Skin tears: should the emphasis be only their management?

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Much has been written on the classification and management of skin tears. This article also looks at the potential risk factors for skin tear development and proposes strategies for their prevention.

Introduction

Skin tears are the most common wound type in the elderly population[1,7-9] and as the population of adults aged 65 years and older entering aged care facilities continues to rise[10], it is essential that protocols are implemented to effectively and efficiently manage these wounds in the community.

If treated inappropriately or left untreated, skin tears can convert to chronic wounds[9], exerting deleterious effects on the individual's physical, social and psychological health and imposing a huge cost on the community.

Relevance

In Australia, skin tears account for 54.8% of all wound types in the elderly, with up to 25% of residential aged care facility residents suffering from a pressure wound, leg ulcer or skin tear at any one time[9]. This figure is most likely much higher as only healthy, uncomplicated residents with only these types of wounds were included in the study[9]. In the US, there is an estimated incidence level of 0.92–2.5 per patient per year[8,16], accounting for approximately 1.5 million skin tears per year in institutionalised adults[5].

The risk of sustaining a skin tear increases significantly with age[1] and literature indicates that women are more susceptible to skin tears than males, due to specific skin transformations that occur as a result of decreasing hormone levels[1,8].

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Skin tears result usually from minor trauma, occurring most frequently on upper limbs. Friction and shearing forces or friction alone cause the separation of the epidermis from the dermis (partial thickness wound)[1,3,8,12,13].

As we age, the skin becomes weaker and more susceptible to tearing. The epidermal papillae flatten, thus weakening the rete pegs holding our skin together. In addition the skin becomes drier, less elastic and tissue-paper thin due to decreased subcutaneous fat, collagen, elastin deposition and sebum gland secretion. Capillaries in the skin become more fragile, disorganised and rupture easily, producing purpura and ecchymoses (skin discolouration/bruising).

Healing rates become significantly compromised due to reduced circulation and epidermal turn over rate. Factors commonly present such as polypharmacy and nutritional deficits further impact on wound healing and must be taken into consideration when treating the patient[9,10,12-14].

Diagnosis

To guide treatment, the revised Payne-Martin classification system was chosen as the simplest and most established method of defining and classifying skin tears[1,2,12]. It involves three categories of increasing severity, with sub-classes to further describe the tear.

Risk factors and prevention

There has been much written on the assessment and management of skin tears; however, there is a need to examine the factors which will increase the risk of these injuries and how best to prevent them.

Preventing skin tears in our community will help to reduce their incidence and the burden these pose on our health care costs. The major risk factors (Appendix 1) that predispose an individual to developing a skin tear need to be considered for each person.

A review of the literature indicated that very old, frail, nutritionally compromised women, dependent on others for performing activities of daily living (ADLs), and suffering

Appendix 1. Risk factors for developing a skin tear.

- Dependent in activities of daily living (ADLs – greatest risk, highest incidence)[1,3,4,16]
- Independent ambulatory patients (second-highest incidence – tears occur primarily in lower extremities)[4]
- Vision impaired patients (third-highest incidence)[1,4]
- Female[1,3]
- Ageing, paper-thin skin[16]
- Very frail[3]
- Dementia[1,3]
- Malnourishment[1,3]
- Mental Impairment[1]
- Neuromuscular changes; for example, stiffness and spasticity[1,3]
- Sensory changes/loss; for example, hearing, sensation, vision[1,3]
- Limited mobility[1]/immobility[1,16]
- Poor locomotion/balance[1]
- Use of an assistive devise[1,3,16]
- Senile purpura[1,16]
- Ecchymosis (purple discolouration of skin)[1,3,16]
- History of previous skin tears[1,3,16]
- Poor appetite[1,3]
- Neuropathy[1]
- Multiple actinic or seborrheic keratosis[1,16]
- Dry skin[1,16]
- Incontinence[1]
- Pitting oedema[1,16]
- Paralysis[1]
- Muscle weakness[1]
- Agitation, flailing extremities or restlessness[1,16]
- Hemiplegia/hemiparesis[16]
- **Comorbidities:**
  - Ureamia[1]
  - Diabetes mellitus[1]
  - Hypothyroidism[1]
  - Hypoalbuminism[1]
  - Peripheral vascular disease[1]
  - Immunocompromised[1]
- **Medications:**
  - Steroids – systemic or topical[1,16]
  - Anticoagulants[1]
  - Polypharmacy[1,3]

dementia were at greatest risk[3,16]. A study conducted in nursing homes over a six-month period concluded that over 65% of the sample skin tear sufferers (n=154) shared the following characteristics[1]:

- Sensory loss 68%.
- Compromised nutrition 68%.
- Advanced age (over 70) 76%.
- History of a previous skin tear 80%.
- Cognitive impairment 77%.
- Dependency 82%.

