Exploring best practice in the management of skin tears in older people

An overview of the definition, prevention and management of skin tear

DEFINITION OF A SKIN TEAR
A skin tear is a traumatic wound resulting from separation of the epidermis and dermis due to friction and/or shearing forces, together with intrinsic skin changes associated with ageing (Fleck, 2007; Birch and Coggins, 2003; Meuleneire, 2002). Tears can be simple tears such as linear laceration (Fig 1) or include tissue loss (Fig 2), with haematoma, bruising or necrosis (Beldon, 2008a; Nazarko, 2005).

Skin tears can occur on any limb, however, Fleck (2007) indicates that they occur most commonly in the upper extremities, with 80% occurring on hands and arms. Nazarko (2005) suggests skin tears most frequently occur on the dorsal sides of the hands, the lower arms and the tibia. Ratliff and Fletcher (2007) suggest that the arms are the most common sites in non-ambulatory adults, whereas the legs are most affected in those who are mobile.

EFFECTS OF AGEING ON SKIN
As people age, the amount and strength of skin collagen and elastin reduces, resulting in visible skin changes such as sagging, wrinkling and dryness (Nazarko, 2007). This process can adversely affect the normal functions of the skin, making it less able to withstand normal wear and tear (Penzer and Finch, 2001). These effects put older people at increased risk of skin tearing as a result of trauma (Nazarko, 2007; Penzer and Finch, 2001). There is also a loss of subcutaneous tissue in older people resulting in loss of mechanical protection and insulation (Reddy, 2008).

Many older people have a variety of co-morbidities which affect their balance, cognitive abilities and awareness, suggesting that they are more likely to sustain injuries and present with skin tears than other groups (Beldon, 2008a). The ageing process is associated with sensory changes including visual impairment, which also put older people at increased risk of bumping into objects and sustaining injuries (Reddy, 2008).

Pressure may be a causative factor for skin tears but is not recognised as the primary cause (Baranoski, 2003). Removing tape from fragile older skin may also result in skin tears (Fleck, 2007).
**Box 1. Categories of skin tears**

<table>
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<th>Category 1</th>
<th>Skin tears without loss of tissue can be:</th>
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<td></td>
<td>● The linear type in which the epidermis and dermis are pulled in one layer from the supporting structure;</td>
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<td>● The flat type, in which the epidermis and dermis are separated but the epidermis flap covers the dermis to within 1mm of the wound margins.</td>
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| Category 2 | Scant loss of tissue, maximum 25% moderate to large loss of tissue, more than 25% of the entire flap lost during the trauma. |

| Category 3 | This type of skin tear involves the entire loss of tissue. It can be caused by the initial trauma, or necrosis of the skin flap. |

Source: Payne and Martin (1993)

**Assessment**

Initial assessment must include a total assessment of the patient and injury. It is important to determine any underlying factors which may have contributed to the injury, while any undiagnosed conditions such as diabetes, anaemia or postural hypotension, commonly seen in older people, need to be addressed to help prevent recurrence (Beldon, 2008a).

Assessment must include questions relating to the patient’s age, general health and social and clinical history (Beldon, 2008b; Ireland, 2007; Davis et al., 2004). This information provides insight into any decline in independence. Holistic assessment of the patient can promote successful treatment (McKirdy, 2000).

**Wound assessment**

Skin tear injuries can present on a range from a simple linear laceration to extensive tissue loss and necrosis so a comprehensive wound assessment is vital. A wound assessment tool suggested by Cole (2003) based on the questions what, where, when and how provides valuable information on:

- The type of injury;
- When it occurred;
- Where it is on the body;
- How it occurred.

A thorough examination of the wound is required to determine the extent and depth of the damage, the presence of haematoma and any degree of tissue flap necrosis which is often not immediately obvious.

**Classification of skin tears**

There is no universally accepted classification for the assessment of skin tear injuries (Henderson, 2007). These systems are important to the whole assessment process as they allow nurses to assess and plan treatment. The first and most widely cited system, by Payne and Martin (1993), involves grading the wound on a scale of 1–3 (Box 1). However, Henderson (2007) describes it as too simple as it does not mention the haematoma, which is often present in pre-tibial lacerations.

