

Use of Noncontact, Low-Frequency Ultrasound* to Aid the Healing of a Trauma Wound in a Prednisone-Dependent Patient

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Case Report

Background

Impaired wound healing is a known side effect of prednisone treatment. Wound healing modalities that promote the healing process in patients taking prednisone, particularly those with prednisone dependence, are needed.

Noncontact, low-frequency ultrasound* (hereafter noncontact ultrasound) delivers acoustic pressure to the wound bed via a fine mist of sterile saline. It is indicated to promote wound healing through cleansing and maintenance debridement of yellow slough, fibrin, tissue exudates and bacteria. This novel ultrasound therapy has been reported to hasten healing in randomized trials of lower-extremity ulcers associated with diabetes and chronic critical limb ischemia.^{1,2}

Purpose

This case report describes the use of noncontact ultrasound therapy for a lower-extremity trauma wound in a prednisone-dependent patient treated in a hospital outpatient department.

*MIST® Therapy, Celleration, Eden Prairie, MN

*Disclosures: The author received no financial support for this case report. Funding for poster production was provided by Celleration.
ML-66162*

History

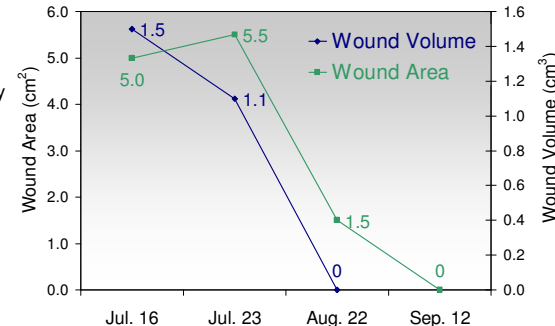
This 57-year-old woman in a manually operated wheelchair presented on July 16, 2007 with a trauma wound on her right calf resulting from a collision with a footstool 9 weeks prior. Her medical history includes congestive heart failure, coagulopathy, mitochondrial myopathy, myalgia, severe osteoporosis, and hysterectomy. Her current medications include cephalexin, prednisone, furosemide, esomeprazole magnesium, and nitroglycerin tablets. The patient is currently prednisone-dependent.

Treatment

Treatment to this point had been a topical antiseptic twice daily and oral antibiotics. The wound presented with rolled edges (epiboly) and 50% slough but was free of odor, drainage, and erythema. On July 16, noncontact ultrasound treatments were started twice per week for 3 minutes per session. The wound was dressed with skin care protectant spray, hydrogel, Telfa, and a perforated skin tape.

Outcome

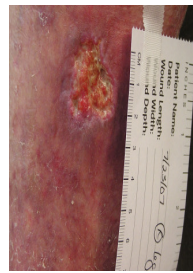
As shown in the graph, wound volume measured zero on August 22, after 5.5 weeks of treatment. At this time, the patient was hospitalized at another facility for exacerbation of congestive heart failure. Noncontact ultrasound was discontinued at this point and dressings were continued. On return to the clinic September 12, after her release from the hospital, the wound had closed completely (see graph and photographs).



July 16



July 23



August 22



September 12



Discussion

With the addition of 5.5 weeks of noncontact ultrasound therapy to moist wound-healing dressings, this lower-extremity trauma wound went on to heal completely in a total of 8.3 weeks despite the impaired healing response typically associated with long-term prednisone treatment.

Conclusions

Noncontact ultrasound may have a role in expediting the healing process in the setting of steroid-associated healing impairment.

References

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- Kavros SJ, Miller JL, Hanna SW. Treatment of ischemic wounds with noncontact, low-frequency ultrasound: the Mayo Clinic experience, 2004-2006. *Adv Skin Wound Care.* 2007;20(4):221-226.