

Purpose:

- Determine the effectiveness of non-contact, low-frequency ultrasound therapy* on patients with partial and full thickness burns

Goal of Intervention:

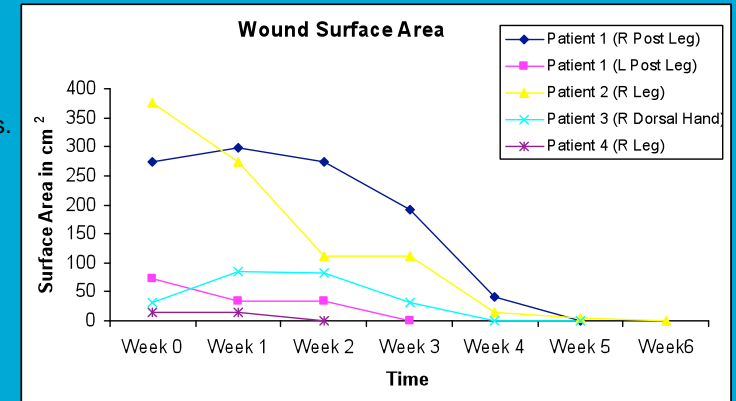
- To remove devitalized tissue from the wound bed without causing increased pain to the patient by using non-contact, low-frequency ultrasound therapy*.

Methods:

- Patients were evaluated by our multi-disciplinary wound care team in an outpatient setting.
- Patients were treated with standard burn treatment which includes daily wound cleansing, sharp selective debridement, and non-adherent moisture control dressings.
- Non-contact, low-frequency ultrasound was added as an adjunctive therapy. Treatments ranged between 3 and 20 minutes depending on wound size.
- Non-contact, low-frequency ultrasound was used at each visit until wound bed composition was primarily healthy pink granulation tissue

Patient Information:

- Patient 1 was a 31 year old white, male with deep partial thickness and full thickness burns (second and third degree burns) on bilateral lower extremities.
 - Pt is a firefighter burned by steam.
 - No significant medical history.
 - 3 treatments → 14 min on RLE and 5 min on LLE
 - Pt healed in 5 weeks, pain decreased from 4-6/10 to 0/10
- Patient 2 was a 20 year old white, male with deep partial thickness (second degree) burns on his right lower extremity.
 - Pt is a college student who caught his pant leg on fire camping.
 - No significant medical history.
 - 13 treatments → 20 min decreased to 4 min
 - Pt healed in 6 weeks, pain decreased from 10/10 to 2/10
- Patient 3 was a 73 year old Hispanic, male with full thickness burns on his right dorsal hand.
 - Pt spilled hot oil on his hand.
 - Past medical history includes insulin dependent diabetes.
 - Non-contact, low frequency ultrasound began week 1
 - 10 treatments → 5 min decreased to 4 min
 - Pt healed in 5 weeks, no pain reported



- Patient 4 was a 16 year old white, female with partial thickness (second degree) burns on her right lower extremity.
 - Pt is a high school student burned by a motorcycle muffler.
 - No significant medical history.
 - 2 treatments → 4 min decreased to 3 min
 - Pt healed in 2 weeks, no pain reported

Results:

- Patients received between 2 and 13 treatments – Treatment continued until patients' wounds were primarily granulated.
- Slough and necrosis was loosened during treatment so that it could be wiped off easily. Patients reported no increased pain during treatment.
- Wounds showed an average surface area decrease of 52.9% from evaluation to discontinuation of non-contact, low-frequency ultrasound therapy.

Conclusions/Relevance:

- Non-contact, low-frequency ultrasound therapy helped to loosen slough and necrosis for easy removal without increasing discomfort to these burn patients.



Patient 2 – R Leg upon evaluation



Patient 2 – R Leg week 4
Following approximately 12 treatments (3 X week)



Patient 3 – R Dorsal Hand
Upon evaluation – prior to any debridement



Patient 3 – R Hand Week 5
Following approximately 10 treatments (5 X week)

*Non-contact, low-frequency Ultrasound Therapy: MIST Therapy, Celleration Inc.

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