An alternative categorisation system was suggested by Dunkin et al (2003) and has a scale of 1 (laceration) to 4 (major degloving injury) (Box 2). Although this system concentrates on pre-tibial injuries it could be considered for all skin tear injuries.

Henderson (2007) suggests Dunkin et al’s system is more meaningful and can be used to develop a pathway of care. However, Beldon (2008b) argues that this classification system is based primarily on patients presenting to A&E, who are more likely to have serious injuries than those seen by district and practice nurses. She suggests that Dunkin et al’s (2003) work does not take into account depth of injury, degree of oedema present and which tissues have been damaged. For this reason Beldon (2008b) examined these two classification systems and proposes an adapted version (Table 1, p24).

Beldon’s system includes seven classes of injury with much more detail describing each class, and provides management guidelines in each case. It could be argued, however, that the system is lengthy and more complicated than the other two. Whichever system is adopted, it is important that it is appropriate to the clinical setting in which it is used and that it is understood by the healthcare professionals using it.

**Assessment of pain**

Skin tear injuries can be extremely painful for older people as they affect the superficial nerve endings in and around the wound. It is important, therefore, to assess patients’ pain before assessing the wound, and offer analgesia if required (Beldon, 2008a; 2008b). This should be offered before any treatment begins.

**Management and treatment options**

There is no consensus about what constitutes best practice in management of skin tears in older people (Lamyman et al., 2006). Ireland (2007) suggests that these types of injuries are often managed inappropriately, and that this can, in some instances, lead to the development of long-term complications such as infection as well as reduced mobility, independence and confidence in older people (Lamyman et al., 2006).

The aim of skin tear management is the same as for any other wound, that is, to reduce any risk of infection, encourage healing and obtain the optimum cosmetic outcome (Reynolds and Cole, 2006).

The best treatment options for the more serious type 2 (Payne and Martin, 1993) and type 3 skin tears is surgical intervention and/or referral to a plastic surgeon. This article explores the more conservative treatment options for the type 1 and 2 injuries (Payne and Martin, 1993).

**Cleaning the wound**

There is evidence to support irrigating the wound to remove dirt or grit (Hollinworth, 2005). The decision to do this depends on the cleanliness of the wound, and irrigation under a tap may be more effective in removing dirt and/or grit than irrigation with a syringe. Meuleneire (2002) advises that any damaged skin cells should be removed by gently rubbing both the wound bed and the reverse side of the flap with gauze. However, this could lead to increased pain and distress to the patient and possible further trauma.

Baranoski (2003) advises the use of 0.9% sodium chloride solution or a non-toxic wound cleanser. Ratliff and Fletcher (2007) suggest the use of a mild liquid soap is also acceptable, although no evidence is given to support this claim.

Choice for wound cleansing ultimately depends on the patient and the circumstances in which the injury was...
### TABLE 1. CLASSIFICATION OF PRETIBIAL INJURIES

