Preparing the Wound to Heal Using a New Hydroconductive Dressing

Pam Spruce, BSc (Hons), DN, DN Cert, RGN
TVRE Consulting, Stoke-on-Trent, United Kingdom

The concept of wound bed preparation is now accepted in clinical practice as a framework for the management of chronic wounds.1 It is recognized that chronic wounds have become "stuck" in the inflammatory and proliferative stages of healing2 and require an approach to healing that differs from what is used in acute wound management.

The aim of wound bed preparation is to create an optimal wound healing environment by restoring the bacterial balance and by managing slough, necrosis, and exudate. Wound bed preparation also involves correcting cellular dysfunction and restoring the biochemical balance within the wound.3,4 Clinicians who deal with chronic wounds on a daily basis aim to manage these factors by judiciously observing patients and their wounds and responding with the appropriate use of supportive techniques and/or technologies to prevent complications and promote wound progression.

In practice, wound bed preparation may be a challenge, not only because of the complexity of the patient and his associated comorbidities, but also because appropriate techniques to prevent complications are not always available. One example is the removal of devitalized tissue from the wound bed; if left in place, this tissue delays healing, is a focus for infection, and increases the risk of chronic inflammation.5 Access to quick and effective tissue removal techniques such as sharp surgical, larval, or hydrosurgical debridement may not be readily available to practitioners working outside specialty or hospital environments.

Assessing the bacterial load in a wound is also difficult. The clinician must rely on identifying the signs and symptoms that indicate developing infection — ie, delayed healing, increasing exudate, bright red discoloration of granulation tissue, purulent discharge, edema, increased heat, malodor, undermining of the wound edges, and possible wound breakdown.6 Preventing wound infection is a major challenge in chronic wounds; clinicians now rely on the use of antimicrobial dressings as one technique to restore the bacterial balance once it is found to be a problem.

Managing wound exudate and associated periwound complications often is accomplished using absorptive dressings, removing the harmful fluid while maintaining a moist healing environment.

To determine whether a dressing could be used within the wound bed preparation framework and was suitable for use with standard care, a new hydroconductive dressing with Levafiber technology (Drawtex [SteadMed Medical LLC, Ft. Worth, TX]) was evaluated on 10 patients with nonhealing chronic wounds. No protocol other than the manufacturer's recommendations was utilized, and patients were not randomized to treatment. The only information recorded was collected during routine assessment. Organizational consent was obtained from the hospital, along with that of the patient's Medical Practitioner. The patients also gave written consent to participate, including the use of photography for educational and publication purposes.

All patients were male, average age 60 years (range 46 years to 78 years). The patients were managed on a day-to-day basis by the Home Nursing Service and were seen by the Wound Care Nurses at the hospital center for specialist advice. This approach facilitated thorough assessment of the dressing in use and its risk/benefit effects to the patients and the organization within day-to-day clinical practice. As such, Ethical Approval was not required within the UK.

This cohort of patients had presented with nonhealing wounds that included seven complex surgical wounds, one traumatic wound, and two leg ulcers being treated with compression therapy. All of the participating patients had undergone full assessment, and other concerns or supporting therapies such as nutritional supplementation, compression therapy, and the like had been addressed previously.

Before the dressing was used, all of the wounds were assessed as stuck in the inflammatory stage of healing, due to the poor progression to healing or nonhealing. The purpose of using this product on these patients was to observe if the dressing was effective in managing wound exudate, removing devitalized tissue from the wound bed, and reducing the signs and symptoms that would indicate an increase in bacterial activity.

The dressing was used until the clinician assessed there was adequate wound bed preparation and wound progress toward healing was observed.

The dressing was applied to the wound and used according to the manufacturer's instructions. At each dressing change, the wound healing trajectory was recorded using a digital software system in association with the wound photographs (Elixr, [Imago Care Limited, South London, UK]) This enabled a clear and precise estimation of not only the

This article was not subject to the Ostomy Wound Management peer-review process.

wound size, but also the percentage of devitalized tissue in the wound bed. The duration of use varied from 6 days to 28 days, depending on the patients' acceptability and the practitioners' clinical decisions.

