

Skin tears made easy

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Introduction

Skin tears occur in those with fragile skin, including neonates and more frequently in the elderly. Some skin tears are unavoidable but many are considered to be preventable¹. It is important that clinicians have a good understanding of the effects of ageing on the skin and take appropriate measures to reduce the risk of patients developing skin tears. For those with skin tears, good assessment skills and documentation are important for effective management. This article will focus on why skin tears occur, the classification tools available and offers a practical guide to the prevention and management of skin tears.

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What are skin tears?

Skin tears are traumatic injuries, first defined by Payne and Martin in 1993 and more recently by an international consensus group, which can result in partial or full separation of the outer layers of the skin¹⁻³. These tears may occur due to shearing and friction forces or a blunt trauma, causing the epidermis to separate from the dermis (partial thickness wound) or both the epidermis and the dermis to separate from the underlying structures (full thickness wound)^{1,2}.

Skin tears are perceived by some to be minor injuries. However, they can be significant and complex wounds; complications such as infection or a compromised vascular status can increase morbidity or mortality risks.

Where do skin tears occur?

Skin tears can occur on any anatomical location. In the elderly they are often sustained on the extremities such as the upper and lower limb and on the dorsal aspect of the hands. Skin tears in neonates with immature skin tend to be associated with the use of adhesives or device trauma and often occur on the head, face and extremities¹.

Which patients are at risk?

Patients who are elderly or dependent on others have a higher

risk of sustaining skin tears²⁻⁷. Skin can become very fragile with age and even the simplest bump or knock can cause tissue damage. In addition, patients who are very young and have immature skin or those who are critically ill and/or have multiple risk factors are also more likely to develop skin tears¹.

What are the risk factors for skin tears?

Skin tears are associated with falls, blunt trauma, handling and equipment injuries. A number of risk factors have been reported^{1,7-12}, including:

- Age and gender
- History of previous skin tears
- Dry, fragile skin
- Medications that thin the skin such as steroids
- Echymoses (bruising / discolouration of the skin caused by leakage of blood into the subcutaneous tissue as a result of trauma to the underlying blood vessels)
- Impaired mobility or vision
- Poor nutrition and hydration
- Cognitive or sensory impairment
- Comorbidities that compromise vascularity and skin status, including chronic heart disease, renal failure, cerebral vascular accident
- Dependence on others for showering, dressing or transferring.

What is the prevalence of skin tears?

Although skin tears are perceived to be common among the frail elderly, these wounds often go unreported, especially in the community^{3,9,13,14}. Most prevalence and incidence studies have been conducted in the United States (USA) and Australia (Box 1).

Studies confirm that skin tears are common³ with an estimated 1.5 million skin tears occurring in elderly residents of institutions in the USA annually²⁴; a three-year, annual, state-wide survey of all public hospitals in Western Australia found skin tears to be the third largest group of wounds¹⁶.

Box 1 Reported prevalence and incidence rates of skin tears

- 0.92% incidence rate reported in an elderly care facility in the USA¹³
- 16% of the population sustained skin tears each month in a 120-bed facility in Australia¹⁵
- 41.5% of known wounds were found to be skin tears in elderly care residents (mean age 80 years) in a 347 bed long-term care facility in Western Australia (WA)⁷
- 8-11% skin tear prevalence reported in surveys in all WA public hospitals in 2007, 2008 and 2009¹⁶

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Table 1 Skin changes in the older person

Skin	The skin is the largest organ in the body and is made up of three main layers; the epidermis, dermis and hypodermis. The skin has a number of very important functions: protection, sensation, thermo-regulation, secretion of sebum, sweat and cerumen and synthesis of Vitamin D. The skin is the body's main protective barrier against invasive micro-organisms, toxins and UV light. It also protects the internal tissues and organs and helps maintain homeostasis ^{17,18} . The average thickness of the skin is 1-2mm and this varies according to the anatomical site.
Epidermis	The epidermis is very thin: approximately 0.1 mm. It receives oxygen and nutrients via the dermis as the epidermis does not have its own blood supply ¹⁹ . The epidermis is firmly attached to the dermis at the dermo-epidermal junction. As skin ages the epidermis gradually thins, particularly after the age of 70 ²⁰ with a flattened interface between the epidermis and the dermis. This reduces its resistance to shearing forces ²¹ . Thinning makes the skin more susceptible to the mechanical forces such as friction and shear ²² .
Dermis	The dermis is composed of connective tissue and other components such as blood vessels, lymphatics, macrophages, endothelial cells and fibroblasts. A reduction in collagen and elastin makes it more susceptible to friction and shearing forces. During the ageing process there is approximately 20% loss in the thickness of the dermal layer. The thinning of the dermis also causes a reduction in the blood supply to the area as well as a reduction in the number of nerve endings and collagen. This in turn leads to a decrease in sensation, temperature control, rigidity and moisture control ²² .
Hypodermis	The subcutaneous layer or hypodermis lies below the dermis. This layer is made of adipose tissue and connective tissue. As skin loses its elasticity and strength, its protective function is reduced. Alterations in the vascularity and thickness of the hypodermis with advanced age contributes to the skin's susceptibility to trauma ²³ . In addition, the vascular capillaries become more fragile, which can lead to vascular lesions such as ecchymosis (bruising) and senile purpura ¹⁵ .

