Trauma-free fingertip dressing changes

KEY WORDS
- Dressing
- Fingertip
- Pain

This article reviews the literature on fingertip injuries, physiology of pain management and assessment of these injuries. It also examines the results of an evaluation focussing on the use of the PolyMem® finger/toe dressing (Ferris Mfg Corp) for wound healing by secondary intention. The dressing provides a mild, non-toxic cleansing agent that is activated by exudate, helping to debride necrotic tissue and support autolytic debridement. The audit was undertaken in a medium-sized accident and emergency department at a general hospital. It is the intention of the authors that the result of their evaluations be used in informing clinicians about the product's performance on a group of patients presenting with fingertip injuries.

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Finger injuries are extremely common and the hand is particularly vulnerable to domestic and industrial trauma. Fingertips are the most frequently injured area of the hand (Lister, 1993; Sanjay and Tiwari, 2007).

Injuries sustained to the fingertips are viewed as relatively minor, but improper treatment can lead to considerable loss of skilled hand function and significant misery for the patient.

Even when appropriately treated, these injuries can still lead to notable hand morbidity affecting the occupational, as well as social, activities of the individual. Fingertip injuries account for 10% of all admissions to accident and emergency departments in the UK and two thirds of hand injuries in children (Legal Request, 2012). More than 11,900 accidents involve children (14 years and under) who trap their fingers in windows or doors each year (The Royal Society for the Prevention of Accidents [RoSPA], 2013).

The management of fingertip injuries is complex and a variety of treatments are available. The goals of therapy concerning such wounds include:

- Preserving finger functionality and sensation
- Maximising functional length
- Preventing joint contractures
- Maintaining good cosmetic appearance
- Avoiding disfigurement and functional loss.

Fingertip injuries can be treated in a variety of ways and their management should be carefully individualised. If there is minimal tissue loss, the wound can be closed primarily with or without debridement. Healing by secondary intention or open technique by a combination of wound contraction and re-epithelialisation is applicable to small, volarly directed fingertip wounds with no exposure of the bone (Allen, 1980; Chow, 1982; Mennen, 1993).

PAIN ON DRESSING CHANGE

Effective pain management is fundamental in maintaining a high quality of care and frequently depends on the ability and knowledge of the clinician. While some clinicians are aware of the issues associated with wound pain, nurses often fail to manage pain effectively at dressing changes (Hollinworth, 2000).

The World Union of Wound Healing Societies' consensus document (WUWHS, 2004) on minimising pain at wound dressing in regard to procedure recommends that wound-related pain should be assessed and the intensity rated before, during, and after dressing using a recognised pain scale (adapted from McCaffrey and Beebe, 1989). It has been found that the highest levels of pain are associated with skin and wound damage occuring during dressing changes (European Wound Management Association [EWMA], 2002; White, 2008). Choiniére et al (1990) discovered that nurses failed to administer prescribed analgesics prior to dressing burns.

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Pain assessment

A patient's pain levels must be assessed accurately before treating their wound. A careful history of how the injury and, consquently, the pain, occurred must be documented as the nerve endings may be damaged, and necessary investigations, such as an X-ray, should be carried out. The mechanism of injury must be identified, since damage from sharp objects, even when it appears superficial, may contain foreign bodies, such glass, metal or wood (Wardrope, 1997; Cole, 2003). When non-accidental injury is suspected in either children or older people, answers to the following questions should be obtained:

- When did the injury occur?
- Has there been a delay in seeking medical attention?
- Does the injury fit the patient's history?
- Are other injuries present that are at a different healing stage?

Pain acts as a warning signal that something is wrong and should, therefore, be given the same priority as a rise in body temperature or blood pressure (Turk and Melzack, 2001). Even a superficial wound may be very painful due to exposure of nerve endings.

There are different ways of relieving pain. The following methods, as described by Jones (2007), have been found to be effective:

- Nonsteroidal anti-inflammatory agents, such as ibuprofen
- Simple opioids, such as co-codamol
- Giving the patient information
- Employing distraction techniques

Psychological and environmental factors need to be considered alongside age, gender, previous pain history, and the patient's ability to communicate their pain. All these factors will affect the way in which the care pathway is performed (Acton, 2008).

The dressing

The test dressing (PolyMem® finger/toe dressing) provides a mild, non-toxic cleansing agent that is activated by exudate. This helps to debride necrotic tissue and supports autolytic debridement. Glycerin (also known as glycerol) is a moisturiser contained in the test dressing, which keeps it from adhering to the wound bed. It also reduces odour, soothes traumatised tissues, and supports autolytic debridement and manages wound fluid. Glycerin also allows the natural growth factors and nutrients to concentrate in the wound bed. The components of the dressing work together to continuously cleanse the wound bed, removing the need for manual cleansing. Wound bed cleansing is often procedural (Fleck, 2007).

