

Hydrogel sheet dressings and short-stretch cohesive bandaging: case study

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Hard-to-heal wounds such as leg ulcers are associated with long duration and a high incidence of complications such as pain, often resulting in considerable financial burden (European Wound Management Association (EWMA), 2008). The financial burden is not just one for the NHS but for the patients as well in lost days from work, taxi fares, prescription charges and even having to take early retirement. The prevalence of venous leg ulcers is approximately 1% in the whole population and this increases with age. Where appropriate research-based treatment protocols and guidelines are in place, about 50% of leg ulcers heal within 4 months (EWMA, 2008). The following case study demonstrates that using protocols, national and local guidelines can have a positive effect on the patients wound care journey and promote optimal wound care (Wounds UK, 2008).

Case study

'Mrs B' is an 88-year-old lady who cares for her disabled husband. On referral to the wound care service her leg ulceration was approximately 10 months in duration. Measuring 9cm x 6cm, it was assessed to be a deep dermal ulcer (*Figure 1*). The wound bed was covered with 100% thick slough and a copious amount of exudate was a real problem for the patient as well as uncontrolled pain.

The ulceration occurred from trauma after knocking the leg on the right medial malleolus. Initially it was about 1cm square, but soon started to deteriorate and enlarge. She was seen in the dermatology department in secondary care after 5 months with the ulcer worsening. Compression was advised but full compression was not tolerated despite a normal resting Doppler pressure. Although the ankle brachial pressure index (ABPI) had been taken (1), no sounds were documented on the referral form to the wound care service.

Recording the Doppler sounds is helpful as this will assist in determining the status of the artery and will provide complementary information to the ABPI (Worboys, 2006). An ABPI of 1 would indicate that the patient is suitable for full compression as the arterial blood flow is sufficient. However, the ABPI result should not be used solely to indicate the amount or types of compression to be applied. Examples of what should also be considered include:

- ◆ Medical history
- ◆ Presenting clinical symptoms
- ◆ Psycho-social factors
- ◆ Patient choice and lifestyle
- ◆ Shape of the limb

- ◆ Past experiences
- ◆ Practitioner competence. (RCN, 1998)

The bandage regime commenced was Layer 1, K-soft, layer 2 K-lite and layer 3 K-plus giving 20mmHg compression and this was just about tolerated by the patient, but pain was a big problem, especially at night.

Pain

It was essential to perform a full comprehensive leg ulcer assessment when seen for the first time by the wound care service. This was undertaken using the local guidelines and the findings were documented in the leg ulcer care-pathway. A key part of the assessment is to establish whether the patient's arterial supply is sufficiently robust for it to withstand compression (Anderson, 2006), therefore on assessment, Mrs B was also re-Dopplered. The use of Doppler ultrasound to detect arterial insufficiency is an essential part of the leg ulcer assessment process (RCN, 1998). The ABPI was again 1 but the sounds were monophasic on the posterior tibial artery (PTA) but biphasic on all the arteries, indicating a degree of arterial disease. The pain was reported to be in the wound by the patient and this increased on application of the compression; the pain scale was 9-10 at times (worst pain ever) using a pain analogue scale. A variety of validated tools have been developed for pain assessment, the visual analogue scale (VAS) is a commonly used uni-dimensional instrument to assess pain (World Union of Wound Healing Societies (WUWHS), 2004). A numerical visual analogue scale with pain description prompts is used in the leg ulcer care-pathway for nurses to use when assessing and re-assessing pain. Patients who have venous leg ulcers often have complicating factors such as pain (Anderson, 2006).