When the dressing was used according to the manufacturer's instructions, an improvement was recorded in all of the wounds. No new infections were reported and the appearance/condition of periwound skin improved.

One particular benefit was that this dressing was found to be very effective in rapidly removing slough from the wound bed, while effectively managing exudate. Although wound area decreased in six patients, it increased in four patients from the initial assessment. However, the increase was routinely associated with removal of devitalized tissue to expose the exact wound margins and, as such, an improvement in the wound bed tissue.

An example of the product's effectiveness is the case involving the area of the medial malleolus of a 47-year-old man. His long-standing wound contained 64.9% slough in the wound bed, but 24 hours after only one dressing application, no slough and 100% granulation tissue were noted.

Another patient, a 46-year-old man who had undergone surgery for hydradenitis suppurativa 7 weeks before inclusion in the study, was invited to participate because he was sensitive to a number of dressing products, including foam dressings, hydrocolloids, and some creams. Before use of the hydroconductive dressing was initiated, the wound was painful and the patient required analgesia. However, after one application of the hydroconductive dressing, the patient's discomfort was reduced sufficiently for him to stop his pain-relief medication. By day 7 of Drawtex usage, the wound bed was improving, the exudate level had decreased, periwound skin condition had improved, and no sign of dressing sensitivity was noted. The patient attended the clinic until the wound no longer required specialist interventions; the Community Nurses managed ongoing care.

Four study participants had undergone abdominal surgery that had been closed by secondary intention using negative pressure wound therapy. Among these patients was a 61-year-old man with no other comorbidities that might influence healing, yet he had an unhealed wound of 2 years' duration. The wound bed was observed to have unhealthy granulation tissue with minimal slough. Wound margins were obscured by dry, flaky tissue. The hydroconductive dressing was used for 3 weeks, at which point the healthy granulation tissue had improved to 94.7%, the periwound skin condition had improved, and the wound was progressing on a healing trajectory.

An additional patient within this small cohort had been treated for a postsurgical abdominal wound for 128 weeks without healing. As a result of the prolonged treatment period and the use of numerous wound care products, the surrounding skin was extremely fragile, making it difficult to treat. The study dressing was used, and at 14 days, a 44% increase in granulation tissue in the wound bed and healthy periwound skin were noted.

The nursing staff found the dressing easy to use, requiring only one clinician to apply it. This is an important feature for any product or technology used within a busy clinical environment.

Wound bed preparation in complex wounds can be difficult, not only because technologies or techniques are not available, but also because other factors such as sensitivities to dressing products, patient pain, and individual preferences need to be considered. The initial indications from this small case series report suggest that the hydroconductive dressing is effective when used within a program of care aimed to reduce the barriers to healing associated with wound bed preparation. It appears to "kick start' the wound within a short time frame. ■

References

1. Dowsett C, Newton H. Wound bed preparation: TIME in practice. Wounds UK. 2005;1(3):48–70.
2. Ennis WJ, Menses P. Wound healing at the local level: the stunned wound. Ostomy Wound Manage. 2000;46:S39–S48.
3. Falanga V. Classifications for wound bed preparation and stimulation of chronic wounds. Wound Repair Regen. 2000;8(5):347–352.
4. Vowden K, Vowden P. Wound bed preparation. Available at: www.worldwidewounds.com/2002/april/Vowden/Wound-Bed-Preparation.html. Accessed June 14, 2012
5. Leaper D. Sharp technique for wound debridement. Available at: www.worldwidewounds.com/2002/december/Leaper/Sharp-Debridement.htm. Accessed June 14, 2012.
6. Cutting K Harding A. Criteria for identifying wound infection. J Wound Care. 1994;3:198–201.