<table>
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<tr>
<th>CLASS</th>
<th>DESCRIPTION</th>
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<tr>
<td>1</td>
<td>● Linear tear of epidermis/partial dermis only&lt;br● No necrosis of skin edges&lt;br● No haematoma&lt;br● No oedema&lt;br● Minimal bruising only</td>
<td>● If possible gently appose skin edges, do not apply undue tension: if necessary leave edges gaping slightly&lt;br● Apply adhesive strips, non-adherent dressing and re-examine in 5–7 days</td>
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<td>2a</td>
<td>● Partial dermal skin flap, exposing less than 25% of underlying dermis&lt;br● Clean, no necrosis of flap edges&lt;br● No haematoma&lt;br● Moderate bruising of immediate wound area&lt;br● Moderate oedema, limb still feels warm and is well perfused</td>
<td>● Using a moistened gloved finger, gently spread the skin flap without applying tension&lt;br● Apply non-adherent dressing&lt;br● Doppler ultrasound if arterial supply is deemed to be sound&lt;br● Measure the patient’s ankle and calf circumference and apply double layer tubular bandage from base of toes to just below knee, or moderate compression using a class 3a bandage in a spiral&lt;br● Leave the dressing intact for seven days unless the patient displays clinical signs of infection</td>
</tr>
<tr>
<td>2b</td>
<td>● Deep dermal skin flap, exposing less than 25% of underlying dermis&lt;br● Edges of skin flaps are necrosed&lt;br● No haematoma&lt;br● Moderate bruising of immediate wound area&lt;br● Moderate oedema, limb still feels warm and is well perfused</td>
<td>● Using a moistened gloved finger, gently spread the skin flap without applying tension&lt;br● Apply hydrogel sheet dressing&lt;br● Doppler ultrasound if arterial supply is deemed to be sound&lt;br● Measure the patient’s ankle and calf circumference and apply double layer tubular bandage from base of toes to just below knee, or moderate compression using a class 3a bandage in a spiral</td>
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<tr>
<td>2c</td>
<td>● Deep dermal skin flap, exposing 50% or more of the underlying dermis&lt;br● Edges of skin flaps are necrosed&lt;br● No haematoma&lt;br● Moderate bruising of immediate wound area&lt;br● Moderate oedema, limb still feels warm and is well perfused</td>
<td>● Using a moistened gloved finger, gently spread the skin flap without applying tension&lt;br● Apply hydrogel sheet dressing&lt;br● Doppler ultrasound if arterial supply is deemed to be sound&lt;br● Measure the patient’s ankle and calf circumference and apply double layer tubular bandage from base of toes to just below knee, or moderate compression using a class 3a bandage in a spiral</td>
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<td>3a</td>
<td>● Full dermal skin flap, adipose or fascia exposed in an area less than 5cm²&lt;br● Moderate bruising to the immediate and surrounding tissue and skin&lt;br● No tissue necrosis&lt;br● Minimal haematoma, likely to be absorbed&lt;br● Moderate oedema, limb feels cooler than unaffected limb</td>
<td>● Using a moistened gloved finger, gently spread the skin flap without applying tension&lt;br● Apply hydrogel sheet dressing&lt;br● Doppler ultrasound if arterial supply is deemed to be sound&lt;br● Measure the patient’s ankle and calf circumference and apply double layer tubular bandage from base of toes to just below knee, or moderate compression using a class 3a bandage in a spiral</td>
</tr>
<tr>
<td>3b</td>
<td>● Full dermal skin flap, adipose tissue/fascia exposed in an area 5–10cm²&lt;br● Moderate bruising, the immediate and surrounding tissue&lt;br● Up to 50% of skin flap is necrosed&lt;br● Moderate haematoma, unlikely to absorb&lt;br● Moderate oedema, limb feels cooler than unaffected limb</td>
<td>● Wound requires surgical intervention, debridement of non-vitalised tissue and skin graft</td>
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<tr>
<td>3c</td>
<td>● Full degloving injury of all soft tissue exposing bone/tendons</td>
<td>● Cover the wound area with saline soaked gauze and wrap in sterile film to ensure moisture retention&lt;br● Immediate transfer to plastic surgery/trauma unit for surgical attention only</td>
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sustained. For example, an injury sustained while gardening is likely to be contaminated and should be cleaned with running water to dislodge any debris.

**Approximating the skin flap**
The skin tear flap should be repositioned as accurately as possible. Meuleneire (2002) suggests this is done by using tweezers, although care must be taken not to damage the skin flap. In contrast, Hollinworth (2005) discourages the use of forceps or tweezers as rough handling of the skin can cause pain and damage to the skin flap.

Lamyan et al (2006) suggest that any non-viable tissue around the injury should be trimmed before the flap is laid over the wound surface. The skin should not be pulled too tightly as this can have a detrimental effect on wound healing (Beldon, 2008b; Ireland, 2007).

Sutting is generally not recommended for the treatment of skin tears (Beldon, 2008a; 2008b). However, Meuleneire (2002) suggests the occasional use of suturing for category 1 and 2 tears (Payne and Martin, 1993) but acknowledges that this can cause additional trauma to the wound.

In a prospective study of 147 patients with skin tears who attended an emergency department, the method of treatment was to approximate the edges of the wound, apply adhesive strips to the skin flap and then to suture through these in a bid to immobilise the flap and close the gap between the flap and the wound bed to aid revascularisation (Silk, 2001). The results with this method were good compared with conservative methods of applying adhesive strips alone. However, the researcher did not mention the classification system used or depth of the injuries other than to say 112 had flap lacerations and 35 had linear lacerations.