Venous leg ulcers can be very painful and this can be made worse by oedema, wound infection and irritation to surrounding skin. 'Burning' and 'stinging' were also used by the patient to describe the pain. Leg ulcer pain that is described as burning usually responds well to non-steroidal inflammatory drugs such as Ibuprofen 400mgs three times daily (World Health Organization, 2005). If pain is described as 'tingling', 'smarting', or stinging pain the patient may require anti-epileptic drugs (Emflorgo, 1999) such as Gabapentin three times daily or amitriptyline 10mgs at night. Persistent (chronic) pain is a common experience that requires appropriate assessment and treatment. Pain is subjective and a common experience for people living with a chronic wound. Chronic wound pain is the background symptom that exists at rest and between wound-related



Figure 1. Deep dermal ulcer



Figure 2. Debriding ulcer



Figure 3. Progressing ulcer showing granulation and epithelialization

procedures including dressing changes (Woo et al, 2008).

The dressings being applied under the reduced multilayer bandaging system was a non-adherent dressing (N/A) with gauze. N/A dressings are recommended underneath compression bandaging (RCN, 1998). However, gauze is not recommended; it can harden with exudate and cause pain and even trauma from movement on walking. The assessment and management of wound pain is an essential element of symptom control and can be overlooked (King, 2003). Despite the importance of pain as a key clinical indicator, it has been neglected by health providers with a lack of documentation and treatment (Woo et al, 2008). Dressing changes is one of the most common causes of pain (EWMA, 2002; WUWHS, 2004) and a dressing that has dried out and adhered to the wound bed has been cited as the most important factor in causing wound pain (Moffatt et al, 2003). In contrast, a moist wound dressing would bathe the nerve endings and help to reduce pain (Young and Hampton, 2005; Beldon, 2009). Pain has a physiological response that causes vasoconstriction, reducing blood delivery to the wound bed, increasing pain, and delaying wound healing. It is therefore suggested by Young and Hampton (2005) that analgesia must be the secondary consideration and dressings the primary consideration in reducing wound pain.

Exudate

The exudate observed had evidence of pseudomonas, indicated by the green-blue colour; the surrounding tissue was inflamed and excoriated. Exudate in chronic wounds appear to have a damaging effect on wound healing, owing to raised levels of proteases, lactate, low pH and PO₂. These raised levels stop or slow down the proliferation of key cells and inhibit healing (Vowden and Vowden, 2004). Chronic wound exudate has been shown to delay proliferation of endothelial cells, fibroblasts and keratinocytes. Excessive levels of exudate can saturate and damage the wound bed and surrounding skin causing pain and discomfort. The saturation of dressings can cause inconvenience and odour for the patient reducing quality of life (Bale and Harding 2000), which was reported by the patient on assessment.

A recent swab taken by the practice nurse grew proteus and pseudomonas. Pseudomonas aeruginosa is a difficult pathogen to treat causing clinical infection and pain (Young and Hampton, 2005). During the 10 month duration of the ulcer Mrs B had been prescribed several courses of antibiotics because of the enlargement of the ulcer and signs of inflammation which is commonly mistaken for infection, but is part of the wound healing response. Antibiotics have been found to be largely ineffective in pseudomonas aeruginosa and it has been observed having resistance. To manage chronic wounds, nurses must understand and apply the biology of chronic wound healing and wound bed preparation (Ayello and Cuddington, 2004).

Care plan

After a full comprehensive assessment using the leg ulcer care pathway to aid the assessment and after discussion

of the outcomes of the assessment and the care-plan options with Mrs B the dressing of choice from the PCT wound care formulary for wound debridement was Actiformcool®; an ionic hydrogel sheet, which would be applied as the primary dressing. Three layers were needed as the wound needed to be debrided quickly and as painlessly as possible and stay in situ under the bandaging which would be short-stretch two-layer system called Actico Cohesive. Short-stretch compression bandages have been shown to be equally efficacious when compared to other compression systems in healing leg ulcers (Scriven et al, 1998; Vowden, 1998). As short-stretch bandaging has low working pressures, with only temporary high levels of compression present when the patient is active, this form of therapy is safe for patients with ulcers of a mixed aetiology (Hayward 2002; WUWHS 2008). A staged introduction with close monitoring could also have been an option in patients who have venous leg ulceration and some arterial insufficiency (mixed disease). Mrs B was not really keen to have bandages applied because of her recent experience of increased pain which she related to the bandaging.