Bruising and poor locomotion were identified in 50% of the sample while assistive devises in combination with polypharmacy were thought to have contributed to 40% of all skin tears[1].

Hospital beds are the most common cause of a trauma-induced skin tear, followed by the wheelchair[1]. Preventative mechanisms should include padding bed rails, wheelchair arms and legs, and wearing long sleeves, pants and gloves whenever possible, to provide extra protection[1,2,4,5].

Intravenous catheters were mentioned as the most likely of all tubes and drains to cause a skin tear[5]. Appropriate non-stick dressings and bandages should always be used for retention purposes in at-risk patients[1,4,5]. Radiography procedures were the highest risk procedure[1]; transferring and positioning patients should be done with utmost care and with the use of an assistive sheet[1,4].

Treatment

The literature emphasises the importance of firstly decontaminating the wound with normal saline, warm water, or a non-toxic surfactant wash, after which the wound is gently patted dry[1,2,4,5,7].

Extreme care should be taken not to further traumatise the wound or damage viable skin flaps, which are then

approximated back over the dermis using forceps or a moist cotton bud.

To hold the skin flap in place, Steristrips™, the elastic form, is the preferred type and these are applied at about 1 cm apart. It is very important that they are applied without tension[1,2,7,15]. They remain in place until the adhesive degrades and they fall off[17]. This grafting process enhances healing by aiding in the deposition of connective tissue and epithelialisation[12]. If the wound is bleeding, gentle pressure is applied with a gauze pad or, if bleeding persists, then a haemostatic alginate dressing, for example, Kaltostat™ is indicated and left in place until the next dressing change.

A number of treatment modalities exist; however, evidence for their effectiveness is limited due to an overall paucity of published trials on skin tear treatments[4,5,16]. Edwards *et al.* compared four common dressing types: Melolite™/Steristrip™ (n=13), Lyofoam™ (n=3), Duoderm™ (n=3), and Opsite™ (n=11)[14]. Optimal healing rates were found with the non-occlusive Melolite™/Steristrip™ combination. These results obtained from small numbers vary from the bulk of recent studies indicating the benefits of modern dressings in: reduced pain, scarring and incidence of infection, and providing the best moist-wound-healing environment for re-epithelialisation[14,16]. This study was also weakened by not including a skin tear classification scheme. Whilst the study found Melolite™/Steristrip™ application faster, dressing changes were more frequent (daily compared to weekly) thus increasing costs and inflicting potential trauma on the wound[14].

Simple Skin Tear

Major Skin Tear

When treating skin tears, a dressing that minimises the number of dressing changes is ideal. Adhesive dressings, for example, films, tapes and so on easily traumatise new epithelium and surrounding skin on removal and are not an appropriate choice for skin tear management[2,16]. If use of these is unavoidable, then the use of paper or cloth tape in conjunction with a skin sealant initially and an alcohol-free adhesive remover is recommended[2,4,5].

A study comparing the healing rates of skin tears using foam dressings compared with film dressings at 21 days found a healing rate of 94% in the foam group compared with 65% healing in the film group, a statistically significant result ($p<0.05$). This study supports the use of foam dressings[18]. The bulk of published and clinical evidence also favours the use of protective and insulating polyurethane foam dressings and the use of retention bandages such as Tubifast™ or Handygauze Co-hesive™ for holding non-adhesive dressings in place[2,4,5,7,18].

Noting the direction of the skin flap on the outside of the dressing is encouraged to prevent further trauma upon removal[1,2,7].

Hydrogels, petroleum ointment, petroleum-based gauze, collagen dressings, hydrocolloids, gauze and other products[1,2,4,5] are mentioned regularly in relation to skin tear treatment, but with no defined context of use. This results in confusing and misguided product selection, possible wound deterioration, increased costs and overuse of staff time[1]. Most treatment models that are one-sided 'fix-all' approaches fail to differentiate between different skin tear categories. They unsatisfactorily reflect the changing nature of wounds and the dressing choices that must reflect this.

Zinc and skin tear healing

An alternative method of healing skin tears after the initial used of foam dressings is the topically application of zinc paste in the form of a patch of non-preserved zinc paste bandage. Zinc in the form of a paste or bandage with foam has been successfully used in the treatment of skin tears. Zinc has cytoprotective[20], anti-inflammatory[20], autodebridement[21] and indirect antibacterial[20] actions. These properties contribute to enhanced healing of the tear by stimulating re-epithelialisation[20,21].

