The effectiveness of adding the geko™ device to a wound care regimen in the healing of a painful leg ulcer

Stuart Elliott. Tissue Viability Nurse, Isle of Wight NHS Trust. stuart.elliott@nhs.net

Introduction

Patients and their families can experience a significant impact on their lives due to living with a chronic wound. Wound-related pain is often described by patients as overwhelming and one of the most devastating consequences of having a wound.[1]

This case study discusses the treatment of Lisa, a 46-year-old female, who was bitten on the tibial crest of her right leg by an unknown insect. She was in good health, with no past medical history. Lisa was normally mobile, independent and worked in the retail sector. She did not consider the wound severe initially and for 5 months had managed it herself using over the counter products (Savlon® and gauze). As the wound became larger, she was impelled to seek medical advice. She had been signed off work for the past few months due to pain and was feeling very depressed.

Method

Lisa was referred to the tissue viability service for assessment and management of her painful, non-healing wound. On initial assessment, her ulcer measured 55mm x 70mm with a punched-out appearance. The wound bed contained 60% slough, 40% granulation tissue and was moderately exuding. Lisa reported that her pain level was 9/10. She initially declined both a Doppler assessment and compression therapy due to her pain but agreed after a further 2 weeks as her wound continued to deteriorate. Her ABPI was 1.05 in her right leg and 0.98 in her left leg.

The aims of wound management were:

- Debride slough
- Manage exudate levels
- Control pain

As a priority, Lisa was referred back to her GP for a review of her analgesia. The wound management regimen consisted of UrgoStart® Plus, ConvaMax™ superabsorber, Actico® 2-layer compression bandages.

After 2 weeks, Lisa was prescribed compression hosiery but she found this very uncomfortable and difficult to apply, so requested reverting back to compression bandaging. At this point the geko™ device, a Neuromuscular Electrostimulation (NMES) device, was introduced as an adjunct to the existing treatment regimen to aid in the healing of her wound.

Lisa was provided with education on how to apply and remove the geko™ device. The device was positioned (as per the instructions for use) to the skin over the common peroneal nerve at the head of fibula on the affected leg. A regular twitch of the foot indicated that the muscles were being stimulated. This optimum positioning of the device was marked so that the Lisa could change the device at home on a daily basis. The usage was 12 hours on and 12 hours off each day for seven days a week.

Results

The geko™ device was used alongside the wound management regimen for 4 weeks and then Lisa went away and contact lost with the tissue viability team. She returned after 1½ weeks and requested further application of the geko™ device. She reported that after just 1 week of use of the geko™ device, her pain levels had reduced from 9/10 to 3/10, which was why she was very keen to continue with the therapy. Lisa found the geko™ device very easy to apply and was able to adjust the stimulation levels to suit her own comfort. After a further 2 weeks of treatment her wound was fully healed and she was able to return to work.

Discussion

The geko™ device is a small, self-adhesive, wearable NMES device that is applied to the surface of the skin on the lateral aspect of the leg just below the knee, over the head of the fibula. It delivers a charge-balanced electrical pulse once per second to the common peroneal nerve which passes through this site, eliciting a muscular twitch of the leg, so activating the venous muscle pumps of the leg and foot, and thus increasing venous, arterial, and microvascular flow.[2] The geko™ device has several stimulation levels to ensure a dorsiflexion is achieved whilst being comfortable for the patient.

The effectiveness of adding the geko™ device to standard care has been demonstrated in a recently published randomised self-controlled study.[3] In this study, two different treatment regimens were compared: multi-layer compression alone, versus multi-layer compression combined with activation of the venous leg pump by neuromuscular stimulation. With 51 patients, adding neuromuscular stimulation to multi-layer compression resulted in a significant two-fold increase in the rate of wound healing over a 4-week period, both in terms of wound margin advance and in terms of percentage area reduction.

Conclusion

The use of the geko™ device in this case accelerated the improvement and healing of this hard to heal, painful ulcer when high compression could not be tolerated. Application of the geko™ device as an adjunct to the existing treatment regimen was successful in achieving wound healing after 6 weeks. The patient reported reduced levels of pain associated with the ulcer during the treatment period, enabling her to resume activities return to work.

December 2022

Mid February 2023 (damage to skin is from shaving her leg)

1. World Union of Wound Healing Societies. Principles of best practice: minimising pain at wound dressing-related procedures. A consensus document. 2007
2. Tucker A, Maass A, Bain D et al. Augmentation of venous, arterial and microvascular blood supply in the leg by isometric neuromuscular stimulation via the peroneal nerve. Int J Angiol. 2010 Spring;19(1):e31-7
3. Bull R et al. The impact of a new intervention for venous leg ulcers: A within-patient controlled trial. Intl Wound Journal. 2023

MDPOWND0699