Many patients experience difficulties with concordance, as compression therapy is reported to be uncomfortable, bulky, and hot to wear and fails to accommodate normal footwear (Annand et al, 2002; Mandal, 2006). After some discussion between both the clinical nurse specialist (CNS) and the patient it was decided that compression bandaging was still the therapy of choice, an agreement was reached that the short-stretch system would help the night pain as well as the new dressings and analgesia, so was commenced. It is essential that the patient understands that compression therapy is the most important part of their treatment, (Cullum et al, 1999; Mandal, 2006).

Elliott and Tunell (1996) and Myers and Macdonald (1996) advocated patient empowerment as supported by Briggs (2007) who feel that patients and health professionals are equal partners and therefore have an equal share in the decision-making process. Taking time to talk about the differences of the previous bandage system and the short-stretch system certainly helped. Kyngas and Hentiniems (1995) and later Russell et al (2003) found that the success of a treatment regime depended on the patient's willingness to comply.

Wound progress

The top film layer of the dressing was removed before applying layer 2 and layer 3 of the Actiformcool®. The film on the top layer was left in situ before the application of the short-stretch cohesive system.

After 10 days the wound had all but debrided (*Figure 2*) and there was no pain (VAS scale 0). Where pain persists despite the use of appropriate dressings, analgesia review should be ongoing to find the most effective analgesia. However, analgesia was only needed for a few weeks once Actiformcool® was introduced. Muldoon (2006) found that the cooling effect on the wound and surrounding skin demonstrated a positive effect in reducing pain.



