

Case study 3: Using the geko™ device to prevent oedema and promote functional activity following foot surgery

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Subject

30 year old female

Procedure

Right scarf lateral release Akin osteotomy

Relevant Clinical History

The patient works as a Business Administrator, is normally fit and well and currently takes the contraceptive pill and inhalers for asthma. She does not report any allergies and presents with bilateral hallux valgus; right side worse than left. Radiologically and clinically she presented with a congruent hallux valgus with about 40° of hallux valgus angulation and uncovering of the fibula sesamoid. Her tibialis posterior tendon is functioning and she is able to do both a single stance as well as a double stance toe raise without any problems.

Clinical Presentation

On examination pre-operatively

- Pain on weight bearing
- Swelling
- Inflammation
- Cosmetic adduction of the first metatarsal
- Bilateral Hallux Valgus

Rationale for treating with the geko™ device

The patient will undergo a scarf and Akin osteotomy along with soft tissue release and medical capsulorrhaphy of heel weight-bearing in an orthopaedic shoe.

The aim of surgery is to relieve pain and improve the alignment of the big toe. Surgery to correct Hallux Valgus is a largely successful operation¹, with a good or very good outcome in 85% of patients¹. However, the NHS Choices website² advises patients that after bunion surgery, the foot and ankle may be swollen for three months or longer post-surgery. Swelling may occur because of the post-operative rehabilitation instructions that are necessary to ensure bone healing. The patient was partial weight bearing with a heel wedge shoe and walked with elbow crutches when first presenting at the clinic. This situation prevents the foot and ankle muscle pumps from working as normal, and leads to a frequent tendency towards swelling. In addition to swelling, impaired wound healing¹ may also occur in 2-4% of patients.

The geko™ device is CE marked for increasing blood circulation and for the prevention and treatment of oedema. The small size and portability of the geko™ device means that it is ideal for providing treatment to patients continuously throughout the day whilst they are active and at rest. The geko™ device is effective at providing up to 70% of the blood flow achieved with maximal effort dorsiflexion movements³.

The geko™ device

The geko™ device was worn for 3 consecutive days for 24 hours per day, followed by 6 hours a day for the next 7 days. The patient was followed up at day 10 post-operation.

Results

<p><u>PRE OP</u></p> <p><u>geko™ use pre-op</u> Patient did not use the geko™ device pre op</p> <p><u>geko™ use post-op</u> The geko™ device was applied to the patient in recovery 1-hour post op.</p> <p>No activity was taken during this time of using the device.</p>	<p><u>SYMPTOMS</u></p> <ul style="list-style-type: none"> • Presents with bilateral hallux valgus • 40 degrees of hallux valgus angulation and uncovering of the fibula sesamoid • Pain on the side of the foot and in the 1st metatarsal for the past 15 years • Swelling • Pins and needles • Numbness • Cosmetic adduction • Pain 8/10 VAS
<p><u>DAY 1 - DAY 10</u></p> <p><u>geko™ use</u> The geko™ device was worn for 24 hours a day for the first three days post-operatively. The device was worn for a further 7 days for 6 hours a day.</p>	<p><u>SYMPTOMS DAY 10</u></p> <ul style="list-style-type: none"> • No swelling • Bruising • Active Range Of Movement of the 1st Metatarsal • Stabbing pain inconsistent on the first metatarsal 2/10 VAS • Slight numbness on the first metatarsal • Wound dry- but needed 2 extra stitches • Re-dressed • Heel wedge shoe still required • Crutches not needed • Patient activity levels increased – ability to walk to the shop 200 metres away

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| | <ul style="list-style-type: none"> • Patient will be followed up in 3/52 for x-ray and wound check. |
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Pre-op Day 0**Surgery Day 0****Post-op Day 10**

Conclusions

The geko™ device offers patients a drug-free treatment option to increase blood circulation in the lower limb and prevent swelling following foot surgery. Prevention of post-surgical oedema is important because excess fluids impede oxygen delivery and wound healing. This case study forms one of a series which suggest that the use of the geko™ device can reduce oedema after bunion surgery. This patient recovered well, regaining functional activity as early as day 10 after surgery with no swelling, compared with swelling up to 3 months without the device². Early observational use of the geko™ device has shown promise and its health benefits following foot surgery deserve further investigation.

References

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3. Tucker AT, Maass A, Bain DS, Chen L-H, Azzam M, Dawson H, Johnston A: 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–e37. PMID: PMC2949997