate of patients and associated costs. Wounds can limit the patient's quality of life and well-being.



28/09/2023



4/10/2023



November 2023 - Complete healing of the wound

Weight: 103kg;

Height: 181cm

BMI: 31.4Kg/m².

Conclusion: User adopted a better life hygiene, assimilated teachings about the importance of having a healthy diet. With the application of the Repairing Cream with Growth Factors on the perilesional skin, a favorable evolution was observed in 2 months.

User continued to apply the Repairing Cream with Growth Factors after complete healing of the wound.

EP645 Application of topical desiccating agent in dehiscence complex wounds after cardiac surgery

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Aim: Late dehiscence of a surgical wound is a problem due to the consequences it entails. When the dehiscence presents devitalized tissue that is difficult to debride, the treatment is prolonged and may cause more complications. The application of topical desiccating agent (TDA) with active ingredient methane sulfonic acid, a chemical debridement is an effective tool in the debridement of these complex wounds, combining the application of local anesthetic for better pain control.

Method: Series of cases of application of TDA in dehiscence of three sternotomies and three saphenectomies with more than 30 days after surgery, with devitalized tissue that is difficult to remove, in hypocoagulated patients, with local anesthetic instilled in the wound bed.

Results/Discussion: After instillation of local anesthetic, TDA was applied, in which the reported pain was on average 5 in 10 in the first minute and in the following hours it decreased, remaining on average 1 in 10. Negative pressure wound therapy was applied in sternotomies, conventional treatment with topical antimicrobials and compression therapy was applied in saphenectomies. In seven days, the reduction of devitalized tissue was noticeable, as was the ease of removal.

Conclusion: Chemical debridement, despite being described as very painful, was well tolerated after instillation of local anesthetic. After seven days, the amount of devitalized tissue was significantly reduced, allowing the remainder to be removed more quickly in hypocoagulated patients in whom sharp debridement is contraindicated. The healing process was faster, and less treatments with a better quality of life.

EP646 Traumatic wound on a leg with CVI and dermatoporosis – Case study

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Aim: Assess the impact of a Lipido-Colloid Technology Nano OligoSaccharide Factor (TLC-NOSF) wound dressing in the local management of venous leg ulcers.

Confirm the benefit of the usage of compression therapy (CT) on Venous Leg Ulcers

Method: Case study presentation of a traumatic wound on a leg with chronic venous disease and dermatoporosis using photographic recording

Results/Discussion:

Day 1 – Traumatic wound on the external right lower area of the leg caused by a fall. Assistance on the local Hospital.

Day 3 - Overlap tissue without viability. Local treatment with iodine

Day 12 – Surgical debridement. Primary Health Care transfer. Arrival at PHC: Evaluation, started CT (40mmHg) multicomponent bandages (ABPI 0,92) and painkiller medication. PHMB cleaning solution used on wound bed and dressing changed to TCL-NOSF.

Day 25 – Wound area reduction, still some slough, granulation and epithelial tissue.

Day 68 – Wound only on the lower area of the leg. Mainly healed.

Day 92 – Total Healing. Hyperoxygenated fatty acids used on epithelial tissue and Compression Hosiery to avoid scar formation.

The use of CT and TLC-NOSF dressing showed to be an effective choice, because inflammation, pain and physical limitation was reduced on time and healing rate was improved, according to the clinical evidence existent.

Conclusion: Compression is the key to reduce edema and inflammation. The TLC-NOSF wound dressing revealed to be effective on accelerating healing rates and reduce wound area. Dermatoporosis is an important risk factor on wounds when trauma occur on skin.

EP647 Hypertrophic scar: A case study

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Aim: The burn can cause anormal scarring and scar. Quality of life can be affected due pain, stiffness and psychological changes in the person's own self-image.

Method: Descriptive methodology.

The case study is about a 3-year-old male patient who suffered a burn on his neck and right shoulder from hot water. Started hypertrophic scar treatment in our Skin Department. Until the scar was started to be treated, the daily skin care consisted of the application of a repair cream in the morning, and in the afternoon a topical corticosteroid.

After the evaluation, a monthly treatment was initiated, in which, in addition to the evaluation of the wound, a photographic record was made with the consent of the user's relative, signed and dated for the purpose of providing photos within the scope of the investigation and publication of the case.

Results/Discussion: In the first session, after the holistic assessment of the patient and the wound, skin asepsis was performed and treatment with the 633nm PDT Led Laser was started, which has biostimulant, regenerating and anti-inflammatory, and a myofascial massage was performed.

In the 7th consultation, exfoliation was started with the Rotary Brush equipment, to perform skin abrasion for better regeneration, followed by high-intensity laser phototherapy and finally the PDT Led Laser 633nm.

The patient performed the treatments in their entirety without pain. The Vancouver International Scale was also assessed throughout treatments.

Conclusion: After 15 sessions, the results of the treatments are notorious. We can observe the regeneration of tissues.

EP648 Abdominal stretch marks: a case study

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Aim: Striae represents a skin condition, characterized by alterations in the development of elastic fibers and collagen in the skin due to several physiological circumstances, such as pregnancy, growth, and weight gain/loss.

Method: Descriptive methodology.

The case study of a 36-year-old female patient who developed abdominal stretch marks caused by pregnancy. The patient with skin phototype II had white stretch marks (alba) with skin depression.

Results/Discussion: In the initial evaluation consultation, their characteristics were evaluated and treatment was started with asepsis of the skin followed by 633nm PDT LED Laser, high-intensity Laser phototherapy (Erbium YAG) and ended with Photona Laser and air cryotherapy for pain relief.

The treatments took place monthly, and the 7th and last treatment so far, a chemical peeling was performed after skin asepsis, followed by microneedling with dermapen and ended with 633nm PDT LED laser which is biostimulant, regenerating and anti-inflammatory.

In all treatments, a photographic record was made with the consent of the user, signed and dated for the purpose of providing photos within the scope of the investigation and publication of the case.

Conclusion: Throughout these treatments, the reduction of stretch marks was visible, but mainly the impact that this change had on the quality of life of the user, feeling better with her body and bringing back her self-esteem.

EP649 Keloid scar: A case study

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Aim: The burn can cause anormal scarring and scar. Quality of life can be affected due pain, stiffness and psychological changes in the person's own self-image.

Method: Descriptive methodology.

The case study is about a 13-year-old male patient who suffered a burn on his face, neck, ear and right leg from fire and alcohol on August 1st, 2021. Started keloid scar treatment in our Skin Department.

After the evaluation, a monthly treatment was initiated, in which, in addition to the evaluation of the wound, a photographic record was made with the consent of the user's relative.

Results/Discussion: On October 27, in the 3rd appointment, skin asepsis was performed and treatment with the 633nm PDT Led Laser was started, which has biostimulant, regenerating and anti-inflammatory, and LED Mask 417nm. At this time, the skin was very contracted, making it impossible to have a good mobility of the scar site.

In the 4th appointment, exfoliation was started with the Rotary Brush equipment, to perform skin abrasion for better regeneration, followed by adhesion reduction massage. In the 13th appointment, the treatments were maintained, changing the adhesion reduction massage to myofascial massage.

In the 20th appointment, treatment with high-intensity laser phototherapy was initiated, followed by chemical peeling and microneedling with dermapen, in order to promote tissue regeneration.

The Vancouver International Scale was also assessed throughout treatments.

Conclusion: After these sessions, the results of the treatments are good, especially in terms of mobility. We can observe the regeneration of tissues.

EP650 Wounds and ostomies: A case report

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Aim: To report on the evolution of a mucocutaneous dehiscence, associated with a peri-ostomy lesion, and its impact on the quality of life and adaptation to the ostomy pouch system.

Method: Study case of a 43-year-old woman diagnosed with ulcerative colitis in 2020. Initially, submitted to a total proctocolectomy in 2020, several post operative complications ensued in the following 2 years. In September 2023 the patient underwent one final surgery to ablate a fistula and relocate her definitive ileostomy. A nearly complete, deep, mucocutaneous dehiscence hence occurred, associated to an adjacent dermal fistulous tract.

Follow-up of the wounds was guaranteed using both photography and measurement techniques. Informed consent was given by the patient and the study case was approved by the local ethical commission.

Results/Discussion: Mucocutaneous dehiscence consists in the complete or partial detachment between a stoma and the skin. The reference nurse, along with the patient, implemented a treatment protocol based on the best practice evidence in wound and ostomy care. The patient was able to perform Self Care relating to ostomy care ever since the first surgery in 2020. Now, due to the necessity to proceed to the wound treatment with every pouch change, new knowledge and abilities were required to promote healing and improve quality of life. Complete healing achieved at 51 days.

Conclusion: Peri-stoma lesions are major contributors to impaired adaptation of pouching systems and therefore diminished quality of life of the ostomate.

EP651 Retrospective evaluation on autologous blood clot treatment (ABCT) as a salvage for chronic non-healing ischemic lower limb wounds within 12 weeks in an Asia acute hospital: case series

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Aim: Management of chronic non-healing ischemic lower limb wounds are met with great difficulties due to the predisposing factors such as Diabetes Mellitus (DM), peripheral vascular disease, and recurrent wound infection. This results in a ballooning healthcare cost and poorer quality of life for patients. This study aims to assess the efficacy of ABCT in treatment of chronic non-healing ischemic lower limb wounds within 12 weeks.

Method: Patients with non-healing ischemic lower limb wounds of more than 6 weeks that does not respond well to previous therapy were selected. ABCT was formed using patient's own blood.

Results/Discussion: A total of 3 cases were evaluated where all patients are male, with an average age of 65years old. All patients had poor controlled DM of HbA1c >8%. The average wound size at baseline is 18 cm² (range of 10.5 cm²- 28 cm²). All wounds have failed responded poorly prior to ABCT application. By week 4 the mean wound size reduction is 9.9 cm² (range: 5cm² - 18.2cm²). The percent wound area reduction (PAR) during the four-week period of treatment was 48% (range: 35%-58%). 67% of the wounds completely healed in less than 12 weeks.

Conclusion: The ABCT is a simple point-of-care treatment used to repair the extra cellular matrix (ECM) by providing the necessary growth factor needed for angiogenesis, stabilising the wound bed, and reducing infection to allows the wound to progress from inflammatory phase to proliferative phase. ABCT is found to be effective in treating hard-to-heal ischemic lower limb wounds.

EP652 Combining shoe-lace technique with negative pressure therapy dressing: useful strategy for managing complex chest wall defects

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Aim: Many techniques have been described for reconstruction of chest wall defects, but occasionally we see patients with limited donor sites, not fit for general anesthesia required for more extensive flap coverage surgery or may have wounds which are not amendable to skin grafting. We describe our experience using negative pressure therapy (NPT) dressings with progression tension with vessel loops for a complex chest wall wound.

Method: We describe a challenging case of a chest wall reconstruction in an elderly lady, with a body mass index of 13.6 kg/m² and high cardiac risk precluding general anesthesia. She had a superior left chest wall defect, with surrounding previously irradiated skin and very minimal subcutaneous tissue and exposed cardiac pacing wires which could not be removed without general anesthesia.

Results/Discussion: We partially buried her cardiac pacing wires within the pectoralis major muscle, and gradually closed the wound with the assistance of NPT dressing and progressive tension using vessel loops over a process of two weeks. Her wounds healed completely with no breakdown or extrusion of underlying implants. NPT dressing promotes granulation tissue and facilitates earlier approximation. The addition of elastic vessel loops in a shoe-lace fashion on the skin edges augments the tension generated by NPT dressing.

Conclusion: This technique has previously been described in the literature mostly for lower limb fasciotomy wounds, but we believe that its utility can be expanded to other regions of the body where reconstructive options may be extremely limited, with good outcomes.

EP653 Efficacy of instillation negative pressure wound therapy (NPWT-i) for management of chronic venous ulcer

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Aim: To highlight efficacy of NPWT-i for non-healing venous ulcer with high bio-burden.

Method: Case Report.

Results/Discussion: 57 y.o female presented to clinic with extensive bilateral lower limb non-healing ulcer. Reported a long history of repeated clinic visits for similar condition.

She was diagnosed with Chronic venous insufficiency based on presentation and ultrasound report. CT angiogram showed no arterial disease.

She was scheduled for elective bilateral lower limb surgical wound debridement in view of extensive bio-burden and worsening wound. NPWT-i was initiated from day 1 post-operative and continued till POD 7 for wound bed irrigation. From day 7 post-op, dressing modality was switched to conventional NPWT in view of improving wound bed.

During NPWT therapy, it was a challenge to maintain sealed dressing due to the location, dimension of wound bed and periwound skin condition.

Wound condition significantly improved with combination of surgical wound debridement, NPWT-i, conventional NPWT and conservative wound care.

Conclusion: Combination of surgical intervention with different wound care modalities should be considered for management of extensive non-healing ulcer. NPWT-i should be considered as an alternative to surgical wound debridement for chronic venous ulcer with high bioburden.

	<p>Pre- surgical debridement</p>
	<p>Day 1 Post debridement Pre-initiation of NPWT-i (Day 1 NPWT-i)</p>

	<p>Day 7 NPWT-i Day 1 NPWT</p>
	<p>Day 18 NPWT Day 1 conservative dressing</p>

EP654 Case report: Achieving filling of hard to heal diabetic foot wound cavity with physician-modified cut up fish skin graft to achieve good wound bed contact

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Aim: Physician-modified cut up fish skin graft (FSG)¹ is effective to fill up cavities and can be used in conjunction with intact forms to improve versatility and reduce cost.

Method: A 57-year-old gentleman with diabetes mellitus, renal failure, peripheral arterial disease presented with left foot re-ulceration.

He previously had left 4th and 5th ray amputation wounds that closed after angioplasty, prolonged antibiotics for residual osteomyelitis and gelling fibre² dressing.

This presentation, there was a left lateral foot 6x4cm wound with bone exposed and biofilm. He underwent angioplasty. MRI showed an ulcer with osteomyelitis over the exposed base of fifth metatarsal bone.

He underwent ultrasonic debridement³ in the theatre. Post debridement wound size was 6x4cm with 8mm deep cavity over the debrided 5th metatarsal shaft. Intact FSG was cut into small (2-3mm) pieces and packed into the cavity to achieve good wound bed contact, aiming for faster filling of the cavity. Sheet FSG was placed on the rest of the wound with foam dressing as a bolster for fixation.

On POD2, the FSG had dislodged and negative pressure was applied at -100mmHg after hydration. The cavity was 50% filled. On POD7, the cavity was fully granulated with the cut up FSG incorporated. Another round of intact FSG was placed with negative pressure.

Results/Discussion: By POD14, the wound had reduction in size to 6x3cm and conventional dressings were applied.

Conclusion: FSG is effective for hard to heal diabetic foot wounds. Physician-modification can improve versatility and achieve rapid filling of cavities.

EP655 Autologous blood clot therapy for limb threatened chronic venous ulcer: A case report

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Introduction: Venous ulcers are common chronic wounds in the community and a major challenge with a considerable impact on quality of life in individuals. Although the standard treatment of venous ulcers is compression, even with best practice compression therapy, time to healing is often prolonged. Actigraft™ is a topically applied blood clot therapy supported by evidence of efficacy in treating chronic foot wounds, initiating tissue repair towards wound healing. Current research supports improved wound healing in full thickness ulcerations.

Aim: This exclusive case report highlights the efficacy of autologous blood clot therapy in preventing amputation in a patient with infected chronic lower limb venous ulcer.

Methods: Patient developed infected extensive full thickness deep injury to exposed tendons and muscles suggestive of a threatened limb loss from self-applied compression bandaging for a chronic venous ulcer. Each Actigraft™ therapy required up to 10 mL of blood drawn from the patient and was introduced into the product's clotting tray. The formed blood clot product respectively was applied over the patient's infected circumferential wounds after surgical debridement. A primary and secondary retention dressings were applied thereafter. The patient received repeated applications of the therapy as required.

Results: The patient achieved to surface wound granulation after 3 weeks with 4 applications of autologous blood clot therapy. Incompetent superficial veins were subsequently treated with radiofrequency ablation and injection sclerotherapy before initiated on appropriate compression therapy upon discharge.

Conclusion: Patients with chronic venous ulcers can be supplemented with Actigraft™ therapy to hasten tissue repair and granulation process.

EP656 Healing of the cancer necrosis wound in a breast cancer patient

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Aim: Malignant skin wounds are defined as tumor or metastases infiltration into the skin, damaging blood or lymph vessels supply. They can develop anywhere in the body.

Method: The aim is to present care of malignant wound with dressing and medical treatment.

A 44 years old single mother, was examined by family physicians for a small lump in her right breast. At first the treatment with antibiotic was introduced, but the lump continues to grow. She was referred to Institute of oncology Ljubljana in July 2023, at that time already with small necrosis on her right breast. She was diagnosed with angiosarcoma, but refused any further diagnostics and proposed treatment.

In September she returned to oncological center, with bleeding necrosis. She agreed to completed CT where no distant metastases were discovered. The necrosis enlarged, the skin was livid, odour and exudates from tumor were present. She needed blood transfusion and antibiotic.

The patient decided to start with chemotherapy. She was referred to a wound care specialist. The wound was treated with antimicrobial alginate with silver and poliuretana foam dressing. During the hospitalization the wound dressing was provided by ward nurses and wound care specialist. After discharge the dressing of a wound at home was regularly provided by district nurse.

Conclusion: In November 2023, cancer necrosis is shrinking, there is no bleeding, and the patient is relieved because the wound is healing and has no odour. The patient is continuing with systemic treatment. Surgery is considered after completion of chemotherapy.

EP657 Use of oxygen bath through oral nasal mask on skin treat successfully open wounds on skin

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Aim: A 25-year-old patient had total colectomy with ileostomy after unsuccessful therapy with biological medication for Ulcerative colitis, which started in June 2022.

The operation total colectomy with ileostomy on the right side of abdomen, 10 cm from bellybutton was in August 2022. She also has non-allergic asthma.

3 weeks later skin around stoma became granulated and inflamed. It worsened in week with puss production and additional spreading in pockets of inflamed outer skin circle. This caused severe problems of sticking the adhesive wafer for stoma bag to skin and causing additional pain, leaking of feces and worsening of condition. After working with stoma specialists and dermatologists there was no satisfaction in improvement. Also, laboratory results were getting worse: CRP rose high.

Additional problem was worsening skin on face with deep bacterial infection with puss, leaving scar tissue.

Method: Using oxygen bath through oral nasal mask on top of stoma for skin around stoma every day for 2 months.

Results/Discussion: Improved skin to healthy state.

Conclusion: Additional oxygen from outside raises the level of cell metabolism in skin. The result was improved regeneration and immune defense.

EP658 Local treatment of chronic wounds using a multipurpose dressing with activated carbon: A case study

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Aim: To assess the efficacy of multipurpose dressing with activated carbon in promoting healing, reducing odor, alleviating pain, and preventing peri-wound maceration in patients with chronic wounds.

Method: A prospective case study was conducted, involving twelve patients with colonized chronic wounds in the inflammatory phase, with a significant amount of exudate treated at a daily wound care clinic. The patients received treatment with multipurpose dressing with activated carbon. Observed outcomes included wound size, changes in wound bed tissue, odor intensity, peri-wound skin maceration, and pain intensity during dressing changes. Patients were followed for six weeks. Data were collected between April 2021 and September 2022 and analyzed using descriptive statistics.

Results/Discussion: We observed a reduction in wound area (up to 35%), a decrease or absence of peri-wound maceration within a period of up to 7 days (2-3 dressing changes), decrease or absence of odour within a period of 4 days (between first and second dressing change) and low to moderate pain intensity reported during dressing changes (between 2-4 in the majority of cases).

Conclusion: Multi-purpose dressings with activated carbon provide a reduction of wound size, intensity of odour and peri-wound maceration area. Furthermore, the dressing has a more moderate impact on pain reduction during dressing change.

EP659 Debridement with sterile, pre-moistened single use cloth or glove: A case series study

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Aim: The aim of this study was to evaluate the clinical effects of sterile, pre-moistened single-use debridement cloth or glove in wound bed preparation.

Method: An exploratory case series study was carried out involving 15 patients with a chronic wound of different aetiology. Patient received sequential mechanical debridement with sterile, pre-moistened single-use debridement cloth or glove containing Poloxamer 188, Allantoin and Aloe Vera Barbadosensis in a period of four weeks. Intervention was administered at each dressing change – two to three times per week. Wounds were afterwards managed by standard treatment using wound dressings. Primary outcome was reduction of devitalised tissue e.g. slough. Secondary outcome was patient reported pain level (0-10) during procedure.

Results/Discussion: The results of this study have shown that in 11 cases, the slough was successfully removed during the period of seven days (e.g. three dressing change) and wound bed was in more than 70% of surface filled with red granulations. In the rest of the cases (n=4) we also observed that the extent of the slough decreased, however the median time to achieve reduction was 17 days. The intensity of patient reported pain during the procedure was low (in between 0 and 3).

Conclusion: In this case series use of sterile, pre-moistened single-use debridement cloth or glove resulted in a decrease of surface area of slough in the wound bed. Furthermore, it allowed a simple, effective and painless debridement. Further rigorous research is needed to evaluate the effectiveness of this intervention.

EP660 The effectiveness of ultrasound debridement on the bacterial load in the wound bed of a venous leg ulcer

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Aim: To assess the effectiveness of ultrasonic debridement with the Curasonic ultrasonic brush on microorganisms in patients with venous leg ulcers at the Dermatovenereological Clinic of University Medical Centre Ljubljana.

Method: 10 patients (9 M and 11 F) (average age 71.07 years) with 20 venous leg ulcers were included in the study. The average duration of ulcers was 29.03 months. The total size of all ulcers before ultrasonic debridement was 654.25 cm². In the research, swabs were taken from the bed of ulcers before and after ultrasonic debridement with an ultrasonic brush. Then cover all ulcer beds with alginate silver dressings, wrap with shortstretch bandages and check after one week.

Results/Discussion: We found 8 different microorganisms (*Pseudomonas Aeruginosa*, *Proteus mirabilis*, *Morganella morganii*, *Enterococcus faecalis*, *Streptococcus dysgalactiae equisimilis* G, *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans*) in the swabs before ultrasonic debridement of the brush, but only 3 different bacteria after the brush. (*Staphylococcus aureus*, *Pseudomonas Aeruginosa*, *Streptococcus dysgalactiae equisimilis* G). After one week, all but one ulcer progressed in healing and patients require systemic antibiotic therapy.

Conclusion: In our opinion, the ultrasonic debridement brush has a good effect on eradication of microorganisms from the wound bed.

EP661 The role of continuous Topical Oxygen Therapy (cTOT) as an adjunctive treatment in non-healing chronic wounds: A South African perspective

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Aim: The impact of cTOT as an adjunct to routine standard of care (SoC) was investigated in several patients with hard to heal wounds at a Wound Management Centre in Pretoria, South Africa

Method: Patients with non-healing wounds of duration > 30 days were included and excluded if any active untreated infection or osteomyelitis were reported. Following informed consent, patient, wound and pain assessments (Visual Analogue Scale, VAS) were performed. The cTOT system* was applied to the wound and covered with an appropriate secondary dressing. Wound assessments/ dressing changes were performed weekly until healing was achieved.

Results/Discussion: 14 patients received cTOT. Two patients were lost to follow-up and one failed to return to clinic after eight weeks treatment, however data up to that point is included. Six wounds healed within a mean duration of 11.7 weeks. DFU texas grade 2B (patient 4) had the longest time to healing (17 weeks), whereas the fastest healing was seen in a venous ulcer reported to healing in just 6 weeks despite a duration of 7 months previous to cTOT. Mean area reduction across all 12 wounds was 78.6 %. VAS pain score was shown to reduce in 5/6 wounds by 3.2 on average (2-4 range).

Conclusion: cTOT proved a useful adjunct to help promote wound healing and reduce pain in these challenging wounds in South Africa highlighting the benefit that access to this therapy may bring to patients in the region with non-healing chronic wounds.

* cTOT, NATROX® O₂ Wound Therapy

EP662 Use of topical insulin on wounds. Clinical case

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Aim: Improve the healing of chronic wounds by applying topical insulin.

Method: An 85-year-old male patient presents with an arterial ulcer in the right malleolus that had been treated by conventional therapy for two years.

Medical personal history, the patient suffers from arteriopathy and type II DM.

After reviewing several studies, topical insulin therapy is chosen as treatment.

Results/Discussion: Treatment is started with 1 IU of topical "Regular" insulin, used as irrigation. A hydrocolloid hydrofibre is used as a secondary dressing. The patient is seen every 3 days and is explained the possible adverse effects.

After three weeks of treatment, the chronic wound was healed.

Conclusion: Chronic wounds affect more and more patients every day, affecting them both physically and in their quality of life. It is also worth highlighting the waste of resources when treating this type of chronic wounds.

In diabetic patients, the use of topical insulin is capable of improving wound healing, offering an economical and effective treatment for this complication derived from diabetes.

EP663 Use of negative pressure therapy in a patient with an enterocutaneous fistula, secondary to transplantectomy

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Aim: To use single-use negative pressure therapy safely to treat surgical wound dehiscence in a transplantectomized patient for an enterocutaneous fistula.

Method: For a 45-year-old patient with no known drug allergies, type 1 diabetes, high blood pressure, and stage V chronic kidney disease, a simultaneous reno-pancreatic transplant was performed, followed by hemorrhagic shock, and perirenal and peripancreatic hematomas persisted. There was a high output enterocutaneous fistula due to multiple fistulous accesses in the duodenal stump with pancreatic graft failure. Finally, four weeks later, a transplantectomy was performed using the same previous laparotomy.

Results/Discussion: Due to the muscle weakness of the abdominal wall, there is significant dehiscence of the right pararectal wound, so the patient required the use of single-use negative pressure therapy due to the large amount of exudate for approximately 84 days.

Conclusion: In transplant patients, factors such as diabetes, immunosuppression, and poor tissue condition make the healing process more complicated, and therefore, negative pressure therapy is the first line of treatment, with excellent results and total safety.

EP664 Topical analgesics in pain management: Evaluation of morphine gel in arterial ulcer

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Aim: Pain has been classified as one of the most challenging aspects of living with a wound, specifically arterial ulcers, which are characterized by their painful nature. Depending on the overall condition of the patient, systemic analgesia may be required before or after performing wound care for these lesions. One of the adjuvant treatments to alleviate pain in these wounds is the application of topical analgesia, specifically the use of topical opioids. The main objective of this study is to assess the effectiveness of applying morphine gel to patients with arterial ulcers.

Method: A mixture of 10mg sodium carboxymethyl cellulose hydrogel with 10mg morphine chloride was prepared. Subsequently, the morphine gel was applied to the wound bed for fifteen minutes before conducting wound care. Pain registered using the Visual Analog Scale (VAS) before, during, and after wound care.

Results/Discussion: The patient reported a four-point reduction from an initial score of seven on the VAS scale after the application of morphine gel. Following its application, the ulcers could be manipulated, removing the present biofilm, and undergoing mechanical debridement.

Conclusion: The use of morphine gel can be a useful alternative treatment for patients with arterial ulcers. The advantage of morphine over other opioids is its low cost and accessibility. Additionally, it promotes wound healing in a moist environment, adheres to the wound bed, and maintains opioid stability.

EP665 A case report: haematomas and heparin

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Aim: To learn new techniques for debridement of haematomas.

- To master the Roviralta technique
- To identify those lesions that can benefit from this technique.

Method: A search was carried out in Pubmed, TripDataBase and Dialnet databases, with the DeCS/MeSH descriptors "haematoma", "heparin", "wound", "debridement" to document the technique used in the cure.

Results/Discussion: A 92-year-old woman attended a nursing consultation to assess a haematoma in the distal area of the lower extremity. A 3x2 cm wound was observed with coagulated haematic content that did not drain. No signs of infection or pain; she has preserved edges and papillary pulses in both lower limbs.

History: High blood pressure, obesity and venous insufficiency.

Haematomas are acute closed wounds that can give rise to ulcerative lesions with a torpid course. Using the Roviralta technique, low molecular weight topical heparin is applied to achieve early dilution of the clots and avoid complications.

Once the haematoma has resolved, a hydrocolloid fibre with silver is applied. In this way, the excess edges will be trimmed as the wound is reduced. The perilesional edges are also protected with zinc. With this method, the wound has healed over a period of 2 months.

Conclusion: Using the "Roviralta technique", we have managed to clean the wound quickly, allowing the wound bed and the perilesional edges to heal quickly.

EP666 Early treatment of diabetic foot ulcers with EHO-85 provides rapid and effective wound healing: A case report

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Aim: To report on the effect of using EHO-85 in the treatment of a patient with a diabetic foot ulcer. EHO-85 hydrogel, containing olive leaf extract, has recently been reported to be efficient and economical in promoting ulcer healing.

Method: Case presentation: 62-year-old male with type 2 diabetes mellitus, diabetic retinopathy, dyslipidemia, and hypertension. Diagnosed with neuropathic DFU in the first toe of the left foot, Wagner scale grade II, with slough, perilesional erythema, and abundant exudate. Glycaemia 147mg/dl, glycosylated hemoglobin 7.9 %. Ankle-brachial index: 1.14. Sensitivity Semmes-Weinstein monofilament: 2. Visual analog scale (VAS): 5.

Results/Discussion: A treatment according to guidelines was started. A thin layer of EHO-85 hydrogel was applied to the wound, which was covered with a polyurethane foam dressing. After two weeks of evolution of the case, the wound was reduced its size by 69.42%, with a favorable evolution, presenting a clean granulation tissue, no superimposed infection, and VAS = 0, in each control. The ulcer achieved completed (100%) healing in less than 8 weeks.

Conclusion: Early treatment of neuropathic diabetic foot ulcers with EHO-75 is easy to apply, safe, fast, and effective. It can provide an innovative, non-invasive, and cost-effective treatment of incipient neuropathic diabetic foot ulcers.

EP667 Left Ventricular Assist Device (LVAD). Empowerment of semirural primary health care

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Aim: Patient with cardiac pluripathology evolving to a terminal state of Heart Failure (HF) due to worsening of his condition. He's not a candidate for heart transplantation. The implantation of the Left Ventricular Assist Device (LVAD) is scheduled to be performed in December 2022 at the Hospital Universitari Vall d'Hebron (HUVH) in Barcelona.

Method: The patient lives 150 km away from HUVH in Barcelona. At the time of discharge and as it requires treatment by trained personnel, the HUVH contacts its care/health staff in the Semirural Health Basic Area "ABS" (Area Bàsica de Salut) to provide training on how to carry out the treatment and follow-up.

Results/Discussion: With all this, the ABS decided to start the cures of the external device, with the future and common objective with the HUVH:

1. To reduce the displacements, increasing the comfort and satisfaction of the user.
2. Empowering Primary Care by reducing hospital pressure on activities that can be assumed by a team closer to the patient (achieving a more stable state of health, and therefore less sick).
3. Emotional support and stress reduction.
4. Knowledge on the part of the usual care team of the problems of the complex chronic patient.

Conclusion: We want to enhance the value of Primary Care, a team capable of taking on complex care, previously considered hospital care.

Key words: LVAD, Primary Health Care.

EP668 Use of antimicrobial charcoal foam dressing in chronic wounds: case series

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Aim: Infected, painful, exudative and foul-smelling wounds represent a growing health problem due to the high incidence of complications for both patients and healthcare professionals, requiring local treatment with specific dressings to control bacterial load, pain, exudate, odour and accelerate healing time.

The aim of this study is to apply an antimicrobial dressing of foam and charcoal* in a series of cases of wounds of different aetiologies with poor evolution, evaluating the clinical results.

Method: A series of cases of wounds with torpid evolution of different aetiologies were treated with this dressing, all of which presented microbial load with biofilm, moderate exudate, bad odour and moderate pain. The following variables were considered to evaluate the effectiveness of the treatment: Resvech score, VAS score, healing rates, improvement, exudate control, odour control, wound bed evolution and pain level.

Results/Discussion: Antimicrobial foam and charcoal dressing was applied to 10 chronic wounds including venous ulcers, burns, pressure sores, tumour injury and diabetic foot ulcers. The results showed a significant decrease in Resvech score throughout the treatment. In addition, there was a marked decrease in pain relief as measured by VAS, significant reduction in signs and symptoms of local infection, with high healing rates.

Conclusion: The silver-charcoal antimicrobial wound dressing for wounds of different aetiologies effectively contributed to the improvement of wound complications for patients.

*Mepilex Ag

EP669 NPWT protocol in perineal wounds after abdominoperineal resection: Our experience in colorectal surgery

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Aim: Negative Pressure Wound Therapy (NPWT) should be considered an effective tool when conventional methods are insufficient or fail.

We present a NPWT protocol made from our experience in complex wounds after Abdominoperineal resection (APR).

Method: A 49-year-old female developed perineal wound infection and dehiscence days after APR (post-neoadjuvant chemotherapy) was performed for rectal adenocarcinoma.

We observed exposure of the Safil mesh at the bottom of the Douglas pouch, secretion of purulent material and necrotic remnants. The wound had a tubular shape (9.5cm depth down to the mesh) and an ellipsoidal cutaneous base (7.5x5.5 cm). NPWT was proposed for further management.

Results: Technical challenges had arisen due to the wound location and shape where prevent any contact of the NPWT with the abdominal cavity was primordial to avoid any complication. Additionally, detachment and subsequent vacuum pressure leakage could be frequent, affecting the effectiveness of the treatment.

We designed a Mixed Foam Bridge with two layers to suit the wound characteristics. White Foam for the deep layer and Black Foam for the outer layer, embroidered with high-adhesive material and moisture tolerance. NPWT was settled with continuously -90 mmHg.

Infection was controlled by day 12. Complete healing and closure was achieved in 8 weeks.

Conclusion: NPWT can be adapted to any wound and combination of 2 different foams does not alter the vacuum dynamics allowing us treating APR wounds in post-surgical infection with/without prosthetic material; complete/partial dehiscence; even intraoperatively if the defect after resection is more or 10 cm.

EP670 Giant cutaneous mucinous carcinoma: npwt a determinate tool in oncoplastic surgery

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Aim: Primary mucinous cutaneous carcinoma is a rare cancer of the sweat glands with low metastatic potential but high recurrence rate. It usually presents in the head and neck as a small area with a slow-growing nodule that is soft and may be indurated or ulcerated. Prognosis is excellent when diagnosed and treated timely.

We report a Giant Mucinous Carcinoma in both buttocks reaching the posterior pararectal plane as well as the coccygeal region, treated in our institution.

Method: A 49-year-old male with history of long-evolving sacrococcygeal folliculitis, type II diabetes, enolism and moderate smoking, who presented for more than 2 years in the right gluteal region a tumor with multiple fistulous holes which secreted mucinous fluid. The tumor increased in size to cover both buttocks.

Results: Our patient presented a 30 cm in diameter tumor which reached the sacral coccygeal plane (muscular and fascial), furthermore to make imprints on the posterior pararectal tissue. He had a bilateral involvement of the buttocks with multiple superinfected fistulous holes. A wide and deep excision with macroscopic margins greater than 1 cm (anatomopathology showed free), a discharge colostomy and autologous reconstruction with gluteal muscle plastic

and advancement flap was performed besides reimplantation of the rectum-anus. Negative Pressure Wound Therapy (NPWT) was essential. No local recurrences and wound practically closed 12 weeks later.

Conclusion: NPWT has been a determinate tool in the evolution and cure of complex wounds in oncoplastic surgery when a wide and aggressive approach is needed with free margins confirmed.

EP671 Extreme reconstruction with npwt of complete perineal dehiscence and rectum-vaginal septum necrosis

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Aim: Abdominal-perineal resection (APR) involves a significant morbidity including wound complications. The aim of this publication is to describe a case report of a perineal dehiscence after APR managed with Negative Pressure Wound Therapy (NPWT) as a tool for closing perineal dehiscences.

Method: A 56-years-old female with type II diabetes and overweight, diagnosed with synchronic cancer in cecum and in rectum. Neoadjuvant radiochemotherapy followed by a panproctocolectomy and APR was performed with no incidents.

She presented 21-days after surgery with an extreme dehiscence of the perineal wound, reaching deep into the peritoneal cavity. Presented necrosis of the rectum-vaginal septum with a loss of substance 5x4 cm, and devitalized tissue and purulent exudate from the rectouterine pouch.

Results: A mechanical wound debridement was performed. The rectouterine pouch was packaged with Linitul and the vaginal canal with gauzes soaked in Vaseline. An urinary catheterization was executed before setting overall the perineal defect the NPWT a -115 mmHg.

Progressive closure of the posterior midline was performed by using dual therapy: gauze in the vagina and sponge in the perineum. After three surgeries, wound size was reduced to 60%. Subsequently, reconstruction with gracilis muscle was performed, although previously had been rejected due to its size. Currently, the patient is asymptomatic.

Conclusion: Perineal wound dehiscence after APR can be a major challenge. NPWT allows us to control both the infection of the surgical site and a progressive closure of the wound, thus avoiding the placement of prosthetic material and the performance of an aggressive surgery.

EP672 From catastrophic to salvageable foot: our experience using npwt on diabetic foot

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Aim: Negative wound pressure therapy (NWPT) is a good option in diabetic foot healing and preserving foot functionality in these patients.

Method: A 37-year-old woman with a history of poorly controlled Type I Diabetes Mellitus, presented to the Emergency Room due to pain in the internal lateral region of her left foot caused by an ulcer on the hallux valgus. The ulcer exhibited suppuration and cellulitis extending to the plantar level, associated with osteomyelitis.

An emergency intervention took place, involving drainage of the plantar abscess and Friedrich-type surgical debridement. Subsequent interventions were required. It ended up as a 20x10cm defect with a raw surface exposing osteotendinous structures. NPWT was initiated.

Results/Discussion: Our Diabetic Foot Unit brings to patients the opportunity to have a multidisciplinary approach adapted to them, avoiding amputation, and achieving good results even in the worse cases. This patient started with daily nursery cures and antibiotic treatment adapted to wound culture. Patient's nutritional status and glucemic blood levels were strictly controlled.

The defect's location and characteristics (an exudative area with tendinous exposition) caused a continuous film detach and pressure leak. The patient could preserve the foot's functionality during the process thanks to a post-operative boot adapted to her situation.

Once the granulation was achieved, it was offered to the patient grafting the wound by Plastic Surgery, but she declined it and decided to continue in our Unit.

Conclusion: This case brings up NWPT as a useful tool in Diabetic foot, even in the worse cases.

EP673 Nursing care to a burn patient: resolution of venous ulcers in both legs with multicomponent bandages

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Aim: Compression therapy is the gold standard of venous leg ulcer treatment. The aim of this clinical report is to highlight the importance of nursing care in the compression patient in the resolution of venous ulcers in a burn patient with very vulnerable skin.

Method: Is presented a clinical report of a patient burned in 90% total body surface due to an occupational accident in 1989. 1 year later presents recurrent ulcers that have been grafted on multiple occasions. Furthermore, he suffered an intervention of varicose veins in the right lower limb. Patient was also diagnosed with venous insufficiency, with ulcers in both legs.

Results/Discussion: The following NANDA diagnoses were identified: impairment of tissue integrity, risk of infection, willingness to improve knowledge, and noncompliance of compressive treatment.

The nursing care plan placed special emphasis on personalized health education and patient involvement throughout the process. With this care a cure was achieved in ten months, when the patient had had the ulcers for more than 20 years.

Conclusion: The role of nursing is of vital importance in the resolution of venous ulcers. Chronic venous disease is potentially recurrent and highly alters the patient's quality of life.

Correct adherence to compression therapy and daily self-care of the skin is essential for an effective care plan. This is especially revealing in a burn patient at higher risk for burns and interventions, in which there is a greater risk of poor healing due to the deterioration or lack of skin layers.

EP674 Pain control and improved quality of life with multicomponent compression bandages in a suture dehiscence in lower extremity

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Aim: Compressive therapy has been shown to relieve pain and reduce edema in patients with chronic venous insufficiency. This case report aims to test the effectiveness of multicomponent compression bandages (MCB) in reducing pain and improving quality of life (QoL) in patients with a lower extremity (LE) surgical injury.

Method: The patient underwent surgery. He presented a dehiscence of surgical wound (saphenectomy) in the left LE due to intolerance to suture and severe perilesional skin reaction to the adhesive material of the dressing used in the wound care.

Despite the favorable evolution of the wound bed, the pain due to inflammation and dermatitis was intense and was not controlled with the optimized analgesia regimen. This pain caused a significant deterioration in the patient's quality of life. The patient also had a discrete edema in LE. There were pedal pulses present and the index ankle arm was 0.9. A multicomponent compression system with short and long stretch bandages of 20 mmHg was apply to manage pain and edema.

Results/Discussion: The application of compressive therapy of 20 mmHg allowed an immediate decrease in pain intensity. Edemas existed reduced by 2.5 cm in five weeks. Due to the patient's good adherence to the compressive therapy and because there were no contraindications, the pressure was increased to 40 mmHg, allowing a reduction of the analgesic treatment to minimal doses.

Conclusion: MCB was shown to reduce the level of pain derived from the wound healing process in IE, contributing to increase patients' QoL.

EP675 Reducing the need for oral antibiotics in head and neck cancer surgical wounds

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Aim: To assess the effectiveness of Manuka Honey in the treatment and healing of infected wounds.

Method: Small case series study (n=3) was conducted to assess whether Manuka Honey dressing was a viable alternative to oral antibiotics in treating wound infections.

- 72 year old female who underwent free flap fibula graft reconstruction for floor of mouth cancer in spring 2017. Radiation 66 Gy/33 F. 5 days post operatively graft became necrotic and the patient underwent several more surgeries (fig 1) treatment of necrotic wound.
- 68-year old male. Right sided tonsil cancer with lymph node metastasis. Surgery and full dose radiation 68 Gy/34fx. Later declared healthy. Big necrosis on neck 6,5x4 cm (fig 2) appeared 6 years after his operation and radiation.
- 74-year-old male. Type 2 diabetes treated with both oral medication and insulin. Pollen allergy. Squamous cell carcinoma at the top of the skull. Surgery June 5 -2019. Secondary healing. Hints of infection at first dressing. (fig 3) Manuka honey was used directly at first dressing.



(fig 1)



(fig 2)



(fig 3)



Results/Discussion: Quick healing, despite initial large defects. 17 – 23 dressings under a period of 1 – 10 months. No oral antibiotics or further surgery was needed.

Conclusion: This small case series indicates that Manuka Honey is a viable option in wound care, providing an effective alternative for oral antibiotics in treating wound infection and in promoting healing.

EP676 Manuka honey - Basal cell carcinoma nostril - the small wounds are also important

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Aim: Female 49 years old. We wanted to preserve a better shape of the nose by not to suture. (Fig 1) secondary healing.

Method: Manuka honey was used from the beginning, with a very small piece abs dressing.

Results/Discussion: With only 7 changes of dressings, this little, but deep, secondary healing was nicely healed. (Fig 2)

Conclusion: It was a small but deep wound, we tried to suture it, but the nose changed its appearance, so we left it open for a secondary healing. The Manuka honey helped to fill up the wound nicely in a short time. So that a small wound heals quickly with no or minimal scar in the face means much for a patient. Manuka honey works very nicely for secondary healing.



(Fig 1)



(Fig 2)

EP677 Severe wound infection after a snake bite

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Aim: A 76-year-old patient came to the emergency room with a worsening wound on the back of his left foot for 5 days.

Method: Clinical examination showed an erysipelas on the left lower leg with edema and infected dorsum of the foot with 2 small, 1x1 cm wounds. Increased pain. We decided to hospitalize the patient. The patient could not tell us what the cause of this wound could be.

Results/Discussion: The laboratory exams showed increased inflammatory parameters (CRP 210 mg/L, WBC > 10,000/mm³). The bacteriological swab showed Staphylococcus aureus. Antibiotic treatment was initiated with penicillin 2.2g i.v. 3 times a day. A surgical debridement of the necrotic and fibrotic tissue of the wound was

performed. A daily wound dressing change showed very good results. On the 7. POD patient was discharged with oral antibiotic for another 7 days.

Conclusion: An ambulatory follow-up with wound dressing changes was organized twice a week. The wound healed without complications after 14 POD. No infection signs; edema and redness disappeared. The inflammatory parameters became normal.

On the last day of follow-up, the patient made a small remark that he always walks barefoot in the garden. He remembered that he was bitten by a snake 3–4 weeks ago. Afterward, the dorsum of the left foot was very itchy, and he scratched a lot. He thought that might be important for us.

EP678 The use of intact fish skin graft for the treatment of pyoderma gangraenosum: a case report

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Aim: Fish-skin wound matrix is a acellular dermal matrix of marine origin¹ and is increasingly popular to treat difficult wounds. As for all matrices, treatment success is highly dependent on the condition of the wound bed. Therefore, local therapy must be optimised before its use. Here, we present a case report of pyoderma gangraenosum successfully treated with fish-skin graft.

Method: A 78-year-old female patient presented with therapy-resistant, atypical leg ulcerations. Due to suspected pyoderma gangraenosum, she was treated with adalimumab after systemic application of corticosteroids. The wound stabilised and local therapy was started (decontamination, exsudate management, compression therapy). However, no epithelialisation of the wound could be achieved and the patient declined transplantation of split thickness skin graft. Therefore, the use of acellular dermal matrix was proposed.

Results/Discussion: Under systemic therapy with adalimumab and local therapy with morphine-PHMB gel, non-adherent dressings, optimal exudate control and compression therapy, fish-skin was applied twice with a latency of 1 month. Treatment was well tolerated and pain decreased significantly, adalimumab was continued beyond complete healing. Full and stable epithelialisation 16 weeks after first application of fish-skin was achieved (figure 1).

Conclusion: The use of fish-skin in systemically controlled pyoderma gangraenosum appears to be a valid treatment option. Compared to split thickness skin graft, it has the advantage of not creating a donor site. Further studies are needed to validate these findings.

¹Kerecis® Omega3 Wound Matrix, Isafjordur, Iceland

EP679 Apligraf® - a new approach for wound closure in severe necrotizing fasciitis

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Aim: A 74-year-old multimorbid patient with a perianal abscess developed severe necrotizing fasciitis, resulting in septic shock and acute kidney injury.

Method: Initial daily debridements in the operating room (OR) were performed under general anesthesia (GA). A diverting transverse ostomy was created, and systemic antibiotics were administered. From postoperative day 5, surgical debridement was conducted every 48-72 hours under GA in the OR, in conjunction with negative pressure wound therapy with instillation and dwelling (vacuum -125mm Hg; instillation of 40ml Actimaris sensitiv® every 2 hours for 10 minutes). After 103 days, due to limited donor site options, a split-thickness skin graft was not feasible. Instead, a biotechnological living bilayered human skin substitute (Apligraf®) was used for the large defect. The initial application occurred in the OR, where the product was meshed and secured with negative pressure therapy (vacuum

-125mm Hg). Subsequent Apligraf® applications and wound care were managed bedside. Within 28 days, the wound reduced by 64% to 125 cm². The remaining defect was treated with a human placental membrane (NuShield®). 73 days after the patient was discharged to rehabilitation with a small residual defect.

Conclusion: Apligraf® effectively replaced a split-thickness skin graft procedure in a multimorbid patient with severe necrotizing fasciitis, leading to rapid wound healing, reduced infection risk, pain relief, and improved quality of life. Moreover, significant cost savings were achieved by avoiding additional surgeries.

EP680 Painful mixed ulcer in a frail elderly patient successfully managed through pinch grafting and negative wound pressure therapy

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Aim: We report the case of a frail patient with a painful mixed ulcer which was successfully treated using pinch grafting and negative pressure wound therapy (NPWT).

Method: An 89-year-old female patient with severe frailty (institutionalized, demented, bedridden) and known for severe arterial insufficiency with venous insufficiency and peripheral neuropathy, presented with a painful post-traumatic ulcer of the dorsum of the right foot induced by compression bandages. The ulcer measured 6x2cm, exhibited overt infection signs with tendon exposure. She was not a good candidate for arterial revascularization. NPWT was implemented along with Unna's boot. The initially favorable evolution did not allow tendon coverage which was resected because of infection. Pinch grafting under local anesthesia associated with NPWT was performed. The pain disappeared within 24 hours and epithelialization was complete after 3 weeks. Wound closure occurred within 2 months.

Results/Discussion: The results show that the combination of NPWT with -125 mmHg and pinch grafting are a successful couple to achieve rapid pain control and wound healing. Pinch grafting take is usually low in poorly vascularized wound beds. NPWT allowed us to prepare the wound bed, increase local blood flow and bolster the skin grafts. This mini-invasive procedure performed under local anaesthesia in a complex mixed ulcer with severe arterial insufficiency and frailty is little described in the scientific literature and deserves further research.

Conclusion: In this complex situation, the combination of pinch grafting and NPWT was a decisive solution. It can be carried out on an outpatient basis and offers interesting perspectives.

EP681 One-stage reconstruction of extensive exposed tibia on malnourished patient using single-layer integra and amino acid supplements: A case report and literature review

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Aim: Extremity injuries resulting from motor vehicle collisions, especially those leading to bone-exposed wounds, present challenges for achieving effective wound coverage. Such injuries are susceptible to complications including infections, osteomyelitis, and unexpected amputations due to inadequate blood supply. Severe traumatic degloving injuries often entail damage to the surrounding blood vessels, making local or free flaps impractical choices in many cases. Consequently, treatment options may vary based on distinct clinical scenarios, with no standardized guidelines available. Our study introduces an integrated approach utilizing dermal substitutes and skin grafts as a safer treatment modality for managing large-area tibial exposure resulting from traffic accidents. A literature review was also conducted in our study.

Method: A 66-year-old male with a compromised nutritional status was struck by a car while riding a motorcycle. Previous attempts using double-layer dermal substitute and negative pressure wound therapy (NPWT) for two-stage reconstruction have been unsuccessful. We applied a one-stage reconstruction involving single-layer dermal substitute, split-thickness skin grafts, NPWT, and nutritional supplements containing various amino acids.

Results/Discussion: By implementing an integrated treatment approach and providing diligent wound care over a total of two months, the patient achieved successful healing and expressed satisfaction with the postoperative results.

Conclusion: This study offers insights into the effectiveness of employing one-stage reconstruction for traumatic injuries with extensive exposed tibias. In addition, it underscores the impact of a patient's nutritional status on wound healing and introduces a potential solution for similar challenging cases.

EP682 Healing of a bone-exposed soft tissue defect after surgical correction of traumatic patellar dislocation: A case report

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Aim: Reconstructive surgery is widely considered the primary treatment for soft tissue defects around the knee owing to its high flexibility. However, in our recent case study, we explored an alternative approach using decellularized collagen dressings, which proved highly effective in healing a soft tissue defect involving bone exposure following surgical correction of a traumatic patellar dislocation.

Method: A 65-year-old male with a traumatic patellar dislocation in the lower extremity failed to approximate the wound after surgical correction. The patient refused additional surgical reconstruction because of the potential risks of multiple operative complications. The procedure was performed using an acellular dermal matrix (ADM) made from a decellularized native porcine collagen scaffold dressing. Collagen dressings were applied to the soft tissue defect, and biointegration was observed in the wound area of bone exposure.

Results/Discussion: Through the application of ADM and diligent wound care for a total of 105 days, the patient healed successfully and achieved partial functional recovery after undergoing rehabilitation. During recent outpatient clinic visits, the patient is now able to ambulate independently with the aid of crutches.

Conclusion: Collagen dressings circumvent the potential risks and complications associated with multiple surgical procedures. We believe that the utilization of collagen dressings, combined with careful wound management, could serve as a promising alternative treatment option for patients with soft tissue defects around the knee in the future.

EP683 Minimal invasive punch and drainage: a game-changer in enhancing the treatment of non-purulent skin and soft tissue infections

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Aim: Non-purulent skin and soft tissue infections (NP-SSTIs) present a complex medical condition characterized by inflammation and cellulitis without evident purulent drainage. Left untreated, these infections can become severe and potentially life-threatening. Antibiotics are commonly used in managing NP-SSTIs, but some cases remain unresponsive to antibiotic treatment, creating a need for effective adjunctive therapies. While incision and drainage (I&D) is the primary approach for purulent infections, punch and drainage (P&D) offers distinct advantages in treating NP-SSTIs, especially in patients with compromised health.

Method: A case series conducted at Kaohsiung Medical University Hospital involving four patients (two males and two females) with moderate or severe NP-SSTIs showcased the effectiveness of P&D. The patients, with various comorbidities, underwent P&D in addition to antibiotic treatment. This minimally invasive technique resulted in reduced tissue trauma, minimal scarring, and improved cosmesis. Additionally, it minimized the risk of introducing further pathogens and reduced the chance of hematogenous spread of infection.

Results/Discussion: The study demonstrated superior patient outcomes post-P&D, including reduced pain, inflammation drainage, smaller wound size, quicker healing, and decreased complications. Further research is necessary to standardize guidelines and optimize the role of P&D in NP-SSTI treatment.

Conclusion: The evidence supports P&D as a promising therapy for NP-SSTIs, providing rapid clinical improvement by reducing inflammation without causing significant harm to surrounding tissues. Clinicians should consider P&D as a valuable addition to managing NP-SSTIs, especially when antibiotics alone are inadequate.

EP684 Nursing experience with persistent peristomal leakage from gastrostomy combined with PMASD

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Aim: A gastrostomy usually performed for patients required long-term nutritional supply. However, parastomal leakage is one of the most common complication after surgery, which could result in PMASD or skin breakdown around the stoma. To address this situation, we assessed and evaluated the stoma condition for appropriate wound care, consulted surgeon to repair the stoma and nutritionists to provide enough energy for wound healing.

Method: For the gastrostomy care, we used nipple as device to keep the gastrostomy tube vertical and sustainable to deferent postures without leakage at the first time, and realized that the size of stoma had extended because of skin damage. Thus, we consulted surgeon to suture the enlarged gastrostomy and decided to apply stoma pouching system to separate the leakage and skin surface. At the same time, we arranged TPN for better nutrition supply.

Results/Discussion: The pouching system sustained over three days and PMASD wound had significantly improved. In spite of this, the stoma leakage could not be resolved, so we arranged scope examination which revealed inappropriate location of the gastrostomy. Eventually, the surgeon closed the gastrostomy and made another jejunostomy.

Conclusion: Stoma leakage without appropriate management in time could lead to serious issue. Even though we applied pouching system for moisture management, the skin damage was too deep to heal as quick as we expect without proper nutrition supply, and which was the reason for gastrostomy closure and jejunostomy surgery.

