# Case study
# The journey towards healing: recalcitrant skin tear injuries

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## Abstract

Skin tears are traumatic wounds that have been described as the "underestimated"[1] wound and a common acute injury in the elderly. Skin tears are wounds that often pose significant challenges for the elderly person who sustains the injury and the nursing home care staff and medical officers involved in progressing the injury towards healing. Furthermore, the comorbidities and medication regime of the elderly resident who sustains such an injury influence the healing process. Complications such as infections also lengthen the time for healing.

This case study focuses on a person who sustained skin tear injuries that failed to heal in a timely manner. The paper details the management that occurred over the course of the healing process.

## Introduction

Skin tears are traumatic wounds[1,2] caused when sheering and friction forces separate the dermis from the epidermis. Factors that influence healing include the severity of the wounding and the health and nutritional status of the person. Also, the comorbidities of the elderly will require poly-pharmacy management and the effect of these medications may affect the healing process. Traumatic wounds have a greater risk of becoming infected and that risk may impact upon and slow the healing process. Most skin tears occur on the upper and lower limbs, and this case study details the management and challenges that occurred when a patient sustained skin tear injuries to both her lower legs.

## Presentation

Mrs M is an 85-year-old woman residing in an aged care facility. She has multiple comorbidities including Type 2 diabetes mellitus, vascular dementia, peripheral arterial disease, congestive heart failure, gastro-oesophageal reflux disease (GORD), cerebrovascular accidents 2000 and 2001, osteoporosis, fractured neck of femur 2007, hyperlipidaemia and depression. As well, vancomyocin-resistant entercocci (VRE) is present in her gastrointestinal tract. Her mobility is poor. On each lower leg, large ulcers were present, the result of skin tear injuries sustained nine months previously. In addition, Mrs M was on numerous medications[3] including oral warfarin, that further impacted upon the extent of the bleeding and bruising seen at the wound sites and in adjacent skin.

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## Wound history

The initial wounds that had become ulcers were one large wound on the right lower leg and two wounds on the left lower leg. The initial wounds were described as skin tears, with one occurring on her right calf, small and capped with a small scab. A further two skin tears were also sustained on the lateral and medial aspect of the left leg. These wounds were not staged using a known staging system such as the Payne and Martin Classification system (1990)[4] or the STAR Skin Tear Classification Tool – Curtin University Technology and Silver Chain (2004)[5] because the facility did not have protocols for staging skin tears in place at that time. Early documentation was archived; therefore, only anecdotal information on the skin tear injuries and initial treatment/management of the injury is known. There had been a previous wound swab taken, which confirmed infection and a short course of oral antibiotics had been prescribed. However, the wounds did not heal.

## Management

On examination, the wounds on both legs were large, with non-viable tissue, wound edges were raised and rolled and not progressing. The left leg ulcer measured 4cm x 5cm. (Figure 1). The right leg ulcers measured 5cm x 2cm (Figure 2) and 1.5cm x 1.5cm (no photograph taken). There was moderate yellow exudate present. Wound swabs were obtained and sent for laboratory analysis. The general practitioner was contacted requesting an urgent review, which occurred and

*Figure 1. Left leg ulcer.*

*Figure 2. Right leg ulcer.*

oral antibiotics were prescribed to combat spreading infection. The initial management plan was to contain the exudate and protect the periwound skin. At first alginate dressings were applied and later foam dressings impregnated with silver were used to contain exudate. In addition, soft padding and crepe bandages held the dressings in place.

On review two weeks later it was clear that Mrs M's legs had worsened as they were extremely painful and swollen. The previous wound swab results showed the presence of methicillin-resistant *Staphylococcus aureus* (MRSA). The prescribed antibiotic course had been completed, and as it was a weekend a locum was called. Mrs M was transferred to hospital for intravenous antibiotics. Prior to transfer to hospital, Mrs M's VRE and MRSA status was discussed with the emergency department (ED) charge nurse so that appropriate infection control precautions would be in place.

After examination in the ED, Mrs M was admitted to hospital for six days of intravenous antibiotics and was then


*Figure 3. Right leg ulcer one month later.*

transferred back to the residential facility. Wound dressings continued; however, the wounds did not reduce in size.

On return from the hospital stay it was noted that there were three small pressure ulcers on the lateral side of each foot and over each bony prominence on three toes and one on the right heel measuring 1cm x1cm x 2mm deep. All pressure ulcers were classified as Stage 2 as detailed in Australian Wound Management Association (AWMA) Guidelines for the Prediction and Prevention of Pressure Ulcers[6]. The pressure ulcers were dressed with hydrocolloid dressings and subsequently healed relatively quickly. A pressure reducing mattress was already in use on the bed and when she was sitting in her chair it was lined with a sheepskin fleece and sheepskin fleece boots were used. Pressure was offloaded regularly through position changes.

Attention was also given to nutritional balance and fluid intake as the regular weighs had shown a loss of weight. Nutritional supplements including fortified milkshakes were added to her diet.

## Treatment plan

The initial wound treatment plan was:

1) Implement an appropriate antibiotic regime.
2) Contain the exudate with appropriate dressings and restore moisture balance in the wound bed.
3) Reduce/remove non-viable tissue via autolytic debridement.
4) Dietician review to ensure adequate nutritional intake.

Specialist vascular assessment was undertaken while at the hospital and surgical intervention was recommended; however, Mrs M refused. The family had been informed during the admission that amputation was a likely outcome if surgical intervention was not undertaken.

