

## **Case study: Young athlete suffering from PTS recovers from traumatic foot ulcer, following use of the geko™ device.**

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### **Subject**

34-year-old male, ex professional rugby player.

### **Wound Type**

Lower left leg ulceration secondary to Post-Thrombotic Syndrome (PTS).

### **Relevant Clinical History**

Patient underwent left hip arthroscopy in 2005, at the age of 23, to alleviate pain around the joints caused by excessive contact attributable to playing rugby. At the age of 25, whilst travelling on a long-haul flight, he developed a DVT resulting in a 100% blockage of the popliteal vein behind the left knee, which led to PTS. The patient underwent 6 months of prescribed anticoagulants and thigh high compression therapy.

### **Clinical Presentation**

In 2011, the patient suffered a small cut on the medial left ankle following a collision during a rugby match; the resulting ulcer measured 2cm x 2cm upon presentation. The treatment plan consisted of antibiotics and multi-layered compression therapy. The wound healed after six months' treatment; however, due to the changes in the patient's lower limb vascular system, caused by PTS, the left leg became discoloured from the bottom of the calf to the ankle. The patient was advised that this was irreversible, *figure 1*.

In July 2016, the patient suffered another small cut on the lateral aspect of the left foot following cricket practice; the wound measured 2cm x 3cm upon first presentation. The patient followed the same treatment regime as described above, from August to October 2016. On this occasion, however, the wound became recalcitrant. The area of the ulcer was located at the top of the ankle where a shoe would normally rest, lending itself to regular contact and friction which exacerbated the ulcer and caused the wound size to expand to 5cm x 2cm. The patient decided to change his footwear during this time and wore open toe sandals to alleviate additional pressure to the area.

The wound continued to deteriorate measuring approximately 6cm x 3cm. The patient suffered increased levels of pain and the wound had become re-infected, which was particularly difficult to tolerate first thing in the morning. Regular dressing changes were required to manage the increased level of exudate.

### **Rationale for treating with the geko™ device**

The wound did not show any visible signs of healing after three months of treatment with compression bandaging and modified footwear, the geko™ device was introduced at the end of October 2016 to assist in the healing process. The patient used the device for 6 hours per day, five days a week, until healing was achieved at 5 weeks.

### **The geko™ device**

Chronic wounds, including venous, arterial and diabetic ulcers often have impaired blood flow<sup>1,2</sup>. Increasing blood circulation increases Transcutaneous Oxygen Tension (TCpO<sub>2</sub>)<sup>3</sup> which is a predictor of tissue viability and ischaemic wound healing<sup>4</sup>. The geko™ device increases venous, arterial and microcirculatory blood flow in the lower limbs<sup>5,6,7</sup>, prevents and reduces oedema<sup>8</sup> and maintains TCpO<sub>2</sub> – promoting conditions favourable for wound healing<sup>7,8</sup>.

**Clinical Assessment**

**Before geko™ device usage**

**Figure 1 – Inside lower left leg**



The first ulcer (2011), was located on the inside aspect of the lower leg, the skin was left discoloured.

**Figure 2a – Outside of left leg**



Mid - October 2016 prior to using the geko™ device. The wound displayed yellow fibrin and/or slough along with what appears to be dried exudate or hyperkeratotic skin, with the entire area measuring approximately 6cm x 3cm.

**Figure 2b – Outside of left leg (closer image of the wound site)**



Mid-October prior to using the geko™ device. The peri-wound area was inflamed and appears to be indurated, wound edges were rolled and static, with fluid discharge. The patient reported that the area was extremely painful prior to using the geko™ device.

**Figure 3 - First day of use (end of October 2016)**



geko™ device used daily for 6 hours a day.

**Figure 4 - After 1 week using the geko™ device**



The wound began to heal, showing positive signs of improvement, with thinner wound edges and some re-epithelialization, and some pale granulation in the base. The wound exudate was decreased, as had the peri-wound inflammation.

**Figure 5 - After 2 weeks using the geko™ device**



Surrounding areas became less sensitive and the wound showed signs of closing. Pain levels reduced dramatically, skin discolouration improved.

**Figure 6 - After 3 weeks of using the geko™ device**



Wound continued to reduce in size, no fluid discharge or discomfort experienced.

**Figure 7 - After 5 weeks of using the device (end of November 2016)**



The wound completely re-epithelialized. The patient reported that he was free from pain; all the surrounding areas had settled significantly.

## Results

The patient reported an improvement to the wound within 4 days of using the geko™ device and healing was achieved after 5 weeks of treatment. The patient reported no pain associated with the ulcer after two weeks of using the geko™ device.

## Patient Feedback

*“In an unusual turn of events I was introduced to the geko™ device when attending a friend’s wedding. It immediately sounded like something very interesting and I was willing to give anything a chance as the feedback from nurses / doctors suggested they were doing all they could. Using the geko™ device proved incredibly easy and the 6 hours per day was very manageable and quite comfortable. Seeing results within days was very exciting and just encouraged me to keep going as I knew great results were just around the corner”*

## Conclusions

Application of the geko™ device as an adjunct to the existing treatment regime for a recalcitrant ulcer, was successful in achieving wound healing after 5 weeks. The patient reported reduced levels of pain associated with the ulcer during the treatment period.

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## References

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