EP685 Managing enterocutaneous fistula post-operative wound: NPWT and stoma bag education

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Aim: This study explores a patient with liver tumor recurrence post-multiple surgeries and Trans Arterial Chemo Embolization (TACE), compounded by intestinal adhesion and wound dehiscence leading to an enterocutaneous fistula. The aim is to illustrate the effective application of Negative Pressure Wound Therapy (NPWT) and appropriate dressing selection to manage continuous fecal and intestinal fluid leakage, alleviate skin inflammation, facilitate wound healing, and offer systematic stoma bag education for a successful transition to home care.

Method: During the care intervention, the patient's persistent fecal and intestinal fluid leakage causing skin issues due to the enterocutaneous fistula were observed. NPWT was employed for wound management alongside systematic stoma bag education for the patient and family members.

Results/Discussion: Utilizing NPWT and tailored dressing selection effectively reduced skin inflammation, fostering wound healing. Systematic stoma bag education empowered the patient and family to manage stoma care successfully at home.

Conclusion: This case study demonstrates the efficacy of NPWT and appropriate dressing selection in managing post-operative wound dehiscence complicated by an enterocutaneous fistula. Additionally, systematic stoma bag education enhances patient and family autonomy in care, providing an alternative approach for similar cases, thus improving care quality and outcomes.

EP686 Strategies for managing fragile skin in critical patients: A case study

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Aim: Skin becomes more fragile with age. When malnutrition occurs, subcutaneous fat is reduced, which can easily lead to bruises and blisters. Patients who use anticoagulants are more likely to develop blood blisters. This time, an 85-year-old male IHCA patient, bedridden with malnutrition and taking anticoagulants, presented with large blood blisters on both forearms, impacting treatment. To prevent skin tears which could lead to subsequent issues like infection, sepsis, and pain, our intervention was initiated.

Method: 1) Cross-Team intervention to conduct assessments for comprehensive care.
2) Opted for a double-layer silicone foam dressing for initial protection. The outer waterproof membrane absorbs exudate, while the inner foam layer provides a soft pad to withstand pressure, minimizing bleeding risks.
3) The second layer of fixed dressing should be non-adhesive to avoid Medical Adhesives Related Skin Injuries (MARS) during removal.
4) Applied arrows to uniformly mark dressing removal directions, reducing MARS.
5) Captured photos to record wound progress, included in shift handover reports.

Results/Discussion: Throughout the care period, the patient's blood blisters gradually absorbed, leaving the skin intact. While the patient's thin and brittle skin remains an uncontrollable factor, the nursing staff's care methods and their understanding of medical adhesive products significantly contributed to the positive outcome.

Conclusion: Accurate assessment and the selection of appropriate dressings can decrease the incidence of MARS, subsequently lowering additional costs, nursing hours, and workload attributed to skin tears. Most importantly, it alleviates patient pain and minimizes associated complications. Engaging in collaborative team care ensures patients receive comprehensive and high-quality care.

EP687 Nursing experience for caring a patient with colorectal cancer and tumor fungoid wound

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Aim: This report describes a 78-year-old man with colorectal cancer combined with liver and lung metastases. He had two mushroom-shaped tumor wounds, one 12x8 cm wound on the right lower abdomen with redness, swelling, pain, a large amount of pus, and moderate odor; and the other 10x7 cm wound on the right waist with oozing, moderate amount of pus, and mild odor. Therefore, during the patient's hospitalization, the wound had to be replaced more than three times a day, and the skin around the wound was infiltrated. Faced with this situation, the patient's family members felt anxious and overwhelmed.

Method: The nurse used aloe vera foam cleansing solution on the surrounding skin, and protective spray to protect the skin where the tape was attached. A two-piece stoma base and pouch were used, and the wound bed was cleaned with saline solution and then wipe with Spersin ointment and place the cotton pad in the ostomy bag.

Furthermore, provide health education to family members on the correct way to change dressings, and videotape it to facilitate repeated learning and complete reply instructions.

Results/Discussion: After the treatment, the wound pain was reduced to 2 from 8 points, the odor was reduced to mild from moderate, and the amount of exudate was reduced to about 10-20cc every 8 hours.

Conclusion: The patient's symptoms are relieved, and the anxiety level of the family members is also reduced, which improves the quality of life of the whole family.

EP688 Application of hemoglobin spray (Granulox) on chronic wounds with tendon exposure – Case series

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Aim: Hemoglobin spray is developed to provide localized oxygen to chronic wounds, lasting up to 72 hours without the need for additional portable devices. Recent studies have revealed its substantial clinical benefits in healing hard-to-heal wounds. Here, we present a case series illustrating its positive impact on the wound healing process.

Method: The case series, conducted at Kaohsiung Medical University Hospital, involved three patients - two males and one female - all suffering from foot ulcers complicated with tendon exposure.

Results/Discussion: The first case involved a 72-year-old female with a history of multiple health issues. She presented with a fever and an ulcerated left foot. After initial treatment and detection of bacterial presence, hemoglobin spray application for two months notably improved the wound bed, enabling a successful skin graft and eventual healing.

The second case was a 57-year-old male with diabetic complications. His chronic foot wound, infected by *Pseudomonas aeruginosa*, significantly improved with two weeks of hemoglobin spray application, leading to successful skin grafting.

In the third case, a 59-year-old male with a history of burn injury and subsequent infections experienced prolonged foot wound issues. Hemoglobin spray application during wound care sessions, post-debridement, showcased exceptional results over a six-month follow-up.

Conclusion: The hemoglobin spray provides an alternative oxygen therapy and aids in treating these three challenging wounds with exposed tendons.

EP689 Nursing experience for a middle-aged woman with intellectual disabilities, hearing impairment, and breast cancer complicated by fungating wound

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Aim: This article discusses the nursing experience of a middle-aged woman with multiple health challenges, including intellectual disabilities, hearing impairment, breast cancer metastasis, and a fungating wound on her right breast.

The complexity of her condition required daily assistance from her caregiver, leading to anxiety and uncertainty about managing symptoms such as wound bleeding, foul odor, excessive exudate, and skin infiltration.

Method: Hospitalization was initiated to address these challenges, and considering the preference for home care, the choice of L-Mesitran Ointment was driven by its antibacterial, debridement, and malodour-reduce properties. The nurse implemented a comprehensive wound care procedure involving saline cleansing, L-Mesitran Ointment application, gauze packing, and adhesive tape fixation. Patient education played a pivotal role, with a focus on the correct wound dressing procedure.

Results/Discussion: The primary caregiver demonstrated understanding through return demonstration. Before discharge, the patient complied with chemotherapy, effectively controlling the right breast wound with no bleeding, odor, and reduced exudate. Subsequent outpatient follow-ups showed a reduction in wound size from 4x4x6cm to 3.5x3.5x4cm, a decrease in gauze packing from 2 to 1 piece, and alleviation of symptoms related to the fungating wound.

Conclusion: The family experienced a decreased burden in wound care responsibilities, contributing to an overall improvement in their quality of life. This case underscores the importance of tailored nursing interventions, patient education, and family support in managing complex health issues and enhancing the well-being of individuals with intellectual disabilities and severe medical conditions.

EP690 If it's not a pressure injury, then what is it?

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Aim: Pressure injuries can be confused with different types of wounds. Especially if other wounds that occur in the area where pressure injuries frequently develop are not well defined, they can be directly called pressure injuries. In this case study, an atypical wound that was mistaken for a pressure injury was examined.

Method: This study was a case example prepared with a retrospective method.

Results/Discussion: A 46-year-old, mobile, female patient with primary lung cancer and metastatic brain cancer. The patient, who received a total of 12 cycles of chemotherapy and 4 cycles of radiotherapy, developed a painful, exudate-rich, fibrin-textured wound extending from the anus to the coccyx during Bevacizumab treatment, which is known to delay wound healing and cause new wound formation. Due to the developing area, it begins to be followed as a pressure injury, the cause of which was not questioned. After a detailed examination, it was concluded that the wound was caused by chemotherapeutic agents. In consultation with the oncology team, chemotherapy treatment was interrupted, and wound treatment was started (Table 1). Due to the treatment chosen in accordance with the phase of the wound, wound healing was completed in a total of 40 days.

Table 1

Date	Visits	Practice
22.2.2023	First visit: After an outpatient clinic consultation, surgical debridement was performed in the operating room and the patient was discharged.	Surgical debridement was performed
13.3.2023	Second visit: To date, wound treatment could not be started because the patient was in another institution. Since the patient was temporarily not followed up after debridement, it was accepted as the first day of wound treatment.	Antiseptic solution containing hypochlorous acid was used for wound cleaning. There was mesa on the wound edges. Liquid acrylate-containing barrier spray and zinc-containing barrier cream were applied. The dressing was closed using a silver-containing hydrofiber dressing to provide both an absorbent and antibacterial effect on the wound bed.
22.3.2023	Third visit	There was visible shrinkage of the wound bed. Since the exudate of the wound moved away from the anal entrance and the exudate decreased, calcium alginate began to be used as a dressing. Before applying the dressing, we applied hyaluronic acid cream to the wound bed.
2.4.2023	Fourth visit	The amount of exudate from the wound decreased to almost zero. The wound bed was granulated and epithelialization was ongoing. Only cream containing hyaluronic acid began to be applied to the wound bed. The dressing was closed with slightly damp gauze.
22.4.2023	Fifth meeting	The wound was completely closed.

Conclusion: Wound treatment gives positive results with accurate diagnosis based on detailed anamnesis, interdisciplinary work, and personalized care. As the condition of the wound changes, the products used should be reviewed and the optimum healing environment should be maintained.

EP691 The treatment process of a severely injured case transferred with post-earthquake sepsis, compartment syndrome, and multiple injuries

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Aim: This report aims to share the successful outcomes of the multidisciplinary wound treatment of our patient rescued 96 hours after an earthquake.

Method: A 19-year-old female patient rescued 96 hours after being trapped under debris. Admitted to the intensive care unit with sepsis, her history revealed fasciotomy performed on both ankles upper regions in a hospital in the earthquake area, with no intervention for other wounds. Both lower extremities exhibited signs of necrotizing fasciitis with more pronounced sensory loss, multiple crush injuries and open wounds, particularly in the right foot. Bilateral below-knee amputations were performed on due to severe necrosis/gangrene in both lower extremities. Surgical debridement was applied to all wounds and a sigmoid colostomy was created to control fecal contamination in the perianal wound. The patient presented with eight wound and the biggest one is on sacral region 48x22.5x10.5 cm, deep, infected, necrotic wound.

Results: Tissue culture revealed growth of *Acinetobacter baumannii*, *Citrobacter freundii*, *E. faecalis* and systemic

antibiotics and antifungals were used. Negative pressure wound therapy was applied for a total of 112 sessions mostly (49 sessions) on the sacral region. Partial opening of a tunnel in the uncontrollable tunneled infection on the left thigh lateral area was performed, followed by ongoing dressings with Ag alginate dressings after achieving sufficient granulation. Reamputation was performed on both lower extremities after negative wound cultures. Positioning, wound and surrounding care, pain evaluation, nutrition and psychological support for the patient and family were ensured during the treatment process.

Conclusion: While our patient's three wounds showed significant shrinkage approaching closure, complete closure was achieved in the remaining wounds in 10 months.

EP692 The skin lesions occurring after COVID-19

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Aim: Since its identification in Covid-19 become a global public health emergency. Initially linked to respiratory infections, the virus has been found to manifest in a complex array of clinical symptoms affecting multiple organs. Skin lesions have gained attention among the various systemic effects of Covid-19. This report aims to outline the treatment and progression of necrotic wounds and bullous lesions on the skin in a patient who contracted Covid-19, experienced severe health deterioration following the third vaccine dose.

Method: 75-year-old male with a medical history of diabetes, kidney and heart failure, prior bypass surgery, two Sinovac and two Biontech vaccinations in 2022 and a episode of Covid-19, was admitted to a hospital due to deteriorating health. After a week, as his general condition improved, necrotic wounds and bullous lesions emerged. Rifampicin and Nitrofurazone was recommended for treating these lesions. Lab findings include d-Dimer: 162 ng/mL, INR: 0.89, APTT: 34.5 seconds, fibrinogen: 4.29 g/L. The wounds were measured as 4x2 cm on the right leg outer malleolus and 1.5x1.5 cm below it.

Discussion: This case report focuses on skin lesions, a significant finding in the treatment process of Covid-19. When similar lesions are observed on the skin, it should be recognized that they cannot be treated with topical antibiotics. The wounds are completely healed within two weeks using polyhexanide as antiseptic, hydrogel and hydrocolloid dressings. Proper wound care has contributed to the rapid and effective healing of the patient's skin lesions.

Conclusion: These findings should be considered as an important step towards developing an effective treatment strategy for managing skin complications in Covid-19 patients. In addition to Covid-19, further research and clinical studies are needed to investigate potential similar complications of Covid vaccines.

EP693 Treatment of severe injuries in patients during the course of a major earthquake

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Aim: This study presents treatments for 13 patients rescued from collapsed buildings in Kahramanmaraş after the February 2023 earthquake.

Method: From February 2023 to present, we analyzed the treatment processes of 13 patients (9 females, 4 males) with an average age of 40 (19-62) who sustained severe crush injuries related to the earthquake. The analysis includes details on surgical interventions, amputations, wound care, and medical treatments.

Results: Patients were trapped for an average of 26 hours (8-96), with predominantly lower extremity crush injuries. All patients underwent antiseptic washing, surgical debridements, and widely used negative pressure wound therapy. Four patients had lower extremity amputations (3 above the knee, 1 below the knee), and three mandatory reamputations were performed. One patient is undergoing ongoing treatment after a left upper extremity below-

elbow amputation. The rest were discharged post-completion of necessary wound care, achieving full recovery and becoming eligible for prosthetic use. One patient received dialysis. Among the ten patients in the follow-up, serious electrolyte imbalances required adjustments. Four presented with successfully treated septic conditions. Regular wound tissue cultures revealed *Acinetobacter baumannii*, *Enterococcus faecium*, and *Klebsiella pneumoniae* as the most frequently cultured microorganisms, guiding appropriate antibiotic treatments based on antibiogram results.

Conclusion: After natural disasters, various injuries can occur, often involving crush injuries. Managing acute wound treatment is crucial, but appropriate chronic wound care is equally vital for desired results. Our center achieved successful outcomes through proper treatments aligned with the TIME concept. Success was attributed to correct amputations, surgical debridements, negative pressure closure, suitable wound dressings and infection management, allowing injured patients to continue daily life with prosthetics.

EP694 The survivor of the 11th day of Turkey earthquakes and how his limb is saved from transtibial amputation by hyperbaric oxygen therapy

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Aim: We aim to show the stages of the crush injury and healing process by hyperbaric oxygen treatment of a victim who was saved from the debris on the 11th day of the 6/2/2023 Turkey earthquakes with magnitudes of 7.8 and 7.7.

Method: Following the patient was saved from the debris, the entire process including hospital admission, hyperbaric oxygen therapy (HBOT), wound care and surgery, was followed with photographs and epicrisis.

Results/Discussion: A 33-year-old patient who was trapped under the rubble in Hatay city was rescued at the 261st hour. He was taken to the intensive care unit in Mersin City Hospital within 3 hours and given the first hyperbaric oxygen therapy at the 24th hour after being rescued. Despite transtibial amputation was recommended by orthopedic surgeons, he continued HBOT twice a day with wound care following each session. After 60 sessions of HBOT at Mersin City Hospital, he was transferred to Istanbul Faculty of Medicine, where the Underwater and Hyperbaric Medicine - Orthopedics - Plastic Surgery council is located. Following 3 consecutive debridement operations, Chopart amputation, flap surgery alongside 40 sessions of HBOT, he was discharged with his heel preserved, his wound healed and able to walk.

Conclusion: HBOT is a beneficial, limb-saving treatment that moves the amputation level to the distal part in cases of severe crush injuries with a mosaic pattern after an earthquake. It can be applied as an emergency treatment protocol for patients who have been stuck in debris for a long time.

EP695 Result of hyperbaric oxygen therapy in a child earthquake victim

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Aim: Demonstration of the effects after hyperbaric oxygen therapy (HBOT) in a 12-year-old child patient with crush injuries in bilateral lower extremities who was trapped under rubble for 48 hours after the February 6, 2023 earthquakes.

Method: HBOT at 2.4 atmosphere absolute (ATA) pressure, 2 hours, a total of 53 sessions.

Results/Discussion: In post-traumatic crush injuries and compartment syndrome, HBOT supports the supply of oxygen to tissues with insufficient perfusion. In addition, hyperbaric oxygen reduces edema in the tissue after trauma.

This effect plays a role in breaking the vicious circle of edema and ischemia by contributing to the improvement of microcirculation and perfusion and contributes to the prevention of tissue damage. In our case with ischemic appearance in both feet, HBOT was applied for 4 sessions on the first day and significant benefit was obtained within 24 hours. The 4th toe of the patient's right foot, who received 53 sessions of HBOT in total, was amputated, and the integrity of both lower extremities was preserved as best as possible.

Conclusion: In clinical situations that develop after trauma and cause tissue ischemia, the earlier HBOT is applied, the more positive results it produces. Therefore, this treatment should be considered as an additional treatment option in suitable patients and necessary consultation should be requested.

EP696 The skin lesions occurring after COVID-19

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Aim: Since its identification in Covid-19 become a global public health emergency. Initially linked to respiratory infections, the virus has been found to manifest in a complex array of clinical symptoms affecting multiple organs. Skin lesions have gained attention among the various systemic effects of Covid-19. This report aims to outline the treatment and progression of necrotic wounds and bullous lesions on the skin in a patient who contracted Covid-19, experienced severe health deterioration following the third vaccine dose.

Method: 75-year-old male with a medical history of diabetes, kidney and heart failure, prior bypass surgery, two Sinovac and two Biontech vaccinations in 2022 and a episode of Covid-19, was admitted to a hospital due to deteriorating health. After a week, as his general condition improved, necrotic wounds and bullous lesions emerged. Rifampicin and Nitrofurazone was recommended for treating these lesions. Lab findings include d-Dimer: 162 ng/mL, INR: 0.89, APTT: 34.5 seconds, fibrinogen: 4.29 g/L. The wounds were measured as 4x2 cm on the right leg outer malleolus and 1.5x1.5 cm below it.

Discussion: This case report focuses on skin lesions, a significant finding in the treatment process of Covid-19. When similar lesions are observed on the skin, it should be recognized that they cannot be treated with topical antibiotics. The wounds are completely healed within two weeks using polyhexanide as antiseptic, hydrogel and hydrocolloid dressings. Proper wound care has contributed to the rapid and effective healing of the patient's skin lesions.

Conclusion: These findings should be considered as an important step towards developing an effective treatment strategy for managing skin complications in Covid-19 patients. In addition to Covid-19, further research and clinical studies are needed to investigate potential similar complications of Covid vaccines.

EP697 Accelerating chronic wound closure with adjuvant wound therapy

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Aim: To describe the management of a chronic non healing diabetic foot ulcer with Negative Pressure Wound Therapy (NPWT) and blue light photobiomodulation.

Method: Case Report.

Results/Discussion: A 33-year-old young man with newly diagnosed Type 2 Diabetes Mellitus presented with a left diabetic foot ulcer on the plantar surface measuring 13.5cm x 8cm x 4cm post-surgical debridement under orthopaedics. Surgical debridement was done twice. He was also covered with intravenous antibiotics and discharged with oral Unasyn for 6 weeks post discharge. He had a deep tunnelling wound with high volume of foul-smelling

purulent discharge. Despite the extensive surgical debridement, systemic antibiotics and silver based antimicrobial dressings, the wound still had high volume of exudate, slough and necrotic patches. After bedside mechanical debridement we applied 5 cycles of *Genadyne UNO Plus* (UNO+) Negative Pressure Wound Therapy System®. This greatly reduced the exudate and wound size. The patient was then given blue light *photobiomodulation* (PBM) therapy with *EmoLED*® twice a week. The wound size improved and wound closure was achieved.

NPWT can reduce bacterial load and exudates.(1) Blue light photobiomodulation can reduce inflammation and stimulates tissue regeneration.(2) The case demonstrates both methods used consecutively to achieve wound healing.

Conclusion: Modern dressing materials are very effective in wound management. However, it is important to consider other adjuvant modalities of wound treatment especially when facing a chronic non healing ulcer. Incorporating adjuvant wound therapy technologies can improve wound healing time.

EP698 Using auto-fluorescence imaging to aid early diagnosis of wound infection in a patient with dark skin tone

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Aim: This case report demonstrates the role of auto-fluorescence imaging in the diagnosis of wound infection in darker skin tones.

Method: This is an interesting case study of a 63-year-old male with Type 2 diabetes, CKD stage 4 and a history of diabetic foot disease. He presented to our service 1 week post incision and drainage for a wound to the left 5th MTPJ. Diagnosis of infection was challenging, inflammatory markers were normal, there was no obvious erythema, but some soft tissue swelling and increased wound exudate was noted. The patient has a dark skin tone and as it was his first presentation there was no baseline information available regarding his usual skin tone to be able to determine any new changes that may be presenting.

Auto-fluorescence imaging proved vital in guiding clinical decision making and further investigations which helped secure an early diagnosis of osteomyelitis in the left 5th MTPJ.

Results/Discussion: Auto-fluorescence imaging enabled prompt diagnosis of infection and early initiation of antibiotic therapy which allowed us to get the infection under control. He was commenced on a 6 week course of oral antibiotics and received regular wound care and multi-disciplinary input, he achieved full wound closure at 24 weeks after initial presentation.

Conclusion: This case clearly illustrates the role that auto-fluorescence imaging can play in the early diagnosis of wound infection and highlights a particular usefulness in patients with a darker skin tone for whom the cardinal sign of erythema may be hard to detect.

Ref: MolecuLight

EP699 The use of mechanical debridement to improve wound healing and quality of life for a complex patient with chronic extensive lower leg ulceration: a case study

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Aim: To illustrate the benefit of wound preparation using a mechanical debridement pad on a 29-year-old female with high BMI admitted to hospital with infected leg ulcers on background of lymphoedema. Pain uncontrolled, mobility severely affected, unable to elevate legs due to anticipated cramping and pain, high exudate levels.

Investigations:

- biopsy of lesions

- Lymphoscintigram
- Referred to pain/psychology/vascular/dermatology teams.

Tissue viability treatment

- cleansing solution soaks
- alginate gel
- absorbent pad
- modified compression.

After 2 months treatment, wounds remained static, with suspected biofilm. Patient declined bed rest, legs remained dependent and she became increasingly deconditioned.

Method: Mechanical debridement was used daily (except weekends) over a 4-week period. Initial concerns she wouldn't tolerate due to anxiety and pain was alleviated with MDT support.

Results/Discussion: Results after 4 weeks:

- reduction in wound size
- reduction erythema, and inflammation
- patient able to visualise improvement at each dressing change.
- patient did not experience the pain she had anticipated.
- patient felt 'legs were being thoroughly cleansed'.



Conclusion: Mechanical debridement has made a significant impact on wound healing and quality of life for this patient. The noticeable improvement has resulted in positive psychological wellbeing, confidence in health care professionals and a future without leg ulcers. This highlights the importance of wound preparation in removing devitalised tissue and disrupting biofilm, it also demonstrates the value of informed decision making to gain positive outcomes.

EP700 A muscle pump activator (MPA) device: Case study in treating a diabetic foot ulcer (DFU)

Amanda Parsons¹

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Aim: To evaluate the impact of an MPA device in treating a non-healing DFU.

Method: A 91-year-old lady who lives in a Long-Term Care setting. She was NIDDM and had many co-morbidities. She described having a callous over the right 1st metatarsophalangeal joint (MPJ) for “many years”. Developed a DFU secondary to wearing ill-fitting shoes that resulted in a blister, then cellulitis and treated with antibiotics. The resident was followed for 9 months in a wound care clinic. Was placed in an off-loading boot and the wound was managed with many evidence-based treatment modalities but remained open. Vascular studies indicated moderate vascular disease (Rt ABPI=0.61, Lt ABPI=0.46).

Consent was obtained for photos and reproduction prior to starting on the MPA device on December 9th, 2019. The device was used for 6 hours/day for 6 days/week. The MPA device was placed over the fibular head to stimulate the common peroneal nerve which activated the calf and foot muscle pumps. This improved venous return, reduced edema, and increased microcirculation to the wound and periwound.

Results/Discussion: Within 5 days of starting the MPA the wound developed hypergranulation and was debrided by the Nurse Practitioner. By Jan 31, 2020 (53 days) the wound was closed.

Conclusion: The application of an MPA device as an adjunctive therapy improves wound healing outcomes in DFU's by increasing blood flow to the wound and periwound area, reducing edema, and significantly decreasing the healing time.

EP701 Bariatric patients journey following failed skin removal abroad, financial and mental factique caused by longevity of stay. Wound services were difficult to obtain upon return home

Kathleen Leak¹, Shaun Churm²

¹NHS, Private Specialist, Doncaster, United Kingdom, ²NHS, Doncaster, United Kingdom

Aim: To facilitate repatriation of patient and improve quality of life both mentally and physically.

Facilitate joint working with local G.P and hospital services.

Provide support without cost for this patient in a difficult situation.

Method: Communicate with Turkish Hospital to enable repatriation of patient.

Provide NPWT pump and dressings and nursing support to patient at home with twice weekly dressings.

Facilitate enhanced recovery.

Peri -skin was badly damaged needing urgent protection which was provided by a thin hydrocolloid. Due to failed surgery the patient needed four theatre trips with 11 units of blood.

Two of these were skin grafts over a deep cavity with the surgeon telling her they failed as her buttocks were too heavy so she needed a buttock lift.

Results/Discussion: This patient returned home following a six month stay in a Turkish Hospital, undergoing extensive surgical debridement's and skin Grafts following 360 abdominoplasty.

The wound was located mid line of her back on the 360 abdominoplasty upper scar

Heavy financial burden on the family as patient had been six months in Turkish hospital due to complications of surgery and non-compliance of medical staff regarding NPWT and dressing frequency. Relying on friends and wider family for financial support

Conclusion:

- Repatriation achieved.
- Appropriate use of NPWT facilitated improved healing. still
- Patients quality of life instantly improved being back with her family.
- Within 4 weeks there was a wound reduction of 70% in size and as the exudate is still heavy NPWT is currently still insitu.

EP702 Calf muscle Pump Activator (CMPA) device: A case study of a traumatic foot injury with suspected arterial insufficiency

Sheri McPhee¹

¹Health Association Nova Scotia, Glace Bay, Canada

Aim: To evaluate the calf muscle pump activator device in the treatment of a traumatic wound with delayed healing.

Method: An 87-year-old resident of a Long-Term Care facility endured a traumatic injury to the left foot resulting in a full thickness tissue injury. Due to severe pain an ABPI was not done, a comprehensive lower limb assessment revealed common characteristics of arterial insufficiency. The wound was treated weekly for 12 weeks by the NSWOC in accordance with best practice. The wound decreased 63%, but the resident continued to experience significant pain 8/10 secondary to ischemia. The resident refused pain medication.

The CPMA device was initiated to increase blood flow to the affected limb.

Results/Discussion: Within 11 days post application of the CMPA device, resident reported a decrease in pain with dressing changes. Wound measurements indicated a 20% reduction in size. Frequency of NSWOC visits decreased now that pain was managed. Six weeks after application of the CMPA device wound measurements indicated 97% healing and pain score was 2/10.

The initiation of the CMPA changed the residents wound care experience from painful and fearful to one where she stated "I was so afraid I was going to lose my foot, but with every little twitch I knew it was getting better".

Conclusion: Clinicians should consider early implementation of the CMPA device to improve arterial blood flow, increase microcirculatory blood flow in and around the wound, optimize the use of human resources, and positively influence the patients' wound outcomes.

EP703 Quality improvement audit: wound bed preparation within the community setting

[laura Hallas](#)¹

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Aim: Prior to February 2021 our local community NHS Trust used saline on all chronic leg ulcers. This audit investigated the impact of a switch to implementing a Wound Bed Preparation pathway (WBPP) using PHMB & Betaine Solution and Gel with particular focus on resource costs and care plan compliance.

Method: This audit was completed retrospectively on 34 anonymised patients over a minimum of four months. Since this audit sought to explore the importance of training on successful implementation a period of bedding in was given prior to data collection. Patients were allocated a treatment protocol at each visit based on the type of products used and the frequency of nursing visits. Each protocol was costed accordingly and verified locally by the tissue viability lead.

Results/Discussion: When comparing pre- and post-implementation of the WBPP there was an average cost saving of £28.15 per patient per week, this comprised of a £24.56 and £5.19 saving on nursing visits and products used respectively. There was a notable increase in the consistency of treatment with a reduction in the variation of products used. In particular the use of antimicrobial dressings was reduced after implementation contributing to the reduction in average cost of treatment per patient.

Conclusion: These results indicate that when implemented properly using a WBPP universally on chronic patients can reduce resource costs, nursing visits and the use of unnecessary products. It also demonstrates the benefits to wound care of a training programme to improve compliance and provide consistent treatment.

EP704 Evaluating wound cleansing in patients with lower limb wounds using fluorescent imaging

Beth Lillico¹

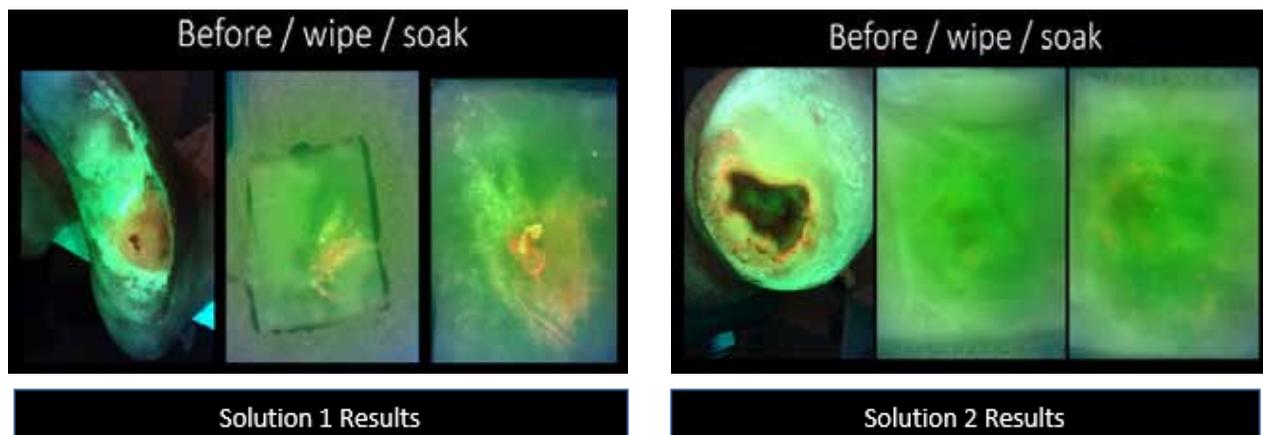
¹Harpurhey Health Centre, Manchester, United Kingdom

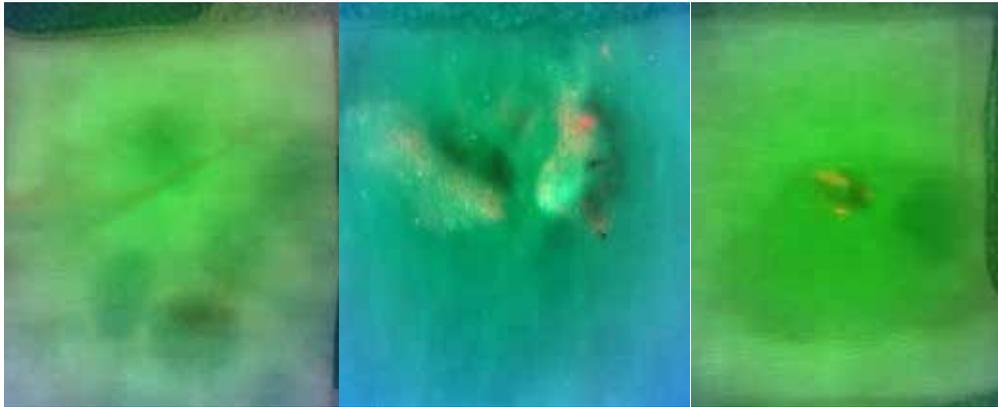
Aim: Investigate the efficacy of wound cleansing using tap water and two wound cleansing solutions using varied contact times under a fluorescence imaging device (FID). To also identify if there is a benefit to irrigating or soaking the wound bed and could this be observed under FID.

Method: We included patients if they presented with lower-limb ulcers/surgical wounds. Patients were randomly assigned either cleansing with tap water, solution-1 (PHMB & Betaine) or solution-2 (Octenidine). FID was used to take pictures in normal and under 'SafeUV' light which highlighted areas of debris and bioburden. The wounds were treated then each wound and gauze was imaged and scored from poor (1) to excellent (4).

Results/Discussion: Both test solutions performed better than a tap water wipe. Both solutions removed some bioburden with a short-contact-time wipe (<30 seconds). Soaking the wounds with either solution (soak times varied between 1-7 minutes due to preparation of dressings) removed more bioburden than a wipe indicating that a longer contact time was more sufficient in these wounds, observation using the FID show that solution-1 performed better overall. The average clinician approval rating for solution-1 and solution-2 was 81% and 55% respectively.

Conclusion: Solution-1 and solution-2 cleansers work within 60 seconds and soak times vary depending on clinical wound assessment. Short-contact-time wiping with both solutions was not sufficient in removing all bioburden and using a soak was beneficial. Blind scoring revealed that solution-1 was evaluated higher than solution-2 for a wipe alone. FID improved patient engagement in their treatment.





Wipe Tap water (L), Solution 1 [C], Solution 2 [R]

EP705 Utilisation of Novosorb Biodegradable Temporising Matrix (BTM) in a patient with chronic limb threatening ischaemia and extensive tissue loss

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Aim: Over recent years, NovoSorb[®] Biodegradable Temporising Matrix (BTM) has been shown to be an effective solution to tissue loss as a result of burns, necrotising fasciitis and, more recently, in diabetic foot disease. Although there is a paucity of literature in the setting of tissue loss secondary to chronic limb threatening ischaemia (CLTI), positive patient outcomes recently published by Guerriero et al. (2023) were encouraging. We present the first known case in the UK of utilising BTM in large areas of tissue loss in a patient with CLTI post revascularisation.

Method: A prospectively maintained electronic record was retrospectively reviewed. This included evaluation of clinical photographs.

Results/Discussion: A 62-year-old male presented with CLTI and extensive tissue loss involving the dorsum of the foot, multiple toes and the calf. Revascularisation by means of iliac angioplasty and femoral to femoral cross of graft was carried out. Debridement of the foot was required including amputation of 2nd-5th toes. BTM was applied to the dorsum of the foot and the calf. Delamination was carried out at 8 weeks. His wounds were fully healed at 24 weeks.

Conclusion: BTM provides a useful adjunct to aid wound healing in revascularised CLTI patients with extensive tissue loss, especially when exposed tendons and bones are present.

EP706 Measuring the impact of a cinnamon-based dressing in malodorous malignant fungating wounds - a case series

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Aim: This study aimed to quantify the impact of a cinnamon-based dressing in patients with malodorous malignant fungating wounds.

Method: Malodour was quantified using the TELER® scale; discomfort using a Visual Analogue Scale (from 0-100); impact on appetite using the SEFI® scale and Quality of Life using the EQ-5D-3L questionnaire. Participants and the Research Team recorded measurements during a two-week study period before and after the application of the dressing.

Results/Discussion: Three participants were recruited. The first participant had malignant lesions over her thighs, buttocks and legs; the second participant had a large fungating wound to his buttock and the third participant had a fungating wounds to her groin. All three participants reported a notable reduction in wound malodour, and this improved their quality of life during the last few weeks of their life. Data collection deviated from the protocol, as the participants were often too ill to be visited by the Research Team and/or complete the measurements; data collection were modified to suit the participants.

Conclusion: This small case series indicate that a cinnamon-based dressing may enhance the quality of life in patients with malodorous malignant fungating wounds. These cases underscore the complexity of conducting research in a palliative context. Further research must include data that qualifies patients' experiences as they journey through end-of-life care.

EP707 The challenges of applying compression bandaging to an individual with spina bifida, recurrent leg ulcers, peripheral neuropathy and lymphoedema

Sok Lou¹

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Aim: Children and adults with Spinal Bifida (SB) are at high risk of developing wounds compared to the general population (Ottolini et al. 2013). This case study addresses the challenge of applying compression bandaging to individuals with SB, who are at increased risk of developing wounds, especially those with peripheral neuropathy and lymphoedema. The aim is to showcase treatment modalities, focusing on reshaping toes, and healing recurrent ulcers in a wheelchair-dependent patient with SB.

Methods: The method involved a four-week intensive bandaging, with the goal of reshaping the toes, reducing oedema and wound healing.

Various treatment modalities, including short stretch compression bandaging, lymph pads, kinesio tape, manual lymphatic drainage, and lower-level laser therapy, were employed.

Results/Discussion: There was significant improvement in toe and foot shape. The patient accepted her new body image, and with a specialist prescription and support from compression industry partners, received personalized toe caps.

The lower limb ulcers healed, and skin integrity resumed. The patient continued with an established compression garment regime, emphasizing the crucial role of personalized toe caps in the maintenance phase.

Conclusion: Despite concerns about tissue injury, the benefits, such as improved toe shape and ease of compression therapy management, outweigh the risks. This case study highlights the challenges of compression bandaging in SB patients, emphasizing careful application, monitoring, patient engagement, and family commitment.

This provides valuable insights for clinicians dealing with similar cases, while contributing to the existing literature on wound care challenges in individuals with SB.

EP708 Case report on successful, non-surgical treatment of an abdominal fistula, with a novel therapeutic (pharmaceutical aqueous chlorine) M3 drench-wash where fistula closure was followed by minimal hypertrophic scaring

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Aim: A patient in 6th decade presented with a large, refractory, fistula from colon to external abdomen two years after radiotherapy for pelvic metastatic osteosarcomas. Three months following colostomy the fistula remained large (90cm²), leaking and prevented socialization.

Failure in wound healing has been hypothesized as a failure of macrophage differentiation from M₁ (inflammatory) to M₂ (regenerative). This is correlated with bacterial colonization, increasingly resistant strains. M₁ cells express pro-inflammatory Il-6, while M₂ cells express anti-inflammatory Il-10.

The novel therapeutic, physiologic aqueous chlorine (M3), possesses broad spectrum antimicrobial properties without resistance. It also produces rapid functional neutralization of Il-6 with simultaneous maintenance of Il-10 function.

Method: Under supervision of a district nurse, a homecare regime was instituted where the fistula was soaked with M3 for 90 minutes twice a day for a period of 102 days. The progression of healing was photographed and recorded.

Results/Discussion: After 19 days the wound had partially flattened and the fistula closed. The resultant wound displayed progressive closure and organization. After 39 days, the wound surface was 18cm² epithelialised and keratinized.

The wound closed with skin of normal appearance, hair follicles and keratinization. At 102 days, only a 2cm² hypertrophic scar remained.

Conclusion: The M3 therapeutic offers a dual action of suppression of microflora and pro-inflammatory milieu. This may have value when applied topically to wounds. The potential impact on the differentiation of Macrophages from M₁ to M₂ should be investigated further. This might offer a cost-effective, non-surgical modality for refractory wounds.

EP709 Treating venous ulceration with a combination of compression therapy above 40mmHg and adjunct therapy by using the Intermittent Pneumatic Compression device

Gabriela Korn¹

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Aim: The aim of treatment was to heal venous ulceration and to improve quality of life for patient “Ava” (pseudonym).

Method: Although we have taken Ava on to attend complex clinic in August, we still continued with share approach of care with her local teams. While the patient’s local team initiated compression therapy as per a NICE guidance on the treatment of venous ulceration (NICE, 2023), we increased the level of compression to above 40mmHg. Partsch (2017) recommends that, to compress leg vein in the upright position, a pressure between 60 to 90 mmHg is required. Vowden, Kerr and Mosti (2020) furthermore recommend that venous ulceration requires strong compression.

Alongside compression therapy we added adjunct therapy and enrolled Ava on to the randomised controlled trial with use of Intermittent Pneumatic Compression device. Evidence suggests that the WoundExpress supports healing through improving venous return, lymphatic drainage, microcirculation and reduces inflammation (Schofield et al., 2021).

The patient was involved in shared decision making and empowered to take an active approach to their own health (NHS England, 2023).

Results/Discussion: Ava’s pain was improving through the course of treatment and she was able to tolerate high level of compression. Her ulceration was responding to therapy and wound size was decreasing. By November ulceration had healed and we measured her for flat knit hosiery (Fletcher et al., 2021).

Conclusion: Through combination of compression therapy and adjunctive therapy the patient not only had her ulceration healed but her quality of life improved.

EP710 The benefits of self-care in hidradenitis suppurativa

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¹Daylong Direct, Ilkeston, United Kingdom

Aim: Hidradenitis suppurativa (HS) is a painful skin condition found in the axilla, breast and groin. Patients often manage their wounds at home with inappropriate materials. HS significantly impacts patient quality of life, and 1-4% of the population suffer from HS. The need for Multiple dressing changes a day can lead to MARS and is time consuming for patients.

This case study evaluates the benefits of a wound management system designed for HS. The aim is to evaluate the benefits on QUOL, wound management and cost savings through self-care and a reduction in dressing change.

Method: 4-week case study evaluation. A skin assessment was captured at each week and patients completed a dermatology life quality index (DLQI). HCP and Patient feedback were also captured. Data on previous dressing use, nursing time and visits were also captured to look at potential cost savings and the ability of the patient to self-care.

Results/Discussion: Patient was able to self-care and return to normal activities. This intervention reduced the number of nursing visits and dressing changes, which translated to a cost saving of approximately £1500. Wound and QUOL scores improved, with significant improvements in pain, odour and exudate management.

Conclusion: This case study demonstrates the benefit of a self-care wound management system in the community to patient and clinician. It highlights the potential cost savings that can be made for a chronic condition and improvement to QUOL. Cost saving that can be made by reducing nursing time through self-care.

EP711 Evaluation of the efficacy of hyper-oxygenated fatty acids (hofa) for skin care in a lymphoedema clinic compared to standard paraffin-based treatments

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Aim: To evaluate the efficacy of Hyper-oxygenated fatty acids (HOFA) for lower limb skin care, using an oil (LV Oil¹) and emulsion (LV Emulsion²) emollient product.

Method: A variation of LV Oil & LV Emulsion was used on 7 patients, these patients had a range of skin conditions such as varicose eczema, maceration, hyperkeratosis and lymphoedema. Treatment was recorded for an average of 5 weeks, both patients and nurses filled out an evaluation form after each appointment to assess the visual effects of the HOFA's.

Results/Discussion: Patients used the HOFA technology to improve skin texture, hydrate or soften the skin. 100% of patients stated their treatment objective reported a positive outcome when using the HOFA products. 100% of patients had a positive experience with LV Oil or LV Emulsion. 100% of clinicians rated the HOFA technology much better at improving skin texture compared with the previous paraffin-based treatment used. 100% rated LV Oil/LV Emulsion as better/much better at retaining moisture compared to previous treatment. Repairing skin barrier and preventing skin breakdown were also reported as overall better. HOFA's performance was rated excellent/great in 100% of cases during the final appointment recorded.

Conclusion: All patients in this case series had a positive experience with the HOFA technology and reported improvements in skin condition. Clinicians found it to be better/much better than previously used paraffin treatment in all outcomes measured. The performance of HOFA's was reported to be excellent/great and on average an improvement was seen after 6 days.

EP712 Title: The effective management of moisture associated skin damage using a hydroactive colloid gel

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Aim: Moisture-Associated Skin Damage (MASD) encompasses a spectrum of conditions resulting from prolonged exposure to moisture, causing skin irritation, inflammation, and skin breakdown. Causes include incontinence, perspiration, wound exudate, body fluids. The aim of this study is to evaluate a Hydroactive Colloid Gel (HCG) as a topical treatment demonstrating an improvement in patient outcomes by reducing harm from skin breakdown caused by MASD.

Method: A comprehensive evaluation conducted across a healthcare setting, focusing on 12 patients exhibiting mild to moderate MASD and/or excoriation and the use of HCG as a topical application/treatment. National tools facilitated standardised skin assessment to correctly identify MASD severity. Education was a key component prior to the commencement of the study. A holistic assessment of the patient was essential to identify multi-factorial elements, causative agents and tailored interventions. The study included a multi-disciplinary approach, involving both nurse specialists and generalists.

Results/Discussion: Preliminary analysis is underway, final findings being collated /reported. Initial findings identify pain reduction, improved healing outcomes in the severity of MASD with the use of HCG. The study underscores the significance of a multidisciplinary approach in managing MASD and highlights the need for tailored interventions addressing individual patient needs.

Conclusion: This case study offers insights into the use of HCG to treat mild to moderate MASD/excoriation within a healthcare setting, emphasising the importance of a holistic approach targeting causative factors, symptoms, and risk mitigation strategies. Further research and widespread implementation into an appropriate pathway may reduce harm to patients from MASD.

EP713 Compression therapy in the absence of an ABPI - A case study

Olivia Fox¹

¹Lohmann & Rauscher, Burton-on-Trent, United Kingdom

Aim: Assessing the Ankle Brachial Pressure Index (ABPI) before applying compression helps healthcare providers determine the patient's vascular status, ensuring that compression therapy is safe and effective for promoting healing without compromising arterial circulation. However, this may not always be possible or unreliable due to clinical complexities such as chronic oedema. This poster presentation will detail the management of a patient with a 4 month history of bilateral lower limb ulceration, lymphoedema and poorly controlled diabetes.

Method: Having been discharged from lymphoedema services with European Class 3 (34-46mmHg) hosiery, this patient presented to general practice. Due to chronic oedema (lymphoedema), it was not possible to obtain a reliable ABPI, despite vascular and tissue viability input, conflicting approaches were suggested. L&R UK's local clinical advisor was contacted for advice who highlighted the British Lymphology Society (2018) document 'Position Paper for Ankle Brachial Pressure Index (ABPI) *Informing decision making prior to the application of compression therapy*'.

Results/Discussion: The patient did not have any presenting signs of arterial disease, consent was obtained to implement ReadyWrap™ adjustable compression wrap system (foot and calf pieces) with information and support regarding the risks vs benefits of compression, adverse clinical signs and symptoms and who to contact. A shared self-care approach was also adopted, and the patient's ulceration subsequently healed at 9 weeks post-implementation.

Conclusion: Utilising best practice evidence and 'being bold' in decision, alongside a wider Multi-Disciplinary Team including commercial product specialists, is essential in order to achieve safe, efficient and effective care.

EP714 The positive outcomes of using evidence-based treatment for complete closure of a transtibial amputation wound

Nikki Storer¹

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Aim: A case study which outlines the care provided to a patient who had undergone angioplasties where the surgical wound had become ischemic. Discussing the positive clinical outcomes achieved when using an easily implemented evidence-based treatment.

Method: Review of evidence including the NICE recommendation for UrgoStart Contact for the treatment of diabetic foot ulcers.

Previous dressing used showed very little progression to the healing of this complex wound. After the clinician had reviewed the evidence available the dressing was then initiated and applied 1x weekly by specialist practitioner with follow up dressing changes once a week by practice nurses. Shared care between primary care and specialist services enabled continuity of care.

Results/Discussion: Within 7 weeks of using the UrgoStart Contact the wound began to improve, slough was decreasing and the wound margins reduced. Complete wound closure was achieved in 8 months with a hospital admission in-between.

Due to the patient's co morbidities the wound was static with no progression, this then had a negative impact on the patient's rehabilitation progress. The simplistic approach of applying an evidence-based treatment and clear care plan which the clinicians followed allowed the wound to progress and heal. Pain was reduced and this therefore encouraged the patient to resume their rehabilitation.

Conclusion: The implementation of a simple strategy for this complex wound and understanding the importance of evidence based practice enabled the wound to progress along the wound healing trajectory to complete healing.

EP715 Reversing a chronic non healing category 4 sacral pressure ulcer, to a healing wound

Sarah Waller¹

¹Molnlycke, Gothenburg, Sweden

Aim: Nurses and family referred a lady to Tissue Viability frustrated to be told her wound would never heal. She had been left in her bed deconditioning, losing her quality of life, including hospital admissions with wound infection and sepsis. This case study is following the care given to this lady with a non-healing/chronic wound on the sacrum indicative of a Category 4, Pressure Ulcer. Describing the challenges, products used to reverse the situation, restoring quality of life.

Method: Primarily completing a holistic assessment, including an MRI which identified a pocket/abscess. A swab identified E.coli, attributed to constant faecal contamination from the minimal wound edge available.

Products were introduced which enabled autolytic and sharp debridement. Discussing and educating the multidisciplinary team and family, a healing wound was formed. Dressings were used to fight bacteria stimulating granulation and epithelisation. Silicone foam as secondary dressing locked away exudate and prevented shearing and skin injury. Epiboling preventing healing then treated using debridement and Negative Pressure Wound Therapy (NPWT) which further developed granulation.

Results/Discussion: Every week a small reduction was found in the cavity size. With a seal enabled the NPWT has had favourable outcomes. Even enabling a visit to the garden to enjoy the flowers, the smile on her face indescribable, she has not returned to hospital for wound infection.

Conclusion: It is possible to establish a reason for a wound not healing and often if holistically treated this can be reversed. Education and teamwork can lead to positive results.

EP716 One-year follow-up of Novosorb biodegradable temporising matrix in the reconstruction of lower limb necrotising fasciitis: a case report

Edward Bollen¹, David Zargaran¹, Daniel Markeson¹, Isabel Jones¹

¹Chelsea & Westminster Hospital NHS Trust, London, United Kingdom

Aim: To evaluate the role of Novosorb® biodegradable temporising matrix in reconstructing a large defect of the lower limb resulting from the debridement of severe necrotising fasciitis.

Method: We present the case of a 39-year-old man who was referred to our burns unit with a wound of the right lower limb involving 18% of his total body surface area following necrotising fasciitis. Prior to the referral, the patient had undergone 13 debridements of the limb. Under our team, he underwent a further debridement before application of Novosorb® biodegradable temporising matrix.

Results/Discussion: 95% of the Novosorb® fully integrated. The remaining 5% was initially replaced with Integra® matrix wound dressing which also failed to take, suggesting a poorly vascularised wound bed. The patient later had definitive autograft reconstruction of the wound and healed very well. The Patient and Observer Scar Assessment Scale was used to evaluate the limb nine months following reconstruction, with vascularity 5, pigmentation 2, thickness 6, pliability 7, relief 5, surface area 3 and overall assessment 6.

Concerns regarding infection and loss of dermal substitutes owing to their biological composition have precluded their widespread use outside of burns reconstruction. There are very few reported cases of biodegradable temporising matrix being used following necrotising fasciitis. This case demonstrates the viability of Novosorb® in this application to achieve a good functional and cosmetic outcome.

Conclusion: Novosorb® biodegradable temporising matrix presents an effective tool as part of the reconstructive ladder in patients who have undergone extensive debridement of necrotising fasciitis.

EP717 An investigation of hyper-oxygenated fatty acids (hofa) in both acute & community settings

Kelly Moore¹, Michaela Delahunty², Louise Wall³, Gemma Long⁴, Dawn Chatterton⁵, Tracy Jackson³

¹Doncaster & Bassetlaw Teaching Hospitals, Doncaster, Doncaster, United Kingdom, ²Rotherham Doncaster and South Humber Trust, Cantley, Doncaster, United Kingdom, ³Doncaster & Bassetlaw Teaching Hospitals, Doncaster, United Kingdom, ⁴Doncaster & Bassetlaw Teaching Hospitals, Doncaster, United Kingdom, ⁵Rotherham, Doncaster & South Humber Trust, Doncaster, United Kingdom

Aim: To assess the effectiveness of Hyper-oxygenated fatty acids (HOFA) on patients, using an oil¹ or an emulsion² emollient product.

Method: 36 patients (intact lymphoedema including patients with head and neck oedema, arm, leg and breast or patient's with a leg ulcer/diabetic foot ulcer without lymphoedema) were assigned either oil or emulsion. The skin condition of each patient varied from healthy to ulceration. The average treatment time was 16 days. The clinicians visually assessed the patient's skin after each treatment and recorded their opinions and skin assessment.

Results/Discussion: The emulsion was used mostly on limbs with wounds, the oil was predominantly used on healthy skin and lymphoedema. Majority of patients met their treatment objectives using the emulsion and oil, 96% and 94% respectively. 84% of clinicians perceived the treatment as positive with 100% of cases having both emulsion and oil rated as better/much better than previous products at improving skin texture, preventing breakdown, retaining moisture, and repairing skin barrier. Patients provided positive feedback regarding the smell, ease of application, absorbency, and coverage. Clinicians noted that compression garments were easier to apply which reduced appointment times. On average excoriation, erythema, thickening or itching were all ranked as a 0 on a scale from 0 (better) to 5 (worse). The average overall performance of HOFA was rated as excellent for both products.

Conclusion: Clinicians noted improvements in skin conditions and evaluated the HOFA on average better than previous treatments for all included patients.

EP718 Using subsensory electrical stimulation therapy* to reduce wound pain and enable rehabilitation in order to facilitate faster patient discharge from hospital

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Aim: The tissue viability team wanted to explore the benefits of a 12-day automated electrical stimulation therapy (EST)* in reducing pain and stimulating healing for two patients in an acute hospital.

Method: Patient A: deep surgical dehiscence wound right hip; required Larvae for debridement of large haematoma, prior to receiving low dose negative-pressure therapy (reduce dressing changes/infection risk) together with the EST*.

Patient B: extensive unstageable pressure ulcer with dry eschar right ischial tuberosity and osteomyelitis; medically unfit for surgical debridement; EST* applied to enhance autolytic debridement.

Hospital admissions prior to commencing EST* was 45 and 4 days respectively. Wound pain prevented rehabilitation/hospital discharge. Pain scores/analgesic consumption and wound dimensions recorded prior to and during EST*.

Results/Discussion: Both patients had a pain score of 10 on the visual analogue score, requiring controlled analgesia. Pain reduced to 0 (100% reduction) and 7 (30% reduction) within 6 days of commencing EST*, enabling rehabilitation.

Patient A: cessation of all analgesia during EST*; discharged home on day 6, completing the 12-day EST* at home. Wound healed.

Patient B: eschar completely debrided (EST* accidentally removed after 6 days) with reduced inflammation; analgesia continued; remained in hospital for intravenous antibiotics for osteomyelitis; discharged 53 days later. Wound continues to improve.

Conclusion: EST* may help to manage wound pain sufficiently to enable rehabilitation, reduce the need for analgesics and facilitate hospital discharge, having a significant impact on reducing hospital stays and improving the quality of life for patients.

*Accel-Heal Solo, Accel-Heal Technologies Limited, Kent, UK.

