A compression cross-screw technique for ankle arthrodesis

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My disclosure is in the Final AOFAS Mobile App.
I have no potential conflicts with this presentation.
Objective

• Talocrural arthrodesis
  – For severe osteoarthritis or deformity of the ankle.
  – more than 40 different surgical techniques

• We evaluate the clinical outcomes of ankle arthrodesis using our open compression cross-screw technique.
A compression cross-screw technique

- Bilateral approach
- The distal fibula as a strut graft
- Two 4.5-mm malleolar screws for obtaining compressive force

Skin incision

Preventing of soft tissue of the distal tip of the fibula

Kinoshita 1996, Mulfinger 1970
Patients

- 2003 -2013
- 71 patients (75 feet)
- 63 years (37–82 years)
- 22 males (22 feet) 49 females (53 feet)
- follow-up: 39.5 months (12–120)
- Diagnosis:
  - OA 57 cases, RA 6, paralytic ankles 6, necrosis of the talus 3, Charcot joint 2, ankle fracture 1
Assessments

- Union rate
- Time to union
- Japanese Society for Surgery of the Foot Ankle-Hind foot scale (JSSF) score
- Range of motion of the ankle joint
- Complications
Results

- Union 71 feet (union rate, 95%)
- 68 feet within 6 m (3 m; 2–6 m)
- 3 feet >6 months (11 m; 6.5–18 m)
- 4 feet nonunion,
  - 1 Charcot joint, 1 paralytic foot, and 2 OA.

In 2 cases with non-union degenerative ankle arthritis, 6.5-mm cancellous screws were used instead of the conventional 4.5-mm malleolar screws, due to poor bone quality.
## Results

<table>
<thead>
<tr>
<th>JSSF Score</th>
<th>Pre</th>
<th>post</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>51.5</td>
<td>94.5</td>
<td>p&lt;0.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROM</th>
<th>Pre</th>
<th>post</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsiflexion</td>
<td>4.8° (-35° ~ 20°)</td>
<td>3.3° (-10° ~ 10°)</td>
<td>ns</td>
</tr>
<tr>
<td>Plantar flexion</td>
<td>39° (10° ~ 70°)</td>
<td>27° (10° ~ 60°)</td>
<td>p &lt; 0.01</td>
</tr>
</tbody>
</table>

- Complications: sensory disturbance 2, skin necrosis 1, infection 2, screw loosening 1, stress fracture 1
Discussion

• Our open compression cross-screw technique for talocrural arthrodesis achieved high union rates (95%).
Discussion

• In 2 cases with non-union degenerative ankle arthritis, 6.5-mm cancellous screws were used instead of the conventional 4.5-mm malleolar screws, due to poor bone quality.

• Therefore, if the bone quality of the talus or tibia is not sufficient for obtaining adequate compression, additional fixing methods and/or postoperative treatment modifications may be required.
Conclusion

• The present study demonstrated that our operative method achieved significant improvement in pain and function in addition to high union rates. Thus, we conclude that the compression cross-screw technique is a useful surgical technique for talocrural arthrodesis.
References

