

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

Authors:

Mr Anand Pillai MB.BS MS (Orth) MRCS Ed FRCS (T&O) FICS

Consultant Orthopaedic Surgeon, Spire Cheshire Hospital and University Hospitals South Manchester.

Nicola Pickford BSc (Hons) MCSP

Physiotherapist at Stockport College Academy of Sport, and Physiotherapy Sales Specialist, Firstkind Ltd.

Tom Wainwright PgDip PgCert BSc (Hons) MCSP

Clinical Researcher in Orthopaedics, The Royal Bournemouth Hospital, and Clinical Advisor, Firstkind Ltd.

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 60% 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