EP719 Successful management of extensive leg ulceration in two cases following insect bites: multidisciplinary teamwork at it's best

Jemell Geraghty¹, Lukla Biasi²

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Aim: Managing leg ulceration for patients presenting with ulceration originating from an insect bite is complex and often an urgent clinical scenario. The following will present two cases of patients who experienced an insect bite to the lower limb, subsequently developed cellulitis and leg ulceration. The aim is to demonstrate the success of timely assessment, diagnosis and treatment leading to full healing as a result of collaboration between vascular and tissue viability.

Method: Both patients sustained an insect bite to the lower limb. Delayed treatment resulted in hospital admission for cellulitis and deterioration in leg ulceration. On discharge both patients were reviewed jointly by a Vascular Consultant and Tissue Viability Nurse within 48 hours. Timely assessment and a thorough physical examination completed at first appointment with commencement of strong compression bandaging. Patients and family were actively involved to optimise person-centred care.

Results/Discussion: Both patients fully healed within 8 weeks. During this time one patient was able to return to work as a practicing surgeon, the other returned to normal activities of living. Pain levels greatly reduced after initial appointment and noted improvement of leg ulceration from first appointment continued until full healing *photographs provided.

Conclusion: Healing is directly linked to the skill and joint working of vascular and tissue viability. The results cannot be underestimated; initial joint reviews resulted in timely commencement of treatment, patient engagement and concordance and ulcer healing. Ultimately, we need to work more closely with our specialist colleagues, avoiding delay and treating to heal.

EP720 Effective healing-to-closure of acute and chronic pressure ulcers by MPPT

Frank Sams-Dodd¹, Jeanette Sams-Dodd¹

¹Willingsford Ltd., Southampton, United Kingdom

Aim: Osteomyelitis releases infectious debris into the tissue surrounding the infected bone. The body will form a draining fistula, i.e. a canal, between the bone and the skin surface to remove this debris. The debris is infectious and typically lead to extensive soft tissue infection, which can cause sepsis.

MPPT (micropore particle technology; Amicapsil-SCI, Willingsford Ltd., UK) is a passive immunotherapy effective in treating wound infections. It has demonstrated benefits in controlling soft tissue infections caused by draining fistulas. The aim was to evaluate patients-benefits achieved using it for this purpose.

Method: Individual with confirmed osteomyelitis were followed for 1- 3 years, and the benefits gained from their use of MPPT were determined.

Results: No adverse events were reported. MPPT removed the soft tissue infection, promoted regeneration, and transformed the wound into a narrow stable draining fistula. Participants reported considerable reductions in exudate levels, reduced frequency of sepsis, reductions in frequency and severity of autonomic dysreflexia episodes, and overall improvements in health. The combination of MPPT being suitable for telemedicine and no requirement for bed-rest meant that participants were able to resume an active life-style, including exercising.

Conclusion: MPPT effectively controlled the soft tissue infections resulting from the presence of an osteomyelitis. It is ineffective in treating the osteomyelitis itself, but can alleviate many of the consequences of osteomyelitis until surgery is possible. In cases, where surgery is not possible due to comorbidities, MPPT can be used palliatively to reduce the risk of sepsis and to improve quality of life.

EP721 Advanced intermittent pneumatic compression wound therapy device for the treatment of chronic venous leg ulceration: case study discussion

Jemell Geraghty¹, Lukla Biasi²

¹King's College London, London, United Kingdom, ²Guys and St Thomas's NHS Trust, London, United Kingdom

Aim: Living with chronic venous leg ulceration has a debilitating impact on an individual's life. People experiencing chronic wounds are unable to continue living in a meaningful way and many areas suffer including relationships, work and recreation.

Compression therapy is the gold standard for the treatment and prevention of venous leg ulceration. Compression is applied in the form of bandages, hosiery or wraps. Advanced wound care technologies offer clinicians and patients additional options of utilising an intermittent pneumatic compression device to the leg(s) alongside conventional compression therapy and wound dressings.

Method: The following will present three cases of patients living with chronic venous leg ulceration treated with compression bandaging and an intermittent pneumatic compression wound therapy device to optimise healing and symptom management. The wound therapy device was worn on the thigh and patients were advised to wear daily for a minimum of two hours.

Discussion: All three patients consistently wore the device. There were initial challenges mainly associated with building a routine and incorporating therapy into daily life. Regular weekly follow-ups and/or telephone contact by the Vascular Consultant/ Tissue Viability Nurse supported patients to embrace the therapy.

Photographic information will demonstrate the journey of the three cases to full healing and present feedback from patients who reported decrease in pain especially at night.

Conclusion: The burden of chronic venous leg ulceration leads clinicians and patients to explore options to optimise healing. Wound therapy devices support conventional compression management and have been shown to improve quality of life and healing.

EP722 Improving the quality of life in a patient with burns

Adele Woodyer¹, Tanya Brandon²

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Aim: This case study illustrates how a burn with a duration of 4 months healed within 5 weeks.

Method: A 33-year-old female patient with a burn wound to her thigh had been attending hospital for 4 months, requiring daily dressing changes. However, the patient's inability to attend clinic required her to be self-caring attending hospital twice weekly. A wide and varied selection of dressings had previously been used with no progression therefore to ensure reduction of bioburden a dressing with Technology Lipido colloid-Ag and polyabsorbent fibres was selected to ensure the wound be continuously cleaned and bioburden reduced.

Results/Discussion: Wound size at commencement of treatment 10cm x 8cm. Patient reported a pain score of 4 using the numeric pain rating scale

Within 2 weeks signs and symptoms of infection reduced with patient reporting a pain score of 2. Dressing changes were pain free and patient stated her quality of life improved allowing her the ability to shower and move freely without pain enabling her to return to work as a hairdresser.

By week 4, patient reported pain score had reduced to 1. Within 5 weeks of commencing treatment, the wound was healed. The patient was elated that her wound of 4 months duration healed within 5 weeks of changing treatment.

Conclusion: This case study demonstrates using a dressing that can clean, fight infection, and prevent reformation of biofilm simultaneously, was effective in healing a burn wound of prolonged duration. This in turn led to a positive patient experience.

EP723 A successful partnership approach which has led to a more effective use of resources within a rural area

Adele Woodyer¹, Rachel Crichton²

¹Urigo Medical, Loughborough, United Kingdom, ²NHS Grampian, Elgin, United Kingdom

Aim: This case study illustrates how a burn with a duration of 4 months healed within 5 weeks.

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EP724 Bioactive Microfibre Gelling (BMG) technology to support patient self care. A case study

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Aim: Self-care is the ability of individuals to care for themselves, allowing them to take an active role to achieve, maintain or optimise their health and wellbeing. It refers to the collaborative partnership between clinicians and patients to support individuals to manage their ongoing health conditions themselves (Blackburn et al, 2021; Martínez et al, 2021).

Our skin integrity team strives to support patient self-care and sought dressing options to enable this. We present a case study of a Bioactive Microfibre gelling technology (BMG) dressing for a 23-year-old female with pilonidal sinus of 5 years duration with episodes of healing and then non healing alongside 4 surgeries over 5 years.

Method: Six-week case study.

Results/Discussion: BMG haemostatic properties facilitated the opportunity for optimisation of wound healing by facilitating rapid haemostasis.

Medical images depict Increased granulation and epithelisation from 10/7/23 to 21/9/23 with complete healing by 31/10/23.

The dressing managed fluctuating levels of exudate due to wound site extremely well with no periwound maceration.

Further future surgical intervention avoided.

The patient was able to do the dressings herself.

Conclusion: This case study demonstrates improved quality of life in this patient centred approach with her engagement in both the evaluation and dressing decision-making process.

Further patients have been identified to continue this approach with consideration being given to now include the BMG dressing for Specialist inclusion within our woundcare formulary.

EP725 Topical haemoglobin spray ‘kick-starts’ 18-month-old chronic leg ulcer

Cheryl Lugton¹

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Aim: Use topical haemoglobin spray to promote wound healing in a chronic ulcer. Multiple dressing types had been used over the 18-month period with initial wound deterioration and then becoming static, therefore, a new approach was required.

Method: Topical haemoglobin spray and a self-adherent soft silicone foam dressing were applied for 6 months with specialist knowledge. The patient was educated to maintain good overall health through movement and healthy diet and was concordant with this advice throughout the treatment.

Results/Discussion: The patient had an 18-month long-standing leg ulcer with odour, high levels of purulent exudate and devitalised tissue. After 1 use of topical haemoglobin spray the base of the wound had minimal devitalised tissue present and after 2 weeks of use, pain and exudate had significantly reduced – after 10 days stopped requiring oral morphine. Following 3x weekly application of topical haemoglobin spray for 7 months and 6 months use of soft silicone foam dressing the leg ulcer completely healed, after initial concerns that this wouldn't heal.

Conclusion: The topical haemoglobin spray along with specialist knowledge were successful in assisting healing a long-standing static leg ulcer and provided a great improvement with pain and exudate levels within the first 2 weeks of use. The patient had a breakdown of skin on their lower limb 12 months later and topical haemoglobin was used straight away. This wound healed in a timely manner. This treatment allowed the patient to be free of their leg ulcer pain and regain their social life.

EP726 Case study. ‘I don't want no one white leg and one black leg’– Glorias story

Jacqueline Dark¹, Eva Harris¹

¹Great Western Hospital NHS Foundation Trust, Swindon, United Kingdom

Aim: Exploring the barriers to healing and the impact of skin tone on patient choice and quality outcomes, for an 83-year-old lady who identifies as a black Jamaican woman.

Method: ‘Gloria’ (Pseudo name) presented with lower limb ulceration. Holistic assessment identified a complex history of prior ulceration at the age of 12 in Jamaica, limb amputation was rejected, traditional remedies were used, resulting in healing.

Gloria's current concern was having dressings that matched her skin tone, however, her family's concerns included:

- ‘Does her skin colour affect healing’?
- ‘Do you know how to manage black skin and what are the healing rates’?

Results/Discussion: By having open conversations with Gloria and her family I was able to identify her needs and offer some management strategies. Glorias primary outcome was access to bandaging that was representative of her skin colour: ‘I don't want no one white leg and one black leg’. Variations in bandage colour are extremely limited, however there are more options available in the hosiery range, which allowed her to choose her therapy option, improving her self-esteem and quality of life score from low to high.

Conclusion: It is vital to support and empower clinicians and patients in open conversations to determine patient wishes, engagement with care and clinician knowledge. Skin tone is an integral element of assessment and management strategies ensuring the patient voice is heard.

Recommendations include, leadership / role modelling, sharing best practice, and expansion of current evidence, education and resources to reflect all.

EP727 Healing of a complex wound 2 years post-op using antimicrobial barrier dressing and single-use negative pressure wound therapy system (sNPWT)

Gemma McGrath¹

¹Smith and Nephew, 5 Croxley Green Business Park, Watford, United Kingdom

Aim: This case study outlines the treatment for a patient who was treated for a non-healing wound which became infected. The patient was treated with an antimicrobial barrier dressing and sNPWT.

Method: A 55-year-old female with a past medical history of diabetes and hypertension and underwent surgery for a below-knee amputation due to deteriorating diabetic foot ulcers. As a result of the surgery, the patient was left with a chronic wound to her left stump, that had been ongoing for two years. The patient was unable to wear her prosthesis because of pain which affected her mobility and negatively impacted quality of life (QOL). On first assessment, the wound presented with classic signs of infection (erythema, warmth, increased malodor and pain). As a result, antibiotics were prescribed for systemic infection, and an antimicrobial barrier dressing with sNPWT.

Results/Discussion: On day 7, the wound had shown some positive signs of improvement; the wound had reduced in size, and had debrided. Signs and symptoms of infection were also assessed as improving. On day 13, the wound had improved further. Exudate levels were decreasing, and the wound was 100% granulating. On days 18, 25 and 39, the wound continued to show signs of healing. On day 39, sNPWT was discontinued; Day 46, the wound was assessed as completely healed.

Conclusion: By applying an antimicrobial barrier dressing and sNPWT, the wound infection visually resolved within 13 days, and the wound healed in 46 days after living with the wound for 2 years.

EP728 Management of a wound after breast surgery using Antimicrobial Barrier Dressing and single-use Negative Pressure Wound Therapy (sNPWT)

Aisling Roberts¹

¹Great Western Hospitals NHS Foundation Trust Marlborough Road, Swindon, United Kingdom

Aim: This young female patient was referred to the breast centre with a wound which developed two weeks after breast augmentation in early 2022. There were 3 visible small wounds with evidence of undermining, with moderate levels of exudate.

Method: Daily dressing changes were carried out with a gelling fiber and foam dressing. The wound was assessed as being at high risk of infection and Antimicrobial Barrier Dressing was introduced.

Results/Discussion: The size of the wound saw a measurable decrease between week 3 and week 5. At 7 weeks the wound bed was improving but not in wound size. sNPWT was introduced and after one week of treatment the wound size reduced from 9x3cm to 3.75x3cm. Oedema was visibly reduced which optimised the aesthetic outcome. The patient felt a high level of comfort and security in the treatment.

Conclusion: A key aspect of this case was the introduction of an Antimicrobial Barrier Dressing and sNPWT in the treatment plan, which contributed overall to a reduction in the number of dressing changes, improved the percentage of slough, and helped to promote granulation. While using sNPWT, exudate was well controlled with twice a week dressing changes. No secondary infection occurred, and the clinician felt that treatment helped expedite healing time and closure of the wound. The patient was happy with the positive outcome and salvage of the implant while maintaining good aesthetic appearance.

EP729 Evaluation of a cleansing and prevention wound bed preparation pathway strategy in an ambulatory clinic

Nikki Turner¹

¹South East Alliance Ambulatory Clinics, Midlands Partnership Foundation NHS Trust, Tamworth, United Kingdom

Aim: Can the implementation of a wound cleansing and prevention wound bed preparation (solution and gel) strategy reduce infection, help improve wound bed conditions and support healing.

Method: Five patients were selected and followed for at least four visits ranging from 3-8 weeks. Patients were representative of the typical wounds seen in the ambulatory clinics. Wound types were arterial leg ulcer, venous leg ulcers, maceration, and a trauma with haematoma. Wound cleansing and infection prevention steps (with a PHMB & Betaine system - solution and gel) were included in addition to standard care, patients received debridement if it was tolerable. Measurements were taken by wound size(mm), slough (%), exudate levels and pain score (NPRS).

Results/Discussion: No new infections were observed during the study, there was one case of over-granulating due to a long-standing low-grade infection and pain on debridement, this was resolved within 15-days. Four wounds reduced in size by >40% within 28-days. Four wounds had slough which had resolved completely in three cases, in one case reduced by 50%. Four wounds reduced exudate levels; this was sustained >28-days for one case. All wounds had reduction in pain which was sustained >28-days.

Conclusion: Using a PHMB & Betaine (solution & gel) improved patient outcomes in an ambulatory setting as it was shown to be effective in removing slough and exudate and managing pain. Wound cleansing and infection prevention steps were cost effective and readily available, patients found self-care to be easy to use and the products to be soothing.

EP730 Manging complex surgical wounds in hard to manage areas

Lorraine Nisbet¹

¹Daylong Direct, Ilkeston, United Kingdom

Aim: Hidradenitis suppurativa (HS) is a chronic skin condition that presents in hard to dress areas and usually manifests in puberty. Due to misdiagnosis and patient embarrassment, it can take 3-10 years before patients are diagnosed. In this time their wounds can progress, and surgical intervention can be required.

In this case study, a 23-year-old, female patient, presented in the complex wound clinic. This patient suffered from stage II HS and required surgical intervention in the axilla region. The case study evaluates the management of her wounds with a device specifically for HS and wounds in hard to dress areas.

Method: 4-week case study evaluation. A wound assessment was carried out at each week and the patient completed a dermatology life quality index (DLQI). HCP and Patient feedback were also captured and collated each week.

Results/Discussion: Patients wound and exudate improved over the 4-week evaluation. Improvement to DLQI scores, with significant improvements in pain, odour and exudate. Patient reported improved ease of use and improvement to self-care. By allowing the patient to manage their wound with appropriate treatment, cost savings were achieved through the reduction in nursing time and in reduced need for recurrent appointments. The case study also demonstrates further Health economic advantages by removing the need for multiple fixation devices, adhesive dressings and highlights the clinical advantages of this.

Conclusion: This case study demonstrates the benefit of a self-care wound management system to the patient, the clinician and highlights the potential cost savings to the health care system.

EP731 Case series exploring the use of a gel dressing on slow healing wounds

John McRobert¹, Debbie Delloson¹, Steven Jeffery¹

¹Pioneer Wound Healing and Lymphoedema Centres, Eastbourne, United Kingdom

Aim: To explore the effectiveness of a gel dressing on slow to heal wounds

Method: Staff caring for patients with wounds that had stalled or slowed discussed the use of a gel dressing to promote wound healing.

Results/Discussion:

Patient 1 88-year-old female with history of fractured neck of femur.



Patient 2 A 77-year-old lady with lymphovenous disease and a history of heart failure.



Patient 3 80-year-old male with wounds of unknown aetiology on bilateral posterior and anterior gaiters.



Patient 4 An 82-year-old female referred to our service from her GP with a wound that had been present for 3 months.



Patient 5 A 72-year-old male with a fixed ankle came to us with a small trauma wound to the left lateral malleolus.



Patient 6 A 74-year-old male lymphoedema patient that developed a wound spontaneously on the right posterior gaiter.



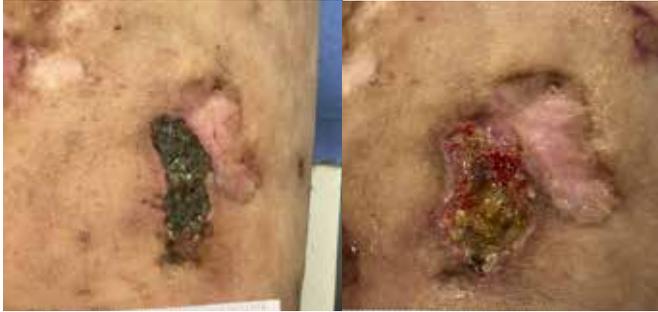
Patient 7 An 87-Year-old with a wound on the left anterior gaiter after the skin spontaneously broke down.



Patient 8 An 86-year-old male with type 1 diabetes.



Patient 9 50-year-old male with multiple wounds of unknown aetiology, wounds breaking down on arms and left thigh. Referred to Dermatology, biopsy taken but only inflammation found no underlying explanation of spontaneous break down.



Conclusion: The gel dressing was accepted by the Patients. Patients appear to have experienced reduced pain. The use of the gel dressing appears to have helped promote wound healing after a wound had stalled or slowed.

	Measurement 4 weeks pre application length cm	Measurement 4 weeks pre application width cm	Measurement 4 weeks pre application(cm2)	Measurement after 4 weeks length cm	Measurement after 4 weeks width cm	Measurement after 4 weeks (cm2)	Percentage area reduction/increase after 4 weeks (%)	measurement with 4 weeks application length	measurement with 4 weeks application width	4 weeks post application cm2	Percentage area 4 weeks after introduction (%)
Patient 1	2	1.9	3.8	2.6	2.1	5.46	43.7% increase	2.5	2	5	8.42% reduction
Patient 2	0.6	0.4	0.24	0.8	0.5	0.4	66.6% increase	0.6	0.4	0.24	40% reduction
Patient 3	2.5	2.5	6.25	2.5	2.5	6.25	0%	2.3	2	4.6	26.4% reduction
Patient 4	1.5	1.5	2.25	1.5	1.3	1.95	13% reduction	0.9	0.8	0.72	63% reduction
Patient 5	1.2	0.9	1.08	1.2	0.9	1.08	0%	0.6	0.5	0.3	72% reduction
Patient 6	3.1	2	6.2	6	2.8	16.8	171% increase	4.5	1.5	6.75	60% reduction
Patient 7	2	1.2	2.4	1.9	1.9	3.6	50% increase	0.5	0.5	0.25	93% reduction
Patient 8	1.2	0.3	0.36	1.2	0.3	0.36	0%	1.2	0.3	0.36	0% reduction
Patient 9	4.7	2	11.75	4.1	2.5	10.25	12.7 reduction	3	2.5	7.5	26% reduction

EP732 Stroke, deep tissue injury and skin tone assessment tool - an observational approach

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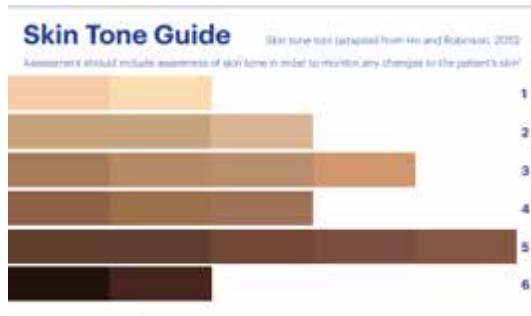
Skin changes in people with dark skin tones are often missed, leading to delayed diagnosis and compromised outcomes, [Oozageer Gunowa, 2018]. To improve best practice, the Tissue Viability team at Northwick Park hospital recently introduced an intervention using a Skin Tone Assessment Tool to facilitate the early identification of deep tissue injury (DTI) in patients on the acute stroke ward.

Due to restricted mobility, impaired sensation and reduced tissue tolerance, stroke patients are at increased risk of developing pressure ulcers (PU) including DTI. The incidence of pressure ulcers in patients with stroke-related paralysis is estimated to be as high as 70%, [Gao, 2023].

A pressure ulcer (PU) is defined as a localised injury to the skin or underlying tissues usually over a bony prominence, which results from pressure or pressure in combination with shear, [Farid, 2022]. In a deep tissue injury (categorised in 2009 as a form of pressure ulcer), there is direct structural damage to cells, compounded by reduced blood flow, which causes tissue necrosis, [WUK, 2017]. The skin may appear intact in the early stages of a DTI, but without management it has the potential to develop into a large, deep wound with significant tissue loss, [Peart, 2016].

DTI can be difficult to diagnose and may not be obvious for 24–72 hours after the event that caused the damage. Patients with light skin tones usually present with the classic skin discolouration of purple or maroon tissue, [Black, 2016]. But in patients with a dark skin tone DTI may be missed in the early stages, and not be evident until the injury has evolved to mid-dermal tissue loss, [Black, 2016]. In dark-toned skin, DTI may appear as discolouration or

patches of lighter or darker skin, [Black, 2016]. A late DTI diagnosis compromises outcomes and patients with dark skin tones have a higher mortality from pressure ulcers than those with light skin tones, [Redelings, 2005]. They are also more likely to be diagnosed with higher-category pressure ulcers, [Oozageer Gunowa, 2018]. As skin assessment is critical to pressure injury prevention, it is essential that practitioners performing skin assessments understand that patients with dark skin tones may be at risk of delayed diagnosis. To address discrepancies in wound care management and ensure equity of treatment for all patients, the Tissue Viability team introduced a new intervention to help improve the early identification of DTI and pressure ulcers. Since September 2023, care staff on the 30-bedded stroke ward at Northwick Park hospital have been taught how to use a validated Skin Tone Assessment tool (adapted from Ho & Robinson, 2015), which shows a range of six skin tones, [WUK, 2021]. The tone that most closely matches the patient's inside upper arm is selected and recorded.



Staff are now aware that skin tone variance may affect the presentation of early-stage DTI. Rather than looking for signs of blanching to identify pressure injury; persistent erythema or hyperpigmentation are likely to be more accurate indicators in patients with dark skin tone, [Grimes, 2009].

To date, incorporating the skin tone assessment tool into initial patient assessment has been positively accepted. A number of PUs and DTIs have been diagnosed in the early stages as a direct result of the intervention. There are now plans to introduce this across the Trust.

Case Report

A 63 year old male was admitted, following an ischaemic stroke. On admission, a skin integrity assessment was carried out including use of the skin tone tool; and skin tone 5 was recorded. This alerted staff to the possibility of a pressure injury developing, which would not necessarily present with the same colouration as seen in a light skin tone. An early diagnosis of a deep tissue infection was made, due to observed changes in skin colour on his right heel. A heel protection boot was applied to relieve pressure and daily skin cleansing with octenidine-containing wash mitts commenced. A doppler scan showed the patient had monophasic pulses, indicating poor arterial circulation. The condition of his heel was monitored three times a day.

Due to the patient's skin tone, the DTI could have been missed. But using the skin tone chart led to an early diagnosis with effective preventative measures put in place. Despite the patient having had a stroke and with poor lower limb circulation, the DTI did not deteriorate. This meant the patient was able to weight bear and undertake essential physiotherapy as part of his rehabilitation. The DTI was completely reabsorbed when the patient was discharged 12 weeks later.



DTI on admission



DTI 3 weeks later



DTI completely reabsorbed at discharge

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EP733 Why the thigh: How thigh applied intermittent pneumatic compression can improve venous leg ulcers

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Aim: Venous Leg Ulcers (VLUs) are difficult to treat due to the challenge of edema and the result of chronic venous insufficiency (CVI) and lymphedema. Patients report a decreased quality of life due to pain, exudate management, and odor control issues. WOC nurses must utilize adjunct therapies to improve VLU wound healing and quality of life indicators.

Method: The gold standard treatment for VLUs is multi-layered compression bandaging. Multi-layered compression dressings may be fraught with issues; pain, discomfort, and exudate can cause poor patient compliance. Intermittent Pneumatic Compression (IPC) has been shown to improve circulation to lower extremity wounds and is often under-utilized. Patients report pain and difficulty applying full limb garments; thus compliance is low. A new three-segmented thigh applied IPC device compresses the thigh from distal to proximal in two phases: active and rest and can be used in conjunction with multi-layered bandaging compressing away from the wound site.

Results/Discussion: Three unique case studies utilizing multi-layered compression bandaging and thigh applied IPC demonstrate ease of application and use, as well as decreased pain and edema. The case studies demonstrate how the thigh applied IPC works differently than full limb compression; utilizing a hyperemic response during the rest phase after compression that increases the arterial and venous velocity, thus improving VLU healing.

Conclusion: WOC nurses need to broaden awareness of adjunct therapies used in addition to multi-layer compression to improve VLU healing and quality of life indicators in patients with VLUs.

EP734 Life threatening sacral wound in alzheimer patient treated with cationic nanoparticle dressing

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Aim: Chronic Pressure Ulcers, despite standard care, often are stalled in their healing due to unaddressed chronic biofilm. Resistant to antimicrobial agents, bacterial biofilms engender a chronic inflammatory response within the wound. Hence, anti-biofilm agents that specifically penetrate and kill biofilm pathogens can significantly reverse wound chronicity and lead to final healing. We present a 77-year-old end-stage Alzheimer patient with a life-threatening sacral abscess treated with a novel combination of cationic nanoparticles (NP) and a tri-block polymer hydrogel.

Method: After incision and drainage of abscess with debridement of underlying necrosis, the wound area was 432cm² and 4cm deep. A compounded antimicrobial cream mixed with a NP cationic matrix* combined with a polymer hydrogel** was applied every day at home. After 4 weekly clinic debridement's and noticeable improvement, treatment with only the hydrogel* was continued.

Results/Discussion: While initially approaching treatment as palliative care, the potentially life-threatening wound unexpectedly healed by 99% in approximately 12-weeks without the need for hospitalization. All dressings were performed by the family.

Conclusion: This case study mirrors many other successful wounds healed with this proprietary combination of an encapsulated NP cation matrix* with a thermoreversible polymer hydrogel **containing Octenidine. This new technology incorporates an abundance of cationic charges as well as heavy molecular weight poloxamers that directly disrupt the biofilm matrix. Furthermore, they effectively kill associated pathogens, and prevent biofilm regrowth while fully augmenting wound repair.

*AgFresh™ Fentonite (McCord Research. <https://mccordresearch.com/>)

**BioRelease™ (McCord Research. <https://mccordresearch.com/>)

EP735 3rd degree burns in a paraplegic patient treated with an advanced thermo-reversible antiseptic hydrogel

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Aim: Third degree burns represent a significant risk for infection and morbidity for affected patients. Hence, treatment is focused on preventing deep infection, limiting fluid loss, ameliorating pain, as well as promoting prompt tissue regeneration. We present a patient with third degree abdominal burns treated solely with a unique thermo-reversible antimicrobial polymer hydrogel* wound dressing until complete healing was achieved.

Method: A 67-year-old paraplegic woman presented suffering from one week old 2nd and 3rd degree burns on the anterior abdomen induced inadvertently by a hair dryer resting at this location. While not acutely painful there was some regional discomfort. After evaluation and staging, the eschar was debrided from the wound margins. The patient was treated with a thermo-reversible polymer hydrogel *containing Octenidine applied directly to the burn areas under standard dressings. She subsequently changed her own dressings daily and returned weekly for follow up.

Results/Discussion: Substantial healing and reduction of discomfort was evident on the patient's first return visit and the progress was sustained through the entire month she remained under care. Her wound completely healed within five weeks of treatment without becoming infected and with minimal scarring or contraction.

Conclusion: This thermo-reversible high molecular weight polymer hydrogel* containing millions of micelles encapsulating the antimicrobial Octenidine effectively dissolves wound biofilm and associated pathogens while also facilitating tissue regeneration. This dramatic case mirrors the success obtained in many other chronic wounds treated with this unique antibiofilm and antimicrobial hydrogel. Further confirmational studies are pending.

*BioRelease™ (McCord Research. <https://mccordresearch.com/>)

EP736 Catastrophic antiphospholipid syndrome - a case report and literature review

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Aim: To describe and understand the clinical course, manifestations, and outcomes of catastrophic antiphospholipid syndrome (CAPS), a rare manifestation of antiphospholipid syndrome (APS), using a case presentation of a 21-year-old female diagnosed with this condition.

Method: A comprehensive case study approach was employed, detailing the patient's medical history, presenting symptoms, laboratory findings, treatments administered, wound care, and resulting outcomes. Relevant literature was referenced to contextualize the manifestations and treatment approaches for CAPS.

Results/Discussion: The patient experienced an array of complications, notably cerebral venous sinus thrombosis, diffuse alveolar hemorrhage, renal thrombotic microangiopathy, and a necrotic, vasculitic wound on her forearm which required one debridement. The wound was dressed daily with non-adhesive fine-mesh gauzes impregnated with petrolatum and was wrapped with bandage rolls. Although treated aggressively within current guidelines, her condition deteriorated rapidly, manifesting the high mortality associated with CAPS compared to the more benign APS. Triggering factors, cutaneous manifestations, and treatment modalities were highlighted and discussed in relation to existing literature on CAPS management.

Conclusion: CAPS involves multiorgan failure and requires a rigorous multi-modal therapeutic approach. Despite adhering to current treatment guidelines, outcomes can remain grim. This case underscores the need for increased clinician awareness and understanding of CAPS, which may promote early detection and timely intervention, potentially improving future patient prognoses.

EP737 Complex lower extremity trauma wounds successfully treated with surgery, application of skin substitutes and negative pressure wound therapy (NPWT)

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Aim: Complex trauma wounds are difficult to treat. After maintaining stable bony structures, concern is focused to the neurovascular and soft tissue structures and their long-term viability after sustaining significant trauma. Infection is always an ongoing concern especially when large surface areas are involved. The case presents a high impact trauma and successful wound healing with aggressive surgical management and multiple applications of skin substitutes and negative pressure wound therapy (NPWT).

Method: Case report includes a patient who sustained a crush injury to his left leg when a retaining wall fell on him. The patient sustained multiple non-displaced fractures to the left lower extremity and extensive soft tissue loss to the medial left foot and ankle and proximal leg. Upon initial evaluation, there was cellulitis, liquefactive necrosis at the ankle region and suspected abscess to the forefoot. Staged procedures were performed. Initially drained the plantar abscess and upon confirmation of negative bone/soft tissue infection and no recurrence of abscess formation, the patient underwent extensive wound preparation and application of fish skin graft and NPWT.

Results/Discussion: Advanced adjunct therapies in combination with conventional wound therapy including weekly wound debridement and application of NPWT three times weekly achieved complete healing.

Conclusion: A combination of surgical intervention, application of skin substitute, NPWT and other advanced modalities are often required for patients with complex medical conditions for successful limb salvage. This case report exemplifies that a complete clinical picture needs to be considered with aggressive treatment when there's significant soft tissue loss after trauma.

EP738 Surgical applications of external fixator, negative pressure wound therapy (NPWT) and application of skin substitutes for complex lower extremity wounds: Multiple case report

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Aim: A collection of multiple case reports was compiled on various patients with significant co-morbidities and complex wounds who were high risk for amputation of the affected limbs. Patients are often faced with complications including long hospital stays, wound infection, osteomyelitis and limb loss due to challenges associated with healing full-thickness wounds. In this multiple case report, various advanced wound closure methods in multiple cases are assessed.

Method: Multiple case reports including male patient with chronic ulceration and deformity requiring application of external fixator and Jacob's ladder suture technique; female patient with severe sepsis, critical limb ischemia requiring emergent partial amputation then application of skin graft and NPWT; male patient with dislocated hallux and failed skin autograft requiring application of skin substitute and NPWT; male patient with multiple fasciotomies of the leg, resulting in a total of five wounds requiring meshed fish skin grafts with bridging between wound sites and NPWT, male patient with diabetes and osteomyelitis underwent partial amputation requiring application of skin substitute and NPWT.

Results/Discussion: Complete or near complete wound closure was achieved for all cases. Advanced adjunct therapies in combination with conventional wound therapy including weekly wound debridement and application of NPWT achieved favourable outcomes for all patients.

Conclusion: A combination of skin substitutes, NPWT, external fixators and other advanced modalities are often required for patients with complex medical conditions for limb salvage. The wounds showed an earlier development of granulation tissue. The results had good cosmetic and functional outcomes for the patients.

EP739 Successful healing of multiple fasciotomy wounds secondary to acute compartment syndrome with the use of skin substitutes and negative pressure wound therapy (NPWT)

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Aim: Fasciotomy is the definitive treatment for acute compartment syndrome to decompress the involved compartments, decreasing the risk of amputation of the affected limbs. Although a life-saving procedure, patients are often faced with complications including long hospital stays, wound infection, and osteomyelitis due to the challenges associated with healing these full-thickness wounds. This case report assessed the use of skin substitutes and negative pressure wound therapy (NPWT) for definitive fasciotomy wound closure in a single patient with multiple wounds.

Method: A 16-year-old male patient presents with acute onset compartment syndrome of the distal right leg and secondary rhabdomyolysis a week after midfoot arthrodesis. The patient received multiple fasciotomies of the right leg, resulting in a total of five wounds. The wound beds were debrided three days after the procedure and meshed skin substitutes were sutured in place followed by non-adherent dressing before continuous NPWT at 125 mmHg setting with bridging between multiple wound sites.

Results/Discussion: Complete wound closure was achieved for all five wounds within three months post fasciotomy procedure. The patient received four applications of meshed skin substitutes to all sites, including a single application of fragmented skin substitute into the larger area wounds. The patient received weekly wound debridement and application of NPWT three times weekly.

Conclusion: Most wound sites were epithelialized within two months. Utilization of the skin substitutes provided structural integrity and allowed for early development of granulation tissue. NPWT allowed for rapid wound closure. The results had good cosmetic and functional outcomes for the patient.

EP740 Implementation of autologous adipose graft from the abdomen for complete fat pad loss of the heel following a traumatic open fracture secondary to a motor vehicle accident

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Aim: This study presents a novel technique involving autologous adipose grafting (AAG) from the abdomen to enhance plantar fat pad thickness in a patient with total fat pad loss following a motorcycle accident, aiming to recreate a normal shock-absorbing surface for painless ambulation and a return to activities of daily living.

Method: A 46-year-old male experienced open pedal fractures and necrosis to the heel fat pad, due to a motorcycle accident. Despite undergoing various treatments, the patient suffered chronic pain on ambulation and recurrent ulcerations. The clinical examination revealed complete loss of the plantar calcaneal fat pad, with scar tissue forming in its place. After exhausting conservative measures, the patient chose adipose allograft matrix (AAM) injections for initial management, resulting in noticeable improvement in calcaneal fat pad thickness radiographically. At one-year follow-up, the patient could ambulate without assistive devices, though still required increased fat pad thickness. Comparing allograft versus autografting of adipose tissue, autograft through abdominal liposuction harvesting was utilized. 15 cc's of autologous adipose tissue was injected into the calcaneus.

Results/Discussion: There was an increase in the calcaneal fat pad thickness both clinically and radiographically. At 6-week follow up, imaging revealed retention of calcaneal fat pad thickness. Three months postop, patient returned to activities of daily living and increased quality of life due to their ability to ambulate.

Conclusion: Adipose autograft and adipose allograft matrix emerge as promising and comparable treatments for pedal fat pad loss, providing relief and enabling patients to regain their quality of life.

EP741 Fish skin graft for the treatment of full thickness bilateral buttock burns in an aging patient

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Aim: Aging is a risk factor for burn injury due to cognitive and sensory impairment, attenuated mobility, and medications. Evidence suggests that patients ≥ 60 years of age represent 14% of burn center admissions. Elderly burn victims have a two times higher mortality rate compared to younger counterparts. Treatment options that can mitigate age-related complications and augment healing may reduce morbidity and mortality. Polyunsaturated acellular fish skin grafts have been shown to expedite healing in chronic and acute wounds. This investigation aimed to examine fish skin grafting in an elderly patient who suffered bilateral full-thickness thermal burns.

Method: An 82-year-old female fell on her hot asphalt driveway and was unable to regain mobility for more than thirty minutes. She initially refused treatment and ultimately presented with draining wounds associated with polymicrobial cellulitis. Past medical history was significant for obesity and atrial fibrillation.

Initial wound measurements were 20 by 12 cm on the left and 14 by 12 cm on the right. Treatment plan consisted of excisional debridement, IV antibiotics, fish skin graft, and negative pressure therapy.

Results/Discussion: The patient refused staged reconstruction and was transferred to a skilled nursing facility. She went on to heal in two months after one application of fish skin graft.

Conclusion: Aging represents a population at risk with burn injury and advanced treatments need to be understood. Current data suggests that the microstructure of fish skin grafts mimics that of human dermis. Polyunsaturated fatty acids have immunomodulatory effects, and defend against microbial pathogens.

EP742 Hyperpigmentation of legs and feet after use of minocycline for a wound infection

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Aim: Cutaneous hyperpigmentation is a recognized adverse effect of long-term minocycline therapy. The skin discoloration is cosmetic and is not associated with other adverse clinical features. The hyperpigmentation is a result from deposition of insoluble minocycline-iron complexes and can appear as a blue-grey or even a muddy brown in color. This risk of hyperpigmentation increases with longer duration of use of the antibiotic.

Method: A 76 year old patient was being followed for wound care for wounds secondary to venous insufficiency. He began to develop dark discoloration on his legs after being started on long term minocycline therapy for chronic osteomyelitis to his sacrum. The discoloration was found to be caused by long term, high dose of minocycline therapy.

Results/Discussion: The patient continued on the minocycline therapy after the diagnosis, due to the coverage of staphylococcal osteomyelitis, oral availability, low rate of resistance, and bioavailability. The hyperpigmentation was isolated to affecting the pigmentation of his extremities.

Conclusion: Hyperpigmentation changes are a rare side effect of minocycline therapy. Patients on minocycline therapy should also be monitored for hepatotoxicity, and either initiation or worsening of SLE. Although it is not

harmful, hyperpigmentation changes due to long term treatment with high dose minocycline can take months to years to fade after the discontinuation of the medication and sometimes never improve. It is important to educate our patient's about the possible complications of the medication and to screen our patient's yearly if they are on long term suppressive therapy.

EP743 Successful soft tissue reconstruction utilizing acellular fish skin grafts in a delayed ukrainian war blast injury

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Aim: Blast wounds significantly contribute to injuries sustained by military personnel. They are categorized as primary (pressure), secondary (fragments), tertiary (structural collapse), and quaternary (thermal). Secondary blast wounds are often fatal or associated with severe tissue involvement. Early and frequent debridement is critical. Severe tissue loss and contamination requires novel treatment strategies. Fish skin grafts have been utilized with the implications of providing a bacterial barrier and rapid cellular ingrowth.

Method: An American nurse on a humanitarian mission in Ukraine, sustained significant soft tissue injuries from a close-range Russian missile. She was thrown 30 feet from impact, sustaining shrapnel injuries to her right lower extremity, buttock, and flank. She additionally sustained bilateral tympanic membrane ruptures and a peroneal nerve injury. The patient presented to a frontline Military hospital and shrapnel was extracted. A week later she presented to our hospital with necrosis and cellulitis. She was admitted for IV antibiotics, and operative debridement was performed. On POD#2 fish skin grafts were applied at the bedside in conjunction with negative pressure wound therapy.

Results/Discussion: She was followed weekly in our wound care center with an excellent clinical response. Her wounds healed without further surgical intervention.

Conclusion: Blast wounds are accompanied by challenging pathophysiology. Blast injuries severely damage soft tissues in ways that often extend beyond traditional wound care. Fish skin grafts provided our patient with a viable option for managing her blast wound injuries. Further studies should evaluate Fish skin grafts for the treatment of blast wounds.

EP744 Reinforcement of the superficial musculoaponeurotic system (SMAS) with intact decellularized fish skin in deep plane facelifting: A novel salvage technique

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Aim: Elevation of the deep plane (superficial musculoaponeurotic system or SMAS) of the face during cosmetic facelifting can be challenging. This tissue layer is often friable and lacks strength for suture suspension. This is particularly problematic in patients undergoing revisional facelifts in which SMAS layer is often scarred/damaged. We evaluated the use of a decellularized, intact fish skin xenograft* for tissue plane reinforcement.

Method: Three patients were included in this bilateral case series. During the central SMAS elevation, the tissue integrity was assessed by the operative surgeon. If the tissue appeared friable, scarred or damaged, it was repaired with 0-vicryl sutures. A reinforcement sheet of decellularized fish skin was then sutured to the SMAs layer to reinforce the repair. The Fish skin/SMAS flap was then utilized as a strength layer for optimal fixation of the tissue flap to the temporal fascia and zygoma.

Results/Discussion: In these 3 patients, bilateral reinforcement was performed for a total of 6 flap advancements. 2-0 PDS, (a high-tension suture) was utilized for fixation of the flaps to the temporal fascia. No secondary tearing was observed. There were no infections. At 3 months, patients underwent normal healing with preservation of their youthful mid-cheek. Figures 1 and 2 illustrates sample case photographs. (The author will also present video)

Conclusion: Decellularized fish skin can be successfully utilized as a salvage procedure for SMAS repair during cosmetic facelifting with no additional morbidity.

* Keracis Omega3 Wound is a decellularized intact fish skin (Keracis LLC, Arlington, Va.)

Fig 1. Reinforcement of SMAS with decellularized fish skin during deep plane facelifting

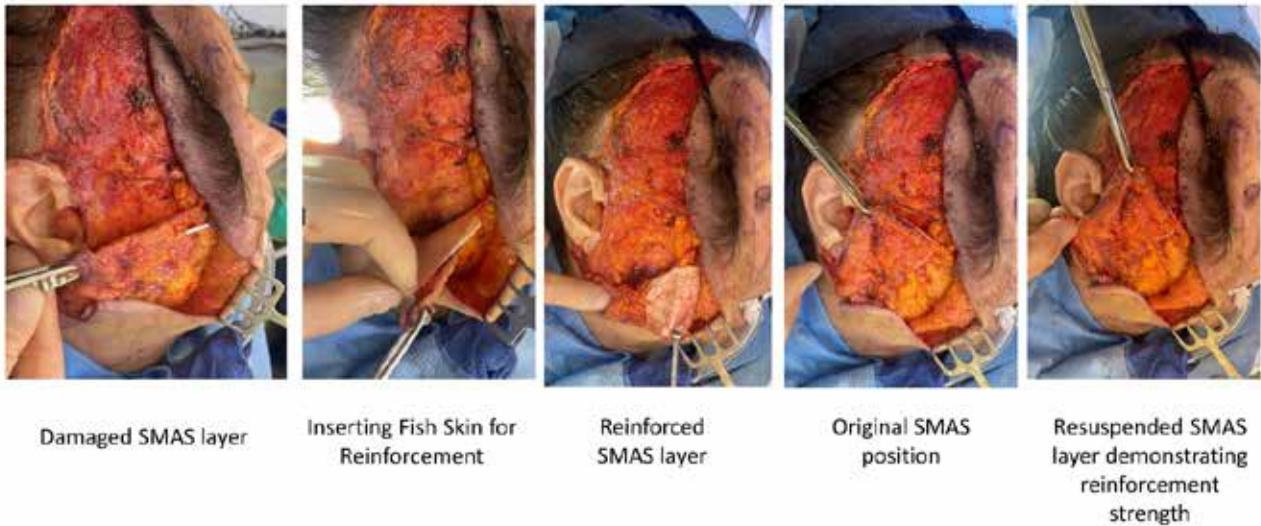


Fig 2. Reinforcement of SMAS with decellularized fish skin during deep plane facelifting (Sample patients)



EP745 Skin and bone – intact fish skin to reconstruct traumatic orbital floor and wall defects

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Aim: Orbital reconstruction following orbital trauma, tissue sacrifice from cancer resection, or other tissue loss poses a unique challenge for surgeons. Factors to consider include patient's systemic health status, potential for adjuvant radiation, final composition and strength of the graft, infection risk, graft rejection, status of visual function, and cosmetic outcome. In settings where a permanent artificial implant is avoided due to exposure or infection risk, potential tissue utilized include xenografts, allografts and autografts – each with variable benefits and drawbacks, depending on the surgical goals of the repair. Our purpose of this case report is to describe a case of orbital reconstruction after gunshot wound to the left orbit and face using tri-layer decellularized intact North-Atlantic cod fish skin.

Method: Three layers of fish skin were used to fill the resultant orbital wall defects and re-establish boundaries of the nasal and orbital spaces.

Results/Discussion: Immediately and 4 months post-operatively, the patient was examined and noted to have excellent globe position and maintenance of ocular motility.

Conclusion: The use of fish skin has marked potential in the field of orbital reconstruction in that minimal processing is required, allowing for cost-effectiveness and preservation of biologically active compounds, as well as possessing fewer cultural barriers compared to other xenografts. Thus, we suggest that decellularized intact North-Atlantic cod fish skin is a viable option, among other xenografts, allografts and autografts, for orbital reconstruction.

EP746 Dystrophic calcinosis cutis leading to a non-healing wound in a patient with chronic venous insufficiency

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Aim: Presence of bony-appearing fragments and calcifications on a non-healing wound is concerning for osteomyelitis. When work-up of the lesion returns negative for osteomyelitis, differentials must be widened for successful management. We discuss a case of an 80-year-old morbidly obese female with a history of chronic venous insufficiency (CVI) and a non-healing wound with bony-appearing fragments and calcifications on her left anterior leg status post punch biopsy during routine skin examination. Upon clinical correlation with labs and imaging, it was determined that the cause of her non-healing wound was due to dystrophic calcinosis cutis (DCC).

Method: The patient displayed a rare presentation of bony-appearing fragments and calcifications on a post-traumatic wound that failed to heal over several months. After ruling out osteomyelitis, a combination of surgical debridement and post-debridement wound care was able to fully heal the patient's wound.

Results/Discussion: CVI may present in many ways, including edema, hyperpigmentation, and ulcerations. Treatment of DCC remains unstandardized. Therapeutic methods range from conservative measures, such as local calcium chelation with topical sodium thiosulfate, to relatively more invasive procedures, such as complete surgical excision. Following surgical debridement, frequent follow-ups for reassessment and debridement to remove fibrotic slough allowed for complete healing of the patient's wound.

Conclusion: The patient's laboratory and various studies established the diagnosis of DCC. Her condition was most likely caused by a combination of her CVI and local trauma. CVI is a rare cause of DCC that should be a cause for concern for non-healing wounds that calcify.

EP747 Ulcerations due to peripheral vascular disease. Case report

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Aim: To achieve the closure of ulcers through the application of healing in a humid environment

Method: The assessment is carried out according to the TIME scheme, treatment is applied in a humid environment, photographic follow-up, records in the medical record, and follow-up by the surgeon.

Male, 83 years old. Live alone in the city, valid car. It wanders continuously. Patient who consults in the emergency department 22/7 for severe pain in the lower limbs. Cardiomegaly. Arterial Doppler echo showing peripheral vasculopathy distal artery disease. Necrosis was present in the distal sector of all the toes of both feet.

Location: distal sector of all toes of both feet, 2 cm in diameter, 1 month of evolution, necrotic. Wound edges: flat, attached to the bed. Perilesional skin: hyperkeratosis. Depth: Not measurable. Pain: severe. No previous treatment

Results/Discussion: Treatment of dressings in conjunction with a surgeon, performing debridement with a scalpel and continued with washing with saline solution and application of hydrogel.

1. Education on daily hygiene and dietary hygienic treatment.
2. Pain management.

Conclusion: Definitive closure was achieved after 3 months, it is highlighted that the debridement of the necrotic tissue significantly reduces pain. It should be noted that by defining the etiology of the ulcer and applying the TIME scheme, we can achieve the definitive closure of the ulcer, as well as an improvement in the patient's quality of life.

EP748 Face and neck tumor treatment. Case report

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Aim: Neoplasms of the otolaryngological sphere (ENT) constitute a heterogeneous and complex group. A 62-year-old male patient had a history of colon and rectal cancer and a brother with fibrosarcoma. With a good context of family support.

Consultation with re-staging – epidermoid neoplasms, tumor on the face that is visualized, the maxillofacial surgeon, performs left ocular decollation and enucleation, tumor sceresis of the nasal region, left ocular and maxillecology, spends 2 days in intensive care and then to the ward for cure treatment, weekly radiotherapy treatment and chemotherapy to then finish the reconstruction of the face.

Objective: Apply protocolized nursing care to contribute to the treatment and rehabilitation of patients with head and neck tumors.

Method: Face ulcer healing treatment, metronidazole washes and duoderm gel application. Ongoing biopsychosocial support.

Results/Discussion: In terms of cure, the patient is prepared for face reconstruction after radiotherapy treatment, although he again presents necrotic borders with pathological anatomy of: moderately differentiated, keratinizing invasive carcinoma, recurring/wide invasion of the tissues analyzed, with most of the surgical edges positive.

Conclusion: In terms of cure, the patient is prepared for face reconstruction after radiotherapy treatment, although he again presents necrotic borders with pathological anatomy of: moderately differentiated, keratinizing invasive carcinoma, recurring/wide invasion of the tissues analyzed, with most of the surgical edges positive.

EP749 Importance of interdisciplinary approach and systematization of care in complex surgical wounds. Case report

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Aim: Address/manage the underlying pathology. Implement local wound care through the TIME CDST scheme. Modify treatment and refer if necessary to other specialists or another level of care.

Method: Traumatic wound in the left lower limb, of 10 days. With deep tissue involvement, and tendon and bone exposure. Swelled and necrotic tissue. Treatment cures every 48 hours, with washes with saline solution and 0.1% PHMB solution. Application of hydrogel on tendons, continuous evolution.

Results/Discussion: Dependency injury prevention measures in accordance with institutional protocol.

Comprehensive treatment measures: Pain management, self-care.

Perilesional skin care: application of non-irritating skin films.

Bacterial load and exudate management: PHMB solution, hydrofiber dressing.

Hydrocolloid with ionic silver.

Advanced therapies; Use of Topical Negative Pressure for 10 days.

Plastic surgeon who performed grafting 25 days after starting the treatment.

Conclusion: Record of wound assessment and evolution RESVECH 2.0. Evolution of 33 days of hospitalization in which a satisfactory evolution of the wound was observed, being able to perform graft in its final stage with good results, allowing the patient to continue her rehabilitation at home and recover her functionality.

This process involved treatment with treatment in a humid environment, application of negative topical pressure and finally surgical resolution.

EP750 Fluid handling by foam wound dressings: An international wound dressing technology expert panel review

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Aim: This work conducted by the international wound dressing technology expert panel [1,2] describes the contemporary bioengineering theory and practice of evaluating the fluid handling performance of foam-based dressings. The focus was on important, clinically relevant engineering structure-function relationships and on advanced laboratory testing methods for pre-clinical quantitative assessments of this common type of wound dressings, to improve the existing EN 13726 testing standard.

Method: The effects of key wound-dressing material-related and treatment-related physical factors on the absorbency and overall fluid handling of foam-based dressings were thoroughly and quantitatively analysed.

Results/Discussion: Key factors identified include exudate viscosity and temperature, action of bodyweight or external mechanical forces and the dressing microstructure and associated interactions. Based on the above analysis, a newly developed testing method and experimental metrics which are clinically relevant and can set the standard for robust fluid handling performance evaluations, were developed with an industry partner.

Conclusion: This evaluative framework translated key physical characteristics and performance determinants of a foam dressing into achievable best clinical outcomes. These guiding principles are pivotal to distinguishing the desirable properties of a dressing that contribute to optimal performance in clinical settings.

References:

1. Gefen et al. How should clinical wound care and management translate to effective engineering standard testing requirements from foam dressings? Mapping the existing gaps and needs. *Adv Wound Care* 2024;13(1):34-52.
2. Santamaria et al. Clinical performance characteristics for bordered foam dressings in the treatment of complex wounds: An international wound dressing technology expert panel review. *Int Wound J.* 2023;20(9):3467-3473.

EP751 The role of the clinical nurse specialist (MScN) in a tissue viability and wound care program at a university hospital in Western Switzerland

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Aim: The aim of this poster is to present the various roles covered by a Clinical Nurse Specialist (CNS) working in a wound care program at a university hospital in Western Switzerland.

Method: The program is a component of the Care Directorate and comprises two CNS, a physician, a professor in tissue viability and wound care, two specialized nurses, and a rotating nurse from a care unit. The diverse roles of the CNS are delineated using the M-Strong Model, a research-based framework encapsulating domains of practice that constitute advanced practice nursing.

Results/Discussion: These responsibilities encompass direct consultations with patients having complex acute, chronic and palliative wounds across different units, coaching both nurses and physicians, and providing education within diverse nursing teams. The collaborative efforts of the CNS team extend to updating wound care procedures and overseeing the follow-up of master's students. Furthermore, the CNS plays a pivotal role in coordinating a national survey focused on the prevalence of pressure sores and falls in acute care settings.

Conclusion: In conclusion, this poster sheds light on the multifaceted roles of Clinical Nurse Specialists (CNS) within a specialized wound care program in a university hospital in Western Switzerland.

EP752 Practical exploration of the effectiveness of wound care consultation systems

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Aim: Wound care is an important part of inpatient care, requiring the collaboration and expertise of professionals. Consequently, we implemented a wound care consultation system in 2021. This article aims to evaluate the effectiveness of this system.

