

Hydromechanical Disruption of Nonviable Tissues Using Negative Pressure Wound Therapy with Instillation

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Introduction

- Negative pressure wound therapy (NPWT) with instillation and dwell time (NPWTi-d)* combines the beneficial effects of negative pressure with the automated flow of topical wound solutions, solubilization of debris covering the wound bed, and removal of excess fluid.
- When used with reticulated open cell foam dressings with through-holes (ROCF-CC[†]), NPWTi-d hydromechanically disrupts necrotic tissues, reducing the necessary number of surgical debridements to support healing.

Purpose

- We present our experience using NPWTi-d to manage lower extremity wounds in 8 patients.

Methods

- Deidentified data was collected after obtaining informed patient consent and stored in accordance with federal regulations.
- Patients underwent surgical debridement or amputation intervention if indicated for lower extremity pathologies, followed by placement of ROCF-CC dressings.
- NPWTi-d was initiated with normal saline and a dwell time of 20 minutes, followed by 3.5 hours of negative pressure.

Featured Case

Case 1. A 63-year-old female presented for advanced wound care of a 2-week-old abrasion/contusion work injury to the right lower leg. Previously, basic wound care was initiated, but she developed cellulitis, necessitating hospitalization for intravenous antibiotics and supportive care. After she improved and was discharged, she arrived at the clinic. Examination revealed a mobile hematoma that was mostly intact with some open wound involvement.



Figure 1A. Initial presentation.



Figure 1B. Surgical debridement and application of NPWTi-d with ROCF-CC dressings.



Figure 1C. Appearance after 3 days of NPWTi-d with saline.



Figure 1D. Appearance at third dressing change. Therapy transitioned to conventional NPWT with advanced wound dressings.



Figure 1E. Appearance after 2 weeks of conventional NPWT with advanced wound dressings.



Figure 1F. Closed wound 4.5 months after presentation.

Methods (cont'd)

- NPWTi-d dressings were changed every 2-3 days.
- After NPWTi-d was discontinued, patients were transitioned to traditional NPWT and, if clinically appropriate, advanced wound dressing regimens.

Results

- The patients were 3 males and 5 females, aged 42 to 83 years old.
- Wound etiologies included traumatic injury, gangrene, and diabetic foot infection requiring amputation.
- After application of NPWTi-d with ROCF-CC dressings, the wounds appeared cleansed with reduced or softened debris.
- A representative case is featured in **Figure 1**.
- All patients in this case series demonstrated positive wound healing outcomes with no significant complications.

Conclusions

- In these patients, NPWTi-d with ROCF-CC improved the wound bed by extracting nonviable tissues.
- Thus, fewer debridements were needed to transition the patients to wound closure.