The use of adhesive strips for category 1 and 2 tears (Payne and Martin, 1993) appears to be the most commonly cited approach to securing the skin flap. Meuleneire (2002) identified that the flap needs a solid fixation which is easy and non-traumatic to move. Ireland (2007) recommends the use of wide adhesive strips, in this case applied without tension and ensuring space between them to allow for drainage of exudate.

Ratliff and Fletcher (2007) and Nazarko (2005) advocate that adhesive strips should be used judiciously, as any traction on the skin could cause further damage, particularly in older people as their skin is friable. McKirdy (2000) has recommended that these strips remain in place for 7–10 days, although no further evidence could be found to support this recommendation. Roberts (2007) says that the primary wound dressing (such as adhesive strips) can stay in place for up to one week but should be removed with great care to avoid tearing the fragile epidermis (Meuleneire, 2002).

**Selecting a wound dressing**
There is a plethora of literature on the choice of dressing for skin tear injuries. Roberts (2007) suggests that occlusive film dressings are inappropriate for these wounds as they are non-absorbent and can damage the skin surrounding the wound on removal. As skin tears are likely to bleed directly after injury, the film dressing would trap any blood and/or exudate next to the skin and could cause maceration to the surrounding skin.

Meuleneire (2002) discusses the use of a silicone-coated net dressing for skin tears. This does not adhere to the wound itself but gently to the skin flap and surrounding skin, allowing the flap to stay in place. The dressing can remain undisturbed for up to one week allowing healing to commence. Beldon (2008b) agrees with this treatment strategy, stating that this kind of dressing can be removed easily without causing pain or discomfort or disturbing the wound. Roberts (2007) also indicates that these porous dressings allow transfer of exudate for absorption by a secondary dressing.

Fleck (2007) discusses the option of using a silicone-faced foam dressing on skin tears. This type of dressing would work in a similar way to the net dressing but does not require a secondary dressing.

Hydrogels in sheet form can be useful in promoting autolytic debridement of the wound for patients with a haematoma or necrosis (Beldon, 2008b). Both Fleck (2007) and Ratliff and Fletcher (2007) agree that hydrogel sheets can be effective with skin tears, although they do not go into detail as to why this is so.

It is widely agreed that a non-adherent dressing that allows the wound to heal undisturbed, and causes minimal tissue trauma and pain on removal, is the ideal dressing for skin tears. If adhesive dressings are used, it is suggested that they are removed carefully and in the direction of the flap (Beldon, 2008b). Ratliff and Fletcher (2007) suggest an arrow be placed on the dressing to indicate the direction of the skin tear. This means the dressing can be removed in the direction of the tear and not against it, minimising the risk of trauma.

**PREVENTION STRATEGIES**
The prevention of future skin tears can be easy if enough information on what happened and why the wound occurred can be gained (Nazarko, 2005). For example, promoting skin health by preventing dry, cracked skin in older people not only helps to prevent further physical skin damage but can also have an impact on patients’ quality of life (Penzer and Finch, 2001).

Avoiding the use of soaps, detergents and perfumes can help to maintain healthy, supple skin. A soap substitute or emollient is recommended for use in people identified as being at risk of sustaining a skin tear injury, such as older people (Ratliff and Fletcher, 2007; Meuleneire, 2002).

Emollients should be used frequently and include the combined use of an emollient cream and emollient soap substitute, and the patient should be educated on how to use these products.

Environmental risks should also be considered (Roberts, 2007). Reddy (2008) suggests adequate lighting and clearing areas of excessive furniture and/or removing rugs can reduce the risk of injury.

Appropriate footwear and clothing, such as well-fitting and skid-free shoes, and long sleeves and trousers or stockings, can also reduce the risk of injury (Reddy, 2008; Roberts, 2007; Meuleneire, 2002).

**CONCLUSION**
Skin tears are traumatic wounds that cause distress and suffering. Despite an abundance of literature on the subject, there is a lack of research into the most appropriate means of managing these injuries. Classification systems have been introduced but there is disagreement about the most suitable system.

Identifying and removing causative factors is a simple and effective way of reducing the number of skin tears in older people. However, further research is needed to identify best practice in both the prevention and, if and when they occur, the management of skin tears in older people.
REFERENCES