Figure 4. Progressing ulceration

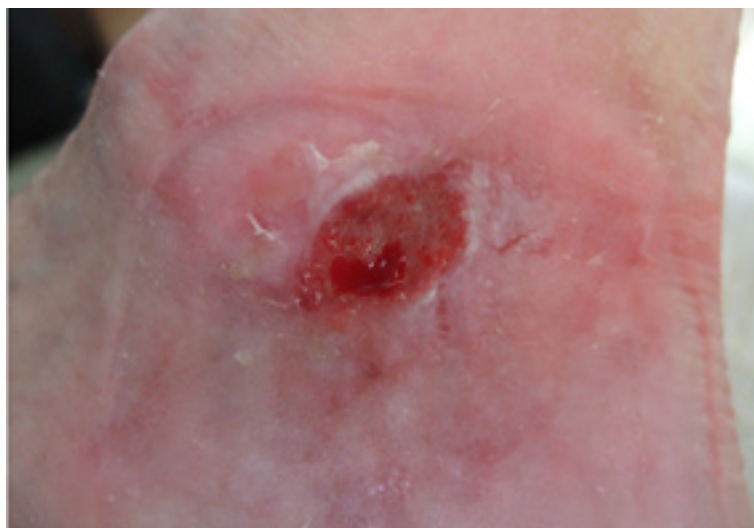


Figure 5. Static ulcer

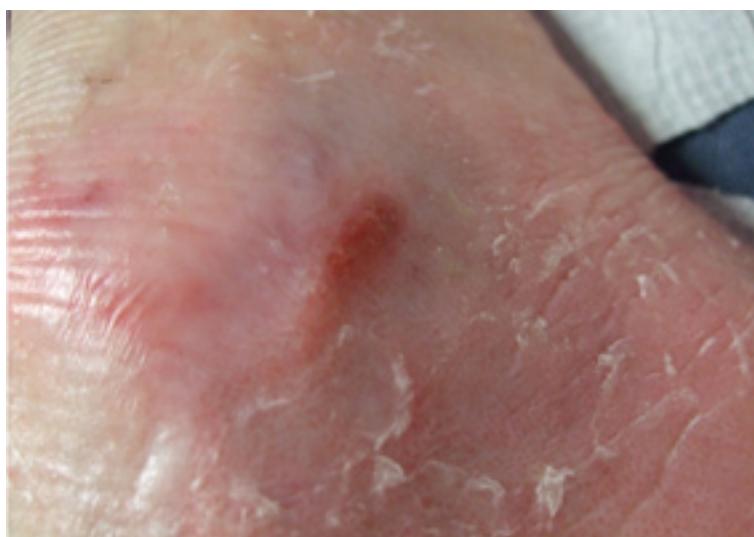


Figure 6. Healing ulcer after one application of Suprasorb X + PHMB

The exudate was controlled and held in the dressing with no strike through onto the bandages. After 6 weeks the ulcer was totally debrided and showing granulation, epithelization and wound reduction (see *Figure 3*). The Actiformcool® was reduced from three layers to two layers after debridement which was after 3 weeks and the bandages continued to be rebanded twice weekly. There continued to be no strike through after reducing the layers of the Actiformcool®.

After a further 3 weeks, the ulcer was 75% healed when compared with the original measurements and the Actiformcool® was only requiring one layer with the short-stretch bandaging and was being redressed once weekly.

Cost

Dressing costs are often negligible in comparison with other factors such as cost of care setting. Cost-cutting exercises that focus on the use of cheaper dressings might actually result in higher overall costs if the dressing change frequently increased and healing time is extended (EWMA, 2008). Using Actiformcool® is justified, in the author's experience as, when layered, it aids quicker debridement.

Tracking healing

Taking photographs and wound measurements helps the nurse to reassess the outcomes of the treatments and show the patients the wound progress (EWMA, 2008). The ulcer continued to heal but for one problem area which refused to progress (see *Figure 4*). The wound remained much the same for 3 weeks although it was only 1cm squared. Mrs B thought the area was the exact place where the original trauma wound had occurred. The wound had friable tissue, bleeding was observed (See *Figure 5*) and had become painful again; chronic wounds do not always show the same signs of infection as acute wounds. Suprasorb X + PHMB (a hydro balance dressing with polyhexamethylene biguanide, an antimicrobial agent) was applied, which helps with reducing microbial burden and maintaining a moist wound surface, while also reducing pain (Glover and Wicks, 2009). Promoting the hydro-balance effect, the dressing will absorb exudate or donate moisture. PHMB is a powerful antimicrobial which interferes with the bacterial cell metabolism by prohibiting the cells' ability to absorb any nutrients or dispose of waste products. However, the dressing has been shown to be non-cytotoxic to human cells (Glover and Wicks, 2009). Within 2 applications the wound was finally healed (See *Figure 6*). Class 1 European hose was applied to support the healed tissue and prevent reoccurrence.

Follow up

Mrs B was followed up at 4 weeks and 12 weeks post healing, to check skin integrity and skin care regime, tolerance of compression hose and that the ulcer remained healed. Mrs B has all the information necessary should she need to seek advice if any problems occur.

Conclusion

Pain management can be a difficult area to deal with; nurses often feel overwhelmed and may inadvertently ignore

the patient's needs. It is vital that nurses act as advocate for patients in liaising with GPs to ensure that their needs are met with analgesia if they cannot prescribe. Optimal wound care is care that addresses every need of the patient in order to maximize their quality of life while they have a wound, this includes issues such as pain. Clear, easy to follow national and local guidelines in leg ulcer management are vital to aid and support nurses caring for patients with complex, hard to heal leg ulcers. Using consensus and position documents will guide the practitioner to give a high standard of care. Referral pathways to local wound care services are also vital to aid a positive patient journey, and keep the patient central of all decisions. It is helpful to have a structured approach with clear assessment tools to promote adequate documentation such as pain assessment tools, wound care formularies and a leg ulcer care-pathway.

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