

# Closure of a 14-Year Chronic Diabetic Foot Ulcer with the Adjunctive Use of Acoustic Pressure Wound Therapy\*

Jennifer Eingle, PT, DPT

Kindred Healthcare, Regency Place of Castleton, Indianapolis, Indiana

## Introduction

Acoustic pressure wound therapy (APWT)\* is a noncontact, nonthermal, low-frequency ultrasound therapy that delivers acoustic energy to the wound bed via a fine mist of sterile saline. In clinical studies, APWT has been associated with improved healing rates and time to healing in a variety of chronic lower-extremity wounds.<sup>1</sup> In a randomized, double-blind, sham-controlled study of recalcitrant diabetic foot ulcers treated with conventional wound care, a significantly greater proportion of ulcers treated adjuvantly with APWT healed at 12 weeks than did sham-treated control wounds (41% vs 13%, P=0.04).<sup>2</sup>

## Purpose

This case report describes the use of APWT to supplement conventional wound healing modalities, including wound type-specific care, for closure of a longstanding (14 years) diabetic foot ulcer in an elderly man with numerous comorbidities and extreme medical fragility.

## Conclusions

The addition of APWT to conventional wound care appears to have helped this patient avoid foot amputation as well as the morbidity associated with additional surgeries and immobility.

\* MIST Therapy System, Celleration Inc., Eden Prairie, Minnesota

Disclosures: The author received no financial support for this study. Funding for poster production was provided by Celleration.

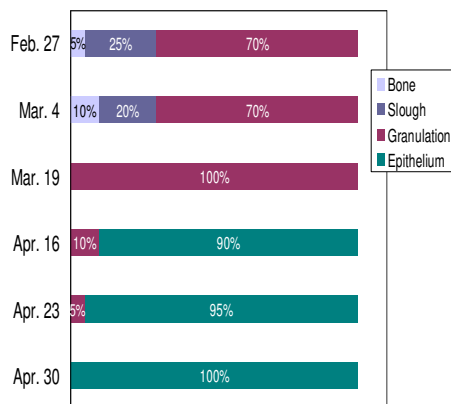
ML-61671

**The Patient:** An obese (BMI=36) 76-year-old male with type 1 diabetes who ambulates with pressure offloading shoes, a quad cane, and a wheelchair.

**History and comorbidities:** Hypertension, peripheral artery disease, venous insufficiency, peripheral neuropathy, compromised circulation to the right foot, pulmonary embolism with vena cava filter, chronic obstructive pulmonary disease, pulmonary hypertension, gastrointestinal bleeding and ulceration, *C. difficile* infection (intestine), diverticulosis, past alcohol abuse, and total knee replacement (right).

**Medications:** Long- and short-acting insulin analogs, lactobacillus, duloxetine, dextromethorphan/guaifenesin, ranitidine.

Figure 1. Wound Tissue Characteristics



## Case Report

**The Wound:** A full-thickness diabetic ulcer of the right plantar heel with chronic osteomyelitis that had been nonhealing for 14 years. Area: 15.3 cm<sup>2</sup>, Volume: 21.4 cm<sup>3</sup>.

**Presentation:** Wound bed was 25% slough with bone and tendon exposure, copious drainage consistent with pseudomonas, and chronic osteomyelitis.

**Prior treatments:** Compression therapy with bandages and garments, sharp and surgical debridement, negative pressure wound therapy (NPWT).

**Prognosis:** Amputation recommended by vascular and infectious disease physicians.

**Treatment:** APWT administered thrice weekly for 4 min per session, in conjunction with sharp and enzymatic debridement, quickly reduced necrosis and signs of bioburden. NPWT was applied for slightly less than 4 weeks. Compression therapy (tubular sleeves followed by ACE bandages) was initiated at evaluation and continued through closure. Compression garments were used once the wound had completely re-epithelialized. Intravenous antibiotics were given to treat the osteomyelitis. The chart below delineates the timelines for each wound care therapy.

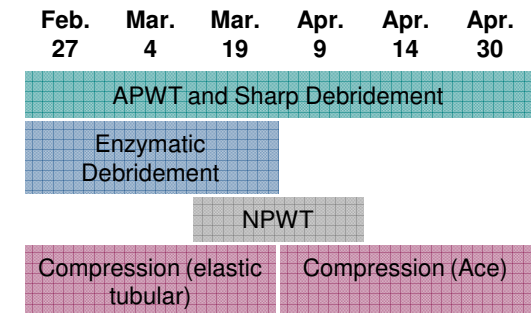
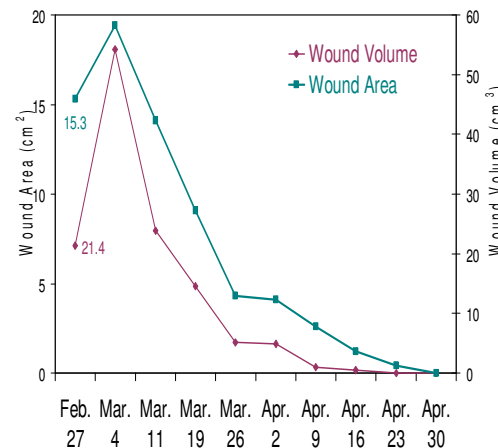


Figure 2. Progression to Wound Closure



**Outcome:** After 26 APWT treatments administered in conjunction with conventional wound care over 8 weeks, the wound closed completely (Figure 2). Full granulation was achieved after 3 weeks of therapy and full epithelialization at 8 weeks (Figure 1). The patient was able to ambulate from the facility with his family at discharge to return home independently with his limb intact.

## References

- Unger P. Low-frequency, noncontact, nonthermal ultrasound therapy: a review of the literature. *OstomyWound Manage.* 2008;54(1):57-60.
- Ennis WJ, Formann P, Mozen N, et al. Ultrasound therapy for recalcitrant diabetic foot ulcers: results of a randomized, double-blind, controlled, multicenter study. *OstomyWound Manage.* 2005;51(8):24-39.