Method: Clinical nurses contacted via mobile phones during the day shift to request wound care consultations. An ET Nurse trained by WCET then served as the consultant, receiving and providing wound care and consultation

Results/Discussion: From 2022 to November 2023, a total of 835 consultations were received, of which 70 (8.4%) required further referral to the medical department for further treatment. Among the 1069 wounds documented, pressure injuries accounted for the majority (n = 655; 61.3%), followed by fungating wounds (n = 125; 11.7%) and

skin tears (n =83; 7.8%). A questionnaire was also sent to the consultation unit, assessing the wound nurse's service attitude (91.3%), ability to deal with wound problems (93.5%), provision of relevant care suggestions (93.5%), immediate feedback on two-way communication (91.3%) and overall satisfaction with 93.5% expressing high satisfaction. However, there is a lack of comparison of personnel awareness and patient wound healing before and after the implementation of the system.

Conclusion: Through wound care consultation, professionals can support clinical front-line nursing staff. The tangible benefits of cross-team collaboration and professionalism are evident. We look forward to more specific wound care results in the future.

EP753 Street homeless wound care support project, improving awareness of wound management through education, a collaborative approach

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Aim: To provide fundamental wound management training to non-clinical staff working with the street homeless. Preparing staff with the knowledge to provide wound care, advice, and signposting.

Method: Specialist wound care nurses delivered training on fundamental wound management to personnel from local street homeless services. The training enabled nonclinical staff to undertake wound assessment, recognise infection and signpost the cohort to either a local general practice or attend accident and emergency. In addition, staff were given practical training on how to clean and manage wounds in an onsite clinic, using selected dressings. The training was adapted from the "wound aware" initiative created by Public Health England (1).

Results/Discussion: Integrated approaches are needed to ensure that health care for people experiencing homelessness is available and accessible (2). Post training, staff reported feeling empowered to instigate conversations with the street homeless. Evaluative data post intervention indicated nonclinical staff have improved confidence in fundamental wound management and knowledge was developed on boundaries for intervention, appropriate escalation, and safety netting.

Further impact data will be collected on the number of clients who have received wound care, advice, or signposting.

Conclusion: Development of this partnership approach to wound care encapsulates the 'wound aware' initiative (1) through the provision of localised, integrated care.

References:

1. Public Health England. *Wound aware: a resource for commissioners and providers of drug services*. 2021. <https://www.gov.uk/government/publications/wound-aware-a-resource-for-drug-services> [Accessed 30th November 2023].
2. National Institute for Health and Care Excellence. *Integrated health and social care for people experiencing homelessness*. 2022. <https://www.nice.org.uk/guidance/ng214> [Accessed 30th November 2023].

P754 The UK #4Nations campaign for Stop The Pressure week 2023 'Every Contact Counts' - raising awareness of prevention wider than just nursing

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Aim: The UK #4Nations campaign for Stop The Pressure week 2023 'Every Contact Counts' - raising awareness of prevention wider than just nursing.

Method: The four UK nations came together to work collaboratively supporting and promoting International Stop Pressure Ulcer Day.

A wide range of resources and events supporting the theme were designed and made freely available to clinicians across the four nations. Eye catching graphics and easy to use templates were designed to use as email signatures, social media Avatars, cover photos and within any presentations or local media. #everycontactcounts was promoted for use on social media. Quizzes, wordsearches and competitions were designed and the level of engagement with these will be provided.

Results/Discussion: During November there were over 17,500 campaign website page views. 1515 delegates attended the events over the week with over 14% being disciplines other than nursing. There were 5,936 engagements and 141,145 impressions with the campaign's social media pages. Social media posts and images by clinicians across the four nations highlighted excellent use of the campaign theme and resources.

Conclusion: It can be challenging for clinicians busy in the current healthcare climate to create and develop engaging resources for International Stop Pressure Ulcer day and to make the campaign relevant to disciplines other than nursing. Co-ordinating the Stop The Pressure campaign across the 4 UK Nations, developing a theme, designing resources and providing a free accessible site for these helped drive successful engagement and promoted the theme of Every Contact Counts.

EP755 Improving professional communication with the introduction of Tissue Viability daily communication briefs

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Aim: To improve professional communication and situational awareness within the Tissue Viability Service by implementing structured daily briefs

Method: The implementation of a daily service brief was initiated by using a structured reporting process to identify priority referrals, reported acquired pressure ulcer injury, patient dynamic mattress installs and educational events within Acute hospitals, community localities, community hospitals and care homes.

Results/Discussion: During the project the structured reporting process was delivered 90% of the time.

- Only 70% started at precisely 9.15am.
- Monday and Friday's took an average of 30 minutes compared to 15 -20 minutes on other days.
- Anecdotally the service briefs allowed complex patient care to be discussed within a peer review setting, benefiting the Tissue Viability Nurses knowledge in assuring complex practice.
- Staffing issues were highlighted in every daily brief, including, sickness absence, study leave and annual leave.
- The Senior practitioner felt situationally aware of service priorities on a daily basis and staff reported it gives a good snap shot of all the Tissue Viability Service priorities.
- Data is still being collated and a further qualitative survey on service provision outcomes is being compiled.

Conclusion: The daily service brief using a structured reporting format has improved professional communication and situational awareness.

- Using a structured approach ensures a consistent start to the service brief and has given staff a daily overview of the departments clinical risk, thus appearing to have indirectly improved service provision.
- Further work is required to understand staff's situational awareness and impact on service provision.

EP756 Optimizing traumatic wound healing with early vacuum therapy: A case report

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Aim: The aim of this study is to underscore the significance of early Vacuum Assisted Closure (VAC) in the management of wounds, exemplified in the case of a necrotic and infected knee wound in an 80-year-old individual who was discovered in a supine position in his backyard, likely following an unobserved fall.

Method: The patient underwent bedside debridement and received a 14-day regimen of vacuum therapy, complemented by a 7-day course of piperacillin-tazobactam treatment. Subsequent interventions encompassed wound debridement for the removal of necrotic tissue and closure employing an allograft.

Results/Discussion: Microbiological analysis disclosed the presence of *E. Coli* and *P. Hauseri*. Magnetic Resonance Imaging (MRI) verified the integrity of the extensor mechanism. The implemented treatment plan resulted in the resolution of the infection, the formation of granulation tissue, and the establishment of viable wound margins. The multidisciplinary approach, involving general surgery, orthopedics, and plastic surgery, played a pivotal role in the successful management of the wound.

Conclusion: This case underscores the effectiveness of early VAC in addressing complex traumatic wounds by diminishing infection and fostering tissue healing. Further research is imperative to fully validate these findings.

EP757 Pyoderma gangrenosum: A case series and discussion

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Aim: This study aims to enhance diagnostic capabilities and treatment efficacy for Pyoderma Gangrenosum (PG), a rare autoimmune disease with an unknown etiology. By analyzing four cases from our hospital and reviewing relevant literature, we aim to improve patient outcomes and satisfaction while avoiding potentially harmful treatment approaches.

Method: Utilizing our hospital's electronic records from May 2008 to September 2023, we identified four cases of PG. Each case's diagnosis, treatment, and disease progression are comprehensively detailed.

Results/Discussion: The first case involves a 61-year-old female with ulcerative colitis, showing improvement with steroid treatment after unsuccessful surgeries. The second case, a 52-year-old female with rheumatoid arthritis, required steroids after failed interventions for a non-healing wound. The third case, a 66-year-old female with multiple conditions, successfully underwent debridement and antibiotic treatment for PG. In the fourth case, a 54-year-old female with hypertension and diabetes experienced symptom relief with steroid cream following consultations.

Conclusion: PG, with an unknown etiology, often correlates with systemic diseases. Prolonged immunosuppressant use increases infection risks, necessitating consideration for patients with PG history and non-healing lesions. This research contributes valuable insights for individualized treatment strategies, emphasizing the importance of tailored approaches to enhance overall patient care and outcomes in PG management.

EP758 Diagnosis and resection of a rapidly growing small round cell tumor at once: A case of orofacial rhabdomyosarcoma in a two-year-old child

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Aim: Though rhabdomyosarcoma (RMS) is the most common soft tissue sarcoma in childhood and head and neck are the most common site, oral lesions are relatively rare. This case study illustrates the usefulness of simultaneous resection and diagnosis with intraoperative frozen section biopsy of rapidly growing orofacial small round cell tumors in children.

Method: The patient was two-year old girl with the mass of the upper lip invaded the oral mucosa, oral skin and nostril base with airway narrowing (Fig. 1). The result of emergent CT scan implied a high likelihood of malignancy (Fig. 2). The patient was hospitalized after one week and the patient seemed to have greater difficulty breathing than a week prior (Fig. 3). Under general anesthesia, enough tissue was resected from the tumor and intraoperative frozen section procedure was executed by a pathologist.

Results: The result of frozen section biopsy was small round cell malignancy. We resected nearly the entire tumor. As

the precise histological examination of the obtained specimen showed small round cells and final diagnosis of RMS was made after 4 weeks.

Conclusion: Small round cell tumors showing rapid growth in size can be effectively diagnosed and managed at once with primary resection in combination with intraoperative frozen section biopsy saving the time spent waiting for a preoperative biopsy.



Fig. 1. Photograph taken when the patient was first presented.

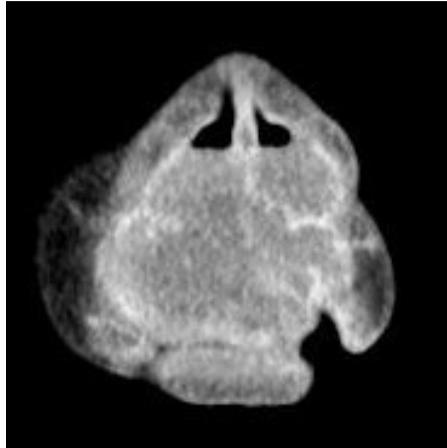


Fig. 2. The CT scan performed at the first visit.



Fig. 3. Photograph taken 7 days after the first visit, the day before the operation.

ORAL PRESENTATIONS

Health Economics & Outcome

OP001 Coordinated result based approach in the chronic wound management

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Aim: Delivery of highly sophisticated and specialist treatment – especially in wound management is often highly depreciated. Patient might spend most of the time waiting between medical appointments. It has its negative impact on treatment outcome quality which leads to unwanted and avoidable consequences of prolonged hospitalization, which one decrease of health services availability caused by too many in-progress care processes. It should be emphasized that without proper and highly time-regime management outcomes may not improve. In order to deliver result-based treatment with proper healthcare system cost-effectiveness that are introduced wider than ever systematic actions must be taken in patient flow management.

Method: With usage of process-management methods (LEAN, Theory of Constraints TOC) outcome-based treatment plan was implemented. After validation of process actions were taken to introduce the results to a wider audience and to build system-approach.

Results/Discussion: Nation-wide, legislated program of complex wound management – as a turning point in process of delivering more health to wider population.

In one year 418 more patients were hospitalized within the same infrastructure. Over 643 more patient were serviced through surgeon clinic. Ratio of completely closed wounds (100%) to partly closed wounds (60% and more) was 4:1.

Conclusion: More areas of health-care system should be processed-through with use of innovative management methods such as LEAN and TOC. Result-based outcomes should always be considered as a main effort. Health system organizers should be involved in process of systemic approach to every treatment areas that need both time and result-outcome regime.

OP002 Closed incision negative pressure in emergency laparotomy: a cost effectiveness analysis

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Aim: Surgical site infection (SSI) rates following emergency laparotomy are approximately 30% and lead to significant patient burden and impact on quality of life. Use of closed incision negative pressure therapy (ciNPT) has been demonstrated to be clinically effective in reducing SSI rates in this setting; however, there is limited data available regarding its cost-effectiveness.

Method: Decision analytical modelling was employed, using a decision tree to simulate costs, health outcomes and cost savings comparing ciNPT vs standard dressings as a measure to reduce SSI. Effectiveness was measured by the rate of SSI and the gain in quality adjusted life years (QALYs). The baseline incidence of SSI (25.1%) was taken from a recently published meta-analysis. Previously published utility values were extracted. Base-case analysis was based on an emergency laparotomy for small bowel adhesiolysis/obstruction and the use of ciNPT. The costs were derived from NHS Reference Costs 2020 – 2021 and NHS Supply Chain. One way deterministic analysis was conducted.

Results/Discussion: The cost of an emergency laparotomy with standard dressing was calculated to be £15,546 with an incremental cost of £299 for CINPWT (total cost £15,845). The use of ciNPT was associated with an expected

increase in QALY of 0.01. Cost-effectiveness analysis demonstrated that at a threshold of £20,000 per QALY, the use of ciNPT was more cost-effective than standard dressings.

Conclusion: For patients undergoing emergency laparotomy the use of ciNPT is more cost-effective than standard dressings.

OP003 Cost-utility and cost-benefit analysis of a novel polylactic acid dermal matrix for the closure of diabetic foot ulcers

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Aim: A recent randomized-controlled trial (RCT) demonstrated a 44% reduction in time for achieving diabetic foot ulcer (DFU) healing when using a novel polylactic acid (PLA) matrix compared to standard care (collagen dressings). Here, we present a cost-utility and cost-benefit analysis of the RCT data.

Method: Effectiveness data was sourced from the primary RCT data. Cost data was sourced from the US Centers for Medicare & Medicaid Services. Utility data for a non-healed DFU was considered 0.60 and 0.80 for a healed one with a time frame of 31 weeks. For the cost analysis, the total and mean costs associated with wound healing were calculated. Health outcomes were calculated using quality-adjusted life years (QALYs).

Results/Discussion: The PLA intervention cost decreased to the point that patients did not incur on any costs from the 11th week onwards because they were completely healed. Cumulative costs showed higher costs in the collagen group after the 6th week. By the end of the trial, the total mean costs per patient for the collagen group were almost twice higher than those in the PLA group. PLA matrices also provided higher QALYs that translated into a difference of 4 weeks of complete health over the 31-week period.

Conclusion: The PLA group had a lower cost and higher QALY. Therefore, we conclude the intervention is cost-effective and has cost-benefit. Among both groups, debridement and wound care accounted for the majority of costs, not the product itself.

OP004 Challenges in wound care dressing prescriptions: Impact on community nursing

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Aim: Effective wound management is crucial in community nursing. Previous studies all highlighted the critical role of community nurses in wound care and the challenges they face¹⁻⁴. The aim of this survey was to improve understanding of four key areas affecting wound care efficiency: nursing time allocation, wastage of dressings, delays in accessing prescribed dressings, and their subsequent impact on patient outcomes.

Method: A comprehensive survey was conducted among community nurses, assessing the time spent on prescription-related tasks, wastage of dressings due to prescription issues, the duration taken to receive prescriptions and the negative impact this delay can have on patient outcomes.

Results: A sample of 704 nurses across the UK participated in the survey. Nurses spent an average of 2.4 hours per week in chasing and collecting prescriptions. When asked about the amount of dressing waste the prescription process incurs the respondents answered with a mean of 20.6%. The survey also highlighted the time taken to receive a prescription; on average this was reported as 5.9 days. 79.5% of respondents believe delays such as this have a detrimental effect on patient outcomes.

Conclusion/Discussion: The findings highlight a pressing issue affecting community nursing in wound care management. The substantial time investment in administrative tasks related to prescriptions, coupled with dressing wastage and delays in accessing dressings, poses significant challenges for nurses, impacting their efficiency and

potentially compromising patient outcomes. Addressing these inefficiencies in the prescription process is imperative to streamline wound care delivery, optimize resource utilization, and enhance patient care in community settings.

OP005 Innovative techniques to minimize the surgical burden of high-risk patients with 4° pressure ulcers

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Aim: Long stays in intensive care units, inadequate remobilization, staff shortage in elderly homes have increased the number of decubital ulcerations. Most patients are in badly reduced general and nutritional conditions. Too radical debridement and frequent anaesthesia represent a considerable risk factor. To counteract this, a new surgical concept was developed. Using tumescent local anaesthesia (TLA), switched debridement to ultrasound-assisted wound debridement (UAW), cover defects with simple flaps.

Method: 2017 -2022, 48 patients (P) with 4° pressure ulcers. Retrospective study: Age, gender(F/M), comorbidities, ECOG, location, type of anaesthesia, number of operations, negative pressure wound therapy (NPWT), type of defect coverage, length of inpatient stay, number of operations, inpatient complications, recurrences within 6 months after hospital stay were raised.

Results/Discussion: Age: Ø 72.875 years; gender: F17/31M; comorbidities Ø 6.25; ECOG median 4; location: sacral n=35, trochanter n=1, ischadical n=5, gluteal n=7; TLA n=37, general anesthesia n=6, combination n= 5; operations Ø 3.9; NPWT n= 31 ; V-Y flap n=24, keystone flap n= 5, rotation flap n= 6, no coverage n= 1; inpatient stay Ø 19.5 days; 17 P with minor wound healing disturbances . 7 P with recurrence/ new pressure ulcer.

Conclusion: The fundamental change to this innovative strategy with a gentle form of anaesthesia, hardly traumatising UAW, NPWT and defect coverage using a simple flap, represents a valuable alternative to the previous standard therapy. It allows methodological flexibility and patients can be sufficiently rehabilitated. Only small disadvantages with longer operating times must be taken into account.

Surgical Approaches

OP006 Pathology analysis and clinical treatment of non-healing wounds after craniotomy

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Aim: To analysis the pathology of non-healing wounds after craniotomy and explore the best clinical treatment on wounds with implant exposure

Method: We did a retrospective analysis of 58 patients who suffered from non-healing wounds after craniotomy admitted in our department from 2017-2022. Thirty three patients were males and twenty five were females. Six cases were incision infection, four cases were CFS leakage, fourteen cases were skull exposure or osteomyelitis. Thirty four cases were implant (titanium mesh) exposure. All patients did debridement surgery with VSD therapy to prepare wound bed after improving general situation, and then close wounds with direct suture or flaps. All thirty four cases with implant exposure were repaired with flaps to save implant: 18 cases were local flaps and 16 cases were free ALT or LD perforator flaps.

Results/Discussion: All patients with implant exposure wounds were treated with flaps to repair wounds with implant salvage. No wound recurrence with implant exposure was found after 1-3 year follow-up.

Conclusion: Multiple factors lead to non-healing wounds after craniotomy. Flaps atrophy or thinning after cranioplasty is major factor to cause non-healing wounds with implant exposure. Repairing wounds with implant salvage become clinical treatment trend in future. Local flaps are applied to repair minor wounds with implant exposure and free perforator flap is promising strategy to close massive wounds with implant exposure.

OP007 Assessing the therapeutic efficacy of an oxygenated oleic matrix-based device for expedited healing at partial thickness skin graft donor sites in reconstructive plastic surgery: a prospective observational study

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Aim: This study explores the regenerative potential of an oxygenated oleic matrix-based device for accelerated healing in partial thickness skin graft donor sites during reconstructive plastic surgery.

Method: Forty patients (20 males, 20 females) undergoing partial thickness skin graft reconstruction were observed. Half received the device, with evaluations at 1, 3, and 6 months conducted by an external surgeon and using PROM SCAR-Q.

Results/Discussion: In the device-applied group, 78% exhibited favorable outcomes. Clinical examination and PROM SCAR-Q consistently demonstrated expedited healing and enhanced tissue quality. Results were consistent across gender-diverse patients, highlighting the device's efficacy in tissue regeneration.

Considerations of patient-centered outcomes, including comfort and scarring, affirmed holistic benefits. This analysis establishes a compelling case for the continued exploration and potential integration of the oxygenated oleic matrix-based device into standard clinical practice.

Conclusion: The findings underscore the promising therapeutic efficacy of the oxygenated oleic matrix-based device in promoting expedited healing and enhanced tissue regeneration at partial thickness skin graft donor sites. The observed favorable outcomes, consistent across diverse patient profiles, warrant further consideration for the integration of this innovative approach into routine clinical practice. This study contributes valuable insights to the evolving landscape of reconstructive plastic surgery, emphasizing the potential for improved patient outcomes through the strategic implementation of regenerative technologies.

OP008 A novel application of fish skin graft for reinforcement of transtibial amputations

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Aim: To evaluate the efficacy of a novel tissue reinforcement using fish skin graft (FSG) to improve the healing of transtibial amputations, decrease the rate of amputation revision, decrease the time to prosthetic fitting, and improve limb durability.

Method: A retrospective review was performed on 37 consecutive patients who underwent primary transtibial amputation (TTA) that utilized FSG tissue reinforcement. Bone graft was applied to a 7x10 cm FSG solid sheet and folded in half lengthwise. The FSG with enclosed bone graft was then secured to the tibia and fibula. A fragmented FSG was applied to the residual limb soft tissue and a circumferential negative pressure wound vacuum dressing was used for the postoperative dressing.

Results/Discussion: The study cohort data showed an incisional dehiscence rate of 13.5% (5/37 patients) 90 days postoperative. The 1996 Centers for Medicare and Medicaid Services reports an incisional dehiscence rate from 26% to 34.5%.

The study cohort mortality was 0% (0/37) within the first 90 days. This mortality rate is lower than the CMS national average of 18%.

Prosthetic fitting occurred approximately 3 months after surgery. This compares favorably to the Veterans Administration prosthetic fitting of 4 months.

Conclusion: The use of FSG for reinforcement of TTA demonstrates a decreased revision rate, decreased time to prosthetic fitting and decreased mortality. The FSG also created a synostosis between the tibia and fibula. The synostosis between the tibia and fibula is encouraging for potential improved long-term viability of the residual limb.

Pressure Ulcers 1

OP009 Pressure ulcer staging and incontinence associated dermatitis classification: Using digital images for competency assessment

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Aim: Clinicians routinely stage pressure injuries (PIs) and classify incontinence associated dermatitis (IAD).

Considerable time is required to access the range of PIs and IAD required to support competency development during clinical practice. Access to PI and IAD digital images may accelerate familiarisation with these conditions and reduce barriers to obtaining competency.

Method: A digital image PI and IAD assessment competency (25 images) was developed and tested with aged care nurses. To promote engagement during the testing phase, the competency was pitched as “speed assessing” with 30 seconds allowed to select the stage or classification. Data was collected in an online survey administrator.

Results/Discussion: 81 nurses participated (experienced and less experienced nurse and none were wound management nurse experts). Correct Stage 1 PI assessment ranged from 99%-71% for the associated images. Correct suspected deep tissue injuries assessment ranged from 89%-83% for the associated images. The least accurate assessments arose from stage two PI images. Assessment of IAD was mostly correct, however, the classification of IAD (1A, 1B, 2A or 2B) was a challenge for the sample.

Conclusion: Digital images of PIs and IAD offer a convenient way to assess competency with staging and classification, however, there may be characteristics of these injuries, and of the images, that could present barriers to the success of this approach. This presentation will (a) share our insights on the use of digital images for competency assessment and (b) explain our next steps for creating a reliable PI and IAD competency assessment.

OP010 Classification of pressure ulcer stages: A deep learning model applying convolutional neural networks

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Aim: To construct a pressure ulcer (PU) staging model using convolutional neural network to provide a new method for improving the accuracy of PU staging among nurses.

Method: 1. Researcher developed a method of photos shooting by reviewing literature; After a wound nurse conducted bedside staging, the photos were taken and collected by the researcher. Seven days later, the wound nurses staged the photos collected, and Fleiss kappa was used to test the consistency of the two staging results. If the coefficient was ≥ 0.8 , the photos shooting method was applied. 2. Two wound nurses conducted bedside staging. If the results were controversial, the third wound nurse was invited to negotiate. After staging results were consistent, photos were taken and collected. 3. Data enhancement and normalization of PU photos; 4. Set the ratio of training set, validation set and test set to 6:2:2, and conduct photos training and test based on Resnet 18.

Results/Discussion: Fleiss kappa was 0.903 ($p < 0.001$). 821 PU photos were collected and 100 were selected for each stage. After data enhancement, we used 3000 photos to construct the staging model. The accuracy of the staging model was 93.33%, and the accuracy, recall and F1 index were 93.33%, 93.75% and 93.22%, respectively.

Conclusion: This study has proved that Resnet 18 has a strong ability to identify and classify clinical photos of stress ulcer, and the staging model in this study is expected to help inexperienced nurses classify PU stages.

OP011 Local inflammatory changes over a grade 1 pressure ulcer

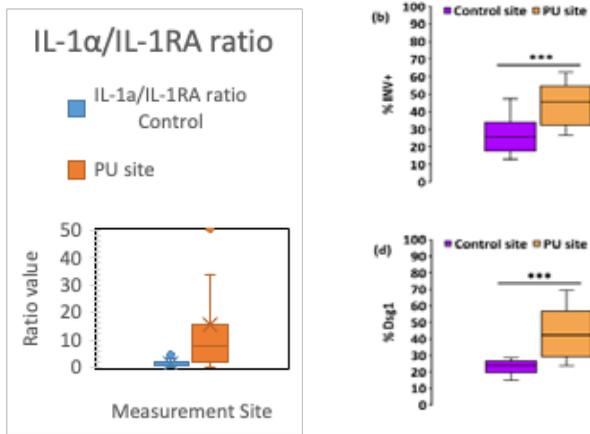
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Aim: The most common type of pressure ulcer is a stage 1, characterized by non-blanchable erythema over intact skin. However, little is known regarding the local changes in skin inflammation over the site of injury. The aim of this study was to evaluate local changes in skin inflammation over the site of a stage 1 pressure ulcer in cohort of elderly inpatients.

Method: This was a single center longitudinal cohort study based at a large university hospital [1,2]. Skin was characterized in 50 patients over 2-3 time points using biomarkers (inflammatory markers in sebum, local cell changes in the corneocytes). Two sites were assessed including the stage 1 pressure ulcer (sacrum or buttock) and a contralateral control site (10mm away).

There were significant difference between the PU site and control site in skin inflammatory biomarkers (Figure 1A) and corneocyte properties (Figure 1B). Changes in these skin properties varied substantively over time, with additional analysis ongoing to evaluate their prognostic capability.



A

B

Figure 1. Values from PU and control site for (A) cytokines and (B) % INV corneocyte envelopes and % Dsg1.

Conclusions: This study represents a comprehensive characterization of local changes in skin inflammation over stage I pressure ulcer, with distinct changes in cell properties observed. These have the potential to support skin assessment when diagnosing damage and with further analysis supporting the prognosis of skin health.

References:

1. Abiakam, NS, et al. Int Wound J. 2023; 1- 13. [2] Jayabal, H., et al. Int Wound J, 2023. 10.1111/iwj.14131.

OP012 A prospective cohort study exploring the correlation between sub-epidermal moisture measurement and ultrasound, for detecting pressure ulcer development in the deeper tissues

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Aim: Alternative methods over and above visual skin assessment are crucial to detect pressure ulcer (PU) development within the deeper tissues. This study explored the correlation between sub-epidermal moisture (SEM) measurement and ultrasound, within a surgical population with no evidence of PUs at baseline.

Method: A prospective cohort study was undertaken between January-November 2021. Surgical patients were consecutively recruited following informed consent. Assessments were performed before and after surgery for three days at the sacrum, both heels and a control site, using a SEM scanner and high-frequency ultrasound (5-15 MHz). A SEM PU was defined as two consecutive abnormal SEM delta values (≥ 0.6), succeeding a normal SEM delta value. A spearman's correlation explored the correlation between SEM and ultrasound.

Results/Discussion: A total of 60 participants were included, with a mean age of 58 years (SD: 13.46) and 50% were male. The SEM PU incidence was 50% (n=28), corresponding to 48.3% (n=14), 35.5% (n=16), and 35.5 (n=16) SEM PUs at the sacrum, left and right heels respectively. The percentage of ultrasound abnormalities increased across the follow-up period (Figure 1). All results at the control site were normal. A statistically significant low to moderately positive correlation was observed between SEM and ultrasound across all anatomical sites (Table 1).

Conclusion: SEM and ultrasound both agreed in the presence of injury; however, SEM was able to identify abnormalities prior to ultrasound. SEM demonstrated superiority in terms of its feasibility in clinical practice when compared to ultrasound.

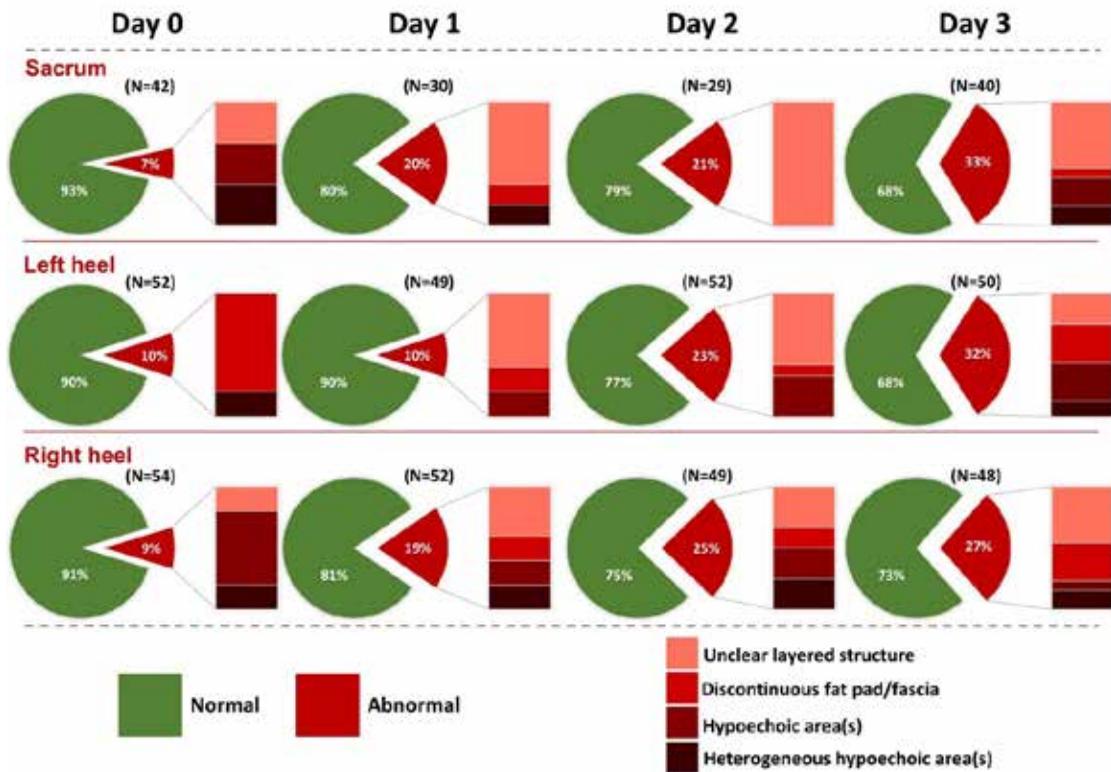


Figure 1

Table 1

SEM & ultrasound	Day 0	Day 1	Day 2	Day 3
Sacrum				
	N=42	N=30	N=29	N=40
Spearman's correlation	0.41*	0.54*	0.38*	0.50*
p value	0.01*	0.00*	0.04*	0.00*
Left heel				
	N=52	N=49	N=52	N=50
Spearman's correlation	0.39*	0.40*	0.41*	0.48*
p value	0.00*	0.00*	0.00*	0.00*
Right heel				
	N=54	N=52	N=49	N=48
Spearman's correlation	0.23	0.45*	0.47*	0.52*
p value	0.09	0.00*	0.00*	0.00*

Asterisks (*) indicate statistical significance

OP013 Comparative analysis of skin lesions in COVID-19 and hospital-acquired pressure ulcers/injuries: A retrospective study during the first year of the pandemic

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Aim: Healthcare Professionals often struggle to distinguish between Covid-19-related skin lesions and hospital-acquired pressure ulcers/injuries (HAPU/I). This retrospective electronic medical record (EMR) review aims to compare the demographic characteristics, treatment approaches, and outcomes of patients exhibiting Covid-19 symptoms who developed skin lesions during the first year of the pandemic.

Method: Descriptive and comparative data were collected from a single-center hospital between March 2020 and 2021. This data included various aspects of patient information, treatments, and outcomes. We gathered data on patient demographics such as age, gender, and BMI. We also recorded information related to the length of hospital and ICU stays, photographs of skin lesions, representing a diverse range of skin tones. Further data encompassed the use of ECMO, vasoactive medications, anticoagulants, systemic corticosteroids, dialysis, and discharge status.

Results/Discussion: This sample of 958 symptomatic Covid-19 patients revealed that 90.5% did not develop skin lesions. Among those who developed lesions, 2.3% had Covid-19-related lesions, while 7.2% experienced HAPU/I. Covid-19-related lesions were more common among males (64%), younger individuals (median age 60), and those with a higher BMI (30). Surviving patients had longer hospital and ICU stays, and 91% of them were discharged to either continuous home health care or organized home health care, in contrast to patients with no wounds and those with HAPU/I.

Conclusion: This study enhances our understanding of patient demographics and treatment approaches that can aid in identifying Covid-19-related lesions and how they differ from HAPU/I. Furthermore, it confirms that patients during the first year of the Covid-19 pandemic required more intensive care during both the acute phase and post-acute care.

OP014 The impact of pressure injury game cards (PI-game) on the knowledge levels and decision-making skills of nursing students' in categorization/staging pressure injuries

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Aim: The study aims to evaluate the effect of Pressure Injury Game Cards (PI-Game) on nursing students (NSs) knowledge levels and decision-making skills regarding PI Categorization/Staging.

Method: Between January and June 2023, a quasi-experimental study with a pre-test and post-test design was conducted on a single group of junior and senior NSs from a university (n=50). Theoretical content for PI-Game and Pressure Injury Test (PI-TEST) was developed from the NPIAP 2016 Classification System, and current literature. The PI-TEST, validated by experts, has a content validity index of 0.96, and the theoretical content of PI-Game is calculated as 0.98. According to expert opinions, 5 points are given for each correct answer, 0 points for each incorrect answer, with a maximum score of 100 for a total of 20 questions. NSs received the PI-TEST (Pre-test) via an Qualtrics survey link. In PI-Game, groups of 4 people played at least twice a week. The PI-TEST (Post-Test) followed the same way. Data analysis included descriptive statistics, Paired Sample t-test, and odds ratio calculation at a 95% confidence level.

Results/Discussion: The post-test overall scores ($\bar{x}=75.20+12.16$) were significantly higher than the pre-test overall scores ($\bar{x}=59.60+17.31$) with $p= <,001$. Except for Stage 4 and Mucosal Membrane PI, the probability of correctly answering PI-TEST questions was approximately 17 times higher across all categories/stages.

Conclusion: This study demonstrated that PI-Game significantly increased NSs' knowledge levels and decision-making skills in PI categorization/staging. Further research with larger samples and integration into education is recommended.

Leg Ulcers 1

OP015 To explore the relationship between physical activity levels and wound healing and recurrence in people with venous leg ulcers

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Aim: To explore the relationship between physical activity levels and wound healing and recurrence in people with venous leg ulcers.

Method: Questionnaires and medical records were used to collect data, with responses used to group participants into different physical activity groups. The differences in healing and recurrence outcomes of ulcers among different physical activity groups was compared using Chi-square, Kaplan Meier survival analysis, and Kruskal-Wallis test.

Results/Discussion: The survival analysis showed higher physical activity level was associated with shorter time to healing (log-rank test = 14.78, df=3; p = 0.002). The moderate-to-vigorous group took fewer number of days to heal than the sedentary group did (MD=54, 95%CI 8-101), however there was no difference in cost. High levels of physical activity were also associated with a better quality of life score at baseline ($\rho = 0.41$, p <0.000), week 12 ($\rho = 0.36$, p <0.001) and week 24 ($\rho = 0.49$, p <0.000). Most participants (48.5%) reported low levels of physical activity, which remained low for the entire study period.

Conclusion: An increased level of physical activity was linked to a shorter healing time and enhanced quality of life. Low levels of physical activity appeared common among people with venous leg ulcers.

OP016 Healing-related outcomes in randomised controlled trials of compression in venous leg ulcers: systematic review

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Aim: Venous leg ulcers (VLUs) are open wounds that can be slow to heal. Healing-related outcomes including complete wound closure (CWC) are prioritised by patients and important for clinical decision making. It is unclear how, how frequently, and by whom, healing-related outcomes are measured in VLU research. This study summarises how healing-related outcomes are defined, measured and reported in randomised controlled trials (RCTs).

Method: This systematic review followed Cochrane guidance. RCTs of compression for people with VLUs were eligible. Five medical literature databases were searched (August 2020) and we extracted data on: the type of healing outcomes assessed, measurement techniques used, who assessed healing, whether assessment was masked, and how the data were analysed.

Results/Discussion: Sixty-three studies reporting 147 healing-related outcomes were included. In total 87% of studies reported at least one CWC outcome.

Of the 147 outcomes, 60% were CWC and 33% were change in wound size. Only 32% of CWC outcomes had a clear definition of healing, and the definitions varied. Change in wound size was measured using four different techniques, commonly planimetry (58%).

No study recorded participant-reported healing-related outcomes; 58% of healing-related outcomes were reported by health professionals and for 42% the reporter was unclear.

Assessment of 79% of outcomes was not masked (or masked outcome assessment was not reported). Assessment of 21% of outcomes was masked.

Conclusion: CWC is often measured in RCTs of compression treatments but frequently not defined. Masked outcome assessment is uncommon and there was no evidence of participant-reported healing-related outcomes.

OP017 Non-healing venous leg ulcers – an advanced therapy medicinal product based on ABCB5-positive mesenchymal stromal cells

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Aim: Despite good healing rates under standard-of-care, some venous leg ulcers (VLU) remain florid for years, often related to an overactivation of pro-inflammatory M1-macrophages. ABCB5-positive mesenchymal stromal cells (ABCB5+MSC) showed a strong immuno-modulatory potential in vivo shifting pro-inflammatory M1- to regenerative M2-macrophages. Improved wound healing was observed together with an excellent safety-profile. Our findings justified clinical trials with the aim to evaluate the safety and efficacy of ABCB5+MSC to re-initiate healing in therapy-refractory VLU-patients.

Method: In a single-arm phase-I/IIa-trial, ABCB5+MSC were applied topically (1×10^6 MSC/cm²) 1-2 times 6 weeks apart. Primary endpoint was wound-size reduction after 12 weeks. A randomized, placebo-controlled phase-IIb-trial is ongoing, testing three cell-dosages (1×10^6 , 3×10^6 and 6×10^6 MSC/cm²) as a single topical application. Primary endpoint is wound closure after 18 weeks already persisting for 2 weeks.

Results/Discussion: In our phase-I/IIa-trial, only 31/58 patients passed our stringent 4-week screening with $\leq 25\%$ wound-size change under standard-of-care. Remarkably, over 70% of these confirmed therapy-refractory VLU-patients responded during the efficacy-phase with $\geq 30\%$ wound-size reduction. Median wound size decreased by 87% in this responder group. Several wounds (6/31) closed completely within 12 weeks. Only 3 mild or moderate treatment-emergent adverse events were considered product-related. To date, 102 therapy-refractory VLU-patients have completed the efficacy phase of the phase-IIb-trial without any product-related serious adverse events.

Conclusion: Our data consolidates the efficacy and safety profile of ABCB5+MSC in therapy-refractory VLU-patients. German authorities (Paul-Ehrlich-Institute) consequently granted national approval for ABCB5+MSC to treat therapy-refractory VLU alongside the ongoing phase-IIb-trial¹.

* AMESANAR@ <https://www.rheacell.com/products>

OP018 Aetiological treatment of venous leg ulcers with compression therapy: real life outcomes with two different procedures

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Aim: Venous leg ulcers (VLUs) represent a burden for the community and patients. For the first time, data from the French national health data system have been used* to estimate:

- complete VLUs healing rates with compression systems recommended by the French Authority for Health (HAS)
- healing time
- each healed ulcer's treatment cost

Method: The prescriptions of patients presenting a first-episode ulcer between 2018-2020 were analysed. Healing rates were calculated at 1, 3, 6 and 12 months. Investigated reimbursed costs were those related to the pathology, for healed patients.

Results/Discussion: The reimbursement data of 25,255 selected patients, using a unique product type over the entire treatment period, were collected. At every point of the analysis, the healing rates were reported as significantly higher in the multicomponent systems (MCBs) group than in the short-stretch bandages (SSBs) group; most notably after 3 months, with a healing rate of 42% with MCBs and 35% for SSBs ($p < 0.001$). The median VLUs healing time

was estimated at 115 days with MCBs vs. 137 days with SSBs. Thanks to reduced healing time, MCB reduced the average cost of treatment per patient and per healed ulcer (€2,875) by 20% vs. SSB (€3,580).

Accessing the database is strictly regulated (ethics committee, mandatory public health interest). However, like all databased-study, it has limitations inherent in the medico-administrative databases and the observational design.

Conclusion: This study on reimbursement data confirms the superior efficacy of MCB (healing rate and time) compared with SSB, while generating additional savings.

OP019 Real-life evaluation of local treatment implications in the treatment of venous leg ulcer in france between 2018 and 2020: additional analysis of the french national health database study on compression systems

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Aim: Data from the French healthcare database was used to estimate the rates, times and costs associated with complete venous leg ulcers (VLUs) healing treated with compression systems recommended by the French Authority for Health (HAS). The first analysis confirmed the superiority of multicomponent systems (MCBs) compared to short-stretch bands*. A complementary analysis was carried out to assess the dressing implications (TLC-NOSF or neutral) in combination with MCBs.

Method: This analysis was conducted by analysing the prescriptions of all patients presenting with a first-episode ulcer between 2018-2020 treated with the same MCB and dressing type, from start to finish. Healing rates were calculated at 1, 3, 6 and 12 months. Investigated reimbursed costs were those related to the pathology, for healed patients. Results were adjusted for propensity score matching.

Results/Discussion: The reimbursement data of 12,507 patients were collected. At every point of the analysis, the adjusted healing rates were significantly higher in the TLC-NOSF group than in the Neutral group ($p < 0.001$); most notably after 3 months (52.4% in the TLC-NOSF group and 36.7% in the Neutral group ($p < 0.001$)). The median VLUs healing time was 87days in the TLC-NOSF group vs. 125.5days in the Neutral group. TLC-NOSF dressings significantly reduced the average treatment cost/healed ulcer (€2,099) by 23.7% compared with Neutral dressings (€2,751).

Like all databased-study, the study results may have some limitations.

Conclusion: These data confirm the increased efficacy of combining MCBs with TLC-NOSF dressings: better healing rates as well as cost savings compared with neutral dressings.

OP020 Comparison of bromelain-based enzymatic debridement to collagenase ointment - Analyses from the chronex study

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Aim: Results from the ChronEx Study assessing a novel bromelain-based enzymatic debridement (BBD) in chronic venous leg ulcers (VLU) were published previously. BBD was superior to hydrogel placebo and non-surgical standard of care (NSSOC). One of the NSSOC used was collagenase (Santyl®). Current analyses assess the efficacy of BBD vs. Collagenase.

Method: In ChronEx, patients were randomized to daily treatment with BBD, placebo, or NSSOC, for 2 weeks or until complete debridement (CD), if achieved earlier, and then treated with NSSOC for 12 weeks.

Incidence and time to CD and wound bed prepared (WBP), defined as CD and complete granulation, were compared between patients treated with BBD, collagenase, and placebo. Log-rank and Fisher Exact tests were used for survival and incidence analysis, respectively.

Results/Discussion: 119 patients randomized - 46 to BBD, 43 placebo and 30 NSSOC. Of the NSSOC, 8 patients were treated with collagenase. Baseline characteristics were comparable across groups.

Median time to CD (95%CI) was 9 days (5-15 days) for BBD vs. not achieved (NA) for CO (22-NA, P=0.023), and 63 (21-93) for placebo.

Incidence of CD (95%CI) within two weeks was 63.0% (47.5-76.8) for BBD vs. 0% for Collagenase ($p=0.001$) and 30.2% on placebo.

Median time to WBP (95% CI) was 11 days (7-50 days) for BBD vs. NA for CO (22-NA, P=0.014) and 85 (24-99) for placebo.

Conclusion: Analyses from the ChronEx study demonstrate clinically meaningful superiority in time to CD and WBP in VLU patients treated with BBD compared to collagenase.

Negative Pressure Wound Therapy

OP021 Ease of use and potential benefits of a longer-wear, peel and place negative pressure wound therapy (NPWT) dressing via user and preclinical studies

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Aim: Reticulated open cell foam (ROCF)[^] is well-established for use with NPWT*, but tissue ingrowth may occur if left in place >3 days. A novel, peel and place dressing[†] was created to address this challenge.

Method: Usability studies determined if participants could successfully complete required tasks of dressing application and sealing. In a preclinical study, full-thickness excisional wounds were created in 11 swine and treated with either peel and place or ROCF dressings and -125mmHg NPWT for 7 days (no dressing changes). Dressing peel force testing and histopathology assessments were performed. All animal work was approved by the relevant Institutional Animal Care and Use Committee (IACUC) and complied with all applicable national and local regulations.

Results/Discussion: Participants found the peel and place dressing easier to use. Average application time was decreased by half relative to ROCF in study #1; study #2, <1 minute application time versus >5 minutes for peel and place dressing versus ROCF, respectively. Peel forces were also significantly lower ($p < 0.0001$). Tissue ingrowth was limited to only ROCF. Significantly greater granulation tissue and re-epithelialization ($p < 0.01$) were also observed with the peel and place dressing.

Conclusion: Users successfully applied the peel and place dressing more quickly and easily than ROCF. Also, increased granulation tissue and re-epithelialization were promoted in the swine study with mitigated tissue ingrowth. These findings demonstrate the suitability of the peel and place dressing used for extended wear.

[^]3M™ V.A.C.® Granufoam™ Dressing; ^{*}3M™ V.A.C.® Therapy; [†]Peel and Place Dressing (3M Company, San Antonio, TX)

OP022 How to reduce Surgical Site Events (SSE) following ileostomy or colostomy reversal using iNPWT: a clinical series

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Aim: The incidence of surgical site events reported in literature after ileostomy or colostomy reversal, is up to 40%. We describe the iNPWT application combined with the use of a surgical drainage, to prevent wounds complications.

Method: At the end of surgery for ostomy reversal, a suction drainage is placed under the subcutaneous tissue; 24 hours later, it is cut 1 cm away from the skin and iNPWT dressing is installed over the surgical wound and the tube. After 3 days the drainage is removed and the iNPWT dressing is changed, to be definitively taken out after other 4 days.

Results/Discussion: Between October 2021 and October 2023, 42 patients (25 men, 17 women, age 42-88), underwent surgery for ileostomy (34 patients) and colostomy (8 patients) reversal.

32 patients had first surgery for rectal cancer, 9 patients for complicated diverticulitis and 1 patient for iatrogenic rectum perforation.

All patients received treatment with iNPWT for 7 days as described.

38 patients (90%) reached the complete healing of surgical wound without any complications (35 ileostomy and 3 colostomy reversal). 4 patients had a subcutaneous fluid collection due to an infected hematoma that was drained: the wounds reached the complete healing in 10-20 days.

Conclusion: The use of iNPWT, combined with a suction drainage, removes the fluid collection in the subcutaneous tissue, that is the main reason of surgical site events in ostomy reversal wounds, reducing the risk of complications and the healing time.

OP023 Negative-pressure wound therapy in the prevention and management of complications from prosthetic breast reconstruction: A systematic review and meta-analysis

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Aim: Complications from prosthetic breast reconstruction are distressing for patients, and their management is challenging. This study analyzes the outcomes of NPWT use in the prevention and management of complications from prosthetic breast reconstruction.

Method: A systematic search of studies was conducted using the PubMed/MEDLINE using the following key words: “negative-pressure wound therapy,” “breast reconstruction,” and “prosthesis” (including breast implants and tissue expanders). Analyzed endpoints were outcomes of NPWT use in prosthetic breast reconstruction compared with conventional dressings. Comparative studies were further meta-analyzed to obtain pooled odds ratios (ORs) describing the effectiveness of NPWT in prosthetic breast reconstruction.

Results/Discussion: Ten studies were included with a total of 787 patients (1230 breasts) undergoing prosthetic breast reconstruction with breast implants or tissue expanders. Three case-control studies focused on preventing breast wound complications. The meta-analysis of the 3 studies included 502 breasts receiving NPWT and 698 breasts receiving conventional wound care. The meta-analysis favored NPWT for less mastectomy flap necrosis (5.6% vs 14.3%; OR, 0.46; 95% confidence interval, 0.27-0.77; $P = 0.004$; $I^2 = 0\%$) and less overall wound complications (10.6% vs 21.1%; OR, 0.49; 95% confidence interval, 0.35-0.70; $P < 0.00001$; $I^2 = 0\%$). In the management of nipple-areolar complex venous congestion, 1 case report demonstrated 85% rescue of nipple-areolar complex after using NPWT (-75 mm Hg) for a total of 12 days.

Conclusion: Current evidence suggests that prophylactic use of NPWT in prosthetic breast reconstruction reduces the rate of overall wound complications and mastectomy flap necrosis.

OP024 Simplified NPWT in newborn: approaching complex wounds in the life's early start

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Aim: To describe the use of canisterless negative pressure therapy in patients aged less than 30 days and therefore relevant to the neonatal age.

Method: From January 2018 to September 2023, a retrospective cohort study on 204 newborns suffering from 244 complex lesions and various comorbidities was completed. The patients were treated with s-NPWT (PICO system and PICO7).

Results/Discussion: Ten crucial points out of 30 analyzed by the Skin Care Team were highlighted and scored from 1 to 5 (from best to worse). The cut-off was rigidly placed at 20. The 10 parameters were: 1. parental counseling and parental compliance, 2. ease of application, 3. acceptance of the method, 4. direct-indirect complications, 5. side effects, 6. dislocation-loss of the pad, 7. migration to another method, 8. contraction of the lesion and healing, 9. reduction in hospitalization times compared to the pathology covered by the sNPWT, 10. costs.

Conclusion: Despite the not exactly “neonatal” dimensions of the smallest pad available, we observed pad dislocation in only 12 locations on the lower limbs. Parents and newborns accepted the method in 92% of cases. The parameters that contributed to having a higher cutoff were the initial nursing and the relative ease of application. A further limit to the 7 days of PICO7 were some more exuding lesions, some lesions that showed infection during the first and therefore early change. Overall we had a cutoff of 15, the prevention of dehiscences in sternal locations and an excellent aid in the consolidation of suture lines of local flaps.

Rare Wounds

OP025 Rare case of necrotising fasciitis of the neck

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Aim: To present rare case of necrotizing fasciitis of the neck and the reconstruction of the skin and subcutaneous tissue defect left after infection containment.

Method: A 39 years old man presented to the emergency room complaining of the pain in his left shoulder and neck with skin changes in form of black blisters, fever and malaise. Initial findings showed he was septic, MSCT of the neck and shoulder showed infection of the skin and subcutaneous tissue. Emergency necrectomy was performed and afterwards patient was situated in the ICU. Multiple biopsy specimens were taken for microbiology assessment. Immediately broad spectrum antibiotics were administered along with all intensive care measures. On the second day microbiology results came and antibiotic therapy was adjusted accordingly. Streptococcus group A was isolated. In the following days several sharp surgical debridements were performed combined with NPWT.

Results/Discussion: Tissue defect was reconstructed using dermal substitute and split thickness skin graft. Necrotising fasciitis often results in a big skin and soft tissue defects usually covered with split-skin grafts or different free or loco-regional flaps. This can result in scarring and contracture or require long and complicated plastic surgery. Our method using dermal substitute is fast and simple with good functional and aesthetic result.

Conclusion: Necrotising fasciitis, with average mortality rate of 24.5% is one the deadliest soft tissue infections. Patients that survive are often left with big tissue loss that can be challenging to heal.

OP026 A multidisciplinary team approach for limb salvage in a rare case of pyoderma gangrenosum in a significant circumferential lower extremity wound complicated by diabetes and end stage renal disease

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Aim: Pyoderma gangrenosum (PG) is a rare, rapidly progressive, neutrophilic ulcerative colitis. PG is often misdiagnosed as a diabetic ulcer in diabetic patients. Though they appear similar, the treatment protocols differ. Also, end-stage renal disease (ESRD) is commonly seen in diabetics impacting wound healing due to uremic toxins. This case study demonstrates a multidisciplinary team and multimodal treatment approach for an uncontrolled diabetic with PG covering almost the entire right lower extremity.

Method: 56 y.o male with diabetes (A1c 10%) and ESRD, presents with worsening PG right leg ulcerations accompanied by 103°F fever. Wound care managed the wounds via 40 mg prednisone. Intravenous (IV) and local wound care, consisting of topical gentamicin 0.1% cream, clobetasol 0.05% lotion, and dapsone were utilized. Multiple surgical debridements, skin grafts, wound cultures, and biopsies for the circumferential ulceration were performed by both podiatric surgery and general surgery. Infectious disease managed antibiotic therapy. Hyperbaric oxygen therapy and wound vac therapy by wound care were also completed.

Results/Discussion: Limb salvage was accomplished with the wound size decreasing over a total of 29 weeks from 600 cm² to 12.0 x 3.5 x 0.2 cm, with complete closure of wound on 12/1/23. Ten surgical debridements with graft applications and negative pressure wound therapy were performed.

Conclusion: This case focuses on the importance of obtaining a wound biopsy to accurately identify the wound type, and the necessity for a multidisciplinary team approach to perform limb salvage.

OP027 An extremely rare case of successful treatment of foot ulcer associated with Evans' syndrome and buerger's disease

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Aim: Evans' syndrome is a rare autoimmune disease defined as association of autoimmune hemolytic anemia (AIHA) and thrombocytopenic purpura. We report a successful treatment of ischemic necrosis of the foot in a patient diagnosed with Evans syndrome associated with Buerger's disease.

Method: A 49-year-old male patient presented with a right foot ulcer. The patient had been diagnosed with Evans' syndrome four years prior, had undergone splenectomy, intravenous immunoglobulin and steroid treatment. On physical examination, right foot was chilled and had bluish color change on great toe with 2x2cm bone exposed wound (Fig. 1). Transcutaneous oxygen pressure (TcPO₂) was decreased to 15mmHg and ankle brachial index (ABI) to 0.74 on the right foot. Radiologic examination revealed 'corkscrew' findings in Buerger's disease, and severe stenosis in right popliteal artery (Fig.2). The patient underwent popliteal-tibioperoneal artery bypass surgery, followed by debridement of the necrotic distal phalanx of the great toe, and application of acellular dermal matrix (ADM, Fig. 3-A, B).

Results/Discussion: After bypass surgery, the ABI of the right foot improved to 0.97 and TcPO₂ to 23mmHg, and warmth and bluish appearance were alleviated. At three weeks after ADM application, epithelialization progressed to 50%, and the patient was discharged (Fig. 3-C). After two months, full epithelialization and no symptoms of chill or bluish color change were observed on outpatient follow-up (Fig. 4).