More recently, a review of 114 long-term care facilities in the USA found that 22% of patients (average age 83 years) had a skin tear, despite good wound care practices¹. In the UK, one primary care trust with a dedicated tissue viability nurse, reported a reduced incidence, with 49 out of a total of 2200 patients (average age 76 years) from 52 care homes developed a skin tear in a 12-week audit period¹².

Why do skin tears occur?

Intrinsic and extrinsic factors increase the risk of skin tears.

Intrinsic factors

As the skin ages, pathological skin changes occur, such as: thinning and flattening of the epidermis; loss of collagen and elastin; and atrophy and contraction of the dermis, causing wrinkles and folds to appear. Decreased sebaceous gland and sweat gland activity causes the skin to dry out, while arteriosclerotic changes in the small and large vessels causes thinning of vessel walls and a reduction in the blood supply to the extremities^{25,26}. This results in the skin becoming more fragile, furrowed and wrinkled and more prone to skin tears (see Table 1).

In neonates the dermis does not fully develop until after birth and at full term it is only 60% of adult thickness²⁷. In addition, the fibrils connecting the epidermal/dermal junction are reduced in number and are more widely spaced. This decreases skin elasticity and the skin is more likely to be damaged by shear forces²⁷.

Extrinsic factors

The need for assisted transfers, showering or other activities of daily living increases the risk of skin tears among dependent individuals.

Carers and patients can reduce these risks by keeping fingernails trimmed, not wearing jewellery, padding bed rails and wheelchairs, and taking care when transporting patients. In addition, a good skin care regimen is important to maintain skin integrity.

How should skin tears be assessed?

The initial assessment should include a comprehensive assessment of the patient and his/her wound. It is important to determine the patient's age and medical history, any underlying comorbidities, general health status and potential for wound healing.

Assessment must establish the cause of injury: when, where and how it occurred²².

In addition, a full assessment of the wound is required to determine the following:

- **Anatomical location and duration of skin tear**
- **Dimensions (length, width depth)**
- **Wound bed characteristics and percentage of viable/non-viable tissue**
- **Type and amount of exudate**
- **Presence of bleeding or haematoma**
- **Degree of flap necrosis**
- **Integrity of surrounding skin**
- **Signs and symptoms of infection**
- **Associated pain.**

The skin tear should then be categorised and all information be carefully documented.

Skin tear classification systems

As is the case with pressure ulcer staging, there is no universally accepted classification system for the assessment of skin tears. Payne and Martin developed the first classification system in 1990²⁸ and this was updated in 1993².

The Payne and Martin system provides classifications by degree of severity. It has three categories and two sub-categories:

- **Category I: Skin tear without loss of tissue. The epidermal flap either completely covers the dermis or covers the dermis to within 1mm of the wound margin**
 - Ia: Linear type
 - Ib: Flap type
- **Category II: Skin tears with partial tissue loss**
 - IIa: Scant tissue loss (25% or less)
 - IIb: Moderate to large loss of tissue (more than 25% loss of the epidermal flap)
- **Category III: Skin tears with complete tissue loss.**

Problems associated with inter-rater reliability testing of the Payne and Martin classification system and its poor utility in Australia, led to a study that resulted in the Skin Tear Audit Research (STAR) Classification System³. This system comprises three categories and two sub-categories of skin tears as outlined below. The STAR Classification System is commonly used in Australia, with evidence of implementation reported within the UK¹².

What principles should guide treatment?

There is a lack of robust research into the prevention and

management of skin tears. Experiential evidence has been used predominantly to develop skin tear guidelines or best practice statements in the USA²⁹, Canada³⁰ and the UK³¹. Although these guidelines are considered to be important for guiding practice in the assessment and care planning process³², there is a lack of uptake within clinical practice reported in the literature^{5,12}.

