

Case study 6: Using the geko™ device to prevent oedema and promote functional activity following foot surgery

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Subject

28 year old female

Procedure

Right scarf lateral release Akin osteotomy

Relevant Clinical History

This patient works as a child minder is normally fit and well and currently not on medication.. She is active and participates in Zumba classes at least once or twice a week and from 12 years of age has noticed bunions on both feet; the right side being worse than the left. She has generalised ligamentous hyperlaxity scoring almost 7 on the Baton scale and has hyperpronated feet on both sides. This has led to bilateral hallux valgus with a prominent medial eminence which causes her pain.

X-rays show a drop to the medial longitudinal arch and an incongruent hallux valgus on the right side with uncovering of the sesamoids.

Clinical Presentation

On examination pre-operatively:

- Pain on walking 8/10 VAS
- Numbness
- Inflammation
- Bilateral Hallux Valgus
- Prominent medial eminence

She requires a lateral release and a Scarf and Akin osteotomy to correct the 1st metatarsal. Given her ligamentous laxity there is chance of recurrence and she is likely to require further surgery in her 40s.

Post operatively she will require a medial arch support to try and hold this foot straighter and to ensure that the correction is maintained.

Rationale for treating with the geko™ device

The aim of surgery was 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 website 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. In addition to swelling, impaired wound healing¹ may also occur in 2-4% of patients.

The geko™ device was therefore chosen as a treatment modality to help accelerate the reduction of this oedema and also to increase blood flow. This is because Neuromuscular Electro-stimulation (NMES) has been found to be effective at increasing venous flow and reducing oedema in the lower limb. The geko™ device has also been used successfully to heal wounds². 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>	<ul style="list-style-type: none"> • Hyperlaxity score 7 on the Baton Scale • Bilateral Hallux Valgus • Prominent medial eminence • Pain 8/10 on walking, 6/10 at rest VAS • Inflammation • Numbness • Struggling with footwear
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DAY 1 - DAY 10	SYMPTOMS DAY 7
<p><u>geko™ use</u></p> <p>The geko™ device was worn for 24 hours a day for three days and for 6 hours a day for a further 7 days.</p>	<ul style="list-style-type: none"> • Numbness on 1st Metatarsal • Pain 2/10 VAS • No swelling L=R • Minimal bruising • Patient still using the heel wedge shoe • No crutches required • Dressing changed to minimal • Patient can increase activity levels as pain allows • Full Active range of movement • Full Passive range of movement

Conclusions

The geko™ device offers patients a drug-free treatment option to simply increase blood circulation in the lower limb and prevent swelling following foot surgery. This patient has made a good recovery with the help of the geko™ device with pain reduced, no swelling and minimal bruising 10 days post operation. Together with previous case studies this case supports the routine use of the geko™ device to aid recovery following foot surgery.

References

1. Wülker N, Mittag F: The treatment of hallux valgus. Dtsch Arztebl Int 2012; 109(49): 857–68. DOI: 10.3238/arztebl.2012.0857
 2. http://gekodevices.com/media/35901/case_study_imperial.pdf
 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
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