Negative Pressure Wound Therapy In Conjunction With Silver Collagen Dressings: A Case Series

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Introduction

- Negative pressure wound therapy (NPWT) has been well documented in the management of a variety of wound types. Traditionally, negative pressure is delivered via foam dressings directly to the wound bed.
- Recently, we have begun implementing oxidized regenerated cellulose (ORC)/collagen/silver-ORC (OCSO) dressing as a fenestrated contact layer underneath NPWT dressings.
- In the presence of wound exudate, the collagen dressing transforms into a biodegradable gel that supports granulation and epithelialization,[1] without impeding negative pressure to the wound.
- This allows the benefits of both NPWT and OCSO dressings to be delivered simultaneously.

Purpose

- The aim of this study is to describe the outcomes of this combined therapy in six patients with lower extremity wounds.

Methods

- Deidentified data were collected after obtaining informed patient consent and stored in accordance with federal regulations.
- Patients had foot, ankle, or lower leg wounds and received NPWT* at -125 mmHg.
- At the wound interface, a fenestrated OSCO† dressing was placed, as determined by medical necessity. This was covered with NPWT foam dressing and drape.‡
- NPWT dressings were changed every 2-3 days.

Results

- The patients were 3 male and 3 females, aged 23 to 79 (median 66) years old.

Representative Cases

Figure 1. A 67-year-old male presented with a Morel-Lavallee lesion of the right lower leg. After surgical exploration and debridement, NPWT with OCSO dressing was initiated and continued until nearly complete wound closure. Advanced wound dressings were then applied until complete closure.

Fig 1A. Wound appearance at 1st dressing change after initiation of NPWT.

Fig 1B. Wound at Week 3, with red granulation tissue in the wound bed.

Fig 1C. Wound at Week 5, after transition to advanced wound dressings.

Fig 1D. Wound nearly closed 7 weeks from initial presentation.

Figure 2. A 23-year-old female underwent elective left below-knee amputation for post-traumatic left foot arthritis, deformity, and intractable pain. After the wound exhibited delayed healing, additional debridement and NPWT with OCSO dressing was initiated. Therapy continued until the wound was nearly closed, after which care transitioned to advanced wound dressings.

Fig 2A. Wound appearance at 1st dressing change after initiation of NPWT.

Fig 2B. Wound at Week 3, showing reduced depth and surface area.

Fig 2C. Wound nearly closed 5 weeks from initial presentation.

Figure 3. A 73-year-old diabetic male with venous insufficiency presented with foot swelling and shoe gear decubiti involving the left foot and ankle. He underwent initial debridement with seroma decompression and initiated basic packing with compression bandaging. Three weeks after initial presentation, NPWT with OCSO dressing was initiated. After 4 weeks, the wounds had reduced in area and depth, and NPWT was discontinued. Applications of advanced wound dressings and compression was continued until closure.

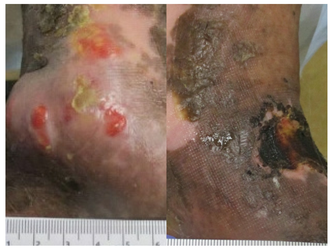

Fig 3A. Wound appearance at presentation. Pressure ulcers on the medial (left) and dorsal (right) aspects of the left ankle.

Fig 3B. Wound appearance after debridement and compression therapy, at initiation of NPWT with OCSO dressings.

Fig 3C. Wound at Week 3, with red granulation tissue in the wound bed.

Fig 3D. Wound after 4 weeks of NPWT with OCSO dressings. Treatment was then transitioned to advanced wound dressings.

Results (Cont'd)

- Wound etiologies included chronic ulcers, pressure injury, and a non-healing wound. Wound volumes at the start of treatment ranged from 0.2 to 26.0 (median 4.6) cm^3.
- Representative cases are shown in **Figures 1-3**.
- NPWT with silver-impregnated collagen dressings was applied for 3-5 (median 4.5) weeks.
- After NPWT was discontinued, wound volumes ranged from 0.4 to 5.9 (median 1.0) cm^3. The median percent reduction of would volume was 76.2%.
- Patients were then continued on the silver-collagen dressing regimen or transitioned to other advanced wound dressing protocols if indicated.

Conclusions

- In these patients, NPWT with silver-collagen dressings effectively managed the wound, resulting in positive healing outcomes.
- No patients experienced significant wound complications, including infection, while receiving this combined therapy.
- In our observations, healing time while utilizing this combined therapy was decreased, compared to our prior experience using NPWT with foam dressings alone.

Acknowledgements

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References

1. Holmes C, Wrobel JS, Maceachern MP, Boles BR. Collagen-based wound dressings for the treatment of diabetes-related foot ulcers: a systematic review. *Diabetes Metab Syndr Obes*. 2013;6:17-29.

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