A recent international survey involving 1127 clinicians from 16 countries found that around 80% of respondents admitted to not using any tool or classification system, while around 90% favoured a simplified method for assessment and documentation¹. This underpins the need for a systematic approach involving the multidisciplinary team to optimise the management and prevention of skin tears¹⁷.

Key principles for management include:

- **Assess and document the wound**
- **Classify using a recognised tool (eg Payne and Martin² or the STAR Classification System³)**
- **Manage using an appropriate dressing**
- **Prevent further trauma.**

How to manage skin tears

The main aims of management are to preserve the skin flap and protect the surrounding tissue, reapproximate the edges of the wound without undue stretching, and reduce the risk of infection and further injury. The principles of moist wound healing are promoted in the following general guidelines:

Control bleeding (haemostasis)

- **Apply pressure and elevate the limb if appropriate.**

STAR Classification System



Category 1a

A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour **is not** pale, dusky or darkened.



Category 1b

A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour **is** pale, dusky or darkened.



Category 2a

A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour **is not** pale, dusky or darkened.



Category 2b

A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour **is** pale, dusky or darkened.



Category 3

A skin tear where the skin flap is completely absent.

Clean the wound

- Use warm saline or water to irrigate the wound and remove any residual haematoma or debris
- Gently pat dry the surrounding skin to avoid further injury.

Approximate the skin flap

- If the skin flap is viable, gently ease the flap back into place using a dampened cotton tip or gloved finger, tweezers or a silicone strip and use the flap as a 'dressing' if viable
- If the flap is difficult to align, consider using a moistened non-woven swab. Apply for 5-10 minutes to rehydrate the flap
- Categorise the skin tear and perform a wound assessment. Document findings
- Apply a skin barrier product as appropriate to protect the surrounding skin.

Apply the dressing

- Select an appropriate dressing (see Dressing selection). If considering the use of adhesive wound closure strips, allow space between each strip to facilitate drainage and avoid tension over flexure sites (this could compromise vascularity)
- Tissue glues may be used to secure the flap. Sutures and staples are generally not recommended due to the fragility of the skin. However, they may be required in the treatment of deep, full-thickness lacerations
- If possible, leave the dressing in place for several days to avoid disturbing the flap
- If an opaque dressing is used, mark with an arrow to indicate the preferred direction of removal and record in the notes.

Review and reassess

- At each dressing change, gently lift and remove the dressing, working

Box 2: Properties of the ideal dressing for skin tear application (based on³³)

- Easy to apply
- Provides a protective anti-shear barrier
- Optimises the physiological healing environment (eg moisture and bacterial balance, temperature and pH maintenance)
- Is flexible and moulds to contours
- Provides secure, but not aggressive retention
- Affords extended wear time
- Does not cause trauma on removal
- Optimises quality of life and cosmesis
- Is cost-effective

away from the attached skin flap, as indicated by the arrow drawn on the dressing. Consider using saline soaks or silicone-based adhesive removers to minimise trauma to the periwound skin^{34,35}

- When cleaning the wound take care not to disrupt the skin flap
- Monitor for changes in the wound and maintenance of skin integrity. Where the skin or flap is pale and dusky/darkened, it is important to reassess within 24-48 hours. Debridement is usually required on non-viable flaps
- Observe the wound for signs and symptoms of infection (especially in patients with diabetes), including increased pain and exudate, erythema, heat, oedema and malodour
- Implement preventative skin care interventions to avoid further skin tears (see How to prevent skin tears).

Box 3 Recommendations for managing wound-related pain (adapted from^{36,37})

- Involve and empower patients to optimise pain management
- Evaluate each patient's need for pharmacological and non-pharmacological strategies to minimise wound-related pain
- Treat local factors such as inflammation, trauma, pressure and maceration that may cause wound-related pain and delay healing
- Choose dressings that minimise trauma and pain during application and removal. Consider wear time, moisture balance and healing potential
- Treat infections and be aware that an increase in pain may be indicative of infection
- Use warm cleansing solution to irrigate the wound, carefully remove dressings and any residue and if necessary use a silicone-based adhesive remover
- Consider 'time out' sessions and allow patients to remove their own dressing as appropriate
- Minimise the frequency of dressing changes when possible.

Dressing selection

A wide variety of dressings are used in the treatment of skin tears. It is important to select a dressing based on the assessment outcomes and goals of care (see Box 2). Calcium alginates may assist with haemostasis. Soft silicone or silicone impregnated dressings facilitate flap security and non-traumatic removal. Foam or fibre dressings assist with exudate management. Antimicrobial dressings aid infection control. Adhesive dressings are best avoided when the periwound skin is fragile. Tubular or roller bandages can be used to secure dressings or provide additional protection.

