

Adjunctive Use of Acoustic Pressure Wound Therapy* for Closure of Chronic Wounds in Diabetic Patients

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Introduction

Acoustic pressure wound therapy is a low-intensity/frequency ultrasound (LIFU)* therapy shown to accelerate healing in chronic lower-extremity wounds. In a randomized, sham-controlled trial of recalcitrant diabetic foot ulcers, adjunctive use of LIFU increased the proportion of wounds closed at 12 weeks compared with conventional wound care alone.¹

Case Series

Nonhealing wounds in three diabetic patients were treated with thrice-weekly LIFU in conjunction with negative pressure wound therapy (NPWT),** sharp and enzymatic debridement, and appropriate dressings.

Conclusions

The addition of LIFU to the wound care regimen was associated with relatively short duration of NPWT, less-than-typical usage of enzymatic debridement and complex dressings to control bacterial bioburden, and avoidance of additional surgeries.

References

1. Unger P. Low-frequency, noncontact, nonthermal ultrasound therapy: a review of the literature. *Ostomy Wound Manage.* 2008;54(1):57-60.
2. Ennis WJ, Foremann P, Mozen N, Massey J, Conner-Karr T, Meneses P. Ultrasound therapy for recalcitrant diabetic foot ulcers: results of a randomized, double-blind, controlled, multicenter study. *Ostomy Wound Manage.* 2005;51(8):24-39.

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

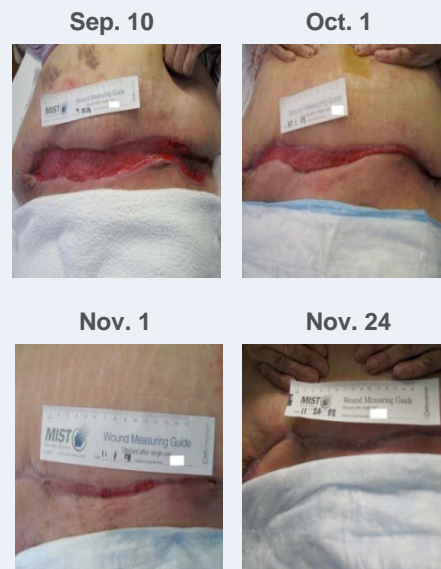
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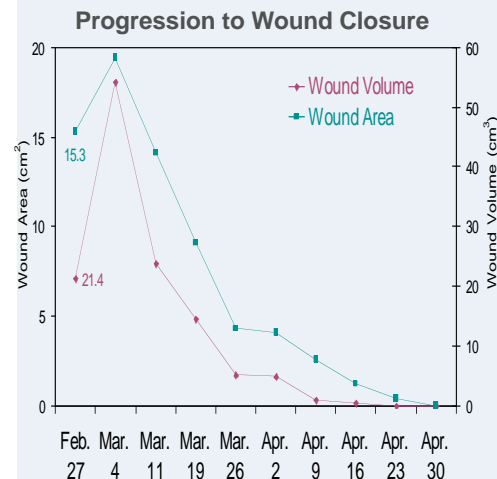
Abdominal Wound with Necrotizing Fasciitis

A 73-year-old female had a large abdominal wound (251.5 cm², 301.7 cm³) with necrotizing fasciitis that had been surgically debrided, with recommendation of skin grafting to achieve closure. She was treated with 8 weeks of NPWT and local wound care prior to admission. With 1 week of NPWT, 12 weeks of LIFU (3-12 min), sharp debridement, and appropriate dressings (gauze, abdominal pad, topical antibiotics, silvers, and hydrocolloids, as needed), the wound was near complete closure (area: 0.60 cm², volume 0 cm³) and a skin graft procedure was avoided.



Chronic Diabetic Heel Ulcer

A 76-year-old male with venous insufficiency presented with a full-thickness diabetic ulcer (15.3 cm², 21.4 cm³) of the right plantar heel that had been nonhealing for 14 years. The wound bed was 25% slough, with exposed bone and tendon, and chronic osteomyelitis. Vascular and infectious disease physicians recommended amputation. After 8 weeks of compression therapy and LIFU (4 min), with concomitant sharp/enzymatic debridement (3 weeks) and NPWT (4 weeks), the wound closed completely. The patient was able to avoid amputation and return home with his family, ambulating independently.



Note: This patient was treated before the facility had a camera for photographing wounds.

Right Heel Wound with Eschar

A 59-year-old female presented with a 12.25 cm² area of hard, dry eschar on the right heel after hospitalization for right total hip replacement secondary to fracture. After 11 weeks of treatment with routine nursing care consisting of dry dressing changes, wound area was 10.8 cm² with 100% eschar, purulent drainage, and edge separation. After 6 weeks of LIFU (3-4 min), sharp and enzymatic debridement, and appropriate dressings (gauze with collagens, hydrocolloids, and silvers, as needed), the wound bed was 90% granular and NPWT was applied. The wound closed after 14 weeks of LIFU, including 2 weeks with NPWT.

