

USE OF ELECTRICAL STIMULATION THERAPY TO TREAT A DIFFICULT DIABETIC FOOT ULCER: A CASE STUDY

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INTRODUCTION | BACKGROUND

Electrical stimulation therapy (EST) has been shown to stimulate the healing of lower limb ulcers. EST has a strong evidence base in the treatment of many types of hard-to-heal wounds,¹ including pressure ulcers² and diabetic foot ulcers (DFU).³

A single-use, portable, easy-to-use electrical stimulation device, Accel-Heal* has recently become available in UAE. This device has been designed to stimulate healing and relieve wound pain.*

OBJECTIVES

- This study aimed to investigate the use of Accel-Heal Solo as an adjunctive therapy in the management of a diabetic foot ulcer

MATERIALS & METHODS

A patient with a non-healing ulcer presented to our podiatry clinic and was considered for treatment with Accel-Heal Solo* EST device (Figure 1). During routine dressing changes, electrode pads were applied either side of the wound and along-side the chosen wound dressing.

Electrical stimulation was applied for 12 days, in line with the device's instructions for use. Healing was monitored both during this treatment period and after therapy had ended.



Figure 1. The Accel-Heal Solo device

RESULTS

In February 2024, a 51-year old male patient presented with a non-healing diabetes-associated planter ulcer (right 5th toe, Figure 2).

- Ulcer had started more than 10 days previously due to wearing ill-fitting work (military) boots
- Comorbid conditions included:
 - Uncontrolled hypertension
 - Uncontrolled diabetes mellitus (uncontrolled)
 - Dyslipidemia
 - Heavy smoker

- Prior antibiotics had been given during a visit to a different medical facility
- Patient had peripheral neuropathy and was not experiencing any pain associated with his ulcer
- Had been non-compliant with offloading and with wound care protocol prior to this visit
- At this point, the wound was treated with a hydrogel dressing (Aquacel, Convatac, UK) every second day and with regular tissue and skin debridement every visit as appropriate.
- Patient did not attend clinic for a two-month period.



Figure 2: 16th February 2024

- At his next visit, on the 15th May 2024, the ulcer had not made sufficient progress, despite partial compliance with offloading (Figure 3)
- A decision was made to apply Accel-Heal Solo (Figure 4)
- Patient was given a medical note to avoid military boots for 3 months and was provided with diabetic shoes to facilitate offloading of the affected area
- The ulcer made rapid progress throughout the 12-day Accel-Heal Solo treatment period (Figures 5 and 6).
- After the Accel-Heal treatment period, the wound was managed with regular debridement and was treated with the Altreazeal powder dressing protocol.
- The wound was almost healed on 25th August 2024 (Figure 7, photo taken by patient) and was fully closed by mid-Sept 2024.



Figure 3: 15th May 2024



Figure 4: 15th May 2024



Figure 5: 20th May 2024



Figure 6: 23rd May 2024



Figure 7: 25th August 2024

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DISCUSSION

- Accel-Heal Solo was used to good effect alongside standard dressings and off-loading devices to manage a diabetic foot ulcer in a complex patient.
- Although the patient was not compliant with off-loading in the very early stages of treatment, his compliance did improve prior to commencing treatment with Accel-Heal Solo and this level of compliance remained similar during the period of treatment.
- Despite having limited sensation in the foot due to neuropathy, the patient was happy after removing the Accel-Heal Solo device, reporting a more normal feeling in his foot compared to previously.

CONCLUSION

- Accel-Heal Solo was used with the aim of kick-starting healing in a previously non-healing diabetic foot ulcers. During the 12-day treatment period, the condition of the wound improved.
- This improvement continued after the Accel-Heal treatment came to an end

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

<https://www.accelheal.com/>

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