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CONFLICT TO DISCLOSURE


Giovany Padiolleau MD

• My disclosure is in the final AOFAS Mobile app.

• I have a potential conflict with this presentation due to FH orthopaedics, 3 rue de la Forêt F-68990 Heimsbrunn, France, provided funding for the web-based data collection spreadsheet. The authors did not receive personal funding for this work.
Background

- Open approaches for calcaneus fractures have been associated with wound complications.

- The development of minimal-invasive technics may reduce these.

- The hypothesis for this study was that the treatment of calcaneus fractures using a percutaneous implant enables clinical results equivalent to open approach with satisfactory anatomical reduction and less morbidity.
Methods

• Study design was a prospective multicenter cohort study.

• Inclusion criteria:
  – Patients over 18 years
  – Displaced articular calcaneus fracture

• Surgical Technique:
  Mini-invasive interlocking intramedullary nailing

Courtesy Goldzack et al.
Methods

• Data was included in an Internet database.

• Primary outcome was postoperative AOFAS hindfoot score.

• Secondary outcomes were Bohler, Gissane angles, and occurrence of wound complications.

• Outcomes were measured at 2, 3, 6 and 12 months post-operatively.
Results

• Fifty-four patients were included from October 2011 to July 2012.

• There were no losses to follow-up.

• Mean follow-up was 8.7 months (2-12 months).

Clinical results:

<table>
<thead>
<tr>
<th></th>
<th>2 months</th>
<th>3 months</th>
<th>6 months</th>
<th>12 months</th>
</tr>
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<tbody>
<tr>
<td>Mean AOFAS hindfoot score</td>
<td>80 ± 8.7</td>
<td>80 ± 3.3</td>
<td>82.5 ± 12.6</td>
<td>86.8 ± 11.5</td>
</tr>
</tbody>
</table>
Results

- **Anatomical measurements:**

<table>
<thead>
<tr>
<th>Bolher angle</th>
<th>Gissane angle</th>
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</thead>
<tbody>
<tr>
<td>Physiological values</td>
<td>25 à 40 °</td>
</tr>
<tr>
<td>measure</td>
<td>29,3° ± 10,7</td>
</tr>
</tbody>
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- **11 minor complications:** 2 complex regional pain syndrom, 2 tendinopathy, 1 nail secondary displacement, 3 discomfort on screws required screws removal, 1 saphen nerve irritation, 1 second ray syndrom, 1 cutaneous necrosis required a flap (patient with a large cutaneous defect after gun shot).

- One patient required surgical removal of hardware and subtalar arthrodesis.
Discussion

• Mini-invasive interlocking intramedullary nailing’s functional (AOFAS score) and radiological (Bolher/Gissanne) outcomes were good.

• Outcomes were comparable to all other known techniques (open approach or percutaneous).

• Mini-invasive interlocking intramedullary nailing lead to less cutaneous morbidity than open approach with a very stable osteosynthesis.

• A specific ancillary facilitates reduction maneuvers, nail introduction and locking screws introduction.
Discussion

• This kind of osteosynthesis repositions hindfoot in anatomical position.

• It will be easy to convert this osteosynthesis into a subtalar arthrodesis in case of failure or articular destruction: simply increasing nail’s length to bridge subtalar joint.
Conclusion

- Surgical treatment of displaced articular fractures of the calcaneus using interlocking intramedullary nail provided good clinical results and allowed for correct anatomical reduction with acceptable morbidity.

- We recommend this technic especially in cases where percutaneous pinning would otherwise be used with less satisfactory reduction and clinical results.
Bibliography


