The geko™ Neuromuscular Electrostimulation Device Reduces Pre-Operative Oedema and Accelerates Readiness for Theatre in Patients Requiring Open Reduction Internal Fixation for Acute Ankle Fracture

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The Burden
- 15,000 ankle fractures treated surgically each year (9% UK T&E workload)²
- Soft tissue swelling can delay time to surgery due to fears about wound breakdown¹
- While delayed fixation may help to reduce the risk of complications it can decrease patient satisfaction⁴,⁵
- Delays mean increased length of stay and associated healthcare costs⁶,⁷
- Current strategies to decrease ankle swelling include passive (elevation, ice) or active (arterio-venous foot pumps [AVFP], Intermittent Pneumatic Compression [IPC]) however evidence for their efficacy is unclear⁸

Methods
- Case control feasibility study
- Prospective cohort – 20 consecutive consenting patients meeting criteria
- Retrospective cohort – Ankle fracture patients matched for age, gender, ethnicity, fracture pattern and dislocation at presentation
- Primary aim:
  (i) Ease of recruiting patients with ankle fractures in the MTC setting
- Secondary aim:
  (i) Assess time to ‘readiness for theatre’
  (ii) Assess tolerability of device

<table>
<thead>
<tr>
<th>INCLUSION CRITERIA</th>
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<tbody>
<tr>
<td>Age 18-60</td>
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<tr>
<td>Ankle fracture requiring fixation</td>
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<tr>
<td>Able to understand patient info and complete consent</td>
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<tr>
<td>Able to follow protocol requirements</td>
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Results

<table>
<thead>
<tr>
<th></th>
<th>geko™ group n=15</th>
<th>Retrospective matched group n=15</th>
<th>P-value</th>
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<tbody>
<tr>
<td>Readiness to theatre</td>
<td>1.66 days</td>
<td>3.66 days</td>
<td>0.001</td>
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<tr>
<td>Time to theatre</td>
<td>3.87 days</td>
<td>4.00 days</td>
<td>0.89</td>
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<tr>
<td>Tolerability</td>
<td>95% compliance</td>
<td>N/A</td>
<td></td>
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</tbody>
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Conclusion
- The geko™ is a safe and effective device for reducing pre-operative oedema in ankle fractures
- Reducing the time to theatre by 2 days could provide a saving of £569 per patient¹¹
- Reducing oedema via this method provides an opportunity to optimise theatre schedules, release savings and has the potential to accelerate the patient recovery pathway

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Figure 1. geko™ device mechanism of action – oedema reduction

References
11. Health economic analysis performed subsequent to the completion of the study by MTECH Access Ltd, Bicester UK, 2017.