
Antimicrobial Silver Polymer Contact Layer for Treatment of Venous Leg Ulcers

Mary Nametka, RN, MSN, CS, CWS, WCN, and Bruce L. Gibbins PhD, CTO
Associates in Wound Care, Kenosha, WI and Department of R&D, AcryMed, Portland, OR

Purpose

The incidence of lower leg ulcers exceeds 4 million cases annually in the U.S. with greater than 85% of venous origin. Contemporary treatment emphasizes edema control by compression with comparatively little attention to wound bed management. Modern multi-layer compression wraps use netting material as the primary wound contact layer which facilitates exudate flow into secondary layers of the wrap but does little to optimize wound bed conditions or control bioburden. Heavy bioburden associated with chronic ulcers can delay progress in healing. This pilot study was initiated to explore the utility of using SilvaSorb™, a uniquely designed antimicrobial wound contact material, in conjunction with compression for treatment of venous leg ulcers (VLUs). It was hypothesized that this antimicrobial dressing would facilitate moist wound healing and reduce the incidence of cellulitis during compression therapy.

Method

VLU patients undergoing treatment with multi-layer compression without progress towards closure, having increased risk of infection, or complaint of pain on dressing change were eligible for the study. Patients were continued on compression therapy with substitution of the standard rayon netting by a perforated silver polyacrylate sheet (SilvaSorb) as the primary contact layer. Wraps were changed weekly during the course of the study. Ulcers were monitored by standard assessment, measurements, swab cultures and photography.

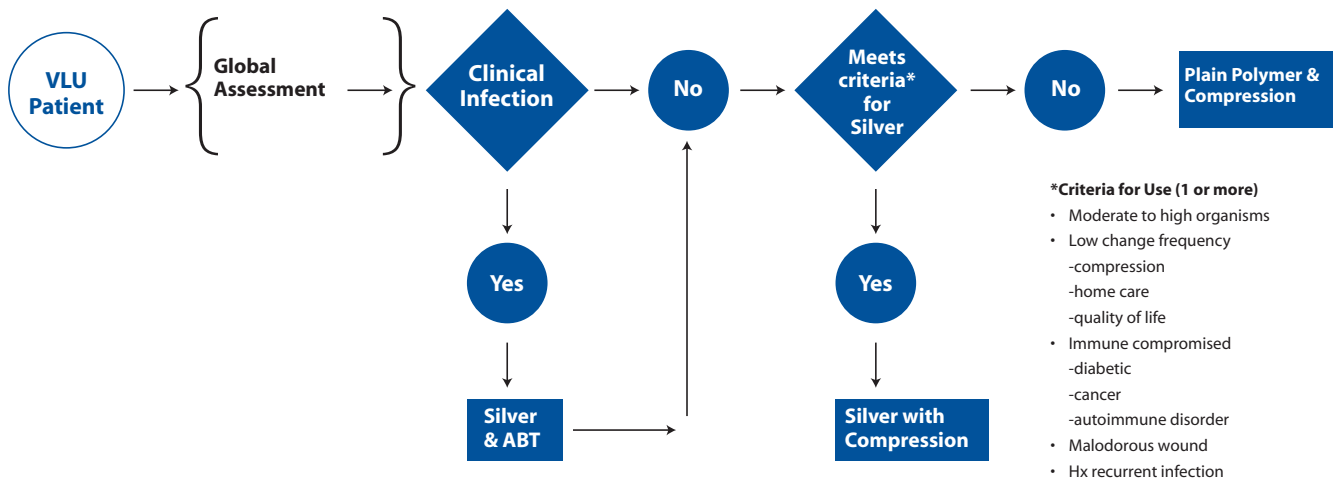
Table 1. Retrospective assessment of the use of SilvaSorb Antimicrobial dressing in combination with multi-layer compression for the management of venous leg ulcers.

Number of Patients	15
Age Range (Mean)	68.3
Sex (Female : Male)	6 : 9
Number of Wounds	19
Weeks to Closure (Range)	11.4 (2 to 24)
Incidence of Maceration	0%
Incidence of Debridement	21%
Incidence of Infection	21%

Results

VLU patients were evaluated for eligibility for the use of SilvaSorb under compression according to the protocol laid out in Figure 1. Fifteen patients were enrolled with a total of 19 wounds; 81% closed in 4-10 weeks. In all cases, patients reported decreased pain associated with wearing and changing dressings. The appearance of all wound beds were improved with > 90% moist granulation and no incidences of maceration noted. Debridement of margins was rarely indicated (4/19) and an unusually low incidence of infection (4/19) was encountered in the patient population. Routine culture results typically reported scant to few organisms from wounds of the patients during the study. The dressings were easily removed from the wounds during the course of treatment until the final stage of wound closure when the matrix material formed a continuous crust over the wound site and subsequently fell away revealing a re-epithelialized bed.

Figure 1. VLU Protocol



4 Case Examples

RV, an 84 year old male presented with acute cellulitis and recurrent venous leg ulcer (VLU) to the right lower extremity (LE). He was initially treated with systemic antibiotics and non-occlusive wound care until a reduction of the signs and symptoms of infection. The patient was then transitioned to compression therapy with the silver polyacrylate as the wound contact to mitigate against recurrence of the cellulitis. Closure was achieved in 24 weeks without any recurrence of infection.



MC, a 94 year old female, presented with severe pain in a VLU on the right LE that had been open for more than 12 weeks. The patient was treated by mild compression in combination with the silver polyacrylate to modulate pain and control bioburden. MC was well tolerant of the treatment and closed in 8 weeks.



November 10, 2000



November 22, 2000



January 8, 2001

LS, a 77 year old male with a 25 year history of venous insufficiency and a VLU on the right lower extremity that was not responsive to 1/2 years of treatment by compression alone. Silver polyacrylate was substituted for the rayon contact layer under continuation of multi-layer compression. Closure of the wound was achieved in 3 weeks.



January 16, 2001



January 23, 2001

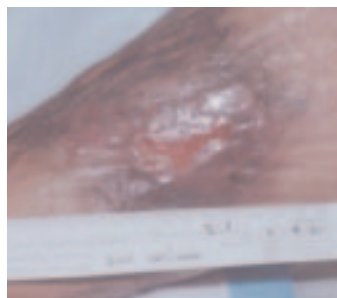


February 8, 2001

DS, a 49 year old male presented with a VLU that had been open for greater than 2 years. The treatment initially included compression over silver polyacrylate to control pain and bioburden. The closure of a clean appearing VLU stalled causing the election to graft with cultured human skin equivalent. The graft was covered with silver polyacrylate. Final closure was achieved at 14 weeks.



December 28, 2000



February 8, 2001



February 22, 2001

Conclusion

This pilot study provides rationale for the coincident management of edema and moist wound therapy under multi-layer compression for VLUs. The SilvaSorb antimicrobial wound dressing, perforated to allow excess exudate to migrate to absorbent layers of the wraps, minimizes the occurrence of maceration yet maintains sufficient moisture in the wound bed to support wound healing. The antimicrobial activity of the silver component of the dressing may have accounted for the remarkable decrease of infection as well as odor due to bioburden control in the wounds during the course of the study. The findings of this study have provided evidence to support the substitution of the netting material provided in multi-layer compression dressings with SilvaSorb to control bioburden and optimize conditions for moist wound healing.



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1-800-MEDLINE (1-800-633-5463) www.medline.com
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