Special considerations

Oedema

If the skin tear occurs over an area where there is oedema, exudate levels will be increased. It is important to consider the cause of oedema and manage appropriately. Failure to respond to first line treatment may indicate further interventions and referral to a specialist is required.

Pain

Skin tears can be painful as trauma can affect the superficial nerve endings in and around the wound. It is important, therefore, to assess the degree and nature of pain and offer analgesia if required¹⁰. Pain measurement tools, such as the visual

analogue scale (VAS) can be used to grade a patient's pain³⁷. This can help to identify the most appropriate treatment strategy (Box 3).

Infection

Pain may also be an indication of localised infection³⁸. Infection may be managed using topical antimicrobials or systemic antibiotics^{39,40} to help prevent the onset of serious complications such as cellulitis or generalised sepsis.

When is referral indicated?

Referral is indicated when the skin tear is extensive or associated with a full thickness skin injury, significant bleeding or haematoma formation. Such skin tears may require surgical review and intervention to repair the injury. An interprofessional and collaborative approach to management is required to optimise healing outcomes for the individual.

How to prevent skin tears

Most skin tears occur during routine patient care activities⁷. Any management plan should therefore include strategies to prevent skin tears from developing and/or prevent further trauma that can be adopted by healthcare professionals and assistants

who care for vulnerable patients on a daily basis. In addition, patients and carers should be encouraged to be involved in their care and provided with the necessary education to prevent skin tears.

Key strategies include:

Create a safe environment

It is important to determine the patient's sensory perception and visual impairment and to ensure a safe home or care environment.

- **Ensure adequate lighting and position small furniture (night table, chairs) to avoid unnecessary bumps or knocks. Remove rugs and excessive furniture**
- **Upholster or pad sharp borders of furniture or bed surroundings with padding and soft material**
- **Use appropriate aids when transferring patients and adopt good manual handling techniques according to local protocols**
- **Never use a bed sheet to move the patient as this can contribute to damage by causing a dragging effect on the skin³⁵. Always use a lifting device or slide sheet**
- **Where possible reduce or eliminate pressure, shear and friction using pressure relieving devices and positioning techniques**

- **Encourage the patient to wear protective footwear and clothing to reduce the risk of injury.**

Maintain skin integrity

Good skin care is vital in maintaining skin integrity. It is important to keep the skin well hydrated by maintaining nutritional intake and adequate fluid intake.

Patients with dry skin will benefit from the application of an appropriate pH-friendly moisturising cream twice a day⁴¹. It is important to:

- **Avoid the use of soap, which can dry the skin. Use pH friendly cleansing solutions**
- **Apply emollients to moisturise and rehydrate dry skin**
- **Control moisture from incontinence or other sources**
- **Place, fix and remove peripheral access devices carefully**
- **Use a barrier film or cream to protect vulnerable skin**
- **Where adhesive products are used, consider a silicone-based adhesive remover to minimise trauma to fragile skin**
- **Protect fragile skin by covering with tubular or roller bandages, long sleeved clothing or skin protection devices.**

Summary

The prevention of skin tears is an important aspect of skin care practice in the care of the elderly and infants or dependent persons. While a skilled healthcare professional is required to assess and agree a plan of care for those with skin tears, more junior staff and healthcare assistants are ideally placed to provide fundamental first aid or assist in the prevention of skin tears. An awareness of the anatomy of the skin and the effects that ageing has on the skin can help clinicians in preventing and managing common wounds. The implementation of an evidence-based skin tear management protocol can help to manage patients effectively and prevent further trauma.

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How to implement evidence-base principles in practice

An innovative primary care trust in the UK has developed the 'STAR' box to help encourage clinicians to assess and manage skin tears effectively. The plastic box contains a skin tear assessment tool, a laminated STAR chart, guidelines and care pathway, together with appropriate dressings. This allows clinicians to implement a care plan for a patient with a newly occurring skin tear in a timely manner by the district nurse or care home staff, without the need for referral to tissue viability, Accident & Emergency department or minor injuries unit.

[Click here to view the resource online at www.woundsinternational.com](http://www.woundsinternational.com)

Cost benefits of effective management

The costs associated with skin tears can be significant. Delays in healing due to infection or other complications can add to the health cost burden. Comprehensive assessment and effective management of skin tears can facilitate faster healing and reduce the risk of complications. Evidence-based clinical decisions and dressing selection are important in helping to reduce the total number of dressing changes and time taken to apply the dressing⁴². When patients are able to be managed within their existing care setting or at home, this can reduce the number of visits to accident and emergency departments or prevent hospitalisation¹².

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