The Usefulness of Subtalar Arthroscopy in Surgical Treatment of Sanders Type 2 Calcaneal Fractures Using a Sinus Tarsi Approach

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Jae-Ho Cho
Disclosure

NO CONFLICT TO DISCLOSE

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Our disclosures are in the Final AOFAS Mobile App.

We have no potential conflicts with this presentation.
Introduction

• **Sinus tarsi approach**
  - To minimize trauma to the soft tissue
  - Technically demanding procedure
  - Difficult to check reduction of posterior facet
    - b/o limited exposure
  - (Weber et al, JBJS Br, 2008)

• **Clinical results after surgery**
  - Böhler’s angle: not irrelevant to clinical results
  - Degrees of posterior facet and CC joint reduction
    - related to clinical results
  - (Kurozumi et al, FAI, 2003)
Introduction

• **Methods to check reduction of posterior facet**
  - Broden’s view using fluoroscopy
  - Using intraoperative CT scan
  - Check step-off using freer
  - Arthroscopy

• **Methods to check reduction of post. Facet**
  - Intraop. arthroscopy in extensile lateral approach
  - No reports about using subtalar arthroscopy in sinus tarsi approach

*(Gavlik et al, Injury, 2002)*
Purpose

• To evaluate the usefulness of subtalar arthroscopy in treatment using sinus tarsi approach of Sanders type 2 calcaneal fractures.
Materials

• From May 2012 to Nov 2014
• Consecutive 35 patients (35 cases)
  - Surgery using sinus tarsi approach by single surgeon
  - Sanders’ classification (IIA : 20 , IIB : 15, IIC : 0)

First 25 cases using fluoroscopy
(Fluoroscopy group)

Latter 10 cases using arthroscopy
(Arthroscopy group)
Surgical technique
Methods

- **Clinical assessment**
  - VAS, AOFAS score, postoperative complications

- **Radiographic assessment**
  - Böhler’s angle using x-ray
  - Reduction of the posterior facet using CT

(Kurozumi et al, FAI, 2003)

<table>
<thead>
<tr>
<th>Posterior Facet</th>
<th>Step (mm)</th>
<th>Defect (mm)</th>
<th>Angulation (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Good</td>
<td>&lt;1 mm</td>
<td>&lt;5 mm</td>
<td>&lt;5°</td>
</tr>
<tr>
<td>Fair</td>
<td>1 mm – &lt;3 mm</td>
<td>5 mm – &lt;10 mm</td>
<td>5° – &lt;15°</td>
</tr>
<tr>
<td>Poor</td>
<td>≥3 mm</td>
<td>≥10 mm</td>
<td>≥15°</td>
</tr>
</tbody>
</table>
Results

<table>
<thead>
<tr>
<th>VAS</th>
<th>AOFAS score</th>
<th>Böhler angle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graph showing:
- VAS scores at 3mos, 6mos, and Last FU.
- AOFAS scores at 3mos, 6mos, and Last FU.
- Böhler angle at Preop and Last FU.

Lines indicate:
- Fluoroscopy (blue)
- Arthroscopy (red)
## Results

- **Reduction of posterior facet on imme postop CT** \( (P\text{-value} < 0.05) \)

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluoroscopy</strong></td>
<td>5 (20%)</td>
<td>12 (48%)</td>
<td>8 (32%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Arthroscopy</strong></td>
<td>5 (50%)</td>
<td>4 (40%)</td>
<td>1 (10%)</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Postoperative complications**

<table>
<thead>
<tr>
<th></th>
<th>Joint penetration</th>
<th>Sural nerve injury</th>
<th>Lateral impingement</th>
<th>Wound complication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluoroscopy</strong></td>
<td>3 (12%)</td>
<td>3 (12%)</td>
<td>6 (24%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Arthroscopy</strong></td>
<td>0</td>
<td>1 (10%)</td>
<td>1 (10%)</td>
<td>0</td>
</tr>
</tbody>
</table>
Conclusion

- Open arthroscopy appears to be useful in detecting joint incongruencies in sinus tarsi approach of intra-articular calcaneal fractures.
Reference