Topical zinc is widely used in wound treatment as it reduces wound debris and advances epithelialisation. Pharmacopoeias list zinc sulphate as a local astringent and antiseptic, zinc chloride as an escharotic, and insoluble zinc oxide as a mild

antiseptic, astringent and protective agent with particular value in treating inflammatory skin conditions and superficial wounds[21]. The value of topical zinc application in wound care is revealed in early observations by Henzel *et al.* They reported that following major surgery, patients had a pronounced decline in blood and tissue zinc, together with increased zincuria, resulting in up to a 50% reduction in zinc in the granulation tissue and wound margin. This likely created a local zinc deficit in patients and contributed to poor wound healing[22]. Zinc stimulates epithelialisation more than wound contraction in experimental wounds[23]. Clinical trials indicate the beneficial effects of topical zinc on human wounds healing predominantly by epithelialisation. It is preferable to use a non-preserved zinc paste bandage as the loss of Langerhans cells in the epidermis with ageing increase the risk of a reaction to the preservatives.

Discussion

The appropriate management of skin tears maximises swift uncomplicated healing of the wound. However, inconsistencies prevail within the community in respect to proper wound management and prevention strategies[7,15]. In a

Appendix 2. Prevention of skin tear.

- Educate staff, family care-givers and home health care assistants on the importance of: maintaining adequate hydration and nutrition[1].
- Obtain the advice of a nutritionist to assess diet and make appropriate recommendations[1].
- Offer fluids between meals to maintain hydration status[1].
- Provide a well-lit environment to aid visualisation and minimise the risk of patients bumping into equipment or furniture[1,2].
- Pad bed rails, wheelchair arm and leg supports, and any other hard-surfaced equipment that the person may bump into, resulting in trauma[1,2].
- Pillows and blankets should be used to support dangling arms and legs[1,2,3] and to pad body parts[1].
- Patients should wear long sleeves and pants and geriatric gloves as an added protective barrier[1,2].
- Adequately hydrate dry skin with moisturising agents. Note: creams are better than lotions[2].
- Try to use lotions twice a day on dry skin areas and extremities[1].
- Bag baths appear to be useful at reducing the incidence of dry skin, a risk factor for skin tears[4].
- Choosing appropriate dressing products[1].
- Applying a skin sealant prior to using tapes can reduce epidermal trauma[1].
- Educate staff, family care-givers and home health care assistants on the importance of handling elderly patient with frail skin with care and via the proper techniques – any harsh, quick or pulling movements may result in a skin tear[1,2,3].
- A lift sheet should be used to move and turn patients to reduce friction and shearing forces[1,2].
- The appropriate sheet positioning, turning, lifting and transferring techniques should be encouraged by all staff[1,2].
- Non-adherent dressings, non-adhesive dressings, gauze wrap, cohesive bandages, stockinette (or paper or cloth tape only if unavoidable) should be used to secure dressings and drains[1].
- Applying a skin sealant prior to using tapes can reduce epidermal trauma[1].
- Dressings should be removed gently and with the use of an adhesive dissolvent if required[2,3].
- Remove tapes by applying a counter pressure and rolling off[1].
- Emollient soaps (soft, soothing, moisturising) are clinically better than non-emollient soaps at lowering the incidence of skin tears by one-third; however, was not statistically significant[1,4,5].
- No rinse cleansers are preferred over soap for bathing[4].

descriptive study conducted by White, Australian registered nurses were shown to be using a wide variety of non–evidence based treatment modalities. Furthermore, doctors failed to utilise a defined language for classifying skin tears[13].

The lack of published scientific evidence regarding skin tear treatments is a major factor in White's study findings. These findings highlight the need for a clear management protocol for health professionals to diagnose, treat and prevent skin tears successfully[1,9].

Prevention

It is essential not only to classify and manage skin tears and be aware of the factors likely to predispose a patient to developing a skin tear, but to actively prevent them. There are a number of strategies which nursing homes, patients and their careers are able to apply to reduce the risk of skin tear development (Appendix 2). These include education; good nutrition; limb protection; the use of quality emollients; discontinuing the use of alkaline soaps for washing; patient handling techniques and the removal from use of adhesive tapes or dressings.

Conclusion

An easy to follow protocol for effectively managing skin tears in the community will undoubtedly pave the way for faster healing times, resulting in reduced costs, incidence, disfigurement and complications. The introduction of prevention strategies and the identification of people at risk will reduce the incidence of skin tears, particularly in older people. Furthermore, posters and flash cards in GP practices, community pharmacies, nursing homes and aged residential care facilities will help raise awareness about skin tears and promote their appropriate diagnosis, treatment and prevention.

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