Putting an end to the chronic suffering of over 20 years in a severely obese leg ulcer patient

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Introduction

With the increasing number of obese patients, chronic leg ulcers have become a major concern for the NHS. The healing of wounds is often compromised in this group due to the presence of multiple co-morbidities, putting them at a higher risk of developing wound infections.

This case study describes the wound management of Arthur (pseudonym), a 69-year-old gentleman who owned and ran a guesthouse. Arthur had a 20-year history of leg ulceration which he self-managed for approximately 14 years. He had a BMI of 41 and very limited mobility but no other relevant medical history.

Method

On assessment by the tissue viability team, Arthur had large ulcer (170mm x 100mm) to the lateral aspect of his very oedematous left leg. The wound bed was covered with 70% slough and 30% dusky granulation tissue. His wound was heavily exuding which was causing damage to the surrounding skin. A wound swab was taken which showed multiple species of bacteria. Arthur was commenced on oral antibiotics.

The aims of wound management were:

- Treat wound infection
- Debride slough
- Manage exudate levels
- Reduce oedema

A new wound care regimen was commenced which included applying emollient to the intact skin, a silver primary dressing, superabsorbent secondary dressing and 2-layer compression bandaging to reduce the oedema. This regimen was continued for 2 weeks and then Arthur was measured for Velcro® adjustable compression wraps so that he could remove them and shower prior to dressing changes.

The tissue viability team decided to introduce a Neuromuscular Electrostimulation (NMES) device (The geko™ device, Firstkind Ltd) as an adjunct to the existing treatment regimen to aid in the healing process by augmenting blood flow to his limb. Arthur was given education on how to apply and remove the device. He was very keen to be involved in his care. The device was positioned to the skin overlying the common peroneal nerve at the head of fibula on his affected leg. A moderate regular twitch of the foot indicated that the muscles of his leg were being stimulated. The geko™ device was used for 12 hours on and then 12 hours off each day for seven days a week.

Results

After just one week there was a marked improvement in the condition of the skin to his leg. Arthur reported that the geko™ device was easy to apply and that he felt in control of his ulcer for the first time in many years. The geko™ device was initially only applied to Arthur's ulcerated limb but he requested use on both limbs after 3 weeks due to seeing the improvement to his left leg. At week 4 his wound had reduced in size to 100mm x 75mm and was fully healed by week 8.

Discussion

Obese patients typically exhibit more advanced venous disease than non-obese patients, possibly due to the elevated intra-abdominal pressure identified in previous research, resulting in heightened reflux, enlarged vein diameter, and increased venous pressures.

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.[1] The geko™ device has several stimulation levels to ensure a dorsiflexion is achieved whilst being comfortable for the patient.

Electrostimulation of the nerves governing the calf and foot muscle pumps has been used successfully to treat hard-to-heal leg ulcers[2] as an adjunctive therapy together with best practices for the management of VLUs, because of its ability to increase blood circulation, therefore augmenting blood supply to the leg.

Conclusion

This challenging wound made significant progress after adding the geko™ device to the patient's wound care regimen. Arthur was very impressed with the improvements in his wound and lower leg after a very short time. This case study demonstrates that the use of the geko™ device offers an effective adjunct treatment option for hard to heal leg ulcers and is well tolerated by patients.

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(4 weeks post geko™ commencing)

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2. Harris C, Ramage D, Boloorchi A et al (2019) Using a muscle pump activator device to stimulate healing for non-healing lower leg wounds in long-term care residents. Int Wound J (2019), 16 (1): 266-274

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