Case study: Using the geko™ device to prevent oedema and promote functional activity following Achilles tendon rupture

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Subject

44-year-old male.

Procedure

Achilles tendon repair.

Relevant Clinical History

The patient was fit and healthy prior to the injury, a keen sportsman and a member of the squash league.

Clinical Presentation

The Achilles tendon is the largest and strongest tendon in the human body, despite this fact, it is the most commonly injured tendon in the lower extremity[1] with an incidence of roughly 18 per 100,000[1]. The rise in number of acute ruptures is thought to be due to the increasing percentage of the population participating in sporting activities at an older age.

The injury was sustained during a squash match, on examination pre-operatively, the patient complained of severe pain, swelling was visible near the heel and he found it difficult to stand on his left leg. After a diagnostic assessment the injury was classified as a grade 3, full tear sprain.

The patient was managed non-operatively via a non-operative tendo-achilles management protocol provided by the Mid Cheshire NHS Foundation Trust. A backslab plaster cast was applied initially for a period of one week to strengthen the tendon (Figure 1, 2). Once the backslab was removed the patient was asked to follow a strict protocol wearing an orthopaedic boot at an angle setting of 30º to provide rehabilitation to the Achilles injury; the patient was non-weight bearing for the first two weeks. From two weeks onwards, the patient's weight bearing ability was built-up relative to his tolerance levels; prophylactic dose of low molecular weight heparin (LMWH) was prescribed during this time.

Physiotherapy was introduced thereafter, initiating soft tissue massage, gentle active range of motion and mobilisation. LMWH stopped after six weeks once plantar flexion was established, the orthopaedic boot was removed after ten weeks at which point the geko™ device was introduced (Figure 3).

MPDCA0387

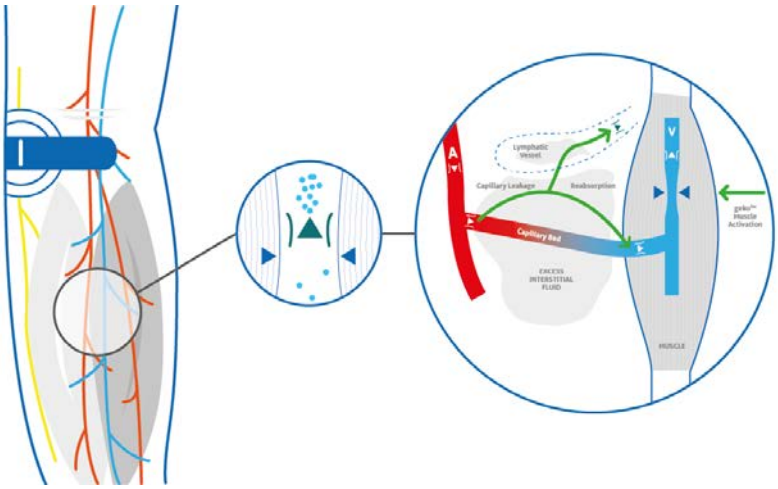
Rationale for treating with the geko™ device

Re-rupture of the Achilles tendon is a significant complication when considering either surgical or conservative treatment. The rate of re-rupture during conservative treatment is reported to be 11.7–20.8%[2].

The geko™ device was utilised prior to the establishment of full range of motion (ROM) for a period of two weeks adjunctively with compression stockings, in line with the manufacturers guidance, to accelerate oedema reduction, increase blood flow and facilitate recovery and rehabilitation.

The geko™ device

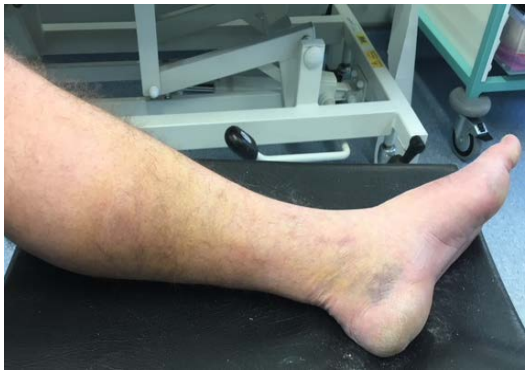
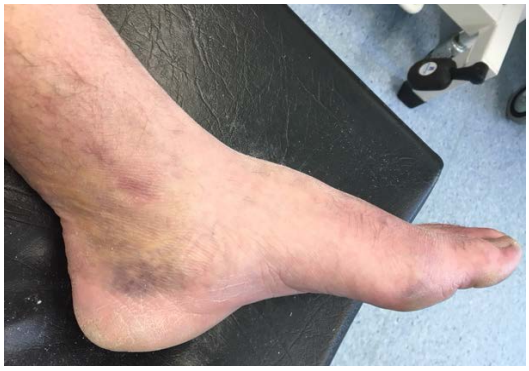
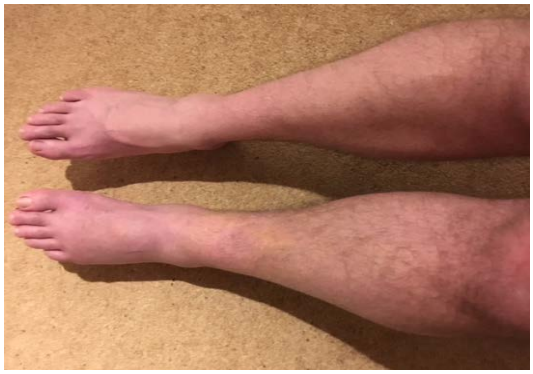
Easy to use, the geko™ device is a battery powered, disposable neuromuscular electrostimulation device designed to increase blood flow in the deep veins of the calf[3]. The geko™ device gently stimulates the common peroneal nerve activating the calf and foot muscle pumps[4], resulting in increased blood flow, and the reduction of oedema[5,6].



The geko™ device can lower AVP (ambulatory venous pressures) and VTT (venous transit times) transferring tissue fluid back into the veins[7].

Results

In comparison to compression therapy, the geko™ device was well tolerated by the patient; easy to use and as an adjunctive therapy, the geko™ device assisted with an overall reduction in oedema.

Figure 1 One-week post injury, when backslab was removed. Angle 1.	
Figure 2 One-week post injury, when backslab was removed. Angle 2.	
Figure 3 geko™ used – 10 weeks post injury.	

Patient Feedback

'*I found the geko™ device reduced the swelling in my leg. The product was easy to use and allowed me to self-care'*.

Conclusions

This case study illustrates that the geko™ device may be useful in helping to reduce swelling in patients recovering from the conservative management of Achilles repair. The device was well tolerated in the management of this complex injury. The patient was impressed with the results and found the geko™ device beneficial in providing oedema reduction. Further research is of course required to confirm the efficacy of the device in this patient group.

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The author is employed by Firstkind and therefore has a conflict of interest. The authors alone are responsible for the content and writing of the paper.

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