Conclusion: Evans' syndrome could progress with AIHA and increases the risk of thromboembolism, leading to the development of peripheral occlusive artery disease. We successfully treated ischemic foot necrosis in patient of Evans' syndrome with Buerger's disease using adequate vascular intervention and wound management.



Fig. 1. Initial findings. The entire right foot was chilled, and the right great toe had a bluish color change with a 2x2cm-sized eschar formation on the toe tip, which had bone exposed depth. (A) Plantar view. (B) Dorsal view. (C) Anterior view.

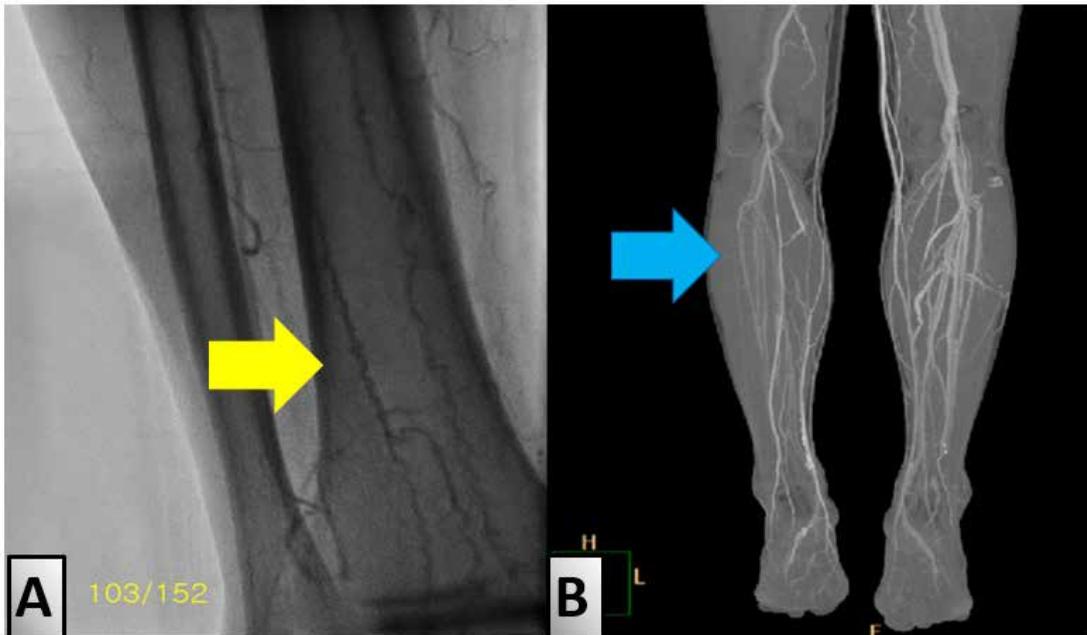


Fig. 2. Radiologic findings. (A) Lower extremity angiography shows a 'corkscrew appearance' (yellow arrow), which is characteristic of Buerger's disease. (B) Lower extremity computed tomography shows severe stenosis in the right popliteal artery (blue arrow).



Fig. 3. (A) Immediate postoperative finding. Two days after bypass surgery, a healthy wound bed of the right great toe was observed after debridement of the necrotic distal phalanx. (B) An application of acellular dermal matrix (ADM), which was changed every three days. (C) Three weeks after ADM application, the patient was discharged. Approximately 50% of epithelialization was observed.



Fig. 4. *Two months after discharge, full epithelialization was observed on outpatient follow-up. No symptoms of chill or bluish color change were observed.*

OP028 Management of periorbital necrotizing fasciitis: Insights from a clinical case and multidisciplinary strategy

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Aim: To illustrate a holistic approach in the initial and reconstructive surgical treatment of individuals with periorbital necrotizing fasciitis, using a clinical case as an example to showcase the multidisciplinary strategy.

Method: We present the case of a 61-year-old woman with no predisposing comorbidities, who presented with unilateral periorbital necrotizing fasciitis (PNF) caused by *Streptococcus pyogenes*. The patient underwent intravenous antibiotic therapy along with multiple debridement and reconstructive surgeries, complemented by hyperbaric oxygen therapy. Each of these modalities contributed to a favorable outcome for the patient.

Results/Discussion: PNF is a very rare condition with often devastating consequences such as blindness or death. The pivotal factors for successful management of necrotizing fasciitis involve extensive debridement and timely administration of IV antibiotics. Debridement in PNF is challenging due to critical anatomical structures also requiring consideration for subsequent reconstructive surgery methods. Adjunctive therapies, such as hyperbaric oxygen therapy, provide supplementary benefits in the treatment of PNF. Incorporating these considerations into our treatment regimen, our patient provides an example of a favorable functional and aesthetic outcome.

Conclusion: We believe that our case study may assist health care professionals in refining treatment strategies for this rare and debilitating condition.

OP029 Alongside life: Experiences of patients and family members managing wound care in Austria

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Aim: There is growing research emphasis on empowering patients and relatives to engage in daily wound care. Despite the emphasis on empowerment within care literature, there is limited exploration of effective strategies to address the demanding nature of wound care. This paper seeks to fill this gap, by analyzing how patients and relatives experience wound care in Austria.

Methods: 13 in-depth interviews and two focus group discussions were used to gather insights from patients and relatives who had experience with chronic wound care in Austria. The Constructivist Grounded Theory was applied for data collection and analysis.

Results: The study shows that patients and relatives adjust their lives to meet care needs. The reasons for this are fourfold: First, patients underestimated their condition and sought professional care too late. Second, balancing care with other responsibilities was perceived as challenging. Third, wound care had an emotional impact, but participants experienced a lack of empathy in insurance-funded treatment settings, fostering general distrust in the system. Fourth, participants reassessed the credibility of professionals after experiencing better care from nurses compared to doctors.

Conclusion: This study elucidates the interplay between personal encounters with chronic wounds and the broader healthcare structure. The study results display gaps in the Austrian healthcare system that led to lifestyle adaptations. It also offers policy recommendations, based on the experienced needs of those affected. Ultimately, the study contributes to enhancing the overall care experiences beyond wound care in Austria.

Miscellaneous: Quality of Life, Pain, Home Care and Education

OP030 The use of virtual reality as a non-pharmacological means of pain management in patients with venous leg ulcer

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Introduction: Chronic wounds affect the elderly, chronically ill and disabled, but also people after surgeries and accidents. Local wound treatment involves mechanically cleansing the wound which can cause pain. Using virtual reality will reduce the sensation of pain.

Aim: Evaluating whether the use of virtual reality will result in a reduction of the patient's pain experienced during venous leg ulcer debridement.

Method: The study enrolled 60 patients, who were randomised into two groups. Study group – 30 subjects – mechanical debridement using goggles and virtual reality. Control group – 30 subjects – mechanical debridement without using goggles and VR. The Oculus Quest 2 VR goggles were used for the study. After each wound debridement, the patient would specify their pain on a numerical pain rating scale.

Results/Discussion: There was a statistically significant difference between the severity of pain experienced after venous leg ulcers debridement by the subjects of the two groups ($p < 0.001$). It averaged 1.13 points among those in the study group and ranged from 0 to 2 points. For those in the control group, it averaged 4.73 points and ranged from 0 to 8 points.

Conclusion: The use of virtual reality in patients with venous leg ulcer results in reduced pain during their wound debridement.



OP031 A combined in vitro and in vivo approach to evaluate wound healing management with a new healing dermocosmetic product

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Aim: Applying a moisturizer is commonly practiced to support wound healing and reduce discomfort sensations, but few robust studies investigate the management of a moisturizer in wound healing. The study's aim was to objectivate pro-wound healing effect of a dermocosmetic product, using a combined approach from in vitro to in vivo models versus control.

Method: The repair active ingredients were evaluated by using a 3D human bilayered skin equivalent wound healing model. Then a randomized double-blind study evaluated the skin regeneration after standardized skin abrasion in 24 subjects. The product was applied in a way once daily covered with a sterile dressing from day 1 (D1) to D7, then twice daily in open until D15. TEWL, images, clinical and functional signs were assessed at each visit vs untreated condition.

Results/Discussion: In the in vitro model, the ingredients improved wound closure (D7 91% vs 48% for untreated), epidermal regeneration (Ki67, loricrine, CD44) and dermal-epidermal junction structuration (collagen VII and XVII), and enhanced dermal repair (collagen III). In vivo, lower TEWL values were obtained with the product at all time points, and significant between D5 and D4 (-13% vs -2% for untreated). Abrased areas were visually improved vs untreated area associated with significant less erythema (-21%) at D8 and an improved subjective global score (-55% discomfort) at D5, including burning (-64%), tingling sensations (-72%) and itching, with no adverse events.

Conclusion: This new healing dermocosmetic product contributes to a better skin repair and demonstrates significant beneficial activities on natural healing process.

OP032 Webinar-based continuing academic education in the field of wound care and healing. A 2-year retrospective study of 83,131 health professionals

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Aim: To present the experience of the Mexican Association for Wound Care and Healing (AMCICHAC), a EWMA international partner organization, with webinar-based continuing academic education over a 2-year span (2021-2023). Members of AMCICHAC are health care professionals (nurses, surgeons, physicians, etc) committed to the proper and state-of-the-art treatment of wounds.

Method: A retrospective study was performed in order to evaluate the experience of the AMCICHAC with webinar-based academic education from December 2021 to December 2023. Webinars were conducted for both members and non-members of the association. For webinar broadcast, we used the GoToWebinar software tool from GoTo (Boston, USA), which can accommodate up to 1500 participants. Stats were obtained with the GoTo statistics tool. Analysis was performed with SPSS software and Excel (Mac Edition).

Results/Discussion: A total of 106 webinars were conducted in the study period. A total 83,131 health care providers attended the 106 webinars conducted over the 2-year span. On average, 784 participants attended each webinar. Mean duration of each webinar was 97.73 minutes. Mean real interest during the duration of each webinar was 94.54%. All webinars were conducted in Spanish. Speakers were mainly from Mexico, Spain and countries from Latin America. Attendees were mainly from Mexico, Spain, Colombia, Ecuador and Argentina.

Conclusion: Webinars represent a popular and affordable continuing academic education option in the field of Wound Care and Healing during the pandemic and beyond.

OP033 Developing and evaluating a wound debridement competency course in New Zealand

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Aim: To present New Zealand's first national qualification in wound debridement modalities that provides a competency in conservative sharp and sharp wound debridement (CSWD).

Method: The NZWCS partnered with Te Pūkenga Institute, and Wendy White (curriculum and content designer of *Talking Debridement Master Course - Australia*), to develop a micro-credentialled certificate in CSWD. In 2021 national consultation and qualification authority approval was achieved.

The annual course (minimum of 20 learners) is delivered over 26 weeks and includes formative and summative assessments with on-line learning consisting of video lessons, quizzes, tutorials, self-directed workbooks and reading resources, written assignment, a two-day practicum, and portfolio consisting of five CSWD competencies in clinical practice with mentor/s. Critical reflective practice is central to course assessments.

The course consists of:

1. What and Why of Wound Debridement
2. Debridement Modalities
3. Pain Management
4. Clinical Assessment and Skills (focus lower limb and foot)

Results/Discussion: The first cohort in 2022 consisted of 26 learners and 24 in 2023. Retrospective course evaluations have enabled modifications to the course assessments. Learner competencies and course evaluations have demonstrated increased knowledge and skills and improved patient outcomes. Subsequent learners have increased their professional support networks by maintaining tutor contact, joining the NZWCS, attending national wound conferences and becoming course mentors.

Conclusion: A nationally recognized debridement course supports networking, standardizes best practice, and can improve knowledge and skills to provide safe debridement (inclusive of CSWD procedures) to optimise healing outcomes and reduce the burden of hard to heal wounds.

OP034 British Lymphology Society (BLS) Lower Limb Inflammatory Pathway - Formerly the BLS Red Legs Pathway

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Aim: This tool sets out to support the differential diagnosis of lower limb inflammatory changes in order to get the treatment right first time

Method: The British Lymphology Society (BLS) Red Legs Pathway was due for revision in 2025 but it is widely recognized that the term redness may be less easily identifiable in darker skin tones. In order to address this the planned revision date was brought forward and the name of the document changed to reflect the amendments. Other changes include the addition of Charcot foot in the unilateral causes of redness, a link to the Wet legs pathway to aid the management of lymphorrhoea and a brief statement regarding the importance of holistic assessment has been included to raise awareness of the importance of examination alongside history taking and assessment (including investigations prior to referral or to aid diagnosis).

Results/Discussion: The BLS has chosen to launch this important document at European Wound Management Association (EWMA) and hopes that it will be well received. The new document is endorsed by the Legs Matter campaign and aims to continue to provide practical information to support effective decision-making for healthcare professionals managing symptoms of inflammation, ensuring key principles for practice.

Conclusion: Correct and timely diagnosis and implementation of a treatment plan for lower limb inflammatory changes promotes prompt and effective treatment to enable good patient experience and aids the individual towards becoming an expert in their condition. Prevention of further complications including wound development underpins the pathway.

Acute Wounds & Burns

OP035 Natural silk a new biological wound dressing for the 2nd degree burns treatment: randomized controlled trial versus silver sulfadiazine

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Aim: Silver Sulfadiazine is a standard treatment for superficial burns. These burns are common, however caretaking may become an issue: dressing technique is not always mastered by home health care nurses, their practical realization may be more difficult considering the surface to be treated; duration of care can also be too long and painful. We have evaluated the interest of a dressing based on natural silk with this indication.

Method: We have compared SSD to silk (S) in the treatment of superficial burns. Following diagnosis, the topical was determined by drawing of lots. SSD with fatty gauze was applied and covered with dry gauzes and bandages. Silk was applied directly on the lesion and covered with dry gauzes and bandages. Dressings were changed every 48 hours. SSD was changed every 2 days, silk was left in place until healing. Pain, duration of care and healing time were assessed.

Results/Discussion: 80 patients were included 25 men, 15 women were treated with SSD; 22 men, 18 women with silk. The average surface area treated was 5%. Pain was evaluated between 3 and 4/10 for SSD and 0 to 2 for S. Dressing duration was 20-30 minutes for SSD and 10-15 minutes for S. The average healing time was 13 days for both groups. 2 infections were observed in each group.

Conclusion: Silk has allowed shorter and painless treatments and has confirmed that superficial burns can be managed with silk dressing as outpatients and reduce the cost of the treatment.

OP036 Clinical study on the combined application of autologous epidermal cell suspension and mesh autologous thick-thickness skin transplantation in the treatment of deep burn wounds

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Aim: To evaluate the effect of autologous skin cell suspension combined with meshed skin graft to treat deep wounds.

Method: Sixteen adult patients with deep II burns were enrolled and randomly divided into groups in a 1:1 ratio, with 8 subjects in each group. Experimental group: Mesh skin grafts (1:3) were prepared and transplanted onto the wound surface, and the autologous cell separator was used to dissociate and collect cells from the patient's donor site to generate a cell suspension. The cell suspension is applied to the wound where mesh skin has been transplanted. In the control group, physiological saline without cell suspension was sprayed on the wound surface of mesh skin transplantation.

Results/Discussion: There was no significant difference in the wound healing rate between the two groups. After 3 months of follow-up, the skin elasticity, color and oil content of the test group were significantly improved compared with the control. Autologous thick-thickness skin grafting (STSG) for the treatment of deep burn wounds is considered the standard of care, but skin grafting is associated with significant pain, pruritus, infection, pigmentation abnormalities, abnormal pigmentation, delayed healing, and hypertrophic scarring. In addition, in patients with extensive burns, the lack of donor sites is the main reason that hinders wound healing.

Conclusion: The autologous cell regeneration technology can solve the bottleneck of lack of donor areas in patients with large-scale burns. Combining with mesh skin transplantation can enhance the survival of mesh skin transplantation and promote wound healing.

OP037 Amputation in burned children; experience at a tertiary pediatric burn center

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Aim: We aimed to share our clinical data and experience with amputation among inpatient burned children in our Pediatric Burn Center (PBC).

Method: The records of the patients between January 2005 and March 2023 were reviewed retrospectively. Age, gender, length-of-stay, total burned surface area, cause of the burn, grafting, amputation, and mortality rate were evaluated. Patients who underwent amputation were identified, and their data were compared with patients whose amputation was not performed. $P < 0.05$ was considered significant.

Results /Discussion: 167 amputations were performed in 53 of 2537 patients. The fingers and toes were amputated most frequently, followed by the forearms. The mean age of amputated victims was found to be higher than non-amputated (7.50 years vs. 4.45 years; $p < 0.001$), the length-of-stay at PBC was longer (15.17 versus 65.60 days; $p < 0.001$), the total burned surface area was larger (29.40% vs. 14.93%, $p < 0.001$), the grafting rate was higher (94.3% vs. 28.7%; $P < 0.001$), and the male ratio was higher (81.1% vs. 60.3; $p = 0.004$). Of the amputated victims, 29 (54.7%) had flame burns, and 22 (43.4) had electrical burns. The mortality rate was 3.8% in the amputation and 2.4% in the non-amputation group ($p < 0.001$).

Conclusion: Although flame and electrical burns are less common in children compared to scald burns, amputation is performed at much higher rates. In order to prevent these, it is crucial to make the first evaluation immediately and to perform the necessary fasciotomies and escharotomies before the compartment syndrome develops. In addition, children and parents should be educated about prevention.

OP038 Pediatric wounds: a single center experience

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Aim: Despite the differences between children and adults, most children's hospitals do not yet have a pediatric wound unit (PWU). PWU was established in our hospital in 2022. Our study aims to share our experiences with the patients who were treated in this unit.

Method: Patients who were treated inpatients and consulted and outpatients who applied to PWU between 01.04.2022 and 30.09.2023 were included in the study. Demographic and clinical characteristics of the patients were evaluated retrospectively.

Results/Discussion: A total of 297 patients were evaluated. The mean- age of patients was 7.19 years (Min: 0.01-Max: 18.0), and 153 (51.5%) were male. While most cases ($n=262$, 88.2%) were inpatients, 35 (11.8%) were outpatients. Patients were most frequently consulted from pediatric intensive care units ($n=95$, 31.98%), followed by neonatal intensive care units ($n=28$, 9.8%). Forty (13.5%) were refugees/asylum seekers, mostly were Syrians ($n=32$, 10.8%). Pressure ulcers (PU) were the most common wounds ($n=159$, 53.5%), followed by extravasations ($n=51$, 17.2%) and incontinence-related-dermatitis ($n=31$, 10.4%). Fifty-seven (35.84%) of the PU's were medical device-related. Most of patients with PUs needed care due to cerebral palsy and similar neurological diseases. Twenty-one (7.1%) died for various reasons.

Conclusion: In our study, although PU's were most common wounds in children, similar to adults, diabetic wounds and venous leg ulcers were not observed. Additionally, many extravasation wounds were observed. We recommend the establishment of PWUs in all hospitals where children are cared for. In addition, doctors, nurses, and other employees should be given regular training on prevention.

OP039 Pediatric wound management – tertiary center experience in a cohort of 211 patients

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Aim: The evaluation of the type of injury and therapeutical procedures in acute wound management in our cohort during the last ten years.

Method: The retrospective study included hospitalized patients with the wounds treated, by different therapeutical procedures under general anesthesia. Children were reviewed for age, sex, type of injury, wound localization, type of therapeutical procedure and length of healing.

Results/Discussion: The study included 211 children (141 boys, 70 girls), treated in the tertiary pediatric centre between 2013-2022. The mean age was 7.64 years (range 5 month -18 year). The most of them had laceration wounds (60.18%), followed by lacerations (15.63%), traumatic hand finger amputations (9,48), bite wounds (8%), explosive wound in four patients, presser ulcer wound and stub wound in three children, avulsion in two cases and gunshot injury in one child. The predominant localization of wounds was head with oral cavity (46,91%), followed by hand (28,43%). Nonoperative treatment was done in 9,95% and surgery in 90,05% of the cases. The performed surgical procedures were: primary repair in 51,18 of the patients, soft tissue reconstruction in 59 children, local flaps closure in 21 cases and skin grafting in 19 patients. Average time of the wound healing were 17.80 (range 7-166) days.

Conclusion: Management of pediatric wounds implies different nonoperative and operative procedures. Boys are more often injured. The most common were laceration wounds of the face and oral cavity. Most of the children required various types of surgery.

OP040 Optimizing outcomes in Hidradenitis Suppurativa surgical treatment: a comprehensive analysis of postoperative complications and quality of life impact

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Aim: Hidradenitis Suppurativa (HS) is a chronic inflammatory disease affecting hair follicles, often requiring surgical treatment. Since effective postoperative management is crucial for enhancing postoperative outcomes, this study aims to assess post-surgical complications and the impact on patients' quality of life after wide excision and secondary intention healing.

Method: We conducted a single centre retrospective study, enrolling 40 patients affected by moderate to severe HS, treated with wide excision after a presurgical mapping with Ultra-High Frequency Ultrasound (UHFUS) and secondary intention healing according to the principle of HS-Tissue- Inflammation/Infection-Moisture-Edges (TIME). We assessed the occurrence of post-surgical complications performing follow-up visits every 6 months. Moreover, Skindex-16 and Hospital Anxiety and Depression Scale for Anxiety and Depression (HADS) were administered before surgery and following the complete healing.

Results/Discussion: No cases of post-surgical bleeding or hematoma occurred, while 4/40 patients developed minor surgical site infection. The severity of pain decreased from a Numerical Rating Scale (NRS) of 5.3 before surgery to 1.3 after 4 weeks. The average healing time was 41.8 days. Regarding delayed complications, 1 case of hypertrophic scarring, 2 of dysesthesia and 4 of clinical relapse were reported. A significant difference was identified between the mean Skindex-16 and HADS questionnaire before and after complete healing (p -value < 0.05).

Conclusion: The low occurrence of post-surgical complications and the enhanced quality of life suggest that the proposed protocol could represent an effective strategy for managing HS patients eligible for surgical therapy. However further investigations will be necessary to validate these findings.

OP041 Use of hyperbaric oxygen therapy in severe earthquake-related injuries

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Aim: On 6 February 2023, two earthquakes of magnitude 7.7 and 7.6 occurred at 04:17 and 13:24 respectively, with epicenters in Pazarlık (Kahramanmaraş) and Elbistan (Kahramanmaraş) in Turkey. Kayseri, which is one of the provinces closest to the earthquake zone, was one of the provinces prioritised for the transport of earthquake victims. This study aimed to retrospectively evaluate patients treated with hyperbaric oxygen therapy (HBOT) for severe tissue damage in body parts after the earthquake in Kayseri City Hospital.

Method: After obtaining approval from the Ethics Committee of Kayseri City Hospital, the data of patients admitted to the hyperbaric unit as earthquake victims between 06/02/2023 and 06/03/2023 were retrospectively scanned and the information was recorded on the patient information form. Necessary data were retrospectively obtained from sources such as hospital records, photographs, emergency department reports, clinical epicrisis notes, imaging results and operative notes. Patients were scored according to previously measured mangled extremity severity scores (MESS). Patients with a MESS score of 7 or more were included in the study.

Results: Thirty-five patients were analysed. After treatment, four patients (11.4%) had a major amputation, seven patients (20%) had a minor amputation. The risk of amputation did not increase with increasing MESS score in patients receiving HBOT ($P > 0.05$). Functional recovery was significantly higher in patients who started HBOT early ($P < 0.05$). No patients died.

Conclusion: These results suggest that HBOT is life- and limb-saving in severe earthquake injuries and that starting treatment as early as possible is important to preserve limb function.

OP042 Nurses' knowledge about skin tears: Exploratory study

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Aim: Identify and analyze nurses' knowledge about Skin Tears (ST), and the correlations between the demographic and educational/ professional nurses' characteristics and their level of knowledge about ST.

Method: This is an exploratory cross-sectional study developed with 179 nurses from 4 hospitals in São Paulo (2 private and 2 public), according to a previous sample calculation. After approval of the research protocol by Ethics Committees, 2 instruments were applied to nurses who consented to participate: the first to characterize the sample related to their sociodemographic, educational, and professional data (developed by the authors); and the translated version of the Skin Tears Knowledge Assessment Instrument - OASES, with its content validity confirmed to assess the knowledge level of the nurses about ST. Data were analyzed by the Pearson and Kendall correlation tests, in addition to hypothesis tests (Welch's t-test; Wilcoxon-Mann-Whitney; Brunner Munzel; Student's t-test; Oneway-Anova and Kruskal Wallis). The statistical significance established was 5%.

Results/Discussion: The average number of correct answers was 10.83 (SD 3.32). There was an association between the average number of correct responses and previous training on ST ($p=0.003$) and participation in scientific activities ($p<0.001$), with lower levels of knowledge related to risk assessment and treatment of FL and better performance in specific patient groups.

Conclusion: Brazilian nurses presented a ST knowledge level with an average score slightly higher than that of other still scarce international studies.

OP043 Optimizing wound monitoring: Can digital tools improve healing outcomes and clinic efficiency?

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Aim: Chronic wound care poses substantial clinical and economic challenges for patients and healthcare systems worldwide. Digital health tools promise more standardized, efficient care pathways. However, rigorous evaluations of digital wound management approaches are still emerging. The aim of the study is to conduct a retrospective comparative effectiveness analysis examining the impacts of a Digital Tracking application for wound documentation versus traditional manual assessments.

Method: A matched cohort study was performed using data from 5,236 patients with various wound types. Propensity score matching balanced groups on demographics. Independent/dependent variables were assigned based on literature. Bivariate tests, correlation analyses, linear regression, and Hayes' Process Macro Model 15 explored relationships.

Results/Discussion: Digital Tracking was associated with significantly shorter healing durations (15 vs 25 days), fewer clinic visits (3 vs 5.8), and improved wound size reduction. Bloodwork inconsistently predicted outcomes while Digital Tracking exhibited moderate negative correlations with total visits. Regression identified wound complexity, hospitalizations and initial size as clinical predictors. For patients with peripheral vascular disease, Digital Tracking significantly lowered associated visits.

Conclusion: Within limitations of observational data, findings indicate digital wound management may streamline care and confer advantages, particularly for comorbid populations facing elevated treatment burdens. Standardizing evaluations through digital interfaces warrants further exploration as chronic wound demands intensify and digital health innovations targeting cost-effective personalized care proliferate.

Diabetic Foot 1, 3

OP044 Treatment of complex diabetic foot ulcers (DFU) with Biodegradable Temporising Matrix (BTM): a prospective pilot single center study

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Aim: Diabetic foot ulcers (DFU) are one of the hard challenges. There is a strong risk of infection and major amputation, unless healed. Biodegradable Temporising Matrix (BTM) is a synthetic matrix that can help to improve tissue reconstruction with a strong strength to infection and to mechanical stress.

Method: We propose a prospective controlled not randomized single-center study involving 29 patients with SINBAD score 4 to 6 DFU had BTM applied in two years of observation. Indications for BTM application were exposed bone (72.41%), fascia (100%) and tendon (60%). The time to healing, infection rate, bearing damage and tissue cover were evaluated by multivariate analysis.

Results/Discussion: The rate of complete healing is 75.8% with full bone cover of 71.4% and fascia cover of 79.3%. The healing time is significantly lower than other literature reports, SINBAD 5 median value is 104 days (50-305) and SINBAD 6 median value is 110 (14-192). Early walking, against advised off loading, seems not to affect the epithelialization time, bone and tendons cover ($p>0.6$). The negative pressure wound therapy seems to affect only BTM delamination time ($p<0.03$), but not epithelialization time, bone and tendon cover ($p>0.5$). Only 3 patients fail treatment and 2 patients need overlaps with successful bone cover.

Conclusion: BTM is a safe and efficacy tool to improve the tissue strength and healing time in complex DFU. BTM in our experience could be overlaid multiple times for a thick granulation tissue.

OP045 The application and analysis of Indocyanine green angiography and Infrared thermal imaging in diabetic foot ulcer (DFU)

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ICG angiography provides real-time assessment of blood vessels up to a depth of 10mm beneath the body surface, while infrared thermal imaging detects body temperature, making it applicable in various plastic surgery fields. In this study, we demonstrate the correlation between Indocyanine green (ICG) angiography and infrared thermal imaging for evaluating tissue perfusion in diabetic foot ulcer (DFU) patients.

This study involved 29 DFU patients, and on the same day, wound evaluation, ICG and infrared thermal imaging were performed. Thermal imaging was captured first, and then 5cc of ICG was injected through a peripheral vein for perfusion assessment at 1 minute and 30 seconds. Results from CT angiography or MR angiography, if conducted previously, were compared with findings from ICG and infrared thermal imaging.

In two cases with clear wound necrosis, both ICG and infrared thermal imaging revealed reduced perfusion and temperature in the corresponding lesion areas. In two cases where ischemic wounds were present on the left foot, but reduced perfusion and temperature were observed in the right foot without any wounds, MR angiography confirmed the presence of occlusion in the right anterior tibial artery (ATA). In cases with ATA occlusion confirmed on CT, ICG and infrared thermal imaging revealed reduced perfusion in the angiosome supplied by the occluded ATA, while the angiosome supplied by the posterior tibial artery (PTA) appeared relatively normal.

ICG angiography and Infrared thermal imaging have clinical applications as objective indicators for evaluating not only wounds but also the condition of blood vessels.

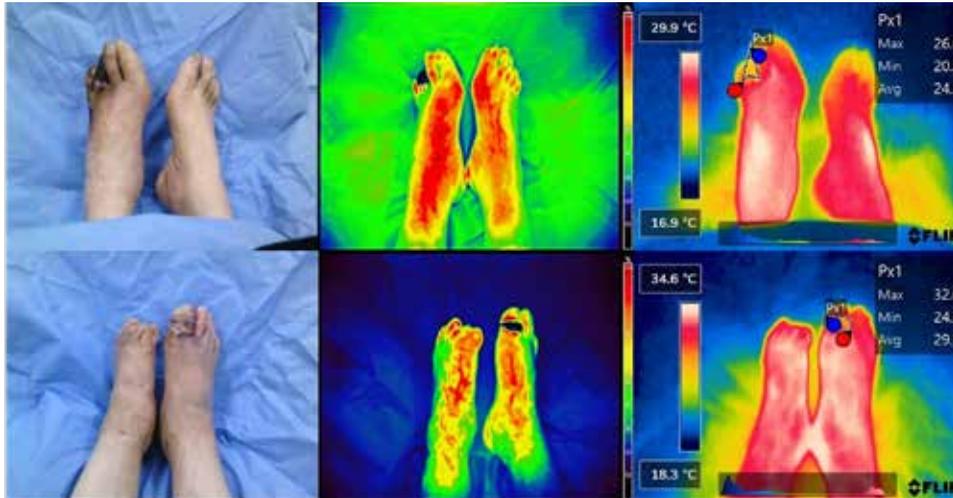


Fig. 1. Comparisons in patients with clearly visible necrotic lesions



Fig. 2. The patient has ischemic wound on his left great toe, but no wound on his right foot. However, the perfusion on ICG and temperature on thermal imaging was more decreased on his right foot compared to left foot. MR angiography showed that right ATA has multifocal stenosis and loss of flow patency at distal end.

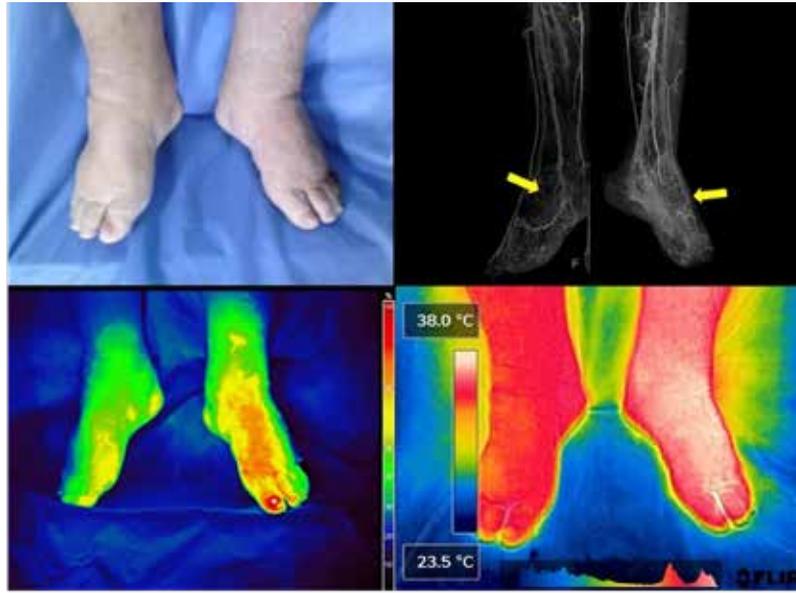


Fig. 3. The patient has ischemic wound on his left 5th toe, but no wound on his right foot. However, the perfusion on ICG and temperature on thermal imaging was more decreased on his right foot compared to left foot. MR angiography showed the narrowing of right ATA and interrupted flow at the dorsalis pedis level, while the flow of left ATA is well visualized up to the pedal arch level.

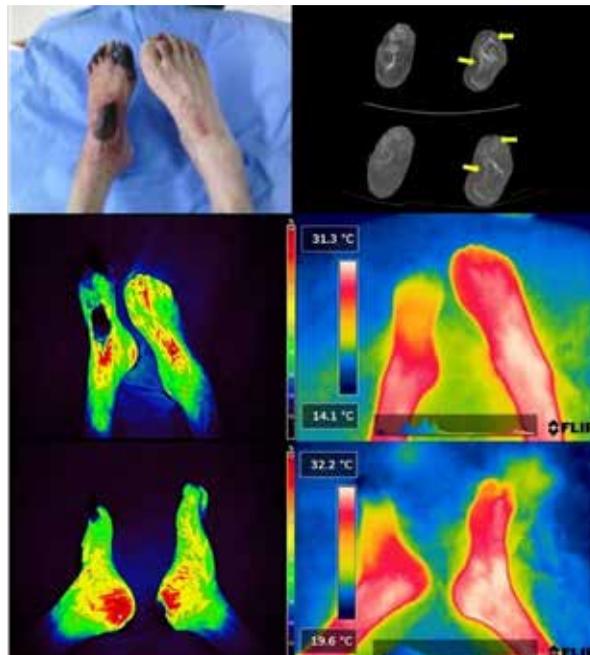


Fig. 4. ICG and infrared thermal imaging revealed reduced perfusion in the angiosome supplied by the occluded ATA, while the angiosome supplied by the posterior tibial artery (PTA) appeared relatively normal.

OP046 Determination of diabetic foot ulcer prevalence, risk levels and associated factors in adult diabetic patients in southeastern Anatolia region of Turkey

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Aim: The aim of the study was to determine the prevalence, risk, and predisposing factors of diabetic foot ulcers in adults with diabetes.

Method: This study is multi-centered descriptive cross-sectional research. Data were collected between June 2022 and November 2022 in seven hospitals. The study included 357 patients with diabetes. General demographic characteristics, medical history, laboratory and foot examination results, history of foot ulcer and/or amputation, skin and nail problems, peripheral sensory loss (10 g-Semmes-Weinstein monofilament) and vascular assessment were obtained. Logistic regression analysis was used to screen for factors affecting the diabetic foot.

Results/Discussion: The prevalence of diabetic foot ulcers was 17.1% (%13.2-%21.5; %95 CI). Among 296 individuals with diabetes without foot ulcers, 86.5% had risk level 0, 7.3% had risk level 1, 3.4% had risk level 2, and 1.4% had risk level 3. In regression analysis, the variables of peripheral arterial disease (Exp β : 3.781 – P =.027), history of ulcer (Exp β =2 6,180 – P <.001), edema (Exp β : 9.784 – P <.001), fungus between the toes (Exp β = 5.284 – P =.009) had a high effect on diabetic foot development.

Conclusion: The prevalence of diabetic foot ulcers was found to be approximately two out of every 10 patients with diabetes, and peripheral arterial disease, history of ulcers, edema, and presence of fungus between the toes were found to be among the risks predicting diabetic foot. The basic building blocks of diabetic foot prevention is planning for risk assessment, follow-up, and treatment.

OP047 May soft tissue infection influence the outcomes of diabetic foot osteomyelitis? Data from a retrospective study

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Aim: The study aimed to assess the outcomes of patients with diabetic foot osteomyelitis (DFO), comparing cases with and without soft tissue infection (STI).

Method: The study is a retrospective observational study including consecutive patients who referred to a specialized diabetic foot service due to DFO located in the forefoot (toes and rays). Patients were categorized in two groups: DFO with STI (type 1) and DFO without STI (type 2). All patients were managed by a conservative surgical approach aiming to remove only the infected bone in association to the antibiotic therapy, evaluated for each specific case. After 1 year of follow-up, the following outcomes were evaluated and compared between groups: healing, healing time, minor amputation, major amputation, hospitalization.

Results/Discussion: Overall, 166 patients were included. The mean age was 68.5±13.2 years, 94.9% of them were affected by type 2 diabetes with a mean duration of 19.3±7.1 years; 52.4% showed peripheral arterial disease (PAD), 4.9% had severe infection with sepsis at the baseline. One hundred forty-four patients (68.7%) had type 1 DFO, while 52 (31.3%) had type 2 DFO. The outcomes for type 1 and type 2 DFO were: healing (95.6% vs 52%, p=0.005), healing time (7.8±5.8 vs 4.6±2.7 weeks, p= 0.0002), minor amputation (13.1 vs 3.8%, p=0.04), major amputation (0 vs 0%, ns), and hospitalization (66.7 vs 48.1%, p=0.002) respectively.

Conclusion: Patients with DFO complicated by STI showed higher risk of hospitalization and minor amputation, and longer healing times in comparison to those without STI.

OP048 Agreement in illness perceptions between caregiver-proxy and patient self-report in diabetic foot ulcer: associations with foot self-care behaviour and caregiving burden

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Aim: Diabetic foot ulcers (DFU) are chronic, complex and costly. Alignment between patients and caregivers' perspectives in DFU care is contingent upon context. This study aimed to explore the level of agreement between patient-caregiver proxy reports of illness perceptions of patients with DFU and associations with foot self-care behaviour and caregiving burden.

Method: Fifty primary care patients (male 58%) with diabetic foot ulcer and their caregivers (N=50, male 32%) completed the Brief Illness Perception Questionnaire (BIPQ) between April to Oct 2022. Patients also completed Diabetic Foot Self-care Behaviour Scale and caregivers completed the Zarit Burden Interview.

Results/Discussion: Intraclass correlation coefficient were mostly good across all dimensions of BIPQ. The relatively high level of agreement was also reflected by paired samples t tests with the exception of "identity" where proxy-rating was significantly higher than self-rating, suggesting that caregivers observed more DFU symptoms than patients perceived. Three different groups (i.e., similarly low, similarly high, conflicting perceptions) were constructed, reflecting directional discrepancies between patient-caregiver dyads in terms of their illness perceptions. The proportion of dyads' with similarly low or high BIPQ scores was high (up to 72%). Similarity/dissimilarity of illness perceptions such as illness coherence and treatment control were associated with foot self-care behavior and caregiving burden, respectively, even after controlling for the effects of the patients' own perceptions.

Conclusion: There was moderate to strong patient-caregiver dyads agreement on illness perceptions between DFU patients and caregivers. Agreement between patients' and caregivers' illness perceptions may predict foot self-care behaviour and caregiving burden.

OP049 Interprofessional care for people living with diabetes and at-risk foot in low- and middle-income countries (LMICs) and/or humanitarian crises: the approach of the International Committee of the Red Cross (ICRC)

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Aim: Most people with diabetes live in LMICs. Diabetic foot ulcers account for 50-70% of non-traumatic amputations, representing up to 40% of total amputations in settings of the International Committee of the Red Cross (ICRC).

Method: The ICRC generated a comprehensive approach, in collaborations with Geneva University Hospitals, D-Foot International, Université Numérique Francophone and other stakeholders, to provide interprofessional (nurses, doctors, physiotherapists, orthoprosthesis, psychologists) diabetes care in LMICs and humanitarian contexts. Resulting in a blended interprofessional training program based on 3 pillars:

- 1) e-learning, (including 3 woundcare modules),
- 2) 5-day hands on course,
- 3) monthly post-course meetings.

Results/Discussion: After having followed the e-learning, 22 professionals from Lebanon, Syria, Jordan, and Iran were trained in Beirut (March 2023), resulting in a learners' confidence increase from 3.39 to 4.22 (5-point scale).

Upon return, at each participant's workplace, shared patient management plans allowed patients to benefit from interprofessional skills on woundcare, offloading and motivational interviews.

The first 4 virtual meetings, attended by many learners, allowed to present current activities and situations, and exchange experiences. Overall, feedback (patients/professionals) was highly positive.

The region's unrest led to suspend these meetings, reminding us of the vulnerability of people with chronic illnesses in humanitarian crisis.

Conclusion: To healthcare personnel and patients benefit in LMICs and humanitarian contexts, this inter-institutional partnership allowed to develop a global course on diabetes, with a strong approach on woundhealing and woundcare. Based on a teamwork approach it contributes to strengthening professional skills, improving overall care of people living with diabetes.

Dressings

OP050 Can anastomotic leakage be prevented in ischemic colon anastomosis? Rat models with Dermalix

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Aim: To evaluate the effect of Dermalix®(Dx) on wound healing and anastomotic leakage in a rat ischemic colon anastomosis model.

Method: In the design of the study, 40 rats were divided into 3 groups; negative control (10 rats), control (15 rats) and experimental (15 rats). Laparotomy was performed in the negative control group, ischemia and end-to-end colon anastomosis was created in the control group and in the experimental group, ischemia was created and Dx application was performed with end-to-end colon anastomosis. The rats were sacrificed on the 7th postoperative day, and burst pressure was measured in the resected colon anastomoses, and the presence of adhesion, histopathological data were evaluated.

Results/Discussion: Limited abscess formation due to anastomotic leakage was observed in 2 rats in the control group and in 1 rat in the experimental group. Burst pressures was calculated as 134.7 mmHg in the control group and 194.7 mmHg in the experimental group. There was a statistically significant increase in burst pressure in the experimental group ($p=0.005$). No statistically significant difference was found in neutrophil infiltration, local inflammation, epithelial regeneration and granulation tissue formation, which are the first stages of wound healing. Neovascularization and collagenization were more prominent in the experimental group ($p=.00$, $p=0.032$), and it was observed that Dx contributed to wound healing by increasing neovascularization. There was no significant difference between foreign body reaction and adhesion formation.

Conclusion: Dx is seen as a promising technology in preventing anastomotic leakage, especially considering its positive effects on burst pressure, neovascularization and collagenization.

OP051 Subvacuum environment-enhanced cell migration promotes wound healing without increasing hypertrophic scars caused by excessive cell proliferation

Jian Jin^{1,2}

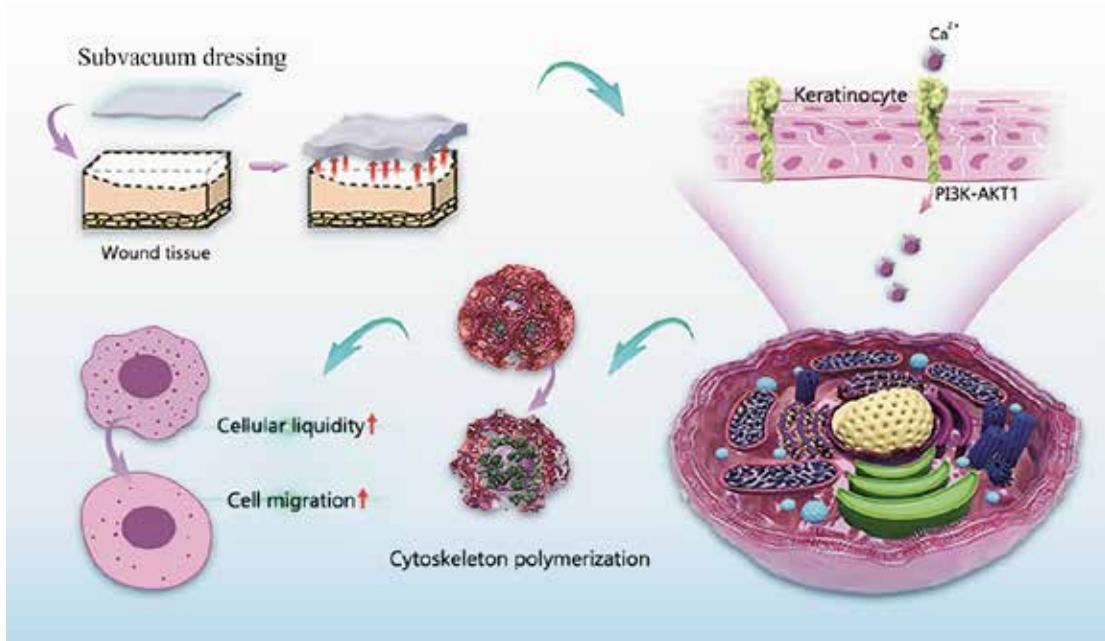
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Aim: Cell migration and proliferation are conducive to wound healing; however, regulating cell proliferation remains challenging, and excessive proliferation is an important cause of scar hyperplasia. Here, we aimed to explore how a subvacuum environment promotes wound epithelization without affecting scar hyperplasia.

Method: Human immortalized keratinocyte cells and human skin fibroblasts were cultured under subvacuum conditions (1/10 atmospheric pressure), and changes in cell proliferation and migration, target protein content, calcium influx, and cytoskeleton and membrane fluidity were observed. Mechanical calcium (Ca^{2+}) channel blockers were used to prevent Ca^{2+} influx for reverse validation. A rat wound model was used to elucidate the mechanism of the subvacuum dressing in promoting healing.

Results/Discussion: The subvacuum environment was observed to promote cell migration without affecting cell proliferation; intracellular Ca^{2+} concentrations and PI3K, p-PI3K, AKT1, p-AKT 1 levels increased significantly. The cytoskeleton was depolymerized, pseudopodia were reduced or absent, and membrane fluidity increased. The use of Ca^{2+} channel blockers weakened or eliminated these changes. Animal experiments confirmed these phenomena and demonstrated that subvacuum dressings can effectively promote wound epithelization.

Conclusion: Our study demonstrates that the use of subvacuum dressings can enhance cell migration without affecting cell proliferation, promote wound healing, and decrease the probability of scar hyperplasia.



OP052 Evaluation of alginate wound dressing loaded with antibiotics, growth factors and silver ions for the treatment of complicated infected wounds: A preclinical study

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Aim: The purpose was to evaluate the potential effects of wound dressings based on modified alginate matrices with antibiotics and growth factors.

Method: Fifty white rats were immunosuppressed with the drug Pristane beforehand. Two full-thickness skin wounds were given and were then infected with a mixture of *St. Aureus* and *Ps. auregenosa* to form complex infectious purulent wounds. The rats were randomly divided into three groups. The control group received no treatment. Group 2 received standard protocol treatment including daily dressings with disinfectant solutions. Group 3 received treatment with modified dressings in two phases. The first stage was a dressing material containing the antibiotic Cefepime, and after 3 days the second stage was changed to an alginate-coated dressing material containing the growth factor Fb2. The wound healing process was evaluated histologically, microbiologically and the area of purulent plaque was measured. A significance level of $p=0.05$ was taken for statistical analysis; (Student's test)

Results/Discussion: The results of the bacteriological study demonstrated the clear effectiveness of the alginate coating, the time to wound healing by reducing the area and also contributed to a more active appearance of granulation tissue as revealed on the basis of histological examination. Student's test concluded that the use of the coating affected the wound healing rate.

Conclusion: The administration of alginate wound dressings containing antibiotics and growth factors appears to be able to accelerate the healing process of complicated suppurative wounds in experimental conditions in a rat model compared to the general standard of care.

OP053 Optimizing healing: Unveiling the M.O.I.S.T approach to local chronic wound management- A retrospective analysis

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Aim: Chronic wounds are a common problem in aging population. The wound bed preparation concept- M.O.I.S.T. is applied to optimize wound healing. We aim to identify the healing rate within six months and factors associated with wound healing after implementing the M.O.I.S.T. concept in chronic wounds.

Method: Retrospective 60 chronic wounds patients treated with the M.O.I.S.T. concept from 1 January 2020 to 31 September 2023 at the Faculty of Medicine, Ramathibodi Hospital, Mahidol University were collected and analysed using chi-square and student t-test. The step of factor selection was analysed using logistic regression for the final model. The wound healing rate was estimated using a log-rank test and presented by the Kaplan-Meier curve.

Results/Discussion: Sixty chronic wounds, including 20 DFUs, 20 VLU and 20 stage IV pressure injuries, were analyzed. The wound healing rate was 83% at six months, with median time to heal was 2 months. The healing rate of DFU, VLU and PI were 85%, 95%, and 70%, with median healing time of 2.1, 0.6, and 4.1 months, respectively. The univariate factors associated with the healing rate were BMI., topical hemoglobin, cleansing solution, topical antibiotic and nutrition support. After model selection, factors associated with the healing rate were those who received Granudacyn cleansing and topical antibiotic with OR 35.61 (95%CI; 1.38, 913.79) and 0.005 (95%CI; 0.0001, 0.17), respectively.

Conclusion: This retrospective cohort study proves the success of the M.O.I.S.T. concept in treating chronic wounds. Further, large cohort and randomized control studies must elaborate on these results.

OP054 Revolutionizing hard-to-heal wounds with fish skin acellular dermal matrix: pioneering excellence and efficacy

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Aim: Addressing the challenge of treating hard-to-heal wounds, defined as those unresponsive to over four weeks of standard care or complex for simple procedures, this study evaluated the efficacy of Fish Skin Acellular Dermal Matrix (ADM) in treating a range of such wounds, including diabetic foot ulcers, pressure ulcers, bursitis, and autoimmune-related wounds.

Method: From 2020 to 2023, 76 patients were treated with Fish Skin ADM, with comprehensive assessments conducted on 27 individuals. To be included less than a 25% change in wound size two weeks prior to treatment commencement. Fish Skin ADM was implemented at various stages, including conservative care, preoperative and postoperative complication periods. Wounds were evaluated for size and depth reduction, with treatments ranging from 1 to 4 sessions at 1-2 week intervals based on the wound's response.

Results/Discussion: Of the 27 patients, wound sizes ranged from 3.1 to 132.7 cm². In an impressive outcome, complete wound healing was achieved in sixteen patients within six weeks, and the overall healing success rate was 93.0%. The mean time to achieve a 50% reduction in wound size was approximately 5.11 weeks.

Conclusion: These findings suggest that Fish Skin ADM is an effective treatment for hard-to-heal wounds, exhibiting high rates of healing and size reduction. The versatility of its application across different stages of wound care, underlines its potential as a valuable tool in advanced clinical wound management.

Kerecis® Omega3 Wound™ (Kerecis, Isafjordur, Iceland)

Diabetic Foot 2

OP055 One or two types of diabetic foot osteomyelitis? Comparison between patients with peripheral arterial disease and without

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Aim: The study aimed to evaluate the outcomes of patients with diabetic foot osteomyelitis (DFO), comparing subjects with and without peripheral arterial disease (PAD).

Method: The study is a prospective study including a population of patients affected by a DFO located in the forefoot. All patients were managed by a surgical conservative approach defined by the removal of the infected bone, in association to the antibiotic therapy based on each specific clinical case. Patients were divided in two groups: those with PAD (ischaemic-DFO) and those without (neuropathic-DFO). After 1 year of follow-up, the following outcomes were evaluated and compared between groups: healing, healing time, minor amputation, major amputation, hospitalization, need for surgical re-intervention.

Results/Discussion: One hundred sixty-six patients were included, 87(52.4%) of them had ischaemic-DFO and 79(47.6%) neuropathic-DFO. Patients with ischaemic-DFO in comparison to neuropathic-DFO were older (72.5 ± 9 vs 64.1 ± 15.5 years, $p < 0.0001$), had longer diabetes duration (21.8 ± 5.6 vs 16.4 ± 7.6 years, $p < 0.0001$), higher rate of dialysis (13.8 vs 1.3%, $p = 0.001$) and ischaemic heart disease (79.3 vs 12.7%, $p < 0.0001$). The outcomes for ischaemic-DFO and neuropathic-DFO were: healing (96.5 vs 97.5%, $p = 0.7$), healing time (7.8 ± 6.2 vs 5.7 ± 3.7 weeks, $p = 0.01$), minor amputation (16.1 vs 3.8%, $p = 0.006$), major amputation (0 vs 0%, ns), hospitalization (69 vs 51.9%, $p = 0.02$), surgical re-intervention (14.9 vs 8.8%, $p = 0.004$). PAD resulted an independent predictor of minor amputation, hospitalization, and surgical re-intervention.

Conclusion: Ischaemic-DFOs were characterized by longer healing time, more cases of minor amputation, hospitalization, and surgical re-intervention in comparison to neuropathic-DFOs. PAD independently increased the severity of DFO.

OP056 Surgical site infections and their risk factors in patients with diabetic foot treated in tertiary podiatric centre

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Aim: The aim of our study was to analyze the SSI occurrence in patients with DF treated in our tertiary podiatric centre.

Method: We have analyzed retrospectively 35 patients with DF whose underwent (1-3/2023) surgical procedures.

Results/Discussion: SSIs have appeared in 11% of study subjects within 7 days (SSI7-4/35) and in 46% (16/35) within 30 days after surgical procedures (SSI30). Higher occurrence of microbes before surgery was found in patients with SSI7 compared to non-infected study subjects (2.8 ± 1.5 vs 1.3 ± 1.1 pathogen; $p = 0.03$). Patients suffering from SSI30 were characterized by higher incidence of multiresistant bacteria (44% vs 10.5%; $p = 0.0498$). Other study parameters such as age, gender, ASA score, diabetes control, renal replacement therapy, type of procedure, localization of surgery, osteomyelitis, duration of hospitalization or surgical procedure and vascular status did not differ significantly between patients with DF with and without SSI. Wound healing was significantly worse (43.8% vs 94.7% of healed patients; $p = 0.0017$) and long-lasting (14.1 ± 3.8 vs 7.7 ± 5.1 weeks; $p = 0.01$) with longer ATB administration (9.4 ± 4.5 vs 4.3 ± 2.5 weeks $p = 0.0003$) and higher frequency of reoperations (0.75 ± 0.86 vs 0; $p = 0.0002$) in patients with SSI30 compared to non-infected subjects. According to logistic regression analysis, the occurrence

of multiresistant pathogens was an independent predictor of SSI30 development ($p=0.019$; OR 10.7(95% CI 1.23-93.2). We try to implement preventive NPWT application into routine podiatric postoperative care. The results of this approach will be included in the presentation.

Conclusion: SSIs frequently complicate podiatric outcomes - prolong wound healing and lead to higher numbers of reoperations. We try to avoid these cost-consuming abnormalities by implementation of modern therapeutic approaches.

