

Use of SILVERCEL® NON-ADHERENT on burn wounds: A case series

Burn wound infections are one of the most important and potentially serious complications that occur in the acute period following injury. The risks are commensurate with the depth and extent of the burn, the health and age of the patient, local perfusion of the tissues, and use of systemic antibiotics. Therefore, topical antimicrobial treatment is usually preferred for burn wounds and this article looks at the use of SILVERCEL® NON-ADHERENT (Systagenix) dressing in three case studies.

The burn wound can be defined as local tissue damage caused by the burn injury with the associated resultant responses of inflammation, regeneration and repair. It is a dynamic changing milieu that is both susceptible to and responsible for the many local and systemic disturbances that characterise a burn injury. The end point of burn management and therapy is wound healing and epithelialisation as soon as possible in order to prevent infection and to reduce functional and aesthetic after effects (Herndon, 2007).

Burn wound infections are one of the most important and potentially serious complications that occur in the acute period following injury. The most important patient characteristics that influence morbidity and mortality from burn wound infection and sepsis include large TBSA wounds (>30%), significant amounts of full-thickness burns, prolonged open wounds or delayed initial burn wound care (Edwards-Jones et al, 2003).

Several factors contribute to infection in burn wounds, notably the destruction of the skin barrier, the presence of necrosis and sero-sanguinous exudate, and impaired immune function (Edwards-Jones et al, 2003). The risks are commensurate with the depth and extent of the burn, the health and age of the patient, local perfusion of the tissues, and use of systemic antibiotics. As burn eschar may be some distance from patent vasculature, systemic agents (i.e. oral and parenteral antibiotics) are unlikely to achieve therapeutic levels at the burn site, whereas topically-applied agents, appropriately dosed, can achieve effective bioburden control (Wounds UK, 2011).

Current clinical practice is to use Flamazine as the first line antimicrobial therapy, only changing to ACTICOAT™ (Smith & Nephew) if the wound becomes infected or patients are referred with cellulosic wounds. However, the issue with ACTICOAT in all its formats is that it adheres to the wound bed making removal painful and traumatic, this means the dressing often has to be soaked off, leading to increased nursing time and potential pain for patients. Also sometimes a residual silver staining is left on the skin, which can be distressing to patients, this is temporary and will wear off with time or washing but is unsightly for patients. In clinical practice the dressing needs to be kept moist, and this can be time consuming in terms of nursing time as either outer soaks need changing regularly or in some services, catheters are inserted to instil fluid regularly to prevent drying out. Contrary to popular belief burn wounds can have less exudate than other wound types causing dressing adherence to be a significant issue.

Removal of dressings that have become adherent to the wound may cause damage to the wound bed or surrounding skin, and so have a detrimental effect on wound healing (Mudge and Orsted, 2010). Clark and Bradbury (2010) add that this has a potential to impact upon additional clinician time and use of resources.

However, for the burn injured patient, pain is the predominant feature. Burn injuries cause intense and prolonged pain, made worse by the need to change dressings frequently to prevent infection and aid healing. Given that burn pain is one of the

KEY WORDS

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JACKY EDWARDS
Burns Nurse Consultant, Burn
Centre, Wythenshawe Hospital,
Wythenshawe

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most extreme types of pain, the emphasis must be on using products that limit the pain experience.

METHOD

SILVERCEL® NON-ADHERENT (Systagenix) is a new generation of absorbent antimicrobial dressings that has been specifically designed to minimise the pain and trauma often associated with wound dressing changes. SILVERCEL NON-ADHERENT contains elemental silver at 111mg/100cm² and is designed for the management of infected wounds or wounds in which there is an increased risk of infection. Specifically, it is a non-woven pad composed of a high G (guluronic acid) alginate, carboxymethyl cellulose and silver-coated nylon fibres, laminated to a perforated, non-adherent ethylene methyl acrylate wound contact layer (Clark and Bradbury, 2010). The absorptive properties of the dressing help to manage the increased exudate production often associated with infected wounds, whilst maintaining the moist wound environment that assists wound healing and protecting the surrounding skin from the potentially damaging effects of exudate (Fleur, 2009).

To assess the potential for SILVERCEL NON-ADHERENT in the management of burn wounds, the dressing was evaluated in three case studies presented here.

CASE STUDIES

Case One

Mrs X is an 88-year-old woman who lived in a nursing home. She fell against a radiator and sustained a deep dermal burn to her right lower back (Figure 1a). This is a common injury among older people, and – in the author’s experience – will soon overtake scalds as the most frequent injury in this age group.

Mrs X’s burn was initially treated conventionally by using FLAMAZINE™ Cream (Smith & Nephew) and Mepilex Border (Mölnlycke Health Care). However, after 3 months, the wound remained unhealed. Although swab results were negative, the wound appeared unhealthy and it was decided to trial SILVERCEL NON-ADHERENT (Figure 1b).

The wound responded well (Figure 1c). After 4 weeks’ treatment with the product, Mrs X’s wound had almost healed (Figure 1d). The patient

experienced no problems with the dressing, she found it comfortable to wear and it did not adhere or cause trauma on removal.

Case Two

Mrs Y, a 42-year-old woman, has epilepsy. Epilepsy is commonly implicated in burn injuries, and the burns sustained are often deep as the patient may be in contact with the heat source for an extended period of time and first aid is often delayed due to the patient being unconscious or confused following a fit (Josty et al, 2000).

Mrs Y burned both feet after spilling boiling water on them during a fit. The wounds were deep dermal/full thickness. Most of the areas healed, but she was left with chronic ulceration under her left foot, partly due to the fact she was a hairdresser and was on her feet most of the time, and also her love of high heels.

