Minimizing Complications of Pain and Dressing Adherence in the Treatment of Venous Leg Ulcers

This article elaborates on the presentation by Mark DeCotiis, DPM, FACFAS, and Elizabeth C. Konz, PhD, RD: Minimizing Complications of Pain and Dressing Adherence in the Treatment of Venous Leg Ulcers from the Clinical Symposium on Skin and Wound Care, Las Vegas, Nev, October 26–30, 2008.

Venous leg ulcers affect more than 600,000 people in the United States per year and make up nearly 80% of all leg ulcers. Wounds caused by venous insufficiency tend to heal slowly and often recur. In addition, venous leg ulcer pain is often a major concern for patients and poses a challenge for practitioners.

Venous leg ulcers can disrupt the patient’s normal life, disturbing sleep, restricting mobility, and creating stress as well as causing pain. Ryan et al studied the relationship between treatment processes and pain relief and individual interpretation of pain symptoms in patients with venous insufficiency ulcers. The researchers found a significant number of patients experience pain with venous leg ulcers, affecting their quality of life. This pain may be constant or intermittent and may be related to care procedures or dressing change.

According to several studies, patients report most pain occurs during dressing changes, particularly during dressing removal. Unresolved pain can negatively affect wound healing and may have an impact on quality of life. Pain experienced during wound dressing-related procedures may be managed by a combination of accurate assessment, suitable dressing choices, skilled wound management, and individualized analgesic regimens. Dressing removal has the potential to damage delicate healing tissue in the wound and surrounding skin; therefore, it is important to consider dressings that promote moist wound healing and are known to be atraumatic on removal.

Bilayer skin equivalents have been shown to be an effective treatment component for venous ulcers; they heal up to 50% more leg ulcers in one third less time than conventional wound care. Three common reasons skin equivalents fail are hematoma, seroma, and infection. Controlling the wound environment and using a nonadherent, semi-occlusive dressing to minimize these complications has been shown to optimize the outcome.

A silver contact layer dressing (Restore Contact Layer Silver, Hollister Wound Care, LLC, Libertyville, Ill) has an open mesh to allow for exudate drainage, which may reduce the likelihood of hematoma and seroma and provides a barrier against methicillin-resistant Staphylococcus aureus (MRSA) and other infection-causing organisms prevalent in the hospital and community environments. Although no in vivo studies are available, several in vitro studies have demonstrated silver’s antimicrobial properties and underscore the dressings effectiveness.

Case Series

A case series was conducted at the Bayshore Wound Care® Center, Bayshore Community Hospital, Holmdel, NJ, by Dr. DeCotiis involving 13 patients (five men, eight women) who underwent treatment with a bilayer skin equivalent for venous ulcers that included use of a silver contact layer dressing. The patients ranged in age from 52 to 89 (mean 73.1) years. The average duration of the venous leg ulcers ranged from 1 month to 75 months (Median: 5 months).
months). All 13 venous ulcers healed within a range of 2 to 36 weeks (Median: 8 weeks). The underlying etiology of each wound was addressed before graft application. If positive cultures were obtained, patients were treated with antibiotics before graft application. All patients received compression therapy. Preparing the wound before applying the bilayer skin is an integral component of the wound center’s protocol for graft application and is thought to increase the likelihood of a positive outcome.

All wounds were prepped using sterile methods and betadine and debrided to a healthy granular bleeding base before application of the skin equivalent. The bilayer skin equivalent was fashioned to meet the size of the wound and placed with an approximately 5-mm overhanging ridge. The graft was secured with skin glue. The bilayer skin equivalent was fenestrated using a number 11 scalpel blade. The silver contact layer then was placed directly in contact with the wound and covered with a compression bandage. The silver contact layer was changed weekly until healing occurred.

The following two case studies provide typical scenarios in which a bilayer skin equivalent and the nonadherent silver contact layer were applied to patients treated in the wound care center.

**Individual Case Reports**

**Case 1.** A 66-year-old man with a history of hypertension and coronary heart failure was seen in the wound care clinic with a venous stasis ulcer of the left leg that had been worsening for 14 months (see images). Once a healthy granular bleeding base was achieved, a bilayer skin equivalent was applied.

Figure 1. A venous stasis ulcer in the left leg of a 66-year-old man.

Figure 2. Once a healthy granular bleeding base was achieved, a bilayer skin equivalent was applied.

Figure 3. Nine weeks post-application of bilayer skin equivalent with nonadherent silver contact layer that was changed weekly.

Figure 4. The ulcer healed after 15 weeks of treatment.
Figure 1). The ulcer was debrided weekly to obtain a healthy granular bleeding base and then a bilayer skin equivalent was applied and covered with the silver contact layer dressing (see Figure 2). The contact layer was changed weekly, with progress noted at 9 weeks (see Figure 3). After 15 weeks of treatment, the venous ulcer was healed (see Figure 4).

Case 2. A 71-year-old woman with a history of hypercholesterolemia, hypertension, and coronary heart failure was seen in the wound care clinic with a venous stasis ulceration on the right lower leg that had been present for 1 month (see Figure 5). After 4 weeks of weekly debridement, a skin bilayer equivalent was applied and covered with the nonadherent silver contact layer, which was changed weekly (see Figure 6). Progress was noted at 3 weeks (see Figure 7). After 6 weeks of treatment, the venous ulcer was healed (see Figure 8).

Conclusion
Although a multitude of products are used to cover bilayer skin equivalents used in the treatment of venous ulcers, research to substantiate this practice is scant. The nonadherent silver contact layer was easy to apply and patients reported minimal to no pain on removal. In this case series, none of the 13 patients experienced any complications or graft failures. This study indicates that a nonadhesive silver contact layer dressing is a viable option for covering venous ulcers managed with a bilayer skin equivalent. - OWM
References

Abstracts for the 2009 Symposium on Advanced Wound Care and Wound Healing Society in Dallas, Texas are due Friday, December 12, 2008