NU20-01-00078, LX22NPO5104

OP057 Role of Platelet Rich Plasma (PRP) as an adjunct therapy for the management of diabetic foot ulcer: An observational study in a multidisciplinary diabetic foot care centre

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Aim: Platelet rich plasma (PRP) is a rich source of locally active growth factors and cytokines that improve the conditions of wound healing. PRP is given as an adjunct to treat diabetic foot ulcers (DFU) which reduces healing time and chances of limb amputation.

Method: This observational study was conducted in a multidisciplinary diabetic foot care centre from January 2022 to August 2023 on patients for treatment of DFUs both OPD and IPD. Fifty patients of either sex with DFUs selected. *Group A:* Patients with non-ischemic DFUs and were treated with a novel modality with PRP injection in the healing edge and the floor of the targeted ulcer. *Group B:* Patients with non-ischemic DFUs who had usual standard care.

Results/Discussion: The rate of complete healing for ulcers in group A was achieved in 14 patients (56%) at the fifth week, while 9 patients (36%) were healed completely by the sixth week and only 2 patient (8%) healed in the ninth week. 32% (n=8 cases) in group B showed complete healing rate by eighth week and 24% (n=6 cases) were healed by ninth week while 44% (n= 11 cases) were healed in the tenth week. P value was statistically significant <0.001 between the groups.

Conclusion: PRP is a novel modality in treatment of diabetic foot ulcer which is feasible, safe and effective with high rate of limb salvage and clinical improvement.

OP058 Prospective analysis of revascularization pathways (RP) in diabetic foot ulcers (DFU) patients with critical limb ischemia (CLI) – A baseline analysis from the Diabetic Foot Valley Tuscany (DFVT) Project

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Aim: To evaluate the adequacy of RP in the DFVT network, we performed a prospective analysis in DFU patients with CLI.

Method: Fifteen DFVT centers were asked to produce data on the first ten patients/center prospectively scheduled for revascularization for Ischemic DFU, May/September 2023. Number and characteristics of patients, pathology and procedures, procedural timing and outcomes [Rates of Healing (HR), Re-Stenosis (RS), Major Amputation (MA), Death (D), respectively] in a 3-month follow up, medical therapy at discharge, were all sorted out from a dedicated online survey circulating in the network.

Results/Discussion: 49 DFU patients from 11 centers (16F/33M; age 73+/-8 yrs) underwent 45 revascularizations (44 endovascular/1 surgical) with 39% HR, 12% RS, 0 MA and 0 D. Delta-T enrollment/procedure was 20.1+/-25.7

dd (range 5 – 45 dd); most frequently affected arteries were Lateral Plantar (LP) 71.4%, Posterior Tibial (PT) 67.3%, Dorsalis Pedis (DP) 65.3% and Anterior Tibial (AT) 63%; while the rates of revascularization of same arteries were 18.4% LP, 44.9% PT, 22.4% DP and 22.4% AT, respectively.

Pre-/post-procedural trans-cutaneous oxygen tension (TcPO₂) as a measure of efficacy of revascularizations was available only in 11/49 pts, with a difference of +15.2+/-11.4 mmHg.

At discharge, statins were prescribed to 65%, SGLT-2i to 35%, low-dose rivaroxaban to 16% and GLP1 analogues to 10% of patients, respectively.

Conclusion: The baseline analysis of RP in DFVT network highlighted procedural delays, suboptimal efficacy and not-at-target medical therapy at discharge; future - already planned - interventions inside the DFVT project will try to fix these criticalities.

OP059 Reulceration rates after healing in patients with neuroischemic diabetic foot ulcers treated with and without sucrose octasulfate impregnated dressings. A one-year comparative prospective study

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Aim: To compare recurrence rates after a 1-year follow-up period of healed neuroischemic diabetic foot ulcers after treatment with or without sucrose octasulfate impregnated dressings.

Method: Ninety-two patients presenting with a neuroischaemic DFU after healing were prospectively followed during 1-year. Patients were assessed monthly in diabetic foot unit. Reulceration, minor, major amputation and death were recorded. Patients were divided into two groups for the analyses; patients treated with a sucrose octasulfate impregnated dressing (treatment group) and patients treated with any other local treatment different to sucrose octasulfate impregnated dressings (control group)

Results/Discussion: Fifty patients in the treatment group and forty-two patients in the control group were included. Fourteen (28%) patients suffered from a reulceration event in the treatment group compared to 28 (66.7%) in the control group, $p < .001$. Time to recurrence in the treatment group was 10 [16.26 – 2.75] and 11,50 [30.75- 5.25] weeks in the control group, $p = .826$. Seven patients (14%) and 3 patients (7%) in the treatment and control groups respectively, required a minor amputation ($p = .249$). Additionally four patients suffered a major amputation in the treatment group whilst no case was documented in the control group ($p = .05$), due to more ischaemic DFUs in the treatment group. 7 (14%) patients died in the treatment group

Conclusion: The treatment with sucrose octasulfate impregnated dressing reduce reulceration rates after healing compared to neutral dressings. It may improve clinical characteristics of the foot in patients with impaired microcirculation status and thus, it could prevent further reulcerations.

OP060 Topical desiccating agent in the emergency treatment of diabetic foot attack

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Aim: To present eight cases with diabetic foot attack (abscess with necrotizing fasciitis) treated with Topical Desiccating Agent (TDA) during their initial surgical intervention.

Method: Eight patients were included for this case series. Four of the patients were referred to our department after other hospitals recommended below-knee amputations for their diabetic foot emergencies and the other four patients

directly applied to our center. Following initial evaluation, resuscitation, and stabilization, surgical drainage and TDA application was performed.

Results/Discussion: Demographic characteristics of the patients and their short medical history is summarized in Table 1. Biochemical blood results upon admission and during follow-up are given in Table 2.

In all cases the wound bed moved to granulation state within the first seven days of the initial procedure. The infection indicators and metabolic parameters and clinical state of all patients improved and stabilized following the procedure with 1 application of TDA. With all patients the indicated major amputation was prevented. Four minor amputations were performed (3 of 1st toe, 1 of 5th toe).

Four patients are still receiving inpatient care for their wounds, the remaining four are already grafted between 5 – 16 weeks after the initial emergency surgery.

The treatment course of two patients are presented below as Figures 1 to 10.

Conclusion: TDA is indicated for the treatment of chronic wounds whose healing is stalled by biofilm infection. In the cases presented here, TDA was employed during the acute phase of abscess and necrotizing fasciitis with deep tunnels within the wound following the initial surgical intervention to control the bacterial load and with satisfactory outcomes.

	Age/ Gender	DM duration	Story of the foot problem	Surgical Treatment	Result
Case 1	62 / M	23 years	Cracked heel 3 months ago, redness and pain for a week	drainage + debridement	Grafted after 16 weeks
Case 2	61 / M	20 years	Bullous lesion on the plantar side of the 1st toe, purulent discharge for a month	1st toe amputation + MT head resection + drainage + incision of the ankle skin-creating a tunnel	Grafted after 12 weeks
Case 3	70 / F	25 years	Trauma related wound on the dorsum of the R-foot for 1 week	drainage + debridement	Grafted after 10 weeks
Case 4	58 / F	25 years	Draining wound on L-foot for 5 months after 5th toe amputation, progressive reddening and pain for 4 days	Debridement + drainage + 5th mt resection	In clinic, graft plan in 2 weeks
Case 5	42 / M	10 years	0.5x0.5 cm “hole” like wound between 4th and 5th toes of the L-foot for 3 months. Purulent discharge, reddening of the lateral part of the foot for 1 week	drainage + debridement	Grafted after 5 weeks
Case 6	49 / M	4 years	Drainage from the callus on the 1st toe of the R-foot. Swelling-darkening in color of the 1st toe of the R-foot for 10 days	1st toe amputation + MT head resection + debridement + drainage	In clinic, NPWT sessions
Case 7	58 / M	25 years	Discoloration of the 5th toe for a month, pain, discharge for a couple of days	5th toe amputation with MT head resection + debridement + drainage	Cardiology ICU for decompensated CHF, NPWT sessions
Case 8	72 / M	6 years	Redness and discharge from L-foot 1 st toe and between 1 st and 2 nd toe for 3 days	1 st toe amputation with MT head resection + sesamoids’ excision + debridement + drainage	In clinic, NPWT sessions

Parameter (Reference interval-unit)	C-reactive protein (0 - 5 mg/L)				Glucose (74 - 99 mg/dL)				Sodium (136 - 145 mmol/L)				White blood cells (4.5 - 10 10 ³ /μL)				Hemoglobin (13 - 17 g/dL) (12 - 16 g/dL)				Creatinine (0.7 - 1.2mg/dL) (0.5 - 0.9 mg/dL)				LRINEC Score (Day 0)	HbA1c (Day 0) (4.0 - 6.1 %)
	Day 0	Day 7	Day 14	Day 21	Day 0	Day 7	Day 14	Day 21	Day 0	Day 7	Day 14	Day 21	Day 0	Day 7	Day 14	Day 21	Day 0	Day 7	Day 14	Day 21	Day 0	Day 7	Day 14	Day 21		
Case 1	138	80	18	6	234	148	101	118	131	135	132	137	18.11	10.63	11.2	9.16	9.2	9.4	9.6	9.8	1.2	0.84	0.96	1.13	6	9.4
Case 2	228	71	16	12	273	129	100	97	123	132	130	133	14.17	8.16	7.78	6.41	8.8	8.9	9.7	10.1	0.97	0.78	0.84	0.86	9	9.4
Case 3	118	28	15	4	219	205	122	103	134	135	135	135	12.32	8.6	7.33	6.15	10.3	11.3	10.7	11.9	0.55	0.65	0.64	0.57	4	10.7
Case 4	331	74	41	31	446	142	157	139	123	133	135	135	15.2	5.89	5.83	5.37	7.6	8.3	8.5	9.1	1.14	0.79	1.01	0.88	10	10.7
Case 5	167	32	5	3	441	174	133	109	129	136	138	138	15.89	12.23	9.21	6.81	14.5	13.3	13.7	12.8	0.72	0.9	0.91	0.89	8	11.5
Case 6	241	68	27	12	502	114	112	105	128	133	137	141	20.87	11.63	8.96	8.37	11.9	11.1	11.4	12.3	1.42	1.02	1.21	1.07	8	11.8
Case 7	184	70			335	155			128	133			15.99	12.9			7.6	8.4			1.27	0.96			10	9.2
Case 8	261				266				131				26.03				9.4				1.57				11	11.1

Day 0: Initial blood work on admission

Day 7-14-21 values may represent ±1 day

LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score: The LRINEC score: a tool for distinguishing necrotizing fasciitis from other soft tissue infections. Wong CH et al. Crit Care Med. 2004 Jul;32(7):1535-41. doi: 10.1097/01.ccm.0000129486.35458.7d

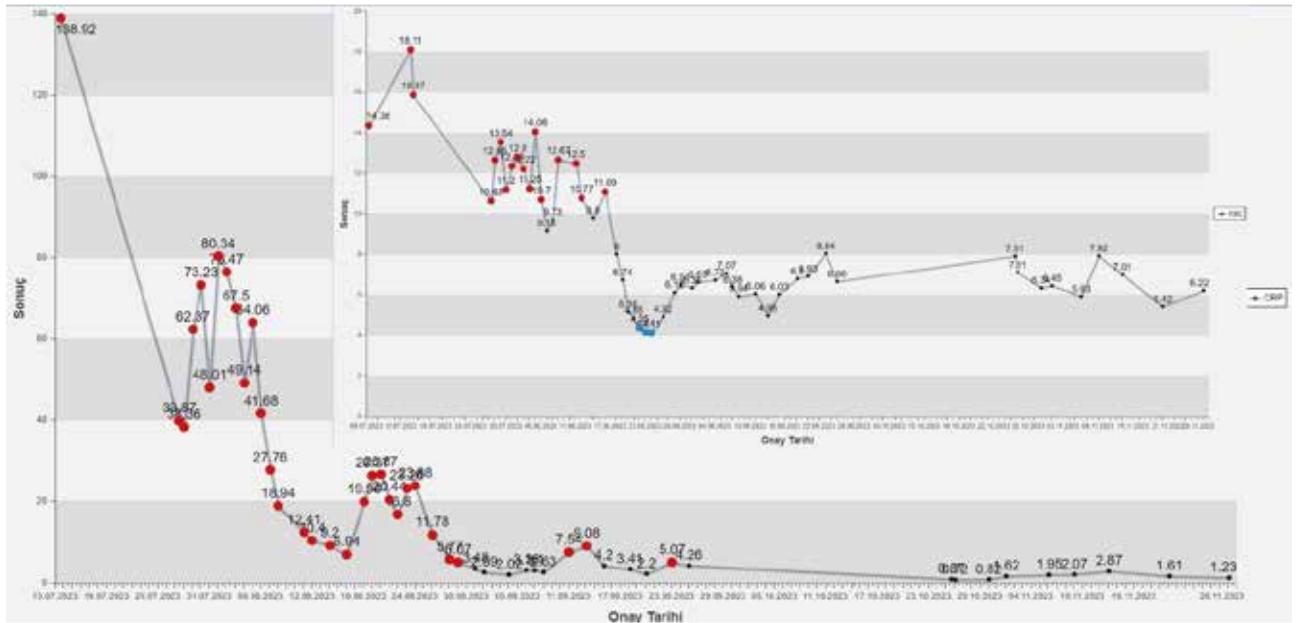




Figure 3 – Case 1- Initial surgical intervention: Debridement, abscess drainage, MSAC application



Figure 4 – Case 1- 10th day after initial intervention, healthy granulation tissue is evident



Figure 5 – Case 1- Wound is closed with a split-thickness skin graft

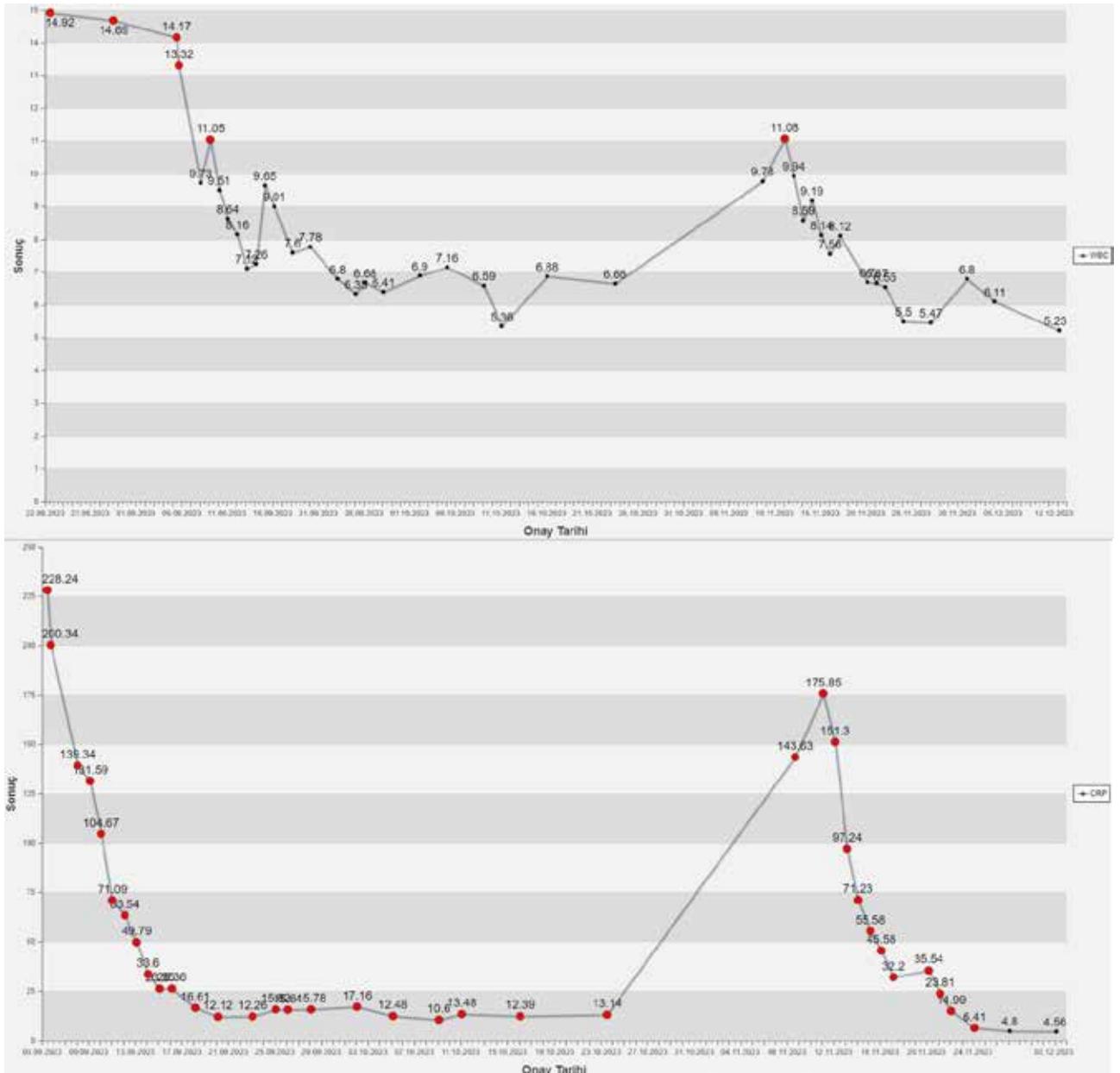


Figure 6 – Case 2- CRP and WBC levels (admission to discharge after grafting)



Figure 7 – Case 2- Left foot on admission



Figure 8 – Case 2 – Abscess drainage, tunnels through the skin and foot compartments (After 1st toe amputation)



Figure 9 – Case 2- MSAC application through the tunnels



Figure 10 – Case 2- Postoperative 7th day: red granulation tissue, partially sutured amputation defect



Figure 10 – Case 2- Acute neuroarthropathy with cellulitis, exploration of the wound, closure with split-thickness skin graft

Devices & Interventions 1

OP061 Can AI tell the difference between incontinence-associated dermatitis (IAD) and pressure ulcers? First steps to train an algorithm

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Aim: The KIADEKU project enables the transformation of nursing wound management by combining data science, the clinical expertise of wound experts and nursing science to develop and evaluate an AI application for incontinence-associated-dermatitis (IAD) and pressure ulcer (PU) wound management.

Method: The project consists of four lines: A review of new evidence in PU and IAD management, the development of an AI model to support nursing IAD and PU wound management, the subsequent evaluation in clinical care using a quantitative pre-post-intervention study and qualitative survey. The presented preliminary study illustrates the first steps of AI training.

Results/Discussion: We extracted about 14300 wound images from routine wound documentation from the HIS-systems of two German university hospitals of which 6500 met the inclusion criteria.

After plausibility checking and mapping of wound images with wound characteristics and metadata, due to suspected poor data quality, three independent annotators re-annotated the wound characteristics.

At the current time, we have annotated 1255 images, of which 449 had annotator deviations above or below the defined thresholds (pixel variance of the segmentation mask >0.01 , agreement of both wound type and severity in $\leq 50\%$ of annotators). In 184 images (14.66%) there were deviations in the segmentation mask, in 84 images (6.69%) in the wound type and in 129 images (10.28%) due to the classification of severity.

The annotators discussed and agreed on the images with deviations. In 5 cases they could not reach a consensus. Three of which were due to classification of IAD, two due to the decubitus classification and one due to the wound type. These data sets were excluded from the initial AI training and will be discussed with other experts in a Delphi process.

We used the remaining generated data to adapt pre-trained state-of-the-art network architectures to the domain of wound images using supervised transfer learning. We integrated Explainable AI methods to increase transparency and trust among end users. First attempts to propose a therapy with the AI achieved a precision up to 98%.

Conclusion: Preliminary results of the study indicate the feasibility of AI development based on retrospective wound images. However, in order to assess the potential of AI in nursing wound management, we need to complete clinical evaluation.

OP062 Integrating point-of-care bacterial fluorescence imaging and targeted debridement with continued wound measurement for enhanced wound area reduction monitoring

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Aim: This prospective observational study investigated the wound area reduction (WAR) outcomes in non-healing acute and chronic wounds. The relationship between bacterial autofluorescence signals and WAR was investigated. The area measurements were collected both manually and digitally, both methods were compared for accuracy.

Method: Twenty-six participants with 27 wounds of varying aetiologies were observed twice weekly for two weeks. Digital wound measurement, wound bacterial status assessment, and targeted debridement were done through a point-of-care fluorescence imaging device (MolecuLight® i: X, MolecuLight Inc, Toronto, Canada). Wound reduction rate (WAR) was calculated using baseline and last visit measurements. Statistical analyses, including t-tests, Fisher exact tests, Wilcoxon signed rank test for method comparison, and ANOVA for bacterial subgroups, were applied as pertinent. **Results/Discussion:** The overall average WAR was -3.80 cm² or a decrease of 46.88% (manual measurement) and -2.62 cm² or a 46.05% decrease (Digital measurement via MolecuLight® device); however, these differences were statistically insignificant. There were no statistically significant differences between the WAR of acute and chronic wounds ($p=0.7877$). A stepwise correlation between the WAR and the bacterial status classification per fluorescence findings was observed, where persistent bacteria resulted in worse WAR outcomes. Overestimation of wound area by manual measurement was on average 23%.

Conclusion: Fluorescence imaging signals were linked to the WAR outcome and could be considered predictive. Wounds exhibiting bacterial loads that persisted at the end of the study period had worse outcomes while those in which management was able to remove it effectively demonstrated greater WAR.

OP063 mHealth electroceutical bandage to decrease infection and accelerate healing of chronic ischemic wounds

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Aim: Current approaches to electroceutical wound therapy require frequent clinical sessions, incurring significant cost and inconvenience to patients. Repeated dressing changes disrupt and inhibit healing. The current study objective was to evaluate these paradigms in a translational study using exciflex, a mobile health (mHealth) electroceutical bandage that can be worn for up to 7 days, thereby delivering consistent therapy and minimizing wound bed disruption.

Method: A porcine model of large (6cm) chronic infected wound model was used. Sustained electroceutical therapy was delivered using exciflex for 6 minutes/hour with up to one week between bandage changes. Wound assessments, including wound bed temperature, blood flow and wound size were carried out at timepoints relevant to the wound healing pathway until treated wounds were healed. Wound swabs were collected at bandage changes to determine planktonic and biofilm wound bed burden.

Results/Discussion: Physiological markers of wound healing showed improvement for wounds treated with exciflex compared to a non-active wound dressing. exciflex treated wounds healed over 80% with 10 days of treatment. Wound infection also significantly decreased relative to untreated wounds.

Conclusion: exciflex delivers reliable mHealth electroceutical therapy for up to one week, minimizing unnecessary dressing changes and improving outcomes, allowing sustained delivery of therapy without unnecessary wound disturbance. exciflex is transparent over the wound bed, allowing the clinician to monitor wound status visually without removing the bandage. Electroceutical therapy delivered using the exciflex system improves healing rates compared to standard of care and reduces wound bioburden, providing an alternative to topical antibiotics.

OP064 Detection of bacterial biofilms in diabetic foot ulcers using a novel multimodal imaging device

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Aim: To evaluate the biofilm-detection capability of Illuminate Pro Max - a rapid, point-of-care, autofluorescence – based multimodal wound imaging and assessment device

Method: Bacterial biofilms play a major role in delayed healing of DFUs. Standard microbiological culture-based tests for biofilm detection are time-consuming and equipment intensive. This situation necessitates the need for a rapid, point-of-care biofilm detection tool. A clinical validation study was conducted on 139 diabetic foot ulcer patients. The wounds were imaged using Illuminate Pro Max. The results were compared against standard nitrocellulose-blotting method to confirm biofilm presence.

Results/Discussion: Of the 139 samples, 115 were biofilm-positive and 24 were biofilm-negative according to the blotting method. The device concurred with the positive blots and showed autofluorescence in 108 samples. Further, no autofluorescence was observed in 15 out of 24 negative samples. The device detected biofilms with 88.48% diagnostic accuracy and 93.9% sensitivity. The positive and negative predictive values for biofilm-detection were 92.3% and 68.2%, respectively.

Conclusion: The rapid, hand-held point-of-care imaging device can be an effective tool in detection of biofilm. The device could assist clinicians in rapidly assessing wounds and in the choice of appropriate wound management strategy.

OP065 Epidermal skin grafting: does it improve wound healing? – a systematic review and meta-analysis

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Aim: The aim of this review was to investigate the effect of epidermal skin grafting (ESG) on wound healing.

Method: For this systematic review and meta-analyses, we searched Embase, Medline, Cochrane CENTRAL register of Trials, Web of Science Core Collection, CINAHL and Google Scholar from database inception to September 18, 2023. The primary outcome was the proportion of completely healed wounds. We performed a meta-analysis of the primary outcome at three months on the observational data, resulting in a pooled proportion with a standard deviation.

Results/Discussion: The search yielded 837 articles of which 21 could be included in our systematic review. We found mainly observational studies and few RCTs (3). The percentage of healed wounds ranged from 19% to 100%. No complications with the donor site healing were reported. The meta-analysis showed a pooled proportion of healed wounds of 0.69 (95% CI 0.52; 0.84) at the three-month follow-up moment, although considerable heterogeneity was found (I² 0.86).

Conclusion: The results of our systematic review and meta-analysis suggest that ESG has a positive effect on wound healing in hard-to-heal wounds. ESG can be considered as an alternative treatment for SSG with less donor site morbidity. More randomized controlled trials with sufficient power are needed to confirm these findings.

OP066 Impact of wound hygiene incorporating antibiofilm gelling fiber dressing on hard-to-heal wounds: real-world evidence

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Aim: To evaluate the impact of Wound Hygiene (WH), a 4-step (cleanse, debride, refashion, and dress) biofilm-based wound management protocol, on hard-to-heal wounds.

Method: A prospective, real-world analysis of hard-to-heal wounds managed with WH incorporating a carboxymethylcellulose dressing containing ionic silver, ethylenediaminetetraacetic acid and benzethonium chloride¹ for approximately 4 weeks. The primary endpoint was change in wound volume from baseline to final assessment.

Results: 693 wounds were included in the analysis (median treatment duration 31 days). Most healthcare professionals were general nurses (50%) or nurse practitioners (38%). Patient homes (27%) and community clinics (27%) were the most common clinical settings. Venous leg ulcers were the most common wound type (26%) followed by pressure ulcers/injuries (17%); duration of wounds was >12 months in 21%. At baseline, the mean wound volume was 57.8 cm³. At final assessment, the mean wound volume was 17.2 cm³, corresponding to an 80% reduction from baseline (p<0.001). At baseline, 66% were static or deteriorating; at final assessment, this had decreased to 5%, and 94% improved or healed. Exudate levels were moderate or high in 69% at baseline which decreased to 25% at final assessment (p<0.001). Suspected biofilm and local wound infection decreased, from 79% and 43%, respectively, at baseline to 18% and 3%, respectively, at final assessment (p<0.001 for both).

Conclusion: Management with WH resulted in healing or improvement in nearly all hard-to-heal wounds by final assessment, with a statistically significant decrease in wound volume, exudate level, suspected biofilm, and local infection.

1. Aquacel™ Ag+ Extra

OP067 Investigation of the wound healing effects of NPWTi-d. Comparison with conventional NPWT

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Aim: Negative Pressure Wound Therapy (NPWT, V.A.C.®) is a standard treatment for chronic wounds. In this study, we compare NPWTi-d (Negative Pressure Wound Therapy with instillation and dwelling) with conventional NPWT for hard-to-heal wounds.

Method: We compared cases that used NPWTi-d from August 2017 to September 2018 (id group) with cases that used NPWT from April 2010 to July 2017 (conventional group: c group). We examined the number of cases, age, gender, wound type, time to achieve 80% or more granulation tissue formation, and discontinuation due to infection or ischemia.

Results/Discussion: The id group had 45 cases, and the c group had 66 cases. The average age was 65.5±12.0 years in the id group and 64.5±15.0 years in the c group. Cases discontinued due to infection or ischemia were 7 cases (19.4%) in the id group and 7 cases (10.6%) in the c group. The median time to granulation tissue formation was 20 days (95% CI: 14-24) in the id group and 22 days (95% CI: 20-30) in the c group (p=0.598). Stratified analysis of the id group showed that the time to granulation tissue formation was 14.0 days (95% CI: 11-19) for immersion time of 5 minutes or more (5-10 minutes) and 25.5 days (95% CI: 20-53) for immersion time of less than 5 minutes (1-3 minutes) (p=0.00007).

Conclusion: A longer dwelling time of 5 minutes or more for NPWTi-d led to a shorter time until granulation tissue formation compared to conventional NPWT.

Translational Science

OP068 Quantitative insights and visualization of antimicrobial tolerance in mixed-species biofilms

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Aim: Biofilms are a major problem in hard-to-heal wounds. Moreover, they are composed of different species and are often tolerant to antimicrobial agents. At the same time, interspecific synergy and/or competition occurs when some bacterial species clash.

Method: For this reason, the tolerance of two dual-species wound biofilm models of *Pseudomonas aeruginosa* and *Staphylococcus aureus* or *Enterococcus faecium* against antimicrobials and antimicrobial dressings were analyzed quantitatively and by confocal laser scanning microscopy (CLSM). The results were compared to findings with planktonic bacteria.

Results/Discussion: Octenidine-dihydrochloride/phenoxylethanol and polyhexamethylene biguanide (PHMB) irrigation solutions showed a significant, albeit delayed reduction in biofilm bacteria, while the PHMB dressing was not able to induce this effect. However, the cadexomer-iodine dressing caused a sustained reduction in and killed almost all bacteria down to 10²cfu/mL within 6 days compared to the control (10¹⁰cfu/mL). By means of CLSM in untreated human biofilm models, it became evident that *P. aeruginosa* dominates over *E. faecium* and *S. aureus*. Additionally, *P. aeruginosa* appeared as a vast layer at the bottom of the samples, while *S. aureus* formed grape-like clusters. In the second model, only a few *E. faecium* were visible, in contrast to the vast layer of *P. aeruginosa*. It seems that the different species avoid each other and seek their respective niches.

Conclusion: These mixed-species biofilm models showed that efficacy and tolerance to antimicrobial substances are nearly species-independent. Their frequent application appears to be important. The bacterial wound biofilm remains a challenge in treatment and requires new, combined therapy options.

OP069 Efficacy of chemical debridement agent on a human explant model infected by biofilm

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Aim: To demonstrate the efficacy of an anti-biofilm agent in a validated human tissue model.

Method: The model used human skin biopsies that were 'wounded' using punch biopsy to yield an open area without overlying epidermis. The tissues were placed in culture for up to 48 hours. Methicillin Resistant *Staphylococcus aureus*, *Acetivobacter baumannii* and *Pseudomonas aeruginosa* were chosen as representative organisms characteristically observed in chronic wounds. Overnight broth cultures were used to provide bacteria for inoculation onto the tissue surface. After inoculation the tissues, with bacteria, were co-cultured for 48 to 96 hours, depending on organism to yield an established biofilm. A recently available device designed to eradicate biofilms in wounds* was used to assess its ability to eradicate biofilms in the present model.

Results/Discussion: The device* eradicated established biofilms in 30 seconds with a sustained effect up to 5 minutes following application while preserving viable tissue. Application of the device for 30 seconds to 5 minutes resulted in a 'wound' bacterial reduction of more than four to more than six logs of bacteria, depending on the organism. Histology performed after the application of the device demonstrated preservation of normal tissue.

Conclusion: In the absence of acceptable preclinical models, the ability to use a validated translational model provided the ability to screen the clinically expected effects of an agent designed to eradicate wound biofilms*. The methods relied on accepted microbiological and histological methods for assessment and as a result, can be used to determine outcomes in clinical trials.

* Debrichem®

OP070 Evaluation of a novel negative pressure wound therapy dressing (NPWT): Preclinical porcine model, proteomic assessment, and finite element analysis

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Aim: Frequent dressing changes are required when using reticulated open cell foam (ROCF)[^] with NPWT* as tissue ingrowth may occur if left in place for >3 days. A novel, peel and place dressing[†] was designed to address this challenge.

Method: The study was approved by an Institutional Animal Care and Use Committee (IACUC). Animal care complied with all applicable national and local regulations. Eleven swine received full-thickness wounds, dressing applied, and treated with continuous -125mmHg NPWT for 7 days (no dressing change). Tissue was collected for protein extraction and excised for histology, wound healing biomarkers quantified using multiplex immunoassays, and granulation tissue thickness assessed via histomorphometry. Finite element analysis (FEA) was conducted using computer simulation to evaluate the effects of NPWT on tissue deformations.

Results/Discussion: The peel and place dressing promoted more tissue granulation ($p < 0.05$) with ingrowth limited to ROCF-treated wounds ($p < 0.0001$). Proteomics of wound healing-associated biomarkers demonstrated differences between treatments. Elevated levels of interleukins and endothelial like growth factor (HB-EGF) were observed relative to ROCF ($p < 0.05$). FEA revealed considerable tissue displacement for the peel and place dressing.

Conclusion: Peel and place dressing treatment resulted in elevated healing biomarkers and increased tissue regeneration relative to ROCF treatment. Greater tissue engagement, as observed via FEA, may have contributed to increased protein expression. These favourable outcomes, combined with mitigated tissue ingrowth, support the effectiveness of the peel and place NPWT dressing for 7-day extended-wear.

[^]3M™ V.A.C.® Granufoam™ Dressing; *3M™ V.A.C.® Therapy; [†]Peel and Place Dressing (3M, San Antonio, TX)

OP071 Peptide-based conjugates towards the development of new topical treatments for diabetic foot ulcers

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Aim: Development of a new peptide-based topical agent for treating diabetic foot ulcers aiming at providing antimicrobial and wound healing action. These conjugates result from combining an ionic liquid with intrinsic antimicrobial action with a collagen-boosting peptide used in the cosmeceutical industry as antiaging. The resulting peptide ionic liquid conjugates (PILC) could be a new option for the treatment of diabetic foot ulcers presenting dual action.

Method: The resulting PILCs were assessed for their *in vitro* antimicrobial action and collagen-inducing effect along with their possible antimicrobial mechanism of action. The most promising candidate was then tested in a non-infected diabetic mice model to assess its wound healing, anti-inflammatory action, and microbiota load at the wound.

Results/Discussion: The *in vivo* assays with the most promising PILC exhibit: i) faster wound closure; ii) a decrease of the inflammatory response; iii) decrease of reactive oxygen species iv) alongside a decrease of microbiota load at the wound. Moreover, the histological analysis from the wound tissue showed an improvement in collagen synthesis and a decrease in the infiltration of inflammatory cells. Therefore, the new PILC showed an overall improvement in the healing of a wound in a diabetic mouse model.

Conclusion: PILC comes out as a candidate for the development of a new topical treatment for diabetic foot ulcers providing faster healing and a decrease in wound microbiota

OP072 Patient experiences with information, communication and shared decision making when deciding amputation level – A national cross-sectional study

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Aim: Patients often feel excluded from amputation-level decisions and desire active participation, even in unavoidable amputations. Despite clinicians aiming for shared decision-making (SDM), barriers persist for implementation. This study explored patients experiences with information, communication, SDM, and their attitudes toward potential decision support tools.

Method: An electronic survey was distributed November 2023 among patients living with a major lower limb amputation, recruited through the patient association (n=25 (inclusion ongoing), 22 men, mean age 62). The questionnaire covered four domains, known to influence implementation of SDM: 1) Environmental Context and Resources, 2) Social/Professional Role and Identity, 3) Knowledge and Skills, and 4) Beliefs about Capabilities. Furthermore, respondents' experiences with information and communication and their viewpoints on the potential use of a tool to facilitate SDM in the determination of amputation levels, was explored.

Preliminary results: In general, 60% were satisfied with the conversation regarding their amputation, 20% were unsatisfied, 20% indifferent. In all, 68% received the information they needed; yet 76% still reported that a decision support tool for use in the conversation about where on the leg to amputate, would be beneficial to them as patients. The physicians were perceived as being open to talk about amputation by 44%. Around 32% of the participants experienced that it was okay to disagree with the physician and 52% experienced that there was time to talk about the topics/issues that they wanted to talk about.

Conclusion: Implementing SDM and decision support tools, could benefit patients need for conversation and information about amputation levels.

OP073 Transcriptional changes in fibroblasts exposed to non-healing wound exudates reveal a role for the unfolded protein response in the pathology of chronic wounds

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Aim: Cell proliferation *ex vivo* is inhibited by exudates from non-healing wounds (NH-WE) and can serve as a functional biomarker for chronic wound healing. Using RNA sequencing, we investigated the cellular responses that drive this inhibitory effect.

Method: Human dermal fibroblasts were exposed to NH-WEs from three different patients for 6h. After RNA isolation and Illumina sequencing, enriched pathways were identified using the Reactome web tool. Gene expression was validated by qRT-PCR. Proliferation of fibroblasts was performed in the presence/absence of WEs and compounds for 72h.

Results/Discussion: We observed major transcriptional changes in fibroblasts after 6h of exposure to NH-WEs (678 to 2761 upregulated genes, $p < 0.01$), with 400 genes upregulated in response to all three WEs. Pathway enrichment analysis revealed immune and inflammation pathways, as well as the unfolded protein response (UPR) among the most significantly upregulated. Validation with qRT-PCR showed that induction of UPR genes also occurred in the late response (72h) and was specific to NH-WEs.

Blocking of a major pro-inflammatory pathway, IL-1 β signalling, with a receptor antagonist, reduced endogenous IL-1 β expression, but could not rescue cell proliferation. Inhibition of the three activation branches of the UPR individually by employing IRE1 α -, ATF6- and PERK-specific inhibitors showed a moderate positive effect only for PERK.

Conclusion: Exposure of fibroblasts to NH-WEs results in major transcriptional changes, with markedly upregulated genes related to inflammation and the UPR. Further investigations may elucidate potential benefits of inhibiting the PERK branch of UPR to target the pathology of chronic wounds.

OP074 Developing 'diseased' 3D in vitro human skin wound models to study the effect of therapeutics for chronic wounds

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Aim: To assess the effect of new therapeutics on wound repair and explore their underlying mechanisms, simplified 2D and 3D skin wound models are used. To simulate the pathophysiology of chronic wounds, animal models are well-recognized alternatives. However, none of these *in vitro* and *in vivo* models can fully recapitulate chronic wounds in humans, leading to failure of many clinical trials. We therefore aim to develop 'diseased' human skin models that mimic chronic wound context to validate our findings on acute wounds and establish an efficient platform to test new therapeutics for hard-to-heal wounds.

Method: We have optimized a well-established De-Epidermized Dermis-Human Skin Equivalent (DED-HSE) wound model to recapitulate chronic wound environment following three main approaches: 1) incorporate 'unhealthy' skin cells and/or acellular dermis derived from patients with recalcitrant wounds, 2) modulate tissue culture systems by incorporating different 'stress' factors (high glucose, microbes, drugs), and 3) validate our *in vitro* model by assessing their response to therapeutics.

Results/Discussion: Waste surgical skin tissues are collected from individuals undertaking plastic surgery and patients who undergo lower limb major amputations to prepare 'healthy' and 'diseased' DED-HSEs. Preliminary results showed great variability of wound re-epithelialization across different donors' DED although the same control keratinocytes were used. Wound closure was 3 times slower in 'diseased' DEDs compared to control, suggesting that the extra cellular matrix composition plays a central role in the re-epithelialization process.

Conclusion: Established therapeutics will be tested on the delayed wounds to assess the efficacy of our 'diseased' model.

OP075 Efficacy of a new chemical debridement method in biofilm-contaminated wounds

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Aim: Biofilm burden is one of the biggest challenges in management of chronic wounds. Therefore, it is mandatory to identify an effective biofilm therapy. The gold standard, repetitive, sharp and/or surgical debridement is highly effective, but not suitable for multimorbid patients with especially with poor perfusion. Therefore, the one-time, one-minute application of methane sulfonic acid (MSA; ingredient of Topical Desiccating Agent (TDA*)) could be an option to “reset” the wound and re-initiate the physiologic healing cascade.

Method: A translational in-vitro test using the standardized human biofilm model lhBIOM (FFP+Buffly coat) of *P. aeruginosa* and MRSA was used to show a possible efficacy of TDA. Its effects were evaluated qualitatively and quantitatively by electron microscopy (SEM), pH value and quantitative suspension method (QSM).

Results/Discussion: Results reveal that TDA aggregate the biofilm matrix, which turned brown (SEM), and a complete reduction/killing of the pathogens in the biofilm within 30sec (QSM) (recommendation: 60sec.) These results correspond to the carbon-like scab that forms after clinical application of TDA, which is usually removed after 1-2 dressing changes during standardized wound therapy. Additionally the pH value was reduced, which is known to be a physiological stimulation of granulation tissue development.

Conclusion: Translational analyses in a human biofilm model revealed that TDA debridement acts both, directly by eliminating the biofilm bacteria on and in the wound and by reducing the local pH value. For human pathogenic bacteria, a pH<7 is optimal for growing and therefore for triggering wound infection. Preserving a comparatively low pH (in chronic wounds) for as long as possible is essential after using TDA for debridement. In this case, individual peripheral perfusion of the lower legs is decisive for the duration of healing in patients.

Diabetic Foot 3

OP076 Early treatment of active charcot foot can avoid major amputations

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Aim: If unrecognized, Charcot neuro-osteoarthropathy (CNO) can be a devastating complication of diabetes. The aim of this study was to evaluate the outcomes in a cohort of diabetic patients diagnosed with active CNO managed in a tertiary level diabetic foot clinic (DFC).

Method: This is a retrospective study including consecutive patients with active CNO, stage 0-1 according to Eichenholtz-Shibata classification, who referred from 01st/Jan/2019 to 27th/Sep/2022 to a tertiary level DFC. Diagnosis of CNO was based on clinical signs (increase in temperature, oedema, redness and sometimes pain, presence of neuropathy), and imaging (magnetic resonance). All patients were completely offloaded by total-contact cast (TCC) or removable knee-high device, according to any specific clinical scenario.

Each patient was closely monitored monthly, until CNO remission or other outcome. At each visit, temperature of both feet and clinical signs of inflammation were recorded. At 12 months the following outcomes were analyzed: remission (defined as resolution of inflammation signs and normalization of skin temperature in 2 visits one month-apart), remission time, major amputation (any above-ankle amputation).

Results/Discussion: Forty-three patients were included. Mean age was 57.6±10.8 years; 65% were males and 88.4% had type 2 diabetes, with a mean duration of 20.6±9.9 years. At baseline, 32.6% was affected by peripheral artery disease.

Remission was recorded in 42/43 patients (97.7%), with a mean time to remission of 5.7±1.7 months; major amputation occurred in 1/43 patients (2.3%).

Conclusion: Early treatment of active CNO leads to high rate of remission and few cases of major amputation.

OP077 The impact of a non-healing toe amputation wounds in diabetics over the course of a year. Can we change something in the line: poor wound healing, major amputation, death

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Aim: Foot ulcers are a frequent late complication of diabetes with high morbidity and mortality. A major challenge is the healing of amputation wounds in diabetic patients. Minor amputations can take months to heal.

Method: We analyze the retrospective patients who presented to our emergency department with a diabetic foot ulcer and toe infection 2020 and 2021, in whom a toe had to be amputated during the course of the hospital.

Results/Discussion: The study population:47 patients who underwent toe amputation for diabetic foot in 2020 and 2021 at our clinic. Of those 47 patients, 79% males and 21% females. The average age was 77 years. 76% of the patients had PAD, 85% had a leg revascularization. 34% of the patients went home with an open amputation wound.

At the 1-year follow-up, 53% of the patients show a healed amputation wound. 47% Had an operative wound revision (debridement, reamputation). 40% Of the 47 patients had another toe amputation or forefoot amputation during the year. 10% of the patients had a major amputation. 9(19%) of the 47 patients died during the year.

Conclusion: The impact of a toe amputation over the course of a year with non-healing wounds is very high on the lives of patients. The high rate of subsequent amputations and progression of the diabetic foot due to further ulcerations is shown again. Toe amputation can be the first step of major amputation for diabetics, a high mortality factor, 20% of our patients died in 1 year.

OP078 Predictive factors of major amputation in patients with diabetic foot ulcers receiving peripheral blood mononuclear cell

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Aim: Peripheral blood mononuclear cell (PB-MNC) therapy is an adjuvant treatment for patients with diabetic foot ulcers (DFUs) and no-option critical limb ischaemia (NO-CLI). The aim of this study was to evaluate the factors influencing the effectiveness of PB-MNC.

Method: The study is a prospective, noncontrolled study including patients with DFUs and NO-CLI treated with PB-MNC therapy. NO-CLI was defined by revascularization failure with desert foot (absence of any artery below-the-ankle) or partial desert foot (absence of wound related artery with TcPO₂ < 30 mmHg). Patients were divided in 2 groups: amputees and not amputees after 1 year of follow-up. Clinical, wounds and vascular features were recorded and compared between the 2 groups. Then, factors influencing the clinical response to the PB-MNC were evaluated.

Results/Discussion: Sixty-four patient were included. The mean age was 73.8±5.8, all patients had type 2 diabetes, 75% were male, 81% showed infected DFUs, 93.7% had a gangrene. Survival with limb salvage was recorded in 75% of cases, major amputation in 12.5% and mortality in 12.5%. Amputees in comparison to not amputees had a higher rate of desert foot (100%vs25%,p<0.0001), higher post-procedural pain (5.7±1.9vs2.2±1.3,p<0.0001), lower TcPO₂ values after PB-MNC (30±8vs43±8mmHg,p0.0001) and higher rate of heel DFUs (75%vs21.4%,p 0.002). The presence of desert foot before PB-MNC, heel DFUs and the persistence of post-procedural pain were independent predictors of major amputation

Conclusion: The current study showed that PB-MNC therapy resulted less effective in patients who had pre-procedural desert foot, heel ulcers and the persistence of post-procedural pain.

OP079 A clinical study using combination therapy with standard of care for the treatment of diabetic foot ulcers: Final analysis

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Aim: A novel combination therapy developed to manage chronic wounds comprises a wound therapy formulation (OCM), a wound preparation formulation, and a skin protectant formulation. One goal of this study is to demonstrate that this combination therapy plus standard of care (SOC) moves chronic DFUs from a stalled state to a healing state in a 4-week period (NCT05417425).

Method: Adult (≥21 years) patients with Type 1/2 diabetes and a DFU of ≥1-month duration were eligible. DFUs were managed with combination therapy and SOC from 4-12 weeks. Endpoints included 4- and 12-week percent area reduction (PAR). Control DFUs were managed with SOC only (n=6).

Results/Discussion: At final analysis (N=19), median age was 60 years (range, 44-85), and median wound duration was 36 weeks (range, 4-72). Five patients included in the analysis did not complete the study. Median wound size was 1.4cm² (range, 0.37-25.0) at treatment visit (TV) 1 and 0.68cm² (range, 0-10.06) at TV5. Average 4-week PAR was 60%, with 3 patients experiencing 100% closure. At TV12, median wound size was 0.0cm² (range, 0-2.59), and average PAR was 93%, with 5 additional patients experiencing 100% closure. Average 4- and 12-week PARs with SOC alone were 42% and 45%, respectively.

Conclusion: These results show encouraging healing rates (60% 4-week PAR and 93% 12-week PAR) of DFUs managed with the combination therapy and SOC. Clinical trials evaluating the combination therapy in VLU (NCT05291169) and multiple wound types (NCT05921292) are underway.

Supported by: Omeza LLC, Sarasota, FL.

OP080 Technology enabled diabetes foot ulcer multidisciplinary clinic: a service improvement project

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Aim: To evaluate a laser-assisted 3D measurement technology and an integrated care record on Diabetes Foot Ulcer 12-week healing outcome.

Method: The diabetes multidisciplinary foot clinic relied on serial digital camera images, clinic notes and letters on various hospital systems. This was a labour intensive system. Hence, we introduced a commercially available 3-D wound imaging system, an integrated multi professional care record in 2019. The English National Diabetes Audit Dashboard (2023) measures were used to look at improvement trends.

Results/Discussion: Two thousand and forty ulcer episodes were submitted during the rolling 5-year National Audit. Seven hundred and ninety five (39%) were alive and ulcer free at 12 weeks. There were variation in numbers during the Covid -19 pandemic. The percentage of patients alive and ulcer free after 12 weeks of clinic attendance in 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 were 43%, 38.6%, 31.9%, 39.2% and 41% respectively. Improved data informatics from the system will enable us to look at 24/52 week healing and amputation rates in due course. Ninety nine percent of the digital reports with wound images were sent out to all hospital and community digital systems on the same day of the clinic. One whole time equivalent of admin time and 12.5% of NHS Consultant admin time has been reduced because of this project.

Conclusion: There is a neutral impact on 12-week ulcer healing rate using digital technology.

OP081 Annotating 10,000 diabetic foot images for machine learning applications and for AI-based diabetic foot imaging tool

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Aim: To develop a high-quality dataset of 10,000 diabetic foot images, which can be trained for multiple Artificial Intelligence (AI) /Machine Learning (ML) use in early detection of diabetic foot complications. Neuropathy precludes early detection of diabetic foot complications resulting in disastrous consequences. Daily self-imaging of the foot with their mobiles and analysis of these images with the AI/ML powered tools can help in early prediction of Diabetic foot complications

Method: A diverse set of 10,000 diabetic foot images were acquired. These were subjected to rigorous cleaning protocols followed by a initial labelling task and validation. Each image was annotated with a precise foot outline, categorized into one of 31 wound classes like ulcers and callosities, marked with three critical foot markers including the big toe and little toe, and tagged with seven metatags encompassing aspects like wound stage and wound site.

Results/Discussion: The validation of these annotations was conducted through a novel, multi-layered approach involving automated algorithms. An expert medical review of these annotated images was done to ensure accuracy and consistency. Preliminary applications (DFIT® - Diabetic Foot Imaging Tool) developed on the dataset has showcased the dataset's capability in periodic monitoring of wound healing and early detection of foot complications. Ulcers were the commonest group (23%), Callosities were detected in 7% of the images and these results correlated well with the medical review of these images.

Conclusion: A comprehensive, well-annotated dataset opens new avenues for predictive modelling, diagnostic accuracy, and advanced wound analysis in diabetic foot care.

Atypical Wounds & Rare Wounds

OP082 A survey of UK nurses about their care of people with malignant fungating wounds

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Aim: The aim of the survey was to gain an understanding of who delivers care to people with malignant fungating wounds (MFW) in the UK, where this takes place, current referral practices, the wound-related treatment aims, and wound care treatments used and to elicit barriers and facilitators in providing care to people with MFW.

Method: An online anonymous questionnaire was developed to explore wound care practitioners' experience of caring for MFW using convenience sampling from the UK using QualtricsXM online software. Study data were analysed by using the SPSS.

Results/Discussion: In total, we received 154 questionnaire responses. Respondents of the survey were tissue viability nurses, community nurses and other specialist nurses. Results highlighted that the MFW-related management aims were to manage wound odour, exudate and pain, bleeding and prevention of infection. Top-ranked treatment aim was reported as pain management followed by odour management. The most reported antimicrobial dressing was topical silver. The use of systemic antibiotics was reported less common.

Access to MFW care training is reported as a barrier to providing care to people with MFW as is a lack of local and national guidelines. The availability of dressings, access to training, and good communication processes were reported as facilitators in providing care to people with MFW.

Conclusion: This is the first study to explore current UK practices in the care of people with MFW and barriers and facilitators to this. Lack of access to MFW care training, resources, and standardised guidelines may impede care delivery.

OP083 COVID-19 infection/vaccine: Does this induce pyoderma gangrenosum

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Aim: We have anecdotally seen an increase in pyoderma gangrenosum during the COVID pandemic this is a systematic review of recent literature to identify similar cases or trends.

Method: A systematic review of the literature since January 2020 to December 2022 2023 was performed using CINAHL, Clinical key, OVID, Google scholar and PubMed and found 143 results. Systematic review of all articles found 4 letters to the editor and 11 related articles. Using these and clinical case studies there is a case for increased risk of PG post COVID virus/vaccine.

Results/Discussion: Pyoderma gangrenosum/ (PG) is a rare and difficult disease to diagnose and manage. The literature is based largely on case studies, case reviews and small randomised controlled studies. Over the pandemic there have been numerous reports of COVID-19 patients with rare dermatologic manifestations including rashes, urticarial lesions, maculopapular eruptions and necrosis. There is evidence that this can be related to the pro-inflammatory effects of the COVID -19 virus that can spike proteins triggering PG.

Conclusion: Local case studies and the evidence in the literature is demonstrating a link to COVID-19 infection / vaccination as being a trigger to rebound or newly diagnosed PG

OP084 Results of treatment of complicated gunshot wounds accompanied by soft tissue damage

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Aim: To study the results of surgical treatment of patients with gunshot complicated soft tissue wounds by studying and evaluating the effectiveness of manipulations and therapeutic measures performed.

Method: The study includes a retrospective cross-sectional study of patients after gunshot wounds since 2019 to the present (27 cases). The characteristics of wounds were studied, depending on the ballistic characteristics of the traumatic agent, on the size of the wounds. Treatment results from 4 months to 4 years were assessed according to the following criteria: complete closure of the soft tissue defect, wound complications, number of re-hospitalizations.

Results/Discussion: The average length of patients hospitalization was 41.5+/-3 days. The combined treatment included both drug treatment, including resistant, anaerobic strains, and surgical treatment, in the form of various methods of treatment and closure of wound defects. Complete closure of soft tissues and skin was achieved in 85% of patients, but in 10 patients the functioning of the fistula wound was preserved. According to the results of the first hospitalizations, in 50% of cases it was possible to achieve closure of the wounds, in 33% of patients defect remained, but the people were discharged for outpatient observation with the aim of healing the wounds, the appearance of granulations and subsequent plastic surgery. The second stage consisted of assessing long-term treatment.

Conclusion: As a result, treatment of this type of injury should include complex treatment of lesions that are used in the hospital and entail the least possible number of complications.

OP085 Modern concepts of the diagnosis and treatment of necrotizing fasciitis

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Aim: The incidence of necrotising fasciitis witnessed a substantial rise from 2009 to 2023, despite in-hospital mortality exhibiting no significant change. In the search for the causes of this condition, it is noteworthy that the level of EBM remains at low to moderate threshold.

Method: Our methodology involved a comprehensive statistical assessment of a 30-patient cohort, juxtaposed with data from diverse international centres.