Despite treatment with a variety of dressings, healing was not achieved and – 15 months after sustaining the burns – Mrs Y’s left foot wound was regrafted using MatriDerm® (Ideal Medical Solutions), a dermal skin replacement and a split thickness skin graft. Initially there was good graft take, but this then broke down (Figure 2a). Skin substitutes are very susceptible to infection and loss of them is very common, this can be alleviated by use of antimicrobial dressings (Stanton and Billmire, 2002).

Mrs Y was commenced on SILVERCEL NON-ADHERENT and found the dressing comfortable to wear. It allowed her to mobilise and was easily removed without causing pain or trauma to the wound. The wound rapidly reduced in size (Figures 2b–c) – more so than with previous products trialled – then healed, and remained healed (Figure 2d).

Case Three

Mr Z was a 43-year-old man with a flame burn to his left forearm. He sustained the burn while using an angle grinder on a mat soaked with petrol; a spark ignited the mat and Mr Z’s clothes caught fire, causing a deep burn to his arm (Figure 3a).

Initially, Mr Z was treated conservatively with FLAMAZINE Cream and Atrauman® (Hartmann). The wound became infected with *Staphylococcus aureus* after 2 weeks and the

dressing was changed to SILVERCEL NON-ADHERENT (Figure 3b).

Mr Z found that the dressing reduced pain, was comfortable to wear, and was removed easily without causing trauma. The infection resolved and the wound healed without abnormal scarring – a common consequence of infected burn wounds and wounds that take >3–4 weeks to heal (Figures 3c–e).

DISCUSSION

The use of topical antimicrobials is fundamental to the prevention of infections in deep and superficial burns. Furthermore, bacterial colonisation of burns may delay healing. Herndon (2007) suggests that maintaining wounds at low bacterial colonisation levels diminishes the frequency and duration of septic episodes. However, outside of burns services, silver dressings have been restricted and, in some cases, removed from dressing formularies (White and Kinglsey, 2010). This could have a significant impact on outcomes for patients with burn wounds.

Only superficial burn wounds will heal with minimal risk of infection, all other depths have the potential for colonisation and, thus, infection. Wounds that take >3 weeks to heal have the potential to develop hypertrophic scarring, which will give a significantly worse outcome for the patient (Ledbetter, 2010).

In the majority of burn units, antibiotics are not routinely prophylactically administered to burns patients because of concerns regarding antibiotic resistance, high cost, and the risk of adverse drug effects (Edwards-Jones et al, 2000). However, they are routinely given to patients with burn injuries through either emergency departments or GPs. Therefore, in this patient group, the judicious use of antimicrobial dressings to prevent progression to infection or re-infection could significantly decrease the need for treatment with systemic antibiotics (Bradbury et al, 2011).

CONCLUSION

SILVERCEL NON-ADHERENT provides the same properties of other elemental silver dressings in terms of its efficacy, but is without the problems of drying out and adherence to the wound, which is common in other silver

dressings. There was no adherence to the wound bed in the cases reported here, facilitating pain-free dressing changes. The dressing did not need remoistening and, unlike ACTICOAT, there was no residual staining.

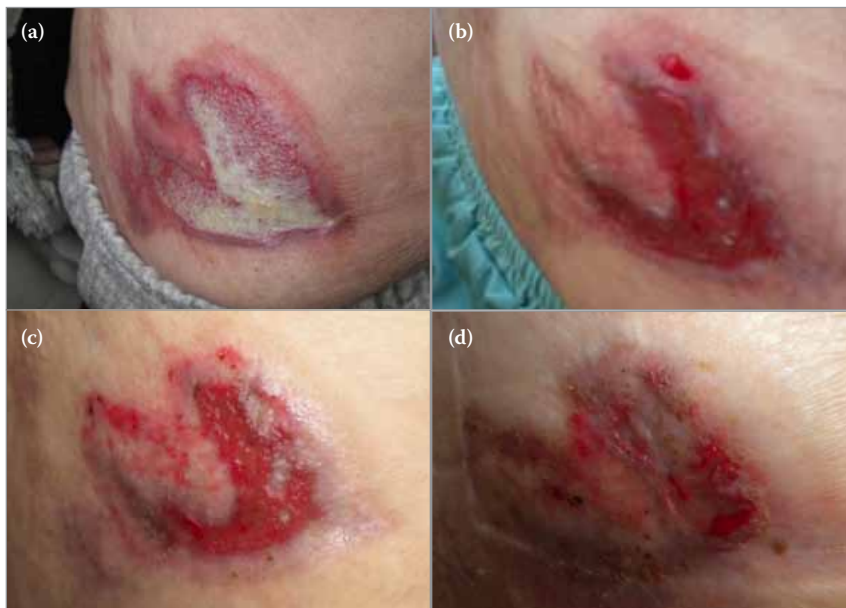


Figure 1. Mrs X's burn (a) at presentation, (b) unhealed following 3-months' standard treatment, (c) 1 week after the initiation of treatment with SILVERCEL® NON-ADHERENT (Systagenix), and (d) almost healed within a month.



Figure 2. Mrs Y's burn (a) following the breakdown of re-grafting, (b) 1 week after the initiation of treatment with SILVERCEL® NON-ADHERENT (Systagenix), (c) after 3 weeks' treatment, and (d) almost healed after 5 weeks' treatment.

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The case series presented here demonstrates that SILVERCEL NON-ADHERENT has the potential to replace the use of ACTICOAT on burn wounds. However, a more structured analysis of the efficacy of the dressing will be required before this can be introduced as first-line management for cellullitic burn wounds. **WUK**



Figure 3. Mr Z's burn (a) at presentation, (b) initiation of treatment with SILVERCEL® NON-ADHERENT (Systagenix), and following (c) 7, (d) 10, and (e) 17 days' treatment.

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