Category: Lower limb and the foot

Accelerating healing and reducing pain in hard-to-heal wounds using a simple-to-use electrical stimulation therapy

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Introduction:

The National Wound Care Strategy recommends that leg ulcers that have not healed after 12 weeks despite compression therapy, and those where pain prevents effective compression, should be considered for advanced treatment.[1] Electrical stimulation therapy (EST) is one such advanced technology, with evidence suggesting that it can promote wound healing and reduce wound-related pain.[2] The aim of this evaluation was to assess the impact of a microcurrent EST device on a real-world cohort of non-healing wounds.

Method:

Patients with non-healing wounds and painful wounds of more than 6 months duration were treated with a pocket-sized, automated EST device^ (Figure 1) as part of a structured evaluation conducted in a single centre in the UK. Treatment objectives were to stimulate healing and/or reduce wound pain. Endpoints included percentage wound area reduction and changes in wound-related pain measured using the visual analogue scale (VAS, 0-10). EST was applied at day 0 (baseline) alongside standard care (including compression and normal dressings) and continued for the pre-determined 12-day continuous treatment period. Patients were followed for 4-weeks after baseline.



***Figure 1**. EST device^*

- N=10, mean age 65.5, 80% female
- Mean wound duration 26 months (range 6-60 months)
- 6 VLU, 2 arterial, 2 mixed ulcers

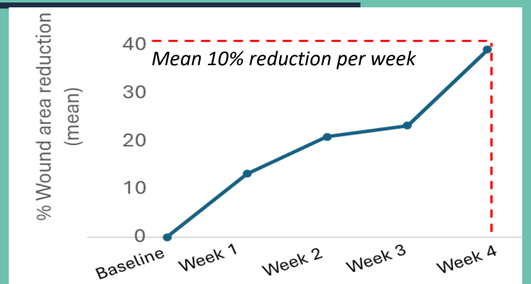


***Figure 2**. Mean percentage wound area reduction*

The reduction of wound pain was a treatment goal in 7/10 patients - in these 7, mean wound pain fell from 5.7/10 at baseline to 2.7 (53% reduction) after the 12-day treatment period and to 2.1 by the end of the 4-weeks - a 63% reduction (Figure 3)

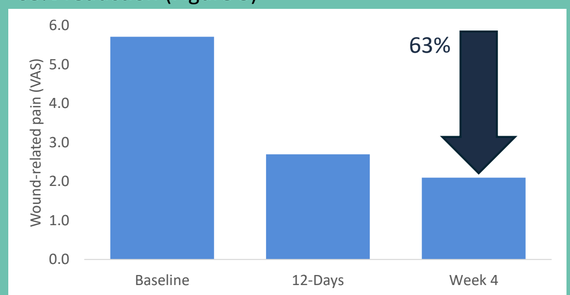


***Figure 3**. Mean reduction in wound pain*

- All wounds reduced in area with a mean % wound area reduction was 13% after 1 week, 20% after the 12-day treatment period and 39% after 4-weeks (Figure 2)
- The % coverage of granulation tissue in the wound bed increased from 54% at baseline to 73% at the end of the 12-day treatment period, with the proportion of wound area covered by slough/necrosis falling respectively over the same period.
- Exudate and signs of infection reduced
- One patient healed within 8 weeks

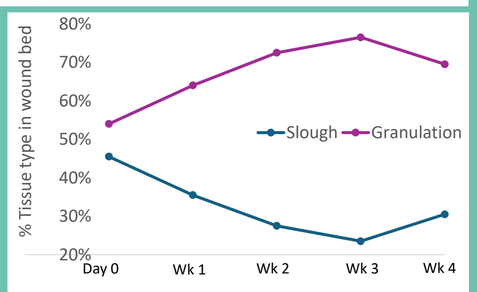


***Figure 4**. Mean change in wound bed tissue*

Discussion and Conclusion:

In patients with longstanding, non-healing wounds, EST may help promote wound healing and reduce wound–related pain. In this real-world cohort, treatment with EST^ was associated with good progress towards healing, including an average weekly reduction in wound area of approximately 10% per week, alongside increased granulation tissue and reduced exudate. Reductions in wound pain were also observed, supporting improved treatment tolerance and quality of life.

One patient's story

A 78 year old female with mixed aetiology leg ulcer to left lower leg lateral aspect, present for 14 months. Past medical history included diabetes, heart failure, pulmonary embolism and osteoarthritis.

Prior to EST^, the wound was extensive, measuring 131 cm^2 with 80% slough and heavy exudate (Figure 5A) and being treated with reduced compression therapy. Her pain score was 10/10 on visual analogue score (VAS), and dressing changes were extremely challenging. EST^ was applied alongside standard care, during and following treatment.

Within 12 days of EST^, wound pain had reduced to 7.5/10 (25% reduction). The wound measured 72.28 cm^2 (45% reduction) with a reduction in slough from 80% to 60%.

Within 4 weeks of commencing EST^, her pain score had reduced to 4/10 (60% reduction). The wound now measured 41.9 cm^2 (68% reduction) with 50% slough (Figure 5B).

The wound continued to progress and within 8 weeks of commencing EST^, her pain score had reduced to 2/10 (80% reduction). The wound now measured 33.31cm^2 (75% reduction) with 100% granulation. The wound fully healed within 27 weeks (Figure 5C).



***Figure 5**. Case study showing wound at baseline (A), after 4 weeks (B) and at healing after 27 weeks (C).*

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^Accel-Heal Solo, Accel-Heal Technologies Limited, Hever, Kent, UK.

References: 1. National Wound Care Strategy Programme – Leg Ulcer Recommendations Summary 2023. https://wounds-uk.com/national-wound-care-strategy-publications/ ; 2. Avendaño-Coy, J., et al. Journal of Tissue Viability, 2022:31(2)268-277.