Results/Discussion: Results show a transition in causative organisms from Gram-positive to Gram-negative. The timing of surgical intervention from admission held steady, with a median duration from admission to surgery at 1 day, debridement at 1 day, and skin grafting at 12 days. Intriguingly, a large number of patients reported incidental or absent preceding injuries, suggesting alternative routes of inoculation. Employing the LRINEC score facilitated the differentiation of necrotizing fasciitis from other soft tissue infections. Presently, rapid diagnosis incorporates bedside ultrasound, evaluating „STAFF“- Subcutaneous Thickening, Air, and Fascial Fluid along with the “ Finger test”.

Conclusion: Conclusions indicate an age-related and male predilection in incidence, necessitating further studies to validate additional prognosis-determining parameters. Dispelling the notion of exclusive perianal occurrence, necrotizing fasciitis manifests in diverse locations. Notably, Negative Pressure Wound Therapy (NPWT) emerges as a pivotal treatment modality significantly enhancing prognosis. The thesis is richly illustrated with self-generated material, elucidating the rationale underpinning each facet of the wound healing process.

OP086 A retrospective study on 24 livedoid vasculopathy (LV) patients

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Aim: To analyze retrospectively the epidemiological and clinical features, as well as comorbidities, treatment, and outcomes in livedoid vasculopathy (LV) patients that attended a tertiary care hospital.

Method: Retrospective observational study with 24 patients.

Results/Discussion: 62,5 % of patients were women. Mean age at the time of diagnosis was 61 years, and mean time of symptom duration was 12,3 years. The most frequent comorbidities in our patients were venous insufficiency 58%, hypertension 38%, deep vein thrombosis 33%, and hyperlipidemia 29%. At our clinic, all the patients without contraindications received compression therapy. 11/24 of our LV patients used bandages at some point, and 16/24 were able to use compression stockings in the end. The most common first treatments were aspirin in 10/24 patients, and prednisolone in 10/24 respectively. Seventeen (79 %) patients were completely healed, but due to the recurrent nature of LV, second treatments were needed in 12 (70,5 %) of them. The most common second-line medications were enoxaparin in 6/19 patients, and prednisolone 6/19. With the second treatment, 15 patients recovered completely and 2 received partial improvement. In the end, 18 patients had totally healed wounds.

Conclusion: Livedoid vasculopathy is a challenging clinical entity with delays in diagnosis and variable treatment responses. Furthermore, comorbidities, such as prothrombotic conditions, venous insufficiency, obesity, hypertension and past history of deep vein thrombosis are common. The main treatments include anti-platelet agents, prednisolone, anticoagulants and compression therapy.

OP087 Risankizumab in the management of refractory pyoderma gangrenosum: a combined approach of systemic therapy and local wound management

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Aim: Pyoderma gangrenosum (PG) is a neutrophilic dermatosis that represents a challenge for physicians in terms of diagnosis and treatment. PG is characterized by an overexpression of Interleukin (IL)-23 suggesting a possible use of an anti IL-23 monoclonal antibody (mAb). We reported our experience in the management of refractory PG cases, who were treated with a new combined approach of local and systemic therapies.

Method: We report data on 7 patients from the Dermatology Department of Pisa off-label treated with Risankizumab (150 mg at week 0, week 4 and every 10 weeks), a mAb targeting the p19 subunit of IL-23, in association with proper local management based on the principles of PG-Tissue-Infection/Inflammation-Moisture-Edges (TIME). The effectiveness and tolerability of the therapy was assessed during each visit performing Wound Bed Score (WBS), Dermatology Life Quality Index (DLQI) and pain Visual Analogue Scale (VAS).

Results/Discussion: 3/7 patients had failed treatment with Adalimumab, an anti-Tumor Necrosis Factor (TNF)-alpha mAb, while 4/7 had failed two or more biologicals. At baseline, the population presented WBS:4, DLQI:27, VAS pain:8. After 6 months, we identified a WBS:12, DLQI:6, and VAS pain: 4. The two patients with a follow-up exceeding 1 year maintained total remission of the lesions.

Conclusion: Due to the complex molecular landscape of PG, it is not possible to identify a single target molecule. Risankizumab could represent an optimal immunomodulatory therapy that needs to be associated with a proper wound management and short-term immunosuppressive therapy during the relapsing inflammatory phases.

OP088 Benefits of using medical-grade honey in the treatment of cavity wounds - Non-comparative clinical case series

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Aim: Cavity wounds are complex to manage for various reasons including the high risk of (deep) infection. The aim of this study is therefore to ascertain the benefits of medical-grade honey (MGH) in the treatment of cavity wounds.

Method: Fifteen patients presenting with a cavity wound of various etiology and complexity were included in this study. Wounds were photographically documented throughout the treatment period with MGH. Wound assessment included anatomic location, type of wound, wound bed quality, wound measurements (planimetric and volumetric), wound probing, wound margins, wound colonization (adapted Levine swab technique), NERDS, and STONEES. The general patient assessment included quality of life (QoL), pain level (0-10 on visual analogue scale), and mental/physical condition. A range of MGH-based wound care products¹ were used: ointment, MGH-impregnated tulle, or MGH-impregnated foam.

Results/Discussion: Each wound is unique; therefore, results were appreciated according to the scope of each wound's improvement. Improvement of QoL was noted in all patients after the first dressing with MGH with reduced levels of pain and malodour. All wounds had significant improvement at the three-month mark, with eight achieving complete closure, while the other seven showed significant improvement regarding size, wound bed presentation, and decreased bacterial load. The variety of presentation of the product facilitates adequate usage, however, larger cavities can further benefit the clinical practice from larger sizes of impregnated tulle.

Conclusion: MGH is effective in the treatment of cavity wounds, showing positive results in all phases of wound healing and improving the QoL of the patients.

¹L-Mesitran

Leg Ulcers 2

OP089 Predicting venous leg ulcer recurrence

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Aim: High rates of recurrence exist for people with venous leg ulcers which causes challenges for individuals, families and carers and the health system as a whole. The study sought to validate a previously developed risk assessment tool in a different country and population to that of its initial development and validation.

Method: An eight-item tool that was previously developed, including history of deep vein thrombosis, duration of previous ulcer, history of previous ulcers, body mass index, living alone, leg elevation, moving around on feet, and compression items, was tested in a sample of participants in New Zealand to determine the risk of recurrence of venous leg ulcers. Prospective validation of this tool used Area Under the Receiver Operating Characteristic Curve analysis.

Results/Discussion: Thirty-seven participants were recruited within four weeks of healing and followed up for 12 months. Participants enrolled from one community clinic in New Zealand. The mean age of participants was 67 years (SD 13.1), 54% were females (n=20), while 8.11% of participants recurred within 12 months. Results concluded AUC 0.824 (95% CI, 0.695–0.952, p<0.001) for the total risk assessment score. Test results of the tool on outcomes at three- and six-month follow-up timepoints demonstrated similar predictive ability of the risk assessment total score.

Conclusion: The validation of a risk assessment tool for recurrence of venous leg ulcers in differing populations provides support for the tool's use in guiding person-centred interventions more globally to address any modifiable risk factors, increase concordance and thus reduce recurrence rates.

OP090 First clinical evaluation of the safety and efficacy of tarumase wound gel for the debridement of venous leg ulcers

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Aim: Assess the safety, tolerability and the rate and extent of wound debridement of topically administered tarumase in Venous Leg Ulcers (VLU).

Method: Multicenter, open label, phase 2a multiple ascending dose clinical trial performed in 8 clinical centers across the US, UK and Hungary. Patients with VLUs of 2-50 cm² present for ≥30 days were enrolled into five Cohorts to receive tarumase and Standard of Care 3x weekly: Cohort 1, vehicle alone, 0U/mL (n=5); Cohort 2, 1U/mL (n=8); Cohort 3, 2U/mL (n=10); Cohort 4, 5U/mL (n=9), and Cohort 5, 9U/mL (n=10) for 4 weeks.

Results/Discussion: 42 eligible patients with VLUs (mean [SD] ulcer area, 13.85 [12.7] cm²) were enrolled. The level of pain reported on a 0-10 scale had a mean [SD] improvement of -0.98 [1.81]. Clinical tolerability was assessed by rating bleeding (absent, present), erythema, exudate, oedema, induration (none, mild, moderate, marked). No worsening in clinical tolerability was observed. No treatment-related serious adverse events and 41 (mild to moderate) adverse events occurred, 33 were unrelated to study drug. Tarumase in the blood remained below quantifiable levels, no evidence of antibody generation and no effects on coagulation were visible. Dose related improvements in wound debridement (Figure 1) and trends towards faster healing were observed based on increased granulation tissue and reduction in surface area (Figure 2).



Figure 1: Dose dependent debridement

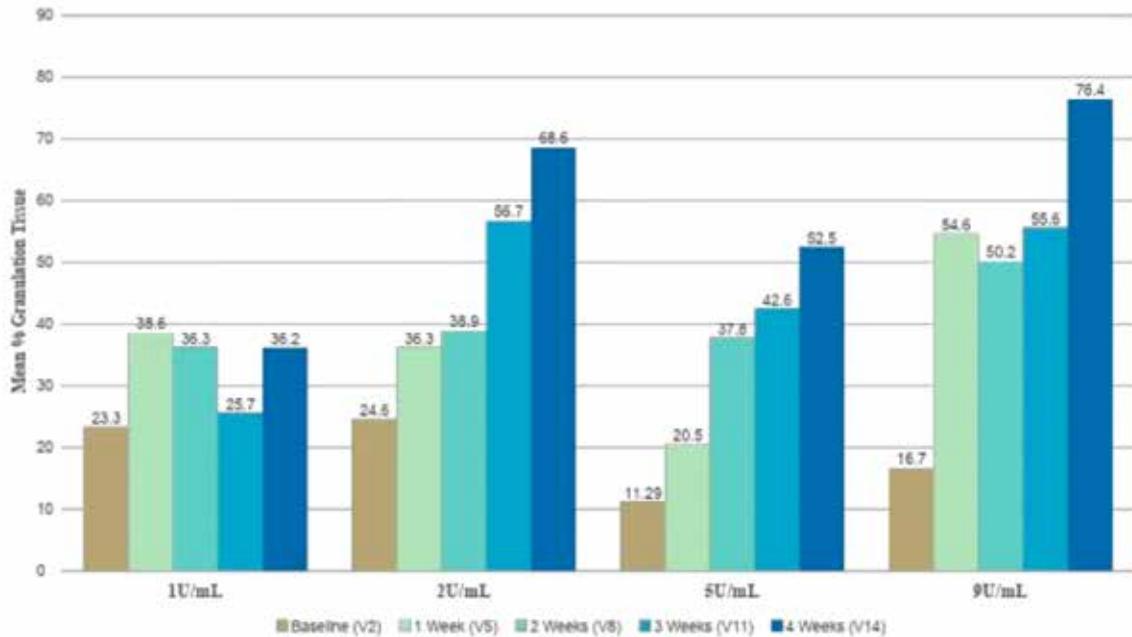


Figure 2: Change in granulation tissue

Conclusion: The excellent safety results and efficacy signals allows the use of higher doses of tarumase in future clinical trials.

OP091 Results of a multicenter, prospective, real-life clinical study on the performances of a new multicomponent compression system using only one bandage in the treatment of 343 patients with leg ulcer and/or oedema

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Aim: To evaluate the performances of an innovative multicomponent compression system in one bandage* in the treatment of patients with leg ulcers and/or oedema in everyday practice.

Method: Prospective observational clinical study conducted in 40 centres in Germany (March 2022 - July 2023). Main evaluation criteria included changes in wound healing and oedema progression, tolerance, and acceptability of the bandage.

Results/Discussion: In total, 344 patients were treated with the evaluated bandage for a mean period of 48±30 days: 276 had oedema and 197 an ulcer, mostly of venous origin. By the last visit, 49% of the ulcers healed (75% in absence of oedema and 61% in ulcers ≤1-month duration). Oedema was completely resolved or greatly improved in 87% of the patients, with substantial reduction in calf and ankle circumferences. Improvement in pruritus, pain, age-related ankle mobility, and skin alterations were also reported in patients who suffered from them at baseline. The system was judged 'very easy to apply' (in 1.8 min, 3 times a week - medians), 'extremely useful' and 'very well accepted' by the large majority of patients who reported an improvement in comfort compared to previous systems. During the study, three cases of local intolerance related to the system and five early terminations (unrelated to the system) were reported.

Conclusion: These results are consistent with the previous clinical evidence available on this new compression system and further support its good efficacy, tolerability, acceptance and usefulness in the treatment of patients with leg ulcers and/or oedema.

OP092 Wound bed preparation of venous leg ulcers is highly correlated with wound closure – results from the chronex study

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Aim: Wound bed preparation (WBP) is a critical step in transition of a chronic wound from a disrupted to normal healing process. Previously published results from the ChronEx study, assessing novel bromelain-based enzymatic debridement (BBD) in chronic venous leg ulcers (VLUs), showed the efficacy of BBD in WBP. These analyses assess the correlation between WBP and wound closure (WCL).

Method: In the ChronEx study, patients were randomized to daily treatment with either BBD, placebo gel vehicle, or non-surgical standard of care (NSSOC), for 2 weeks or until complete debridement, and then treated with NSSOC for 12 weeks. WBP was defined as complete debridement and complete granulation, both assessed clinically. Complete WCL was defined as complete re-epithelialization without drainage or dressing, confirmed at two visits.

Results: 119 patients were randomized. Overall, 80 patients (67%), reached WBP anytime throughout the study and 39 (33%) did not. Of those that reached WBP, 34 patients (42.5%) achieved WCL within the study period, while only 4 (10.3%) patients that did not achieve WBP achieved WCL, with relative risk (RR) of 4.1 (95%CI=1.58-10.85, p=0.0004).

Patients reaching WBP by 16 days were 2.2 times more likely to achieve WCL within 12 weeks compared to patients who did not reach WBP by that time (50.0% vs. 22.7%, 95%CI for RR 1.31-3.71, $p=0.0028$).

Conclusion: The ChronEx study demonstrates that wound bed preparation of chronic VLUs significantly increased the likelihood of complete WCL. These findings support the critical importance of adequate WBP in the process of wound healing.

OP093 Evaluation of risk factors affecting the healing process of venous ulcers: a 12-week longitudinal study

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Aim: The healing process of venous leg ulcers (VLUs) is influenced by many factors. By identifying them, it is possible to predict impending delays and plan an individualized care plan.

The aim of this study was to analyze the risk factors delaying the healing process of VLUs in patients treated in tertiary wound care center in Poland.

Method: The database of 754 patients with VLUs treated in Out-patient Clinic for Chronic Wound Management at the University Hospital nr 1 in Bydgoszcz, Poland, between 2001-2019 was analyzed. The collected medical records allowed to review demographic and clinical factors responsible for a delayed healing process. The univariate and multivariate analysis of variance (ANOVA) was used to prove the statistically significant impact of sociodemographic and clinical variables as risk factors related to prolonged healing of venous leg ulcers during the 12-week follow-up.

Results/Discussion: The mean age of the studied population was 65,7 years and majority of the treated patients (64.3%) were women. At 12-week follow-up, 432 of the 754 ulcers had healed. The independent predictors which slow ulcer healing rate were: wound area > 8.25 cm², location of the ulceration other than the medial ankle area, underlying disease for >20 years, the presence of multiple comorbidities, ulcer depth, the presence of an unpleasant smell and alert pathogens. The presence of redness resulted in faster healing of VLUs.

Conclusion: The performed study can improve patient care and implement appropriate early strategies to promote healing.

OP094 Autologous whole blood clot efficacy in cutaneous wounds – Data from a large registry cohort

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Aim: Patients' comorbidities are one of the major factors negatively affecting the wound healing process. Stalled wounds are challenging to heal and may require advanced therapies and prolonged treatment in order to avoid wound deterioration. Autologous whole blood clot (AWBC), is an advanced technology, using the patient's own peripheral blood to create a fibrin matrix dressing, that was found to be safe and effective in promoting acute and chronic wounds toward healing.

Method: A total of 179 patients, > 18 years, who presented with chronic wounds, signed informed consent (NCT04699305). At the point of care, ACWB was generated using peripheral blood from each patient and was applied weekly.

Results/Discussion: ACWB was administered to 66 diabetic foot ulcers (DFUs), 39 vascular ulcers (VLUs), 30 pressure ulcers (PUs), 29 surgical wounds, and 15 wounds categorized as trauma. Most patients experienced multiple comorbidities and underwent various treatments, with no success. The ACWB treatment demonstrated rates of 53%, 49%, 53%, 59%, and 73% for complete healing in each respective wound type. Additionally, when evaluating the percentage area reduction (PAR), ACWB treatment resulted in 59%, 46%, 77%, 66%, and 73% of the wounds achieving at least 50% PAR by week 4.

Conclusion: ACWB exhibited high efficacy in stalled cutaneous wounds by creating a fibrin matrix serving as an extracellular matrix, providing both a mechanical barrier and functional matrix, initiating the wound healing cascade. ACWB facilitates significant area reduction in all wound types, demonstrating a safe and effective way for the treatment of challenging wounds.

OP095 Efficacy tolerability and acceptability of a monolayer multicomponent compression system

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Aim: To evaluate the efficacy, tolerability and acceptability of a new multicomponent compression system in one bandage and at the local treatment of patients with venous leg ulcers (VLUs).

Method: This was a monocentric prospective, non-comparative, clinical trial. Eligible participants had a recalcitrant VLU, including grafted ulcers. For a period of 12 weeks, patients were treated with a new multicomponent compression system in one bandage which was worn day and night, providing high working pressure and moderate resting pressure (UrgoK1). Clinical assessments, wound measurement and photographs were planned at weeks 0, 2, 4, 8 and 12. The primary endpoint was complete epithelialisation after 12 weeks of treatment. Secondary endpoints included wound area reduction, frequency of dressing changes, global performance score, tolerance, and physician's overall satisfaction with the evaluated compression system.

Results/Discussion: A cohort of 50 patients were recruited. After 12 weeks of treatment, wound closure was reported in most patients. Compared to previous compression systems, most patients reported more ease in wearing shoes, and greater satisfaction and comfort with this new system. No serious adverse events related to the device occurred. At the final visit, the majority of the physicians were 'very satisfied' or 'satisfied' with the new compression system overall.

Conclusion: The combination of the new multicomponent compression system in one bandage and NOSF dressings has been shown to promote rapid healing of VLUs and to be well tolerated and accepted. It might be a viable alternative to existing compression systems.

Devices & Interventions 2

OP096 Determining the optimal pressure redistribution surface in children: Pressure mapping on different bed surfaces

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Aim: This study aims to identify the needs for pressure redistributing surfaces designed for children undergoing life-saving treatments under heavy sedation, and to determine the most effective pressure redistributing surface.

Method: In this descriptive and comparative quantitative study, surface interface measurements were taken for a total of 49 patients, with measures lasting for two minutes each, followed by a rest period and recording. X-sensor data and images were collected in real-time and displayed on the screen with a minimum of 600 frames. Data were recorded in terms of monthly age, weight in kilograms, peak pressures in mmHg, average pressures in mmHg, and surface area in square inches.

Results: Using the X-sensor PX100 pressure mapping system, interface pressures between the surfaces and the body were measured. Children had an average weight of 9.56 (8.6) kilograms and an average age of 4.5 (5.24) months. The average pressure for static air-filled cushions was 10.41 mmHg, with peak pressures of 22.44 mmHg, while regular cushions had an average pressure of 12.63 mmHg and peak pressures of 34.92 mmHg.

Conclusion: Pressure mapping can be utilized to compare different cushioning strategies for pediatric patients and evaluate their effectiveness in reducing pressure injuries. It is demonstrated that static air-filled cushions provide the lowest peak pressures and the widest pressure distribution area compared to other surfaces. Particularly for children who are heavily sedated and immobile, static air-filled cushions are shown to be the most suitable pressure redistributing surface, surpassing conventional mattress surfaces in all measured variables. It was found that regular positioners were less effective in pressure redistribution.

OP097 IMPULSE: A wearable in-shoe temperature and pressure system to monitor the diabetic high-risk foot

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Aim: The aim of this study was to compare the outcome of incorporating IMPULSE – an innovative single sensor pressure/temperature monitoring device as an adjunct to standard diabetic foot care clinical protocols when assessing the high risk foot and the prognosis of ulcerations.

Method: A matched parallel, prospective experimental study included 88 participants living with Type II diabetes mellitus and a history of plantar foot ulceration and prescribed orthoses. Participants were randomly divided into 2 groups, the control group (n=44) received standard diabetes footcare only. The experimental group (n=44) were assessed with the innovative device for peak pressure areas and peak temperature whilst also received standard footcare. Both groups were monitored for re-ulceration every 4 months for period of 1 year.

Results/Discussion: A higher number of ulcer healing cases was noted in experimental group implying that the use of IMPULSE as an adjunct tool [monitoring temperature and foot pressures] to the standard diabetic footcare resulted in better outcomes when compared to providing standard diabetic foot care alone. Furthermore, a correlation between in-shoe skin temperature and in-shoe peak plantar pressure was confirmed.

Conclusion: This study highlights the need for more objective assessments for the management of the diabetic high-risk foot. The ultimate goal this innovative low cost, single sensor temperature/pressure monitoring device is to preserve lower limb function and to reduce the number of ulcerations/amputations in this population.

OP098 The impact of high skin pigmentation on the clinical diagnosis of wound infection and the ability to enhance diagnosis with fluorescence imaging of bacteria

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Question: Clinical signs and symptoms (CSS) of chronic wound infection (including erythema) perceived differently based on skin pigmentation, can fluorescence imaging (FL) offer a more objective, unbiased diagnostic solution.

Findings: Clinical trial post-hoc analysis (n=350), patients with the highest skin pigmentation had the lowest incidence of erythema and CSS in general, despite comparable bacterial.

Importance: The alarming lack of skin tone diversity in medical textbooks and literature disproportionately impacts the quality of medical treatment received by people of color. This is an issue.

Objective: Reporting of clinical signs and symptoms of infection (including erythema) differs by skin tone and whether fluorescence imaging offers a more equitable solution for detecting pathogenic wound bacteria.

Design: Post-hoc analysis of a prospective, single-blind, multicenter, cross-sectional clinical trial. **Setting:** 14 outpatient wound care centers across the US.

Participants: 350 adults (>18 years) with chronic wounds (DFUs, VLU, PUs/PIs, surgical wounds).

Results: TBL from quantitative wound cultures did not differ across FSPC groups (Kruskal-Wallis test; $P = .38$), while frequency of erythema decreased proportionally with increasing FSPC score, from 13.4% (low), to 7.2% (medium), to 2.3% (high), across a variety of wound types ($P = .05$).

Conclusions and Relevance: These findings speak to the inequalities faced by diverse wound care patients; erythema and CSS were detected less frequently in patients with more skin pigment despite comparable TBLs. This could delay treatment, increasing the risk of complications and poor wound outcomes.

OP099 A novel randomized trial protocol for evaluating wound healing interventions

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Aim: Randomized controlled trials using complete healing as an endpoint suffer from poor statistical power, owing to the heterogeneity of wounds and their healing trajectories. The Food and Drug Administration has recently consulted with expert groups to consider percentage area reduction (PAR) of the wound over a 4-week period as a valid intermediate endpoint, creating the opportunity for more powerful study designs. This presentation assesses this opportunity for patients with venous leg ulcers.

Method: A within-subject controlled study design comparing the PAR of venous leg ulcers in patients over 4 weeks receiving different interventions. 29 patients received multi-layer compression over 4 weeks, followed by neuromuscular stimulation (NMES) of the leg muscle pump in addition to compression for a further 4-weeks. Paired comparison was then made of PAR between the two phases. A second cohort of 22 patients received only multi-layer compression throughout both 4-week phases.

Results/Discussion: Patients randomized to NMES saw a significant increase in healing rate compared to compression alone, whereas patients receiving compression only saw no significant change in healing rate throughout the course of the study.

Conclusion: Intermittent NMES of the common peroneal nerve significantly accelerates the healing of venous leg ulcers. It is well tolerated by patients, and deserves serious consideration as an adjuvant to compression therapy. PAR is a useful metric for comparing the performance of wound healing interventions, and the self-controlled trial design allows sensitive discrimination with a relatively small number of subjects over a reasonably short trial period.

OP100 Revisiting clinical efficacy of autologous platelet-rich plasma gel in patients with hard-to-heal diabetic foot ulcers in a multi-center study in Japan

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Aim: To evaluate the healing outcome of a platelet-rich plasma (PRP) gel prepared with TKKT01 in Japanese patients with hard-to-heal diabetic foot ulcers (DFUs) who showed an inadequate response to ≥ 4 weeks of standard of wound care.

Methods: This open-label, single-arm, multicenter study was conducted on 15 centers in Japan. Eligible patients received PRP gel treatment twice a week for 8 weeks, followed by a final evaluation after the completion of week 8 (day 57). The primary endpoint was the percentage of patients who achieved $\geq 50\%$ reduction in wound radius at the final evaluation (achievement criterion, $\geq 60\%$ of patients). The secondary endpoints included wound area and volume reduction rates, time to possible wound closure by secondary intention, a relatively simple procedure, and safety at the final evaluation. The median time to possible wound closure by secondary intention and relatively simple procedure was 57 and 43 days, respectively. Complete wound closure at the final evaluation was achieved in 27 patients (57.4%). No safety concerns were raised.

Results/Discussion: Fifty-four patients were enrolled per protocol ($n=47$); the primary endpoint was met in 80.9% (95% confidence interval: 66.7%, 90.9%; 38/47) who achieved $\geq 50\%$ wound radius reduction at the final evaluation. High rates of wound area (72.8%) and volume (92.7%) reduction were observed in the final evaluation.

Conclusion: The efficacy and safety of PRP gel treatment with TKKT01 have been confirmed in Japanese patients with hard-to-heal DFUs.

OP101 Randomized controlled trial on direct cold atmospheric plasma treatment in chronic venous leg ulcers: 62% complete wound closure vs 25% with standard of care

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Aim: This study compared the effect of two frequencies of direct cold atmospheric plasma (direct-CAP)¹ treatment with standard of care (SOC) alone on healing of venous leg ulcers (VLUs). CAP is distinguished from other treatments by its multifaceted effects: kills microbes, inactivates biofilm, stimulates tissue growth, and improves microcirculation.

Method: Open-label, randomized controlled trial (ClinicalTrials.gov: NCT04922463) on chronic VLUs at two home care organizations in the Netherlands. All three groups received SOC for 12 weeks or until healing. Additionally, treatment groups received direct-CAP once (1x direct-CAP) or twice (2x direct-CAP) a week, at specialized wound care facilities and the patients' residences. Primary outcome was percentage of wounds healed. Secondary outcomes included wound area reduction and adverse events.

Results/Discussion: 46 patients were randomly allocated to receive SOC only ($n=15$), SOC + direct-CAP once a week ($n=17$) or SOC + direct-CAP twice a week ($n=14$). A higher percentage of wounds healed within 12 weeks in the treatment groups: 53.3% (1x direct-CAP, $p=0.16$) and 61.5% (2x direct-CAP, $p=0.08$) vs 25.0% (control). Wound healing was significantly increased in both treatment groups compared with a 25% fixed proportion. The largest wound area reduction was obtained with 2x direct-CAP (95.2%), followed by 1x direct-CAP (63.9%), and control (52.8%). No device-related serious adverse events occurred.

Conclusion: Direct-CAP applied once or twice a week could substantially improve wound healing of VLU in primary care. These results align with existing clinical data, supporting the integration of direct-CAP as a valuable therapy for complex wounds.

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OP102 A prospective research comparing hyperspectral imaging and toe pressure to predict wound healing

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Aim: Quick and noninvasive diagnostics are crucial for guiding healthcare professionals in the management of wounds, aiming to reduce complications or unnecessary interventions. The frequently used Toe Pressure measurements (TP) are nonspecific, time-consuming, need specialized trained staff and cannot easily be transported. Hyperspectral imaging (HSI) presents a movable, non-invasive modality for wound assessment in six seconds. This study seeks to assess the reliability of HSI in predicting wound healing within a 12-week period, comparing its efficacy to toe pressure.

Method: 137 patients with a non-healing wound below the knee, who were suspect for arterial disease, received both HSI and TP at the start of treatment. The relative operating characteristic curve (ROC) was employed to determine optimal cut-off points and evaluate the sensitivity/specificity of HSI and TP.

Results/Discussion: The most comparable outcome between HSI and TP was observed in the near-infrared (NIR) spectrum. An NIR with a value higher than 35% means that 90% of the wounds heal within 12 weeks. TP higher than 29.5 mmHg results in a similar outcome (93% sensitivity). Specificity was low in both tests. The area under the curve (AUC) did not significantly differ between NIR and TP (0.703 for NIR and 0.714 for TP). Given the study's objective of maximizing sensitivity, the chosen cut-off points aim to minimize the risk of overlooking patients unlikely to experience spontaneous healing within 12 weeks.

Conclusion: Hyperspectral imaging is comparable to toe pressure for assessing wounds and distinguishing their likelihood of healing within a 12-week timeframe.

Antimicrobials & e-Health

OP103 How non-medicated dressings are tested using in vitro and ex vivo test methods

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Aim: Non-medicated wound dressings (NMWD) are a type of dressing that does not contain an active ingredient. NMWD aim to eliminate wound bioburden via mechanisms other than active killing such as debridement and sequestration of microorganisms/toxins. In this study we present a range of in vitro/ ex vivo models aimed to confirm NMWD mode of action.

Method: Bacterial sequestration was assessed by placing wound dressings inside *Pseudomonas aeruginosa* and *Staphylococcus aureus* inoculated trays and incubating for up to 48 hours. After, dressings were transferred onto fresh agar and incubated overnight. The agar under the dressing was observed to demonstrate bacterial retention within the dressing. Sequestration of bacteria was also visualized inside the dressing layers using SEM.

Removal of exudate was evaluated using a complex ex vivo mucoid biofilm model. Porcine skin samples, with pre-formed *P.aeruginosa* 7 days biofilms, were treated with each wound dressing. Remaining viable organisms and total remaining protein were assessed.

MMP modulation was assessed by incubating dressings with MMPs for up to 24 hours. After which remaining proteinase concentration was determined.

Results/Discussion: All three studies showed increased bacterial sequestration, removal of mucoid exudate and MMP modulation of NMWD compared to gauze or other dressing types.

Conclusion: In vitro/ex vivo models outlined in this study assess the mode of action of NMWD. Preclinical models are extremely important in predicting clinical performance. In this study, these models can help establish whether NMWD can remove the bioburden at the wound surface without the use of antimicrobial agents.

OP104 Micro-porous ceramic dressings or silver impregnated dressings in the treatment of infected wounds: a randomised controlled study

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Aim: The ever-increasing risk of antimicrobial resistance highlights the need for non-medicated alternatives to treat infected wounds. The aim of the study is to compare the reduction of bacterial load and healing rate between micro-porous ceramic and silver-impregnated dressings.

Method: Eligible patients from two outpatient wound management clinics were randomised into 2 groups. A total of 53 participants were successfully enrolled, 28 in the ceramic dressing group and 25 in the silver-impregnated dressing group. Wounds were reviewed on days 0,3,7,14,21 and 28. MolecuLight fluorescence imaging was used to measure the presence of bacterial load of more than 10⁴CFU/g, and MolecuLight wound tracing was used to measure the wound size.

Results/Discussion: There was a significant (p=0.001) difference in the distribution over the categories of bacterial load cleared after 1,2,3, or 4 weeks in the two groups. Bacterial load cleared significantly faster in the ceramic group. The secondary objective for the treatment groups was to compare reductions in wound size. The mean size of the wounds was 10.93cm² (range 0.1 to 37.95) in the silver group and 11.48cm² (range 0.8 to 60) in the ceramic group. In a maximum likelihood regression analysis, the treatment groups differed significantly (p=0.026), and the mean change in wound area for the ceramic group (Predicted mean: 6.56cm² and 95% CI: 4.29cm² – 8.83cm²) is greater than for the silver group (Predicted mean: 2.81 cm² and 95% CI: 0.41cm² – 5.2cm²).

Conclusion: Ceramic dressings seem to be an effective alternative to silver impregnated dressings when treating clinically infected wounds.

OP105 Comparing the antibacterial and healing properties of medical-grade honey and silver-based wound care products in burns

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Background: Burns are a major global healthcare concern, often complicated by the presence of bacteria such as *Pseudomonas aeruginosa*. Silver-based dressings are commonly used in the treatment of burns but can cause skin irritation and delayed healing. Medical-grade honey (MGH) provides an interesting alternative. This study investigated several wound healing characteristics of different MGH-based products and silver-based burn treatments in an *ex vivo* human burn model.

Methods: Burns were created in an *ex vivo* model using human skin obtained from adult patients undergoing elective surgery. Assessed products included supplemented MGH-gel¹ and its individual components, Manuka MGH-gel², silver sulphadiazine (SSD)³, and silver nitrate (AgNO₃). Antimicrobial activity, and wound healing parameters, including re-epithelialization, keratinocyte proliferation, and cytotoxicity were assessed. MGH-gel was investigated clinically.

Results: The supplemented MGH-gel¹, SSD³, and AgNO₃ reduced *P. aeruginosa* numbers below detection levels. Notably, the supplemented MGH-gel¹ exhibited a significantly stronger antimicrobial effect compared to the Manuka MGH-gel². The individual components of the supplemented MGH-gel¹ contributed significantly to its antibacterial efficacy, thus suggesting synergistic activities. Moreover, the supplemented MGH-gel¹, SSD³, and AgNO₃ slightly inhibited re-epithelialization while the treatment with the Manuka MGH-gel² resulted in a complete lack of re-epithelialization and keratinocyte proliferation. Furthermore, clinical cases illustrated the effectiveness of supplemented MGH therapy in infected burns.

Conclusion: Overall, the supplemented MGH-gel¹ had similar effects as silver-based products on bacterial load and epidermal regeneration, but outperformed the Manuka MGH-gel². Therefore, supplemented MGH could be used as an effective alternative to silver-based dressings for *P. aeruginosa*-infected burns.

¹L-Mesitran Soft

²Medihoney

³Flammazine

OP106 The introduction of podiatric telemedicine for wound care management

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Aim: To evaluate stakeholders views with regards to the inclusion of podiatric telemedicine for wound care management.

Method: Three virtual focus groups (n=16) comprising patients, podiatrists, and senior managers were conducted. The Delphi technique was utilised to establish an evidence-based podiatric telemedicine guideline for wound care management in a primary care setting. The responses were analysed utilising thematic analysis.

Results/Discussion: Results demonstrate that stakeholders understand the significance of prioritizing prevention rather than treatment and accept that the scope of healthcare extends beyond clinical environments. When addressing the issue of wound management, particularly foot ulcerations, stakeholders acknowledged that it

predominantly entails primarily a practical engagement. Nevertheless, patient education and guidance for daily self-care in these sensitive scenarios are also crucial components of managing the high-risk foot. Hence, podiatric telemedicine holds significant promise and potential in educating patients about the essential care required to maintain optimal foot health and reduce complications by facilitating early interventions with a podiatrist. Moreover, telemedicine has the potential to prioritise traditional consultations for patients requiring urgent foot care.

Conclusion: Integrating podiatric telemedicine with conventional podiatry practices presents a pragmatic strategy for optimal wound care management. Promoting patient education and empowerment through podiatric telemedicine is paramount in maintaining the overall health of patients' feet by implementing preventive measures and timely interventions.

OP107 Deep learning-based method for survival prediction using wound images of pressure ulcers

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Aim: Pressure ulcers (PUs) were found to be associated with the general health conditions and underlying diseases of patients, which could be quantified by the Eastern Cooperative Oncology Group (ECOG) performance status. The authors conceived the idea of employing a deep learning model to predict patient survival based on digital photographs of PUs.

Method: For 961 patients with PUs in the sacrum or coccyx, the initial photograph taken at the time of admission was designated as the input data. Following the extraction of photos as 512 features, survival prediction was conducted using DeepSurv and SurvNet as the forecasting models, and the model's performance was assessed using the c-index.

Results/Discussion: Among the 961 patients, 206 were identified as deceased, while 755 were classified as survivors. After experimenting with various methods for the deep learning model, we determined that extracting 512 features from the image using a deep learning model, transforming them into 128 variables, and applying the SurvNet prediction model yielded the highest c-index, which was 0.7699 (where a c-index of 0.5 denotes randomness and convergence to 1 indicates superior performance).

Conclusion: This study, to the best of our knowledge, is the first known research to conduct survival prediction using deep learning with digital photos. The identified c-index of 0.77 in this study demonstrates notably high performance. If this study is developed into a mobile application, it will be possible to calculate the probability of a patient's expected date of mortality.

OP108 Monitoring negative pressure wound therapy for diabetic foot/leg ulcers using WhatsApp

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Aim: Telemedicine (TM) has been advanced as an innovative effective approach to wound care management. The majority of TM models provided costly tele-consultations, after initial face-to-face evaluation. Short Message Service such as WhatsApp could be an alternative in low-income countries but no studies explored its efficacy in wound

management. The aim is to evaluate the utility and effectiveness of WhatsApp in monitoring negative pressure wound therapy (NPWT) for diabetic foot ulcer treatment.

Method: A practical protocol was established between the patients, wound nurse and treating physician. A subsequent face to face consultation was scheduled when complication was suspected. The defined outcomes were: a) wound outcome, b) percentage of visual files deemed acceptable for proper decision, c) percentage of accurate cases where a new or recurrent infection was suspected, c) percentage of accurate cases where a wound was thought to need debridement.

Results/Discussion: The prospective study included 22 patients with wounds of varied stages. Out of the 196 sets of imaging data, 186 (95%) were deemed acceptable for proper decision. Out of the seven cases where a new infection was suspected, five (71.5%) were confirmed on face-to-face consultation. Out of the 11 cases where debridement was favored based on the files, confirmation of a needed debridement was recorded in 8 (73%) cases.

Conclusion: This preliminary report showed a high reliability of information exchange for diabetic wound follow-up management when using a low cost application such as WhatsApp. While accuracy of diagnosis was very acceptable, no missed complication was recorded.

Wound Assessment

OP109 The process of clinical decision-making in wound care: a scenario-based think-aloud study

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Aim: To undertake a comprehensive investigation into both the process of information acquisition and the clinical decision-making process utilized by primary care nurses in the course of treating chronic wounds.

Method: Scenario-based think-aloud method, enriched by the integration of information processing theory. The study was conducted within the framework of home care nursing organizations situated in [placeholder]. A cohort of primary care nurses (n=10), each possessing a minimum of one year of nursing experience, was recruited through the collaboration of three home care nursing organizations. Two real-life clinical practice scenarios were employed for the interviews, with the researcher adopting the roles of either the patient or another clinician to enhance the realism of the think-aloud process. Each think-aloud session was promptly succeeded by a subsequent follow-up interview

Results/Discussion: Amidst noticeable variations, a discernible pattern surfaced, delineating three sequential concepts: 1. gathering overarching information, 2. collecting and documenting wound-specific data, and 3. interpreting information to formulate wound treatment strategies. These concepts encompassed collaborative discussions with stakeholders, while the refinement of wound treatment strategies was interwoven within both concepts 2 and 3.

Conclusion: Evident variations were identified in wound care clinical decision-making, regardless of educational background or experience. These insights hold the potential to inform the development of clinical decision support systems for chronic wound management and provide guidance to clinicians in their decision-making endeavours.

OP110 Unveiling the therapeutic potential of peperomia pellucida: Phytochemical profiling, antioxidative and wound healing properties

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Aim: The aim of the study was to investigate the efficacy of Peperomia pellucida nanoemulsion (PPNE) as a novel therapeutic approach for enhancing burn wound healing in Wistar rats.

Method: The method involved formulating a nanoemulsion using the high-energy ultrasonication method, with optimization for droplet size, polydispersity index, and stability. A 30% burn wound was induced on the dorsum of 60 Wistar rats, which were then divided into three groups: control (untreated), silver sulfadiazine (SSD) treated, and PPNE treated. The levels of inflammatory cytokines (TNF- α , IL-6, and IL-1) were measured using enzyme-linked immunosorbent assay (ELISA).

Results/Discussion: The results showed that treatment with PPNE significantly accelerated wound closure rates compared to both the control and SSD-treated groups, achieving complete wound closure by day 10 in the PPNE-treated group. Histopathological examination revealed improved re-epithelialization, granulation tissue formation, and collagen deposition in the PPNE group. Furthermore, PPNE treatment resulted in a significant reduction in inflammatory cytokine levels and an enhancement in antioxidant enzyme activities, suggesting a decrease in inflammation and oxidative stress in the treated wounds.

Conclusion: The conclusion of the study is that Peperomia pellucida nanoemulsion (PPNE) represents a promising and effective therapeutic strategy for improving burn wound healing. The enhanced healing observed is likely due to the anti-inflammatory, antioxidant, and antimicrobial properties of PPNE. This warrants further investigation and potential clinical application.

OP111 Does bacterial fluorescence imaging improve chronic wound biofilm detection over standard clinical assessment and blotting?

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Aim: Biofilm is a destructive and resilient form of bacterial loads that is highly prevalent in chronic wounds. It is notoriously hard to identify and localize at the bedside, resulting in missed or incomplete removal and its rapid reconstruction within 24-hours. This study compared promising methods for point-of-care biofilm localization: fluorescence imaging of wound bacterial burden and biofilm blotting techniques.

Method: In this clinical trial, 40 chronic wounds underwent the following assessments: (1) Biofilm Based Wound Care (BBWC) checklist for clinical signs of biofilm, (2) biofilm blotting, (3) fluorescence imaging for localizing bacterial loads*, wound scraping taken for (4) scanning electron microscopy to confirm matrix encased bacteria (biofilm), and (5) PCR and NGS sequencing to determine absolute bacterial load and species present.

Results/Discussion: 20 patients positive and 20 patients negative for the BBWC checklist were recruited. Biofilm (defined as positive microbiology and SEM co-localization of bacteria/ECM) was present in 65% of wounds. Blotting paper technique fared poorly in biofilm detection (37% accuracy) similar to clinical assessment (40% accuracy). Fluorescence imaging however performed very well (60% accuracy and 81% sensitivity) for biofilm detection, numbers likely a bit lower due to planktonic bacteria detection.

Conclusion: This trial provides the first evidence of clinical biofilm detection by fluorescence imaging. It alerted to regions of biofilm at the point-of-care with greater accuracy than standard clinical assessment or biofilm blotting paper. Fluorescence imaging technology offers a unique and rapid approach to detecting wound biofilm, to encourage optimal wound hygiene and clinical outcomes.

*MolecuLight

OP112 Wound Area Severity Index (WASI): a novel tool for predicting healing times in hidradenitis suppurativa post-surgical wounds

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Aim: Hidradenitis suppurativa (HS) is a chronic inflammatory condition affecting hair follicles, characterized by recurrent abscesses, nodules, and tunnels. Treatment often involves surgical excision, but there is currently no scoring system to predict healing times based on clinical parameters. The study aims to introduce a new tool, the Wound Area Severity Index (WASI), to guide clinicians in assessing post-surgical wound progression and predicting potential healing times.

Method: Between December 2021 and November 2023, a team of wound healing experts assessed 83 post-surgical HS wounds, derived from wide excision and secondary intention healing, using three parameters: area, Wound Bed Score (WBS), and WASI. The WASI Score includes four parameters—Area, Temperature, Depth, and Wound Bed—each with four severity options. The total WASI Score ranges from 4 to 16. For each patient, we conducted a Pearson correlation analysis between the 3 parameters analyzed (Area, WBS and WASI) and the healing time of the postsurgical wound.

Results/Discussion: We observed a strong positive correlation between WASI scores and wound healing time ($r: 0.78, p\text{-value} < 0.001$), which was higher than the moderate positive correlation found between Area and healing time ($r: 0.71$) and the moderate negative correlation between WBS and healing time ($r: -0.72$).

Conclusion: To date post-surgical wounds evaluation was performed through the clinician's visual assessment, often without the use of guiding tools. The WASI represents an easy, quick, and cost-effective tool to objectively monitor the progression of the lesion towards healing and the appropriateness of the chosen treatment.

OP113 Microbial burden, pain, inflammation, stress, and delayed wound healing: cohort study

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Aim: To analyze the relationships between microbial burden, wound-related pain, inflammation, and their impact on stress and healing in patients with hard-to-heal wounds.

Method: A prospective cohort study, approved by an ethics committee, included 41 adults with leg ulcers (63.8%), followed up from two to eight appointments at an outpatient clinic after informed consent was obtained. REDCap[®] was used for data collection with the Bates-Jansen Wound Assessment Tool (BWAT) for healing and the Perceived Stress Scale. Brief Inventory of Pain, McGill Pain Questionnaire, and Neuropathic Symptom Rating Scale for pain. The LOWER and UPPER checklist, with thermography; fluorescence UV light to visualize areas of $>10^4$ CFU/g of bacteria, guiding the biopsies' locations for microorganisms' detection. Through ELISA, inflammatory mediators (IL-1 β , IL-10, TNF- α) were identified in wound fluid samples.

Results/Discussion: The mean BWAT score was 23.2 (SD 9.8), decreasing by 3.2 points throughout consultations; however, 21.3% remained in delayed wound healing. The mean stress score was 23 (SD 10), dropping by 3 (SD 12) points. Correlation analysis ($p < .01$) showed a strong relationship between number of isolated bacteria and pain during dressing changes ($r = .720$). TNF α inflammation indicator was moderately correlated to neuropathic pain ($r = -.422$). BWAT had a low correlation with McGill's number of pain descriptors ($r = -.234$). Stress was low correlated to pain after procedures ($r = .457$), BPI Sensitivity ($r = .436$), and pain now ($r = .407$).

Conclusion: stress and healing were correlated with pain, identifying its assessment as a potential predictor for hard-to-heal wounds and the patient's experience.

OP114 Clinical signs and symptoms and biomarkers indicating presence of biofilm in chronic wounds: a scoping review

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Aim: To record signs, symptoms and biomarkers that are being reported in the literature as indicative of biofilm in chronic wounds.

Method: The Joanna Briggs Institute Manual for Evidence Synthesis and the Preferred Reporting Items for Systematic Reviews extension for Scoping Reviews (PRISMA-ScR) guided this review process.

Medline, Embase, CINAHL, Cochrane Central and BASE were searched for studies including patients with diabetic, venous, mixed arterial-venous or pressure ulcers.

Reviewer pairs independently screened titles/abstracts and full text articles against pre-determined eligibility criteria.

Discrepancies were resolved by discussion between reviewers or third-party intervention. Data was extracted by one reviewer and verified by a second.

Results/Discussion: Searches returned 6,556 titles/abstracts. Post de-duplication, 3,650 titles/abstracts were screened and 260 were included for full text review. Reference scanning was carried out on 20% of included full texts. Thus far, data has been extracted from 95 eligible articles. Reported signs and/or symptoms were organized into 28 categories including visual indicators (e.g. shiny surface), exudate, non-healing wound, signs of infection, wound edge, eschar, and antimicrobial failure. Visual indicators, antimicrobial failure, non-healing, and exudate were the most frequently reported signs/symptoms (135, 86, 70 & 46 times respectively). No evidence of any reported signs and/or symptoms having been validated was apparent.

Conclusion: Signs and symptoms in the literature indicating biofilm in chronic wounds appear to be based on subjective opinion. This review contributes to a project that aims to determine if a validated clinical signs and symptoms detection tool for biofilm in chronic wounds can be developed.

OP115 Ultra-high Frequency Ultrasound (UHFUS) characterization of the inflammatory and non-inflammatory phase of pyoderma gangrenosum: A comparison study between chronic and acute wounds

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Aim: Pyoderma gangrenosum (PG) is a neutrophilic dermatological disorder, characterized by innate and adaptive immunity dysregulation. The aim of the study is to characterize Ultra High-Frequency Ultrasound (UHFUS) differences among various cutaneous ulcerative diseases.

Method: We enrolled 45 patients: 15 patients suffered from PG (Inflammatory phase: Group 1; Non-inflammatory phase: Group 2); 15 patients had Venous Leg Ulcers (VLU) (Group 3); and 15 patients had acute ulcerative lesions (Group 4). Each lesion underwent UHFUS examination, assessing features such as ulceration angle, epidermal and dermal morphology, vascular characteristics, and “scattering” signals.

Results/Discussion: Significant differences in ulceration angles were identified: obtuse in VLU (Group 3), flat or straight in acute lesions (Group 4), and predominantly acute or straight in PG (Group 1). Group 1 displayed notable fragmentation of the dermoepidermal junction (DEJ), with specific features like a subepidermal hypoechoic Band, dermal hypoechogenicity, and fluid collections. The predominant vascular morphology in Groups 3 and 4 was regular, while in Groups 1 and 2, it was irregular, presenting a high degree of “scattering” signals.

Conclusion: The study underscores the usefulness of UHFUS as a valuable imaging tool for evaluating skin ulcers. It offers new insights into the recognition of PG inflammatory phase showing promise for early biomarkers to enhance diagnosis and treatment.

Diabetic Foot 4

OP116 Antimicrobial peptide-loaded hydrogels as a functional therapeutic approach for chronic diabetic foot ulcers

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Aim: Diabetic foot ulcers (DFUs) are the leading cause of non-traumatic amputations globally, which efficient management remains a clinical challenge, particularly in treating severe infections. Despite their promising antimicrobial and wound-healing effects, endogenous antimicrobial peptides (AMPs) may be insufficient or impaired in conditions like DFUs. Alternatively, functional biomaterials as delivery systems for exogenous AMPs have emerged as an encouraging therapeutic strategy to handle the tricky DFU environment. Here, we aimed to develop and characterize alginate (ALG)-based hydrogels with sustained release of AMPs to promote wound healing.

Method: Briefly, ALG hydrogels were produced by ionic crosslinking and were characterized through scanning electron microscopy and rheology techniques. A streptozotocin-induced diabetic mouse model of wound healing was used to assess the effects of empty and AMP-loaded hydrogels on wound closure and microbial load compared to a gauze control. Histological analysis (H&E and Masson's trichrome stainings) and immunohistochemistry were used to analyze wound maturation, and inflammatory, angiogenic and proliferative markers.

Results/Discussion: ALG hydrogels presented suitable elasticity and stiffness to be used as wound dressings, whilst exhibiting a nanometric porous structure. Moreover, AMP-loaded hydrogels accelerated wound healing, by stimulating re-epithelialization and tissue remodeling, and decreased the wound microbial load by 9.2-fold, compared to control. Finally, AMP-loaded hydrogels decreased the macrophage M1/M2 ratio, and the production of ROS, while increasing the number of CD31⁺ and Ki67⁺ cells, and the production of COL1A1, compared to control.

Conclusion: AMP-loaded ALG hydrogels significantly enhanced wound healing by enabling a favourable environment characterized by anti-inflammatory, pro-angiogenic, proliferative and antimicrobial properties.

OP117 Baseline low hemoglobin, albumin and poor glycemic control donot effect efficacy of novel topical esmolol hydrochloride gel for diabetic foot ulcer healing

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Aim: Novel topical esmolol significantly improve wound healing than standard of care (SoC). Patient related factors anemia and poor glycemic control impedes wound healing. Outcome was proportion of complete diabetic foot ulcer closure with reference to baseline hemoglobin, albumin and HbA1c.

Method: This is a double-blind, vehicle (placebo)-controlled, randomized clinical trial in subjects with non-infected diabetic foot ulcers of grade 1A and 1C. Participants were randomized to receive either topical Esmolol gel (Galnobax with SoC), SoC only and Vehicle (Placebo) with SoC in 3:3:1 proportion. The hematologic and biochemistry parameters were evaluated at screening visit and 4 weekly during treatment phase till end of the study (EOS).

Results/Discussion: A total of 176 subjects were included. 94 out of 140 participants (67.1%) had anemia at baseline. Among anemic participants 57.4% ulcers closed in Galnobax group whereas 42.6% closed in SoC only

group during 12-week treatment phase ($p=0.148$, OR = 1.823, 95% CI = 0.80-4.13). One-third participants reported albumin < 4.0 g/dL. Among participants having albumin < 4.0 g/dL (one-third of participants), the proportion of ulcer closure was 60.9% in Galnobox group compared to 42.1% in SoC only group ($p=0.225$, OR = 2.139, 95% CI = 0.62- 7.37). Proportion of ulcer closure in Galnobox with SoC group was higher (72.5%) compared to SoC only group (43.5%) ($p=0.0067$, OR = 3.427, 95% CI = 1.38 – 8.48) in participants with poor glycemic control (HbA1c > 8%).

Conclusion: Novel topical esmolol exhibited significant DFU healing independent of patient related factors including anemia, hypoalbuminemia and poor glycemic control.

OP118 Development of sub-first metatarsal head ulceration after charcot midfoot re-alignment arthrodesis

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Aim: To identify patients who developed sub-first metatarsal head ulceration after realignment arthrodesis for reconstruction of Charcot midfoot deformity.

Method: A retrospective review was performed to identify patients who developed full thickness ulceration beneath the first metatarsal head after realignment arthrodesis for midfoot Charcot neuroarthropathy using intramedullary fixation techniques.

Results/Discussion: 11 patients were identified and included nine males (82%) with a median age of 60 years and median duration of diabetes of 10.5 years. Median time from surgery until development of the ulcer was 32 weeks, and overall median follow up was 136 weeks. Compared to preoperative radiographs, median improvement in the lateral talar-first metatarsal was 30° ($p=0.0004$) and median improvement of the calcaneal inclination angle was 15° ($p=0.02$). Five patients (45%) required return to the OR for surgical intervention due to the ulceration. Only four patients (36%) are currently healed.

Conclusion: Development of sub-first metatarsal head ulceration after realignment arthrodesis using intramedullary fixation was an unexpected complication. We hypothesize that significant improvement in medial column alignment, coupled with a completely rigid medial column results in increased plantar pressure beneath the first metatarsal head. Additionally, damage of the first MTP joint during insertion of fixation may also play a role in stiffening the joint. This complication often requires return to the OR for additional surgical interventions. Potential solutions to avoid this include prophylactic sesamoid excision and distal first metatarsal osteotomy at the time of the initial re-alignment arthrodesis surgery.

OP119 Role of self-offloading therapeutic footwear in diabetic foot disease

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Aim: This paper proposes dynamically self-offloading therapeutic footwear that operates mechanically without using sensors and actuators to prevent the adverse effects of prolonged high plantar pressure in subjects with diabetic peripheral neuropathy

Method: High-pressure regions (>200Kpa) are identified from the clinical data, and the arches are placed to offload these high-pressure regions dynamically and redistribute the same to other regions. In the self-offloading mechanism, the arches are designed so that when one gait phase gets over, the arches underneath the sole return to their undeformed position to take the load in the next gait phase. A complete 3D-printed prototype made of thermoplastic polyurethane was tested and compared with barefoot and in-shoe plantar pressure for 100 subjects recruited at a clinical facility.