METHOD

This results of 11 case studies were evaluated in which patients had been treated with the test dressing. The participants were aged between

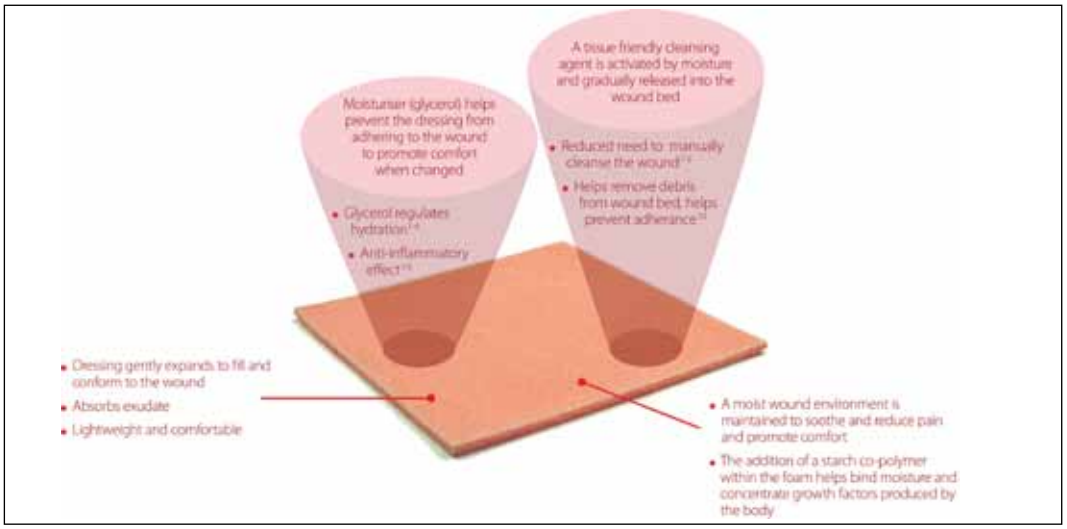

Figure 1. How PolyMem finger dressing works, with permission of Aspen Medical Ltd.

Figure 2. PolyMem finger dressing *in situ*.

7–70 years, nine of which were males and two female. Photographs from 10 of the 11 fingertip wounds evaluated are shown at presentation in *Figure 3*.

The authors questioned patients on their experiences of dressing changes and the functionality of the dressing. Comments from nurses and carers were also collected regarding the application of the dressing and the freedom they may have gained by using the dressing when it came to carrying out their hygiene needs by being able to shower without having to cover the dressing.

The patients with finger injuries were randomly selected from the accident and emergency department of Burton Foundation Trust. The types of finger injuries were varied, reflecting the wide range of injuries seen in the accident and emergency department of a general hospital. The test dressing was changed every 2–4 days. All the participants were given instructions on how to apply the dressing, which was to be given to the clinician carrying out the dressing change. Dressing application was demonstrated to the patients' carers (when present) so that they could apply the dressing if they were happy to do so. Five of the patients were recruited to the study one week post-injury. A further six patients were recruited with acute finger injuries and followed-up 7 days later in the consultant's finger clinic.

The test dressing's ability to promote effective healing, and the presence of pain on dressing changes were noted (*Box 1*). Comments from 10 nurses were collected, covering how they found the test dressing compared to other finger dressings for ease of application and removal, whether the dressing required soaking off and if the patient experienced any pain on removal of the dressing. Comments from the patients and their main carers were also collected.

RESULTS

All 11 patients treated with the test dressings remarked that they found them extremely comfortable and the application easy and pain free. The conformability of the dressing allowed all the patients to move their fingers, despite the traumatic wound they had sustained.

The test dressing was applied, in the main, by patients' relatives, without the need for a clinician. All 11 finger wounds healed satisfactorily and the patients were pleased with the final cosmetic result. One patient commented that his boss would like to have the test dressing in his first aid box at work. Other patients commented that they would like them to be available in chemists at a reasonable price.

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Box 1. Patient comments on PolyMem finger dressing

Patient comment	Number of patients (*n*=11)
No pain on dressing	11
Comfortable	11
Conformability	11
Ease of dressing application	11
Dressing change performed by a non-clinician	9
Minimal scarring and good cosmetic appearance	11
Easy application by nurses	11

Figure 3. Ten of the 11 cases included here, at presentation.

"It is essential to consider the patient's pain level at dressing changes and to employ a dressing that reduces this to the lowest level possible."

DISCUSSION

The authors concluded that the test dressing appeared to provide the optimum environment for healing with satisfactory scarring. There is a large economic cost saving on the number of visits to clinicians that would otherwise be required to carry out dressing changes. Another advantage is the convenience for the patient in not having to take time off work to attend a hospital or doctors appointment.

The nurses involved in the study compared the finger dressing that they would normally have employed to manage these trauma wounds with the test dressing. They were impressed with the ease of application and removal of the test dressing, which did not necessitate soaking the dressing off, as well as the lack of pain for the patient on removal of the dressing.

The study also highlighted that the test dressing should be produced in a smaller size for children, who regularly sustain trauma to their fingers. A young girl required a smaller size dressing as the original size was too large.

CONCLUSION

The test dressings promoted effective wound healing compared with the finger dressings that were normally employed in the accident and emergency department.

The authors were very satisfied with the dressing as it delivered the important requirements of a finger dressing. The nurses involved in the study found that the dressing was easy to apply and remove which made it painless for patients.

It is essential to consider the patient's pain level at dressing changes and to employ a dressing that reduces this to the lowest level possible.

DECLARATION

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