A role for a portable neuromuscular electrical stimulation device for treatment of refractory chronic wounds of the lower extremity.

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AIM

The purpose of our study was to assess the effectiveness of a portable neuromuscular electrical stimulation device to heal a variety of stagnating open chronic wounds in an outpatient setting.

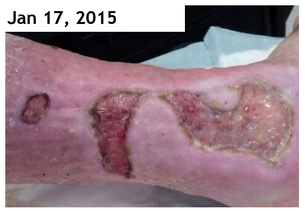
METHOD

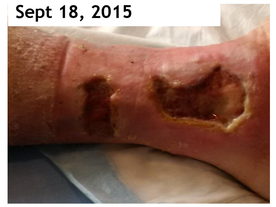
A total of five patients were chosen who had a variety of wounds involving the lower extremity. All of the wounds displayed stalled healing. Conventional and advanced wound products had been used on these wounds but the wounds remained open with little to no healing. A multidisciplinary team consisting of a Plastic Surgeon, a Vascular Surgeon, and two IIWCC certified Registered nurses selected the patients. Selection criteria were: 1) a wound involving the lower extremity and an open wound present for minimum of six months. Each patient was custom-fit with a portable neuromuscular electrical stimulation device during an initial visit and follow-up in the clinic included weekly progressing to monthly visits. Photographs and measurements of the wounds were taken at the time of the visit in clinic.

RESULTS

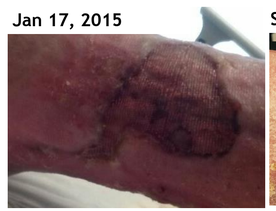
Overall, the case series demonstrates that a portable neuromuscular electrical stimulation device assists in achieving wound closure.

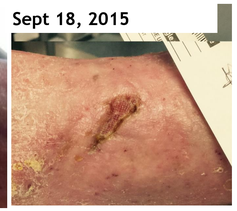
Case 1: 10 year history, Multiple chronic arterial-venous ulcers;





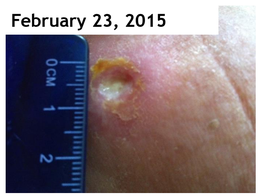
One wound completed closed. Other 2 wounds reduced in size by 50% over a six-month period.

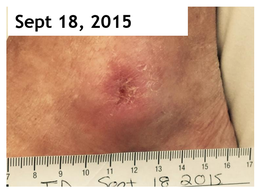




Wound reduced in size by 70% over a six-month period. As of Oct 16th Wound reduced size by 99%

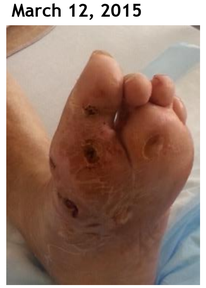
Case 2: 6 month history Chronic pressure ulcer over the lateral malleolus

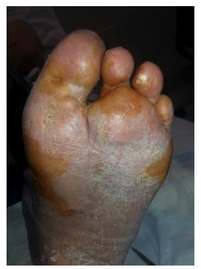


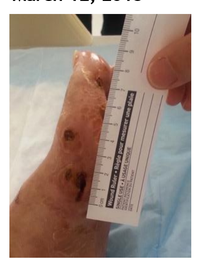


reduction in wound size by 90%

Case 3: Chronic multiple plantar wounds; complete closure of all wounds within three months

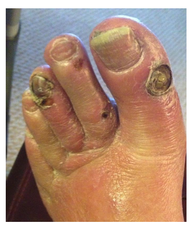






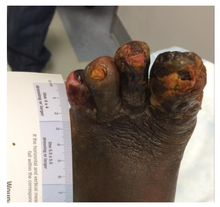
Closed
May 8, 2015

Case 4: Chronic arterial wounds of the great and fourth toes; reduction of wounds size by 30%

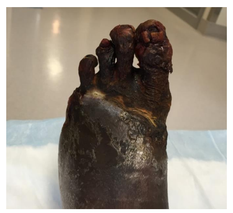


April 27, 2015

Case 5: Chronic wet gangrenous forefoot; conversion to a dry gangrene forefoot



May 18, 2015



July 20, 2015

Two patients reported a reduction in pain. Two patients had a contact dermatitis at the site of the device application at the fibular head. The dermatitis was treated successfully with a topical corticosteroid and temporary application of the device at an alternative site.

CONCLUSIONS

All the patients were happy with the ease of use and portability of the device. This study demonstrates that a portable neuromuscular electrical stimulation device can play an important role in chronic wounds that appear to be refractory to conventional and advanced wound care treatment. In addition to promoting wound closure, there may be a role for pain alleviation.

REFERENCES

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3. Ingves, M and Power, A. Two Cases of Transcutaneous electrical nerve stimulation of the common peroneal nerve successfully treating refractory multifactorial leg edema. J of Investigative Medicine: 1- 4. 2014.