Results/Discussion: The disease duration significantly differed ($p=.007$) between neuropathic and nonneuropathic subjects. In terms of pressure, at MTH1, pressure for neuropathic subjects differs significantly from other groups ($p=.02$). It is observed that the forefoot region and heel region bear maximum pressure for all subjects, and it is above the threshold value of 200kPa. The self-offloading insole shows the plantar pressure reduction at all the foot regions, and a significant offloading of 57% is observed at the forefoot region.

Conclusion: The mechanism presented in this study helped offload the high-pressure regions above the critical value. The prototype is tested using the in-shoe method for dynamic offloading. The concept shows positive results and can be implemented to reduce high plantar pressures.

OP120 Clinical evaluation of a first-in-class antibacterial wound dressing in patients with infected diabetic foot ulcers

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Aim: Diabetic foot ulcer (DFU) poses significant healthcare challenges. Advanced Antibacterial Wound Dressing (AAWD) is based on Nanordica Medical technology with synergistic copper and silver nanoparticles. The clinical trial evaluated the efficacy and safety of AAWD compared with a commercially available hydrofiber silver ion-dressing (HSBD) as primary endpoints. Secondary objectives included comparing changes in wound appearance and patient quality of life (QoL).

Method: This randomized, single-blinded clinical trial enrolled 30 patients with grade 2 DFU infections. Patients were randomly assigned to AAWD or HSBD groups and treated for 1 week followed by 2 weeks of treatment with non-antibacterial gauze.

Results/Discussion: The trial demonstrated a nearly two-fold greater reduction in wound area size (WAS) in AAWD group compared to HSBD group. The model allowed to extrapolate the effects beyond the period observed in the study, showing that the time required to achieve 50% WAS reduction was nearly double in the HSBD group (37 days) than in AAWD group (21 days). Bacterial loads remained stable in AAWD group with a trend towards reduction; HSBD group showed a moderate increase in bacterial load. Improvements in wound parameters (edge redness, swelling, exudate quantity) and QoL scores were more pronounced in AAWD group. Remarkably, the prevalence of adverse events was lower in AAWD group compared to HSBD group.

Conclusion: Nanordica's AAWD showed to be an excellent treatment for moderately infected DFUs, showing good tolerability and consistently better results in nearly all efficacy and safety parameters compared to popular certified antibacterial Ag ion-based dressing.

OP121 Validating a new thermographic diabetes foot screening methodology

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Aim: To determine whether thermography can be used as a screening modality to detect type 2 diabetes mellitus (T2DM) complications by measuring the cutaneous temperature of specific areas of the foot

Method: A thermogram of the plantar aspect of the foot was taken for each participant using a thermal camera. The probability of complications for each foot was calculated using equations previously published in literature based on the cutaneous temperature. All subjects underwent a clinical assessment by a clinician blinded to the results of

the thermography analysis to diagnose peripheral arterial disease, neuropathy, or neuroischaemia. The probability of diabetic foot complications was then compared with the actual presence or absence of diabetic foot complications arising from the clinical examination. The sensitivity, specificity, positive-predictive and negative predictive values were calculated for four different probability cut-off points (at 0.4, 0.5, 0.6,0.7) on ten different regions of interest.

Results/Discussion: In 66 feet, using a 0.5 probability cut-off point was found to have the greatest sensitivity of detecting complications, ranging from 93% to 97% in the toes and 93% to 100% in the forefoot. Importantly, all participants with peripheral arterial disease, neuropathy and neuroischemia were identified using the 1st metatarsophalangeal joint region of interest.

Conclusion: Results indicate that thermography can effectively detect diabetic foot complications with high sensitivity and specificity. In a clinical setting, this technology can be a helpful tool for reducing waiting times and resources for diabetic foot screening and detecting T2DM foot complications faster.

OP122 Determination of Dipasol FC and Dipasol compositions impact on stem cells and tissue regeneration

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Aim: Pluripotent stem cells, recognized for their rejuvenating and immune support functions, demonstrated a substantial thousand-fold increase in yield when our researchers combined cAMP-phosphodiesterase and histone deacetylase inhibitors. Despite requiring genetic modification, this success has spurred exploration into identifying small-molecule substances with similar potential.

Method: In the investigation of wound-healing properties, 38 male Wistar white rats underwent experiments involving anesthesia and the creation of 2 cm by 2 cm skin wounds on the dorsal side. The wounds, with an average area of 4±1.0 cm² and polygonal shapes, resulted in intense bleeding. Groups 1 and 2, each with 10 rats, were treated with Dipasol FC and Dipasol aerosol, respectively. Group 3 (10 rats) received “panthenol,” while the control group (8 animals) remained untreated. A parallel study was also conducted on guinea pigs.

Results/Discussion: A planimetric study assessed wound healing on days 3, 6, 9, 11, and 13 post-experiment initiation. Celluloid film was applied to wounds, and contours were plotted for surface area determination using graph paper. This method facilitated a detailed analysis of reparative processes, offering insights into the efficacy of tested substances in promoting skin regeneration before complete wound healing.

Conclusion: In a rat model, Dipasol aerosol accelerated skin regeneration by 2 times, while a guinea pig study showed a 5-fold acceleration in wound healing. These results hint at a potential breakthrough in regenerative medicine, offering promise for enhanced wound healing and potential applications in addressing age-related challenges through pluripotent stem cell enhancement.

Basic Science

OP123 Functionally enhanced human adipose-derived stem cells facilitate wound healing and revascularization in diabetic foot ulcer: In vitro and in vivo study

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Aim: Peripheral vascular disease worsens diabetic foot disease and contributes to the occurrence of ischemic ulcers. Adipose-derived stem cells (ADSCs) possess the potential to promote angiogenesis and regeneration due to their strong paracrine effect. This research study validated the positive impact of enhanced human ADSCs (ehADSCs) combined with a mixture of fibroblast growth factor (FGF) in promoting the healing of diabetic foot ulcers.

Method: Adipose tissue was harvested from human abdomen and went through isolation and subculture process with FGF. After culturing of both hADSCs and ehADSC on 96-well plate, then following studies were performed; BrdU assay for migration, antioxidant test, RNA analysis for expression of growth factors, co-culture with fibroblast for invasion analysis. In an animal model of diabetes induced by streptozotocin, local transplantation of 1.2×10^6 hADSCs, ehADSCs or normal saline was performed.

Results/Discussion: *In vitro* experiments demonstrated that ehADSCs displayed elongated spindle-shaped morphology and exhibited significantly increased proliferation. Furthermore, ehADSCs demonstrated improved functionality in terms of tolerating oxidative stress, maintaining stem cell properties, and mobility. And *in vivo* experiment, the ehADSCs group exhibited a statistically significant reduction in wound size and increased blood flow compared to both the hADSCs group and the sham control group.

Conclusion: In conclusion, ehADSCs demonstrated superior performance *in vitro* when compared to conventional hADSCs. Moreover, topical injection of ehADSCs into diabetic foot ulcer improved wound healing, blood flow, and histological markers associated with revascularization.

Figure 1. Process of cultivated adipose-derived stem cells from human-derived adipose tissue. Adipose tissue was processed to obtain single cells, which were then cultured three times with fibroblast growth factor (FGF). After the third subculture, cells were collected and underwent a suitability test to assess their quality

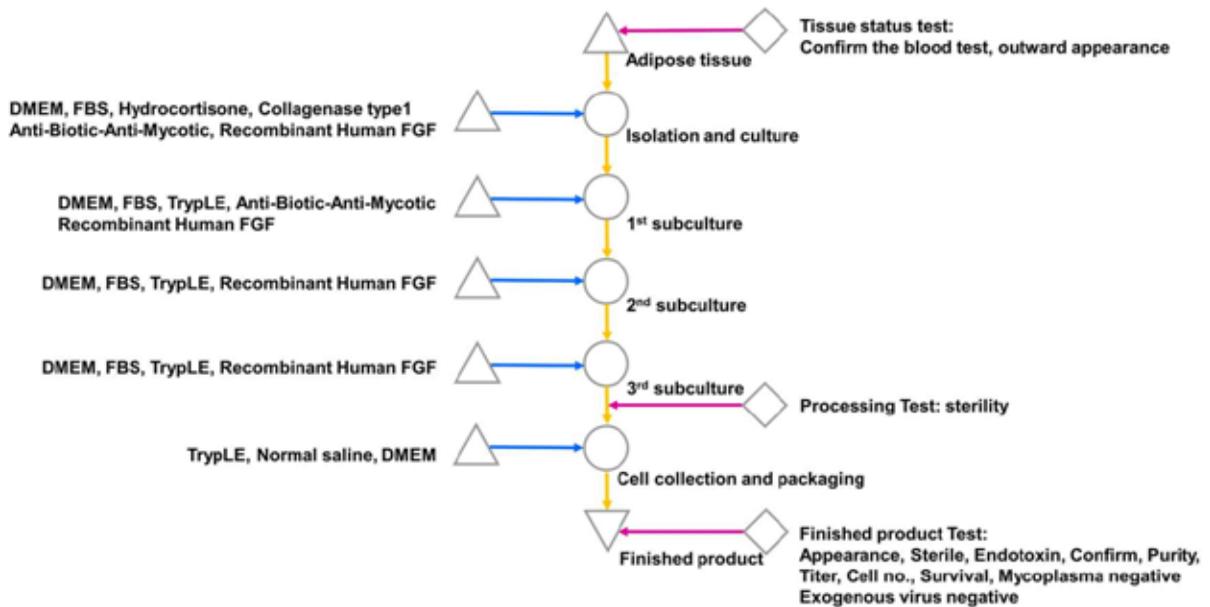
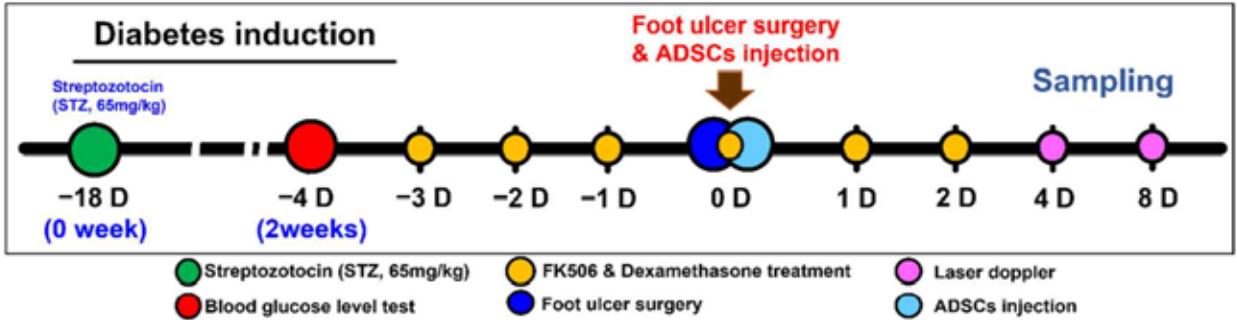
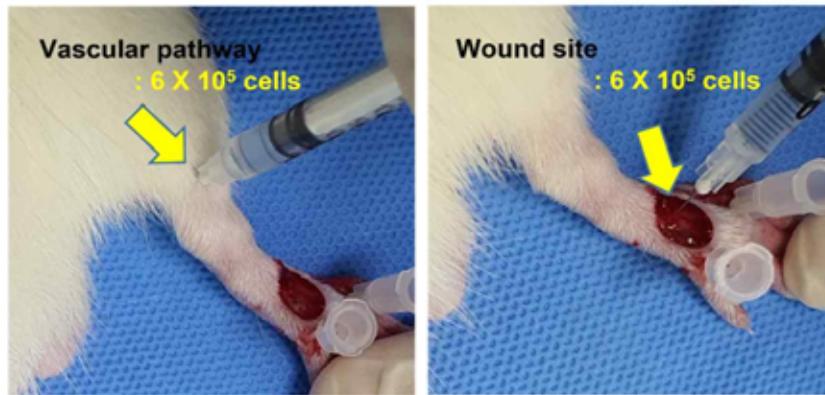


Figure 2. The scheme of experimental schedule, body weight, and blood glucose level. (A) The *in vivo* experimental schedule (B) Injection site and route (C) Body weight and blood glucose level

A Experimental schedule



B ADSCs injection site



C Weight & glucose level over time

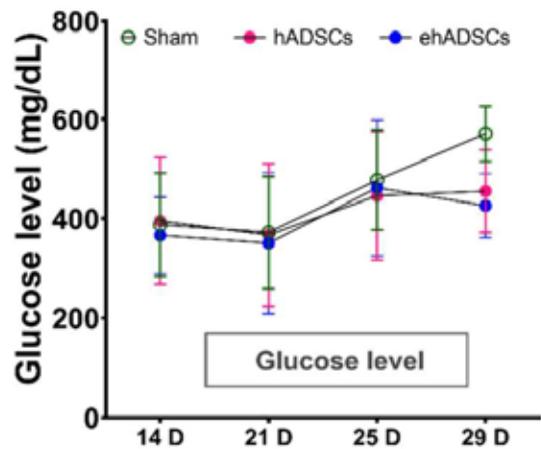
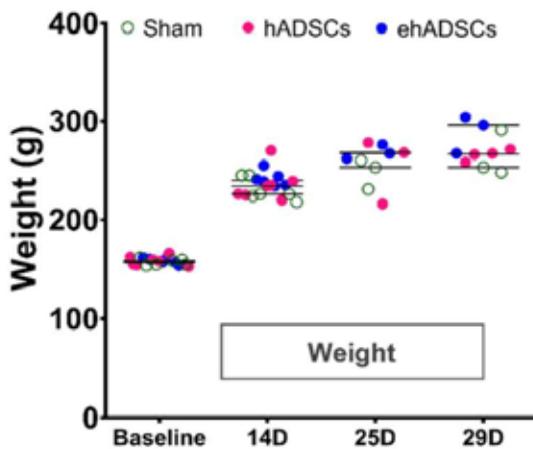


Figure 3. Characteristics of ADSCs. **(A)** Microscopic morphology of hADSCs and ehADSCs **(B)** Proliferation assay (BrdU assay) between hADSCs and ehADSCs **(C)** Anti-oxidative effect between hADSCs and ehADSCs **(D)** Stem cell marker between hADSCs and ehADSCs **(E)** Wound scratch test (migration assay) between hADSCs and ehADSCs. Red mark area indicates the area of scratched wound site. Values are means \pm standard errors of the mean (** $p < 0.01$; n.s., not significant)

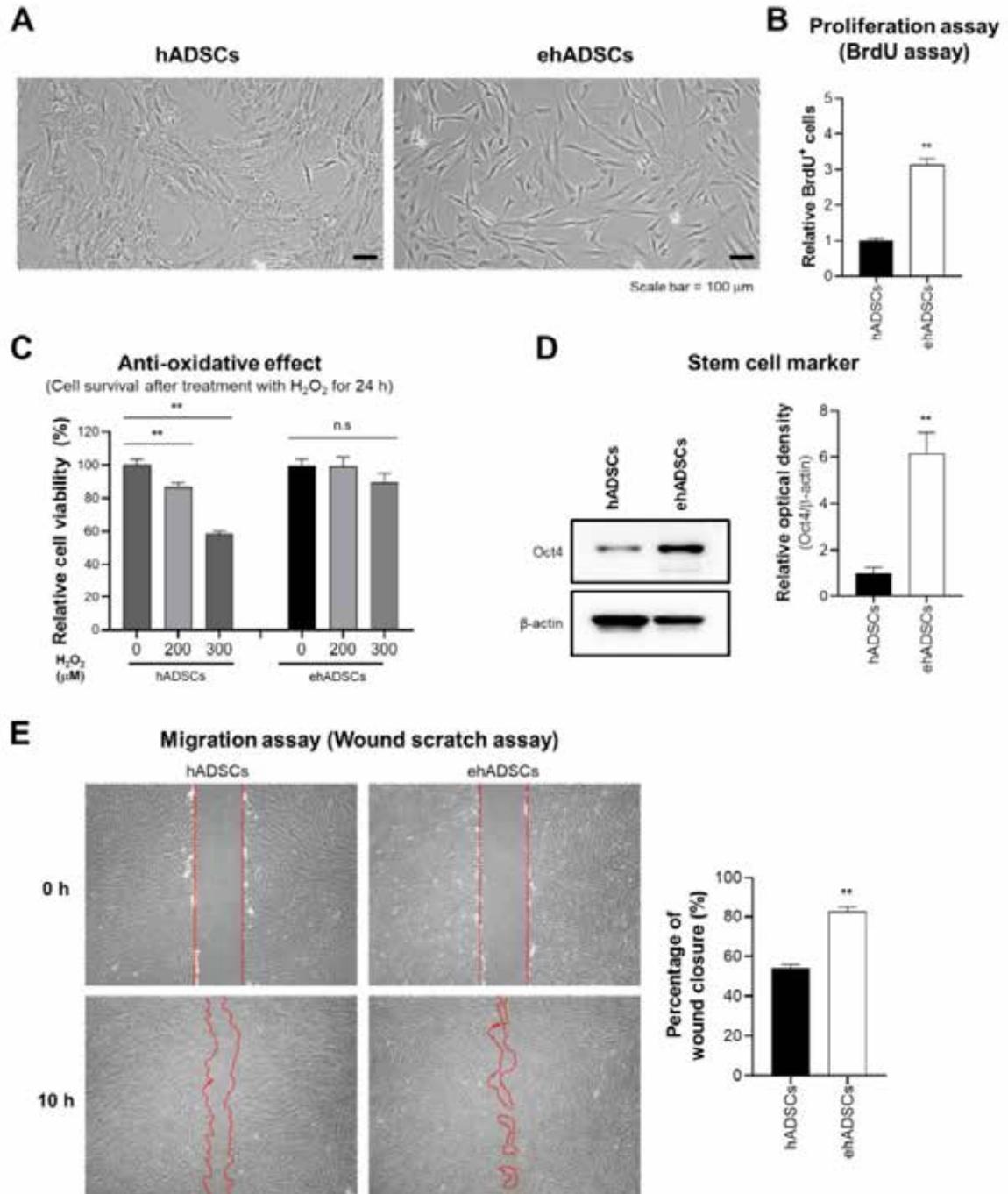


Figure 4. Functional analysis of ADSCs. **(A)** Comparison of mRNA expression between hADSCs and ehADSCs using RT-PCR **(B)** Relative cytokine expression analysis using enzyme-linked immunosorbent assay (ELISA) **(C)** Scheme of producing conditioned media in both hADSCs and ehADSCs **(D)** Proliferation ability of fibroblast on each conditioned media **(E)** Scheme of co-culture with human fibroblast and ADSCs **(F)** Microscopic analysis of co-culture with ADSCs

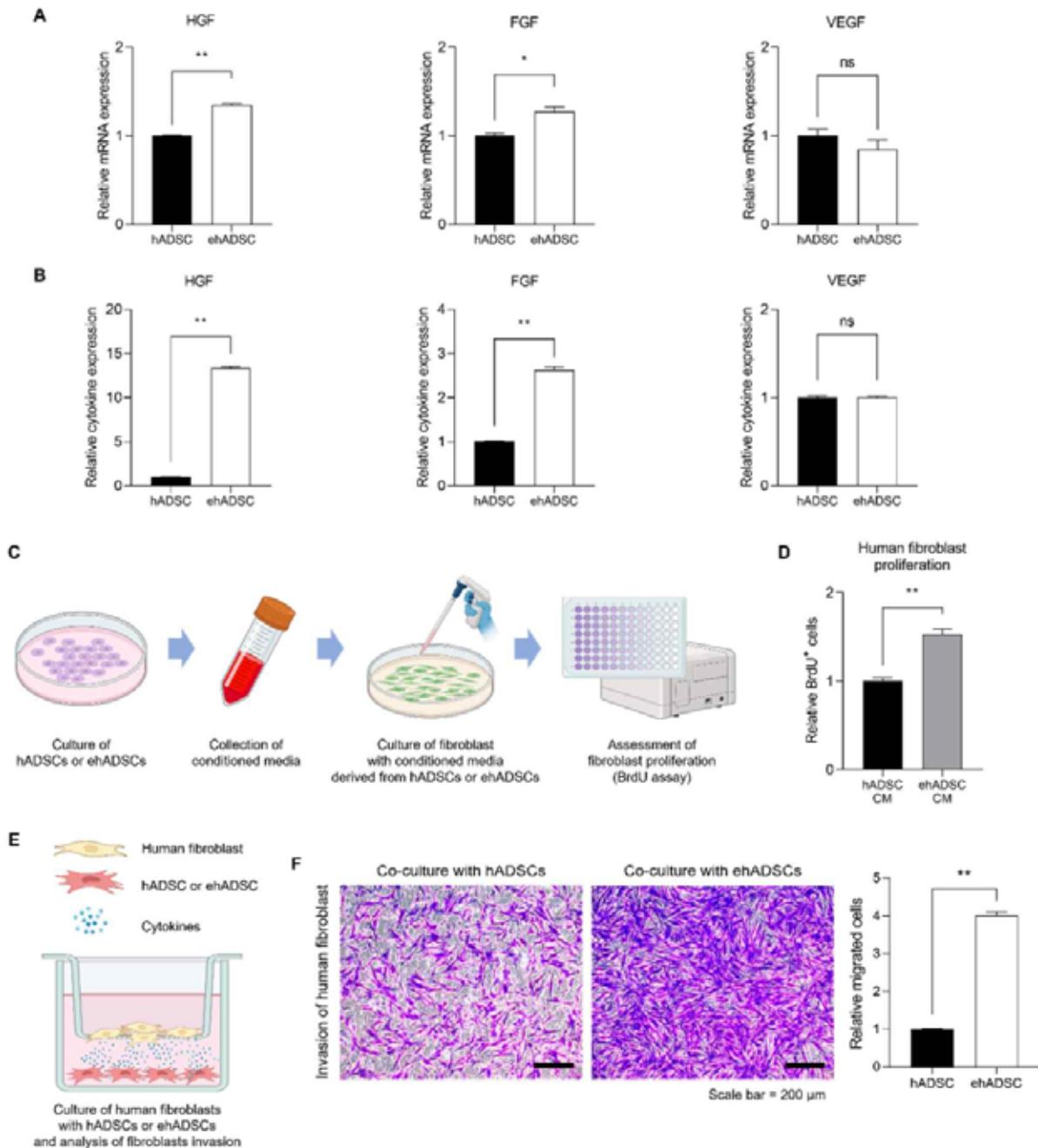


Figure 5. Evaluation of wound size and blood flow in rat experiments. (A) Wound size and blood flow evaluation using laser doppler among three groups (sham group vs. hADSCs group vs. ehADSCs group) (B) At 4 days, ehADSCs significantly reduced wound size compared to hADSCs and other groups. This difference persisted on day 8, indicating the ongoing positive effect of ehADSCs on wound healing (C) On day 4 after ADSCs injection, there were no significant differences in blood flow among the groups. However, on day 8, the ehADSCs group showed a significant increase in blood flow compared to the other groups, indicating enhanced blood circulation in the wound area (* $p < 0.05$; n.s., not significant)

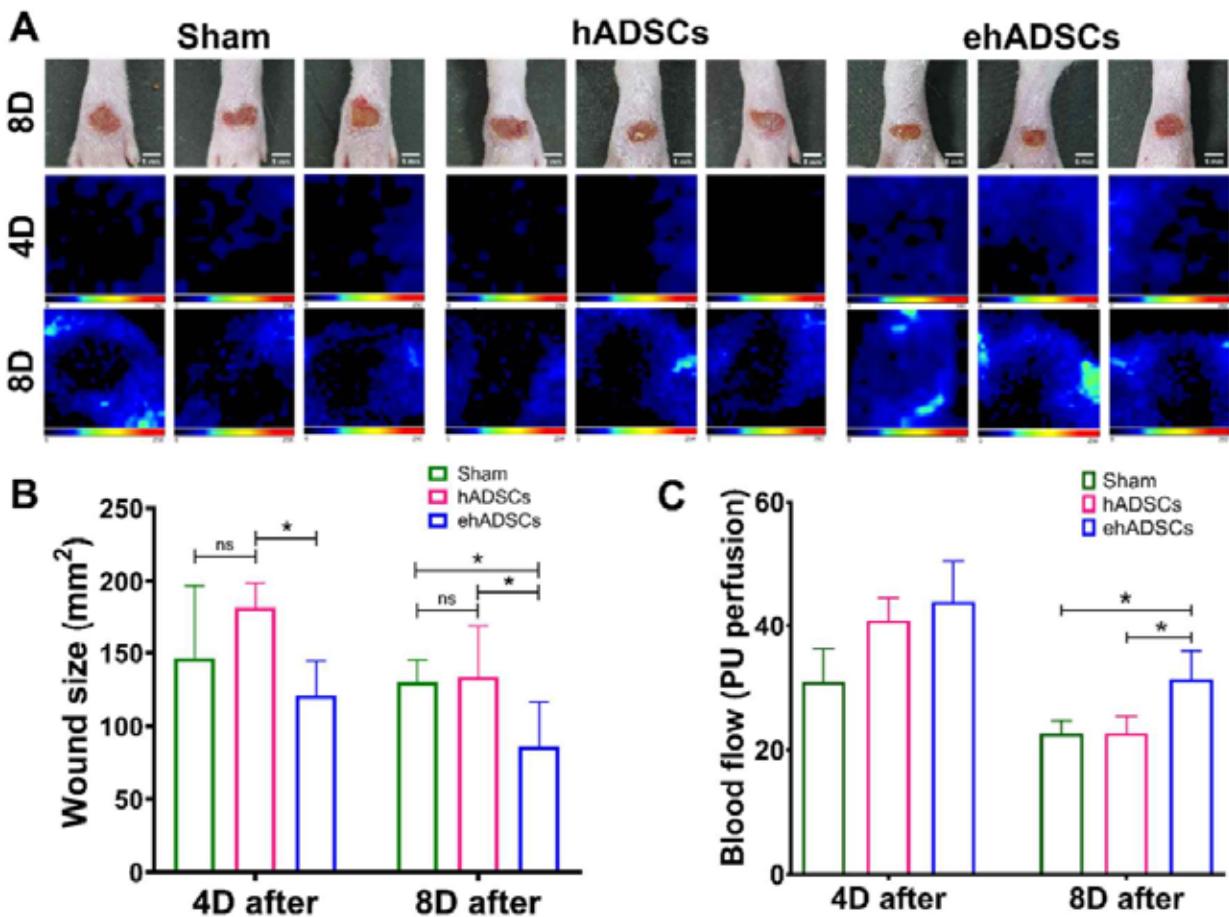
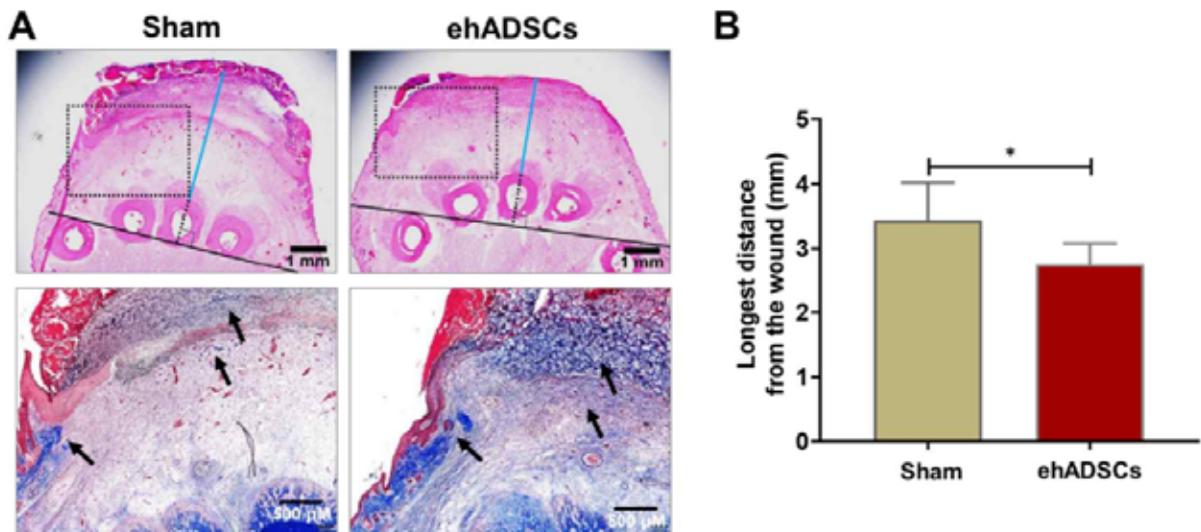


Figure 6. Histological analysis of foot ulcer site. (A) At 8 days after ADSCs injection, histological evaluation of the wound using H&E (soft tissue thickness between the epidermis and bone is a line drawn horizontally and vertically from the lower end of the animal's 3rd toe bone and marked in blue from the upper end of the bone to the lower part of the wound) and MT (dotted rectangle; collagen deposition was stained blue: black arrow) staining revealed notable findings. In the ehADSCs group, a tightly connected tissue structure was observed, indicating improved wound healing. Additionally, there was greater collagen deposition, indicated by blue staining, in the ehADSCs group compared to the sham group (B) The ehADSCs group showed a shorter bone-epidermis length compared to the sham group, indicating potential improvements in tissue regeneration and remodeling (* $p < 0.05$)



OP124 Efficacy of topical and systemic transplantation of mesenchymal stem cells in a rat model of diabetic ischemic wounds

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Aim: Mesenchymal stem cells (MSCs) exert positive effects in chronic wounds. However, critical parameters, such as the most effective administration routes, remain unclear. Accordingly, the purpose of this study was to compare the effects of topical and systemic transplantation MSCs on diabetic ischemic wound healing and explored the underlying mechanisms.

Method: A diabetic ischemic wound model was created on the dorsal foot of type 2 diabetes mellitus (T2DM) rat. Bone marrow-derived mesenchymal stem cells (BM-MSCs) were administered via two routes: topical injection and intravenous (IV) infusion. Wound healing outcomes and blood glucose level were assessed dynamically. Meanwhile, blood flow recovery was evaluated in ischemic gastrocnemius muscles. The homing and transdifferentiation of mKate2-labeled BM-MSCs were assessed by fluorescence imaging and immunohistochemistry (IHC) analysis.

Results/Discussion: Both topical and systemic treatments had a positive effect on the diabetic ischemic wound showing a significant reduction in wound area at day 14. Histological results showed an increase in the length of epithelial edges, collagen content, microvessel density in the wound bed, and a higher expression of vascular endothelial growth factor (VEGF). Meanwhile, systemic administration can ameliorate hyperglycemia and improve the blood perfusion of the ischemic hindlimb. BM-MSCs administered systemically were found distributed in wounded tissue and transdifferentiated into endothelial cells. Furthermore, BM-MSCs stimulated angiogenesis at wound sites.

Conclusion: The results demonstrated that both transplantation delivery method (topical and systemic) of BM-MSCs accelerated wound healing remarkably under pathological conditions. Nevertheless, systemic administration has the potential to ameliorate hyperglycemia and repair the damaged tissue.

OP125 ScRNA-seq reveals long-term effects of ADM on skin cell heterogeneity and cellular communication in mouse chronic wound window

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Aim: We established a chronic wound window model, monitored the long-term effects of ADM on this wound, and acquired the tissue cells in the wound area at day 21 post wound introduction for single cell RNA sequencing to explore the multiple functions of ADM during wound healing.

Method: Full-thickness cutaneous wound model was established in the dorsal skin. A cylindrical silica frame with 3-mm partial defect at lower end was sutured to form a chronic wound window. The model treated with gauze covering and bandaging was taken as control, and another one was covered with ADM.

Results/Discussion: Seven major skin cell types and nine epithelial subpopulations. ADM changed the skin cell homeostasis by increasing epithelial cells and decreasing immune cells. It activated the differentiation of ESC and HFSC therefore altered the epithelial cell homeostasis. Coordinately both GO and KEGG pathway analysis revealed that ADM upregulated the genes related to keratinization, epidermal cell differentiation and epidermis development. ADM downregulated the inflammatory pathways, which was evidenced by the cell-cell communication between epithelial subpopulations and macrophages. ADM elevated the infiltrating macrophages and decreased the resident macrophages. The infiltrating macrophages were enriched with some well-known M2 macrophages markers.

Conclusion: Long-term ADM treatment significantly improved wound healing through activating skin stem cell differentiation and M1/M2 polarization, therefore finally changed the epithelial cell and macrophage homeostasis; cell-cell communication among the epithelial subpopulations and macrophages through inflammatory pathways were inhibited, which might play a critical role to benefit the re-epithelialization during wound healing.

OP126 Burn wound blister fluid biochemical analysis to assist with early clinical decision making

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Aim: Burn wounds in children result in long lasting physical and emotional impacts which require repeated surgeries and rehabilitation efforts well into adulthood. While burn wound treatment typically involves 'de-roofing' of blisters, little attention has been paid to the biochemical composition of the blister fluid as a non-invasive means to investigate the biology of the initial response to burn injury. Similarly, it has been underutilised for its diagnostic or prognostic potential to assist in early clinical decision making. Therefore, we aimed to describe the molecular composition of clinical paediatric burn blister fluid samples.

Method: We used SWATH liquid chromatography tandem mass spectrometry for protein profiling and gas chromatography mass spectrometry metabolomics and subsequent multivariate statistical analysis.

Results/Discussion: We found that the blister fluid composition could discriminate burns of different clinical depth classification (superficial-partial thickness; deep-partial thickness; and full-thickness); time-to-reepithelialisation (time to healing) and time since burn injury. Identification of the molecules associated with more severe burns may provide insight into the expected wound healing trajectory and prediction of patients at risk of poor healing outcomes. Interestingly, the molecular profiles in blister fluid provided evidence of increased Neutrophil Extracellular Trap (NET) pathway activation, relative to time from burn injury to sample collection. Therapeutic targeting of the NET pathway may stimulate improved burn wound healing outcomes.

Conclusion: With further validation, these results could aid in clinical decision making or development of novel treatments. The findings also provide new insights into the early stages of burn wound biology in children.

OP127 Cold plasma enhances debridement efficacy of maggots

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Aim: Maggot debridement as well as cold plasma are proven therapeutics in chronic wound management. Plasma primarily focus antimicrobial decontamination and healing stimulation, maggots mainly debride necrotic material but usually are not applied in parallel. Therefore it is of interest whether both may be combined to obtain maximal benefit in wound therapy.

Method: In an in vitro wound model we exposed medical larvae (instar stage 1 and 2, and biobags) to cold plasma (1mm distance to glass electrode of a medical high-frequency plasma source, 30 to 60s exposure time) and monitored debridement in parallel to antimicrobial efficacy on semisolid blood agar contaminated with 10e3 cfu *Staphylococcus aureus* (MSSA, ATCC 6538). Bacterial burden and agar weight were daily monitored over 5 days and compared with controls. The ingestion efficacy IE was calculated as mean agar reduction over 24h (mg/24h) after 5d, the bioburden reduction calculated as logarithmic reduction factor (RF).

Results/Discussion: 30 to 60s plasma treatment was well tolerated by larvae of all stages. Whereas fast (24h) and complete MSSA eradication (RF=3) was not affected by plasma exposure, plasma treatment was followed by triple agar reduction efficacy compared to controls (13,4 vs 4,4mg/h).

Conclusion: 30s Plasma treatment of larvae did not hamper larval vitality nor antimicrobial activity but strongly enhances ingestion capacity of solid agar heavily contaminated with important pathogens (MSSA) in a wound model. This may be of concern optimizing chronic wound therapy combining plasma and maggot therapy resulting in significantly enhanced larval debridement.

Pressure Ulcers 2 & Prevention

OP128 Assessing pressure injury prevalence and preventive interventions among hospitalized patients in Oman

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Aim: The aim of this study was to measure the point prevalence of pressure injuries among hospitalized patients in Oman and assess the adequacy of prevention provided to at-risk patients.

Method: A cross-sectional (one-day) survey was conducted in four hospitals in Oman. Data were collected using the European Pressure Ulcer Advisory Panel minimum data set and staging system, and risk was assessed using the Braden scale. Each patient's skin was examined, and prevention measures were recorded.

Results/Discussion: The study included 556 participants, with a mean age of 52.9 years. The point prevalence of pressure injuries, including stage I, was 8.3%, decreasing to 7.4% when stage I injuries were excluded. Medical wards exhibited the highest prevalence (39.1%). The most common stage was stage II (43.5%), and the sacrum was the most affected site (69.5%). Less than half of the patients (41.9%) at risk received adequate prevention measures.

Conclusion: The prevalence rate of pressure injuries in Oman was lower than global and regional figures, possibly due to the relatively younger patient population and shorter hospital stays. Adequate prevention measures were lacking for a significant portion of patients at risk, highlighting the need for improved preventive strategies. Additionally, the provision of preventive measures to patients not at risk raises concerns about adherence to guidelines.

OP129 Real-time in-bed patient position detection for pressure injury (PI) prevention

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Aim: This study aims to: (1) validate the performance of a pre-trained artificial intelligence (AI) algorithm on detecting in-bed free-living data, which includes non-standardized sleeping postures, and (2) to confirm the technology's effectiveness regarding pressure injury (PI) prevention.

Method: Ten healthy participants were recruited and asked to lie on three types of mattresses for 10 minutes: a hospital bed, a home bed, and a foam topper placed on the bed. Body pressure profiles were collected from a pressure-sensitive mat, which was placed on each mattress. The algorithm generated predictions every second to detect the in-bed body postures. The final output was constructed by fusing the algorithm's continuous predictions with five different window sizes, 1, 3, 5, 7 and 10 seconds, to ensure output stability.

Results/Discussion: Figure 1 shows the performance of the 1, 3, 5, 7 and 10 seconds window sizes, using 'unanimous vote' and 'majority rules' decision techniques. The algorithm utilizing the 'majority rules' decision technique, with a 3 second window size, accurately predicted the free-living data with the highest performance of 76.51%±17.20%, indicating that output stability improves the performance. The results of 'majority rules' decision technique was similar between the various window sizes and resulted in a higher performance than the 'unanimous vote' decision technique.

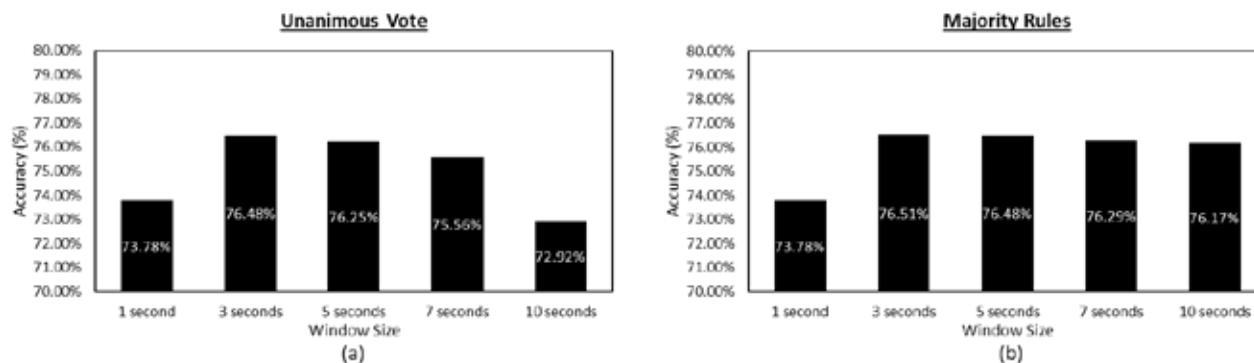


Figure 13: The average accuracies for (a) the unanimous vote and (b) the majority rules decision techniques.

Conclusion: These results indicate that the AI algorithm can recognize non-standardized postures in real-time, allowing the algorithm to be applied to PI prevention applications.

OP130 Analysis of situation and influencing factors of orthopaedic inpatients' engaging behaviours in preventing pressure injuries: Based on the theory of Planned Behaviour

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Aim: This study aimed to explore the level of patients' engagement behaviors in preventing pressure injury (PI) and the influencing factors related to it.

Method: This was a cross-sectional study involving 366 participants from Orthopedics in China who has high level of risk in PI. The behavioral level of patients' participation in PI prevention was measured using a research tool designed by the research team. Based on the theory of planned behavior, the possible influencing factors were determined and the corresponding research tools were selected for evaluation. Univariate analysis, correlation analysis and multiple stepwise regression were used to determine the influencing factors of patients' participation behavior with SPSS 25.0.

Results/Discussion: The total score of orthopedic inpatients participating in PI preventive behavior was 89.45 ± 10.64 , and the scoring rate (actual score/maximum possible score $\times 100\%$) was 85.19%, which was at a high level. Social support ($\beta=0.291$, $P<0.001$), Participation attitude ($\beta=0.211$, $P<0.001$), Health literacy ($\beta=0.233$, $P<0.001$), Living with children ($\beta=-0.141$, $P=0.001$), Transfer from other hospital ($\beta=-0.120$, $P=0.004$), Social Security payments ($\beta=0.108$, $P=0.009$), and Hospital stays with 4-7 days ($\beta=-0.089$, $P=0.010$) were influencing factors of patients' participation in PI prevention.

Conclusion: Our findings may guide clinical healthcare providers to develop more targeted interventions to promote patient engagement in self-care. It was a potential suggestion for patient participation behavior in medical services to prevent other types of adverse events as well.

OP131 Determination of pressure injury prevalence and affecting factors in patients undergoing surgical intervention in neonatal intensive care unit

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²Eastern Mediterranean University, Turkey

Aim: The aim of this study is to determine the incidence of pressure injuries and risk factors in newborns followed up in the intensive care unit undergoing surgical intervention.

Method: This descriptive-cross-sectional research study included 105 patients who received postoperative care in the Neonatal Intensive Care Unit. The Neonatal Descriptive Characteristics Form, the Neonatal Q Pressure Ulcer Risk Assessment Scale for Newborns, and the NPUAP-EPUAP Pressure Injury Classification System were used to collect data.

Results/Discussion: 21.9% of the newborns developed pressure injuries and 14.3% of them had Stage II pressure injuries was detected. The majority of pressure injuries developed in the dorsel, and the rate of pressure injury was higher in those who underwent cardiopulmonary surgery longer than three hours was found. It was determined that the use of non-invasive mechanical ventilation, medical equipment such as central venous catheter, urinary catheter, drainage tube and vasoactive drugs affected the rate of postoperative pressure injury development in newborns

Conclusion: According to these results, it is a priority for nurses providing post-operative care to newborns undergoing surgery to develop and implement preventive care strategies for the characteristics and risk factors of pressure injuries, as well as accurate risk assessment, for the prevention of pressure injuries.

OP132 Determination of nursing students' knowledge levels and affecting factors regarding staging and categorization of pressure injuries

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¹Koç University, Istanbul, Turkey, ²Istanbul Medipol University, Istanbul, Turkey

Aim: This study aims to determine the knowledge levels, decision-making skills, and influencing factors related to the categorization/staging of Pressure Injuries (PI) among junior and senior nursing students in their undergraduate programs.

Method: The study was conducted cross-sectionally between December 2022 and July 2023. A total of 300 nursing students were reached through social media. Data were obtained using a 20-item multiple-choice, four-option Pressure Injury Test (PI-TEST) developed by the researchers, with expert opinions obtained and a content validity index of 0.96. PI-TEST Qualtrics survey link was shared with students online. Expert opinions guided scoring: 5 points for correct answers, 0 points for incorrect ones, with a maximum PI-TEST score of 100 points. Data analysis included descriptive statistics and the Independent Sample t-test.

Results/Discussion: Nursing students scored an average of $\bar{x} = 56.36 \pm 19.05$ out of 100 on the PI-TEST. Questions related to Stage 1, Stage 4, and Mucosal Membrane PI had the highest correct response rates, while those related to Stage 3 and Deep Tissue PI were most frequently answered incorrectly. Factors such as receiving education on PI ($t = 2.368$, $p = 0.019$) and providing care to patients at risk for or diagnosed with PI during clinical practice ($t = 2.375$, $p = 0.018$) were identified as positively influencing nursing students' knowledge levels and decision-making skills in the categorization/staging of PI.

Conclusion: Nursing students' knowledge about PI categorization/staging is insufficient. Theoretical PI courses and clinical experience contribute to improving their knowledge scores.

Infection

OP133 Impact of continuous topical oxygen therapy (cTOT) on biofilm gene expression in a porcine tissue model

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Aim: To determine the effect of continuous Topical Oxygen Therapy (cTOT*) on biofilm gene expression in *Pseudomonas aeruginosa* using a customised molecular assay.

Methods: Sterilised porcine skin explants were inoculated with *P. aeruginosa* in triplicate (0h negative control, 24h cTOT on, 24h cTOT off). The oxygen delivery system (ODS) of the cTOT device was applied to the inoculated tissue and covered with a semi-occlusive dressing. All samples were incubated at 37°C ± 2°C for 24h with the negative control 0h inoculated porcine skin samples recovered immediately.

Planktonic suspensions and biopsy samples were removed at 0 and 24h. Samples were processed and quantifiably assessed using gene specific RT-qPCR assays for a panel of eight *P. aeruginosa* genes (16S, *pelA*, *pslA*, *rsaL*, *pcrV*, *psqC*, *acpP*, *cbrA*) associated with biofilm and quorum, protein secretion/translocation and metabolism.

Results/Discussion: Transcriptional up-regulation of *pelA*, *pcrV* and *acpP*, responsible for intracellular adhesion, needletip protein production for type-3 secretion systems and fatty acid synthesis during proliferation, respectively, was observed when the cTOT device was switched on compared to when the device was switched off. Data suggests increased metabolic activity within bacterial cells following cTOT treatment. Oxygen has previously been shown to increase susceptibility of biofilms to antibiotics⁵ through enhancing metabolism.

Conclusion: cTOT is an adjunctive therapy that supports faster healing¹⁻³ and pain reduction⁴ in non-healing hypoxic wounds. Observed gene expression changes here highlight the impact of cTOT on biofilms potentially influencing antimicrobial treatment success in wounds warranting further *in-vitro* and clinical investigation.

*cTOT, NATROX® O₂ Wound Therapy

OP134 The pathogens isolates in chronic wound infections in Poland

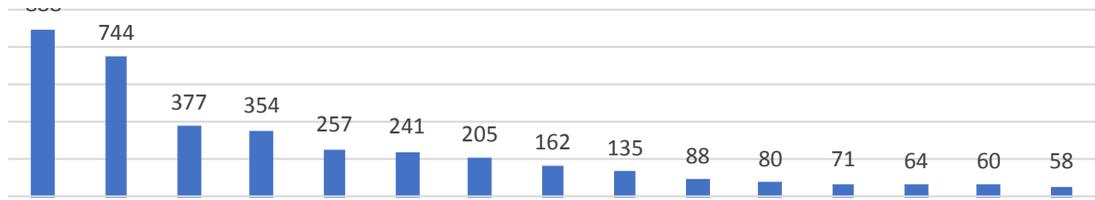
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Aim: The aim of the study was a descriptive analysis of the microorganisms found in infected chronic wounds in patients from Poland, consulted on an outpatient basis at a wound care center in the period from February 26, 2013 to June 29, 2021.

Method: The retrospective analysis included 3,917 results of microbiological tests performed on cultures from chronic wounds. The material for the study was collected from 1,199 patients consulted and treated on an outpatient basis at a specialist wound care center from 2013 to 2021.

Results/Discussion: The paper presents the results in the form of the number of cultured microorganisms and their relative incidence as percentages, taking into account the division into the types of wounds from which the material was obtained. A total of 137 different microorganisms were identified in the analyzed material. The most frequently isolated microorganisms in the entire analyzed group were *Staphylococcus aureus* (31.3%), 14.3% of this group were MRSA, and *Enterococcus faecalis* (26.2%), 2.4% of this group were VRE.



Conclusion: In the presented material, only 12.7% of the tests were negative among aerobic cultures. In contrast, in the group of cultures performed for anaerobic bacteria, no growth was found in as many as 81.6% of the tests.

OP135 Agreement of microbiological identification by aspiration puncture versus biopsy guided by bacterial fluorescence in the diagnosis of complex wound infection

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Aim: To analyze the concordance of microorganisms identified in samples from infected complex wounds collected from aspiration puncture versus biopsy.

Method: An ethics committee approved a prospective cohort study, which included 40 adults with complex wounds attended at an outpatient clinic after informed consent was obtained. The sample was mainly men (53%) with venous ulcers (30%), which were clinically evaluated according to the checklist UPPER and LOWER for infection; classic and fluorescent pictures were taken to guide aspiration puncture and biopsy samples collected for qualitative microbiological culture.

Results/Discussion: There was an agreement between biopsy and needle aspiration in 62.5% of cases, representing a reasonable Cohen's Kappa coefficient of 0.34. The biopsy / puncture aspiration combination had an average identification of microorganisms of 1.93 (min. 1- max. 5) per wound, higher when compared to the isolated biopsy ($p < 0.01$). The biopsies identified fifty-nine microorganisms, mainly *Pseudomonas Aeruginosa* (16.9%) and *Staphylococcus Aureus* (16.9%). In the aspiration punctures, 47 types were identified, mostly *Staphylococcus A.* (19.1%) and 7 (14.9%) *Escherichia Coli*. Species of *Staphylococcus*, and *Enterobacterias* resistant to treatments, were identified. At follow-up, 82.5% of the sample had satisfactory treatment, 2.5% underwent amputation, and 5% died from septic shock.

Conclusion: Aspiration puncture complemented the qualitative biopsy in the average number of microorganisms identified, increased sensitivity for microbiological identification, presented reasonable agreement (does not justify isolated use), and positioned itself as a diagnostic option in patients with complete contraindication to biopsy.

OP136 Analysis of individual *Staphylococcus aureus* isolates in the etiology of chronic wound infections in outpatients treated in a wound care center in Poland in 2013-2021

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Aim: To analyze *Staphylococcus aureus* isolates in the etiology of chronic wound infections in outpatients.

Method: From the database containing 3,917 results from 1,199 patients with infected chronic wounds in the years 2013-2021, 888 cultures were selected for analysis from which *Staphylococcus aureus* was isolated.

Results/Discussion: *Staphylococcus aureus* was the most frequently isolated microorganism (31.3% of aerobic cultures), monocultures were observed in 47.3% of isolates. As an etiological agent, *Staphylococcus aureus* was most frequently found in nail fold wounds (71.4%), mixed leg ulcers (35.6%), lymphatic leg ulcers and/or foot ulcers (35.5%) and critical limb ischemia (34%). The share of methicillin-resistant *Staphylococcus aureus* (MRSA) in the etiology of chronic wound infections was 14.08%. Macrolide-lincosamide-streptogramin B (MLS_B) resistance was present in 28.6% of the entire *Staphylococcus aureus* group, and as much as 80.0% in MRSA group. There were no significant changes in the prevalence of methicillin-sensitive *Staphylococcus aureus* (MSSA), MRSA isolates and MLS_B.

In terms of MRSA susceptibility, more than 80% of isolates demonstrated resistance to clindamycin and erythromycin. Only single MRSA isolates demonstrated resistance to trimethoprim/sulfamethoxazole.

Conclusion: Cloxacillin or first-generation cephalosporins proved useful in the empirical therapy of nail fold wound infections. In case such treatment is impossible, trimethoprim/sulfamethoxazole should be considered.

In the whole group of chronic wounds, if MRSA etiology is suspected, trimethoprim/sulfamethoxazole, tetracyclines are advised, and then clindamycin in empiric therapy.

Due to multimicrobial nature of chronic wounds, each patient with MRSA should be carefully analyzed for vancomycin resistance.

OP137 Microbiological pattern of in-hospital patients with diabetic foot infection

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Aim: The aim of this study was to evaluate the microbiological pattern and its relationship with outcomes of patients admitted for diabetic foot infection (DFI).

Method: The study is a retrospective observational study including in-hospital patients with DFI. The microbiological pattern of each infected ulcer was recorded, including the type of bacteria, the presence of polymicrobial infection and the antibiotic resistance. The correlation between microbiological characteristics and amputations was also analysed.

Results/Discussion: One-hundred-twenty-three patients were included. The mean age was 67.8 ± 10.6 years, 74.5% were male, 97.5% had type 2 diabetes; 22% had osteomyelitis and 78% soft tissue infection. The most isolated bacteria were Methicillin-susceptible *Staphylococcus aureus* (MSSA) (26%), *Enterococcus faecalis* (12.2%), *Pseudomonas aeruginosa* (10.6%), and Methicillin-resistant *Staphylococcus aureus* (MRSA) (7.3%). Polymicrobial infections were found in 37.8% of cases and antibiotic resistance in 17.9%. The rate of in-hospital minor and major amputation was 56.3% and 4.2% respectively. Amputees were older (70.1±8.9vs60.9±12.1, p=0.006), had higher rates of ischaemic DFUs (91.7vs70.6%, p=0.002), and higher level of white blood cells (WBC) (10.9±6.5vs8.3 ±3.4, p=0.01) in comparison to not amputees. No correlation was found between any amputation and the type of bacteria, the presence of polymicrobial infection, the type of infection (bone or soft tissue), and antibiotic resistance. Severe infection with WBC>10000 ×10³μL (vs moderate infection) resulted as an independent predictor of amputation.

Conclusion: *Staphylococcus aureus* (both MSSA and MRSA) was the most isolated bacteria. Microbiological characteristics are not independently related to in-hospital amputation, whereas amputation was related to the clinical severity of infection.

OP138 Anaerobic isolates found in infected hard-to-heal wounds and their sensitivity to antimicrobial drugs

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Aim: The aim of the study was to analyze the role of anaerobic bacterial flora in the etiology of hard-to-heal wound infections. In addition, the sensitivity of the obtained isolates to antibacterial drugs was assessed.

Method: 1053 anaerobic cultures taken from 611 patients in 2018-2021 were analyzed. All samples were taken from wounds with clinical signs of infection by deep-tissue biopsy. Each wound was prepared for taking cultures in accordance with the concept of "wound hygiene".

Results/Discussion: 81.7% of the cultures were sterile and 18.3% of the samples were positive. 229 anaerobic isolates (13 types of bacteria) were found, among which the most numerous were: *Bacteroides spp.* (47.2%), *Peptoniphilus spp.* (14.8%), *Prevotella spp.* (11.8%) and *Fingoldia spp.* (10.0%). The percentage of isolates resistant to metronidazole was 2.2%, to amoxicillin/clavulanic acid 7.0% and to clindamycin 24.6%. Analyzing drug susceptibility of the most frequently isolated anaerobic microorganism - *Bacteroides fragilis*, 25.4% of isolates were found resistant to clindamycin and no resistance to metronidazole.

Conclusion: Anaerobic flora may be responsible for the failure of antibacterial treatment of chronic wound infections. Including anaerobic bacteria in the process of diagnosis and treatment can significantly shorten the total treatment time. In the case of suspected anaerobic etiology, metronidazole seems to be the best choice in empirical therapy.