The dressing regime was a thin layer of a hydrogel, (Solosite™) covered with a paraffin-impregnated gauze (Grassolin™), absorbent dressing, Softban™, crepe bandage and a tubular bandage to act as a protective sleeve, for example, Tubifast™. The purpose of the hydrogel was to provide a moist environment to rehydrate the dry eschar and act as an autolytic debriding/desloughing agent. Hydrogels if used appropriately do not harm granulating tissue or epithelising cells and reduce pain by keeping nerve endings moist. The wounds began to reduce in size, because the devitalised tissue and slough was diminishing.

Four months later there was an exacerbation of the infection, with yellow slough on the wound bed with increased exudate. The wounds were very painful. Mrs M was again transferred to hospital for IV antibiotic therapy. In consultation with the family and the residential facility, it was decided that Mrs M would be managed under the Hospital Avoidance Scheme. Under this scheme, registered nurses employed by that service provider check and administer the drugs via the established access line. If the access line 'tissues' or is accidentally removed by the client the line is re-established by the provider's staff. The IV antibiotics were administered successfully for several doses until Mrs M removed the line. An attempt to re-establish the line failed. Oral antibiotics were then prescribed and tolerated.

Attention was paid at each dressing change to skin hygiene and moisturising care of the intact skin of each leg and foot. A pH-neutral skin wash[7-10] was used and the skin was patted dry to avoid friction and sheer, which might increase risk of skin injury. The limbs were then gently moisturised to prevent dry scaling skin, which can increase the risk of skin breakdown and micro-organism colonisation[9].

## Progress and follow-up

The leg ulcers slowly responded to the management plan once the infection was controlled. Over the course of the next three months the ulcers healed and Mrs M was finally wound-free. The skin on her legs continued to be cleansed and moisturised regularly and protected with Softban™, crepe bandages and Tubifast ™. Commercially produced skin protectors were implemented. However, Mrs M preferred the Softban™ and crepe bandage protection.

## Discussion

Skin tears are one of the most common injuries sustained by the elderly[1,2]. Their management and healing outcome is influenced by the vascular status of the limb and flap, the amount of tissue lost and whether the flap can be replaced to the wound edge or not. The development of infection will lengthen healing time. Skin tears should not be regarded as a simple wound. If they are not managed appropriately, they can become deep ulcers, infected, painful and costly to heal.

The use of a staging system, for example the STAR Skin Tear Classification Tool©[5] can be used for the initial assessment and the facility can develop appropriate management protocols for each classification of skin tear that will guide practice and influence healing outcomes.

Attention also needs to be paid to leg and wound hygiene at dressing change[8]. The intact skin should be cleansed with commercially prepared cleansing wipes, or gently washed and dried and moisturised. The agents used should be pH-neutral[8]. For routine hygiene care, the limb with the wound dressing should be wrapped in protective plastic sheet or cling film wrap when the resident showers. It is important that after the shower, when this protective covering is removed, that the dressings are checked for signs of dampness. Wet outer and inner dressings that remain in place may cause maceration of the wound and further skin breakdown and provide an environment that encourages proliferation of micro-organisms. If the wound has a waterproof dressing in place, then protective wrap is not needed; however, checking that the dressing is intact is required after the shower.

Prevention is the key to reduce the incidence of skin tears and strategies can be put in place to minimise their occurrence. Moisturising of skin at least daily is known to be of benefit[9,10]. Also the wearing of long-sleeved blouses or shirts and long pants is known to reduce incidence. The importance of a nutritionally balanced and adequate food intake is paramount[10]. Furthermore, ensuring the environment is free from obstructions and easy for the resident to move within will also reduce the risk of skin injuries.

A quality improvement project has been commenced at this facility with the development of a skin tear management protocol using the STAR Skin Tear Classification Tool©. This facility's recently developed protocol for skin tear management is based on the STAR Skin Tear Classification Tool[5] and also includes management plans with dressing choices for each classification. The use of this protocol has been especially beneficial when there are novice staff providing wound care and selecting appropriate dressings.

Prevention strategies have been implemented, including encouraging moisturising of limbs and use of skin protective devices or the wearing of garments that have long sleeves and garments that provide full-leg covering[2]. Attention is also given to the nutritional status of residents and regular assessment of their skin with monthly weighs and implementation of a dietetic review and commencement of appropriate nutritional supplements should their weight decrease and warrant this[10].

The quality improvement programme and monthly audit of skin injury incidence has shown a decrease in the prevalence of skin tears and the time to heal has shortened. It has also shown that the residents' room is the most common place site where skin tear injury occurs.

## Summary

This case study documents the importance of a multidisciplinary approach to wound management. It demonstrates the need for skilful wound assessment and use of appropriate assessment tools, development of management plans and regular review of wounds and documentation of their healing. It also highlights the need for effective communication between all health professionals, the resident and family members.

## Declaration

The dressing and materials used were all ordered from suppliers in the usual manner for this facility. No products were supplied free of cost or used as part of a manufacturer's trial. The photos were taken only after verbal consent was obtained from the resident and the resident's family. The resident has given verbal consent to the writing of this case study and her daughter has provided written consent on the residential facility's designated form.

Note: Permission was sought from, and granted by, Silver Chain and Curtin University of Technology, WA for use of the STAR Skin Tear Classification Tool. Granted: 29 July 2009.

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