Subtalar Arthrodesis with Cannulated Screws: Comparison of Posterior fixation Technique (P2) and Anterior-Posterior Fixation Technique (A1P1)

Jong-Tae Park, M.D.,
Hong-Geun Jung, M.D. Ph.D.,
Hyoung-Weon Cho, M.D.

My disclosure is in the Final AOFAS Program Book.
I have no potential conflicts with this presentation.
Isolated Subtalar Arthrodesis

- Treatment of pathologic conditions of subtalar joint associated with pain, instability and deformity.

• Satisfactory correction of deformity
• Relief of pain: Regain the ability to perform most activities.

- Coughlin and Mann, Saltzman, Surgery of the Foot and Ankle 8th e.-
INTRODUCTION (II)

• In subtalar arthrodesis, bone healing can be enhanced by keeping sufficient contact pressure and minimizing the movements of fused areas.

  - Dahm DL, Kitaoka HB, JBJS Br, 1998 –

• Optimal fixation configurations induce the higher union rate of subtalar arthrodesis postoperatively.

  - Lee JY et al, J KSSTA, 2011 –

• Ideally, fixation of 3 facets should be performed to achieve solid subtalar joint union.
PURPOSE OF THE STUDY

- To evaluate clinical and radiographic results of the subtalar arthrodesis with cannulated screws.
- Description of new technique of Anterior-Posterior fixation to fuse 3-facets of subtalar joint.
- Comparison of clinical and radiographic results of subtalar arthrodesis between Anterior-Posterior fixation and Posterior fixation technique.
MATERIAL AND METHOD (I)

• Subtalar arthrodesis with cannulated screws → 20 feet (19 patients)
  1) Posterior fixation technique (P2)
  2) Anterior-Posterior fixation technique (A1P1)
• Duration : 2006.9 - 2010.09
• Single Surgeon (HGJ)
• Post-Op follow-up: At least 12 mo
• Posterior fixation : 7 feet (35%)
  Posterior-Anterior fixation : 13 feet (65%)
Clinical and Radiological Evaluation

- **VAS** pain scale (0–10pts)
- **Modified AOFAS** Ankle-Hindfoot scoring system: Maximum score 94 points due to loss of subtalar ROM
- **Time interval of return to daily living** (month)
- **Patient satisfaction** criteria (4 groups):
  - very satisfied / satisfied / fair / dissatisfied
- **Bone union at final follow-up (CT)**:
  - Interpreted by musculoskeletal radiologist
## RESULTS

<table>
<thead>
<tr>
<th></th>
<th>P2</th>
<th>A1P1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of person</strong></td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td><strong>VAS score average</strong></td>
<td>8.6 / 1.7</td>
<td>8.4 / 2.0</td>
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<td>(PreOP/PostOP)</td>
<td></td>
<td></td>
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<tr>
<td><strong>AOFAS score average</strong></td>
<td>44 / 84</td>
<td>45.8 / 80.2</td>
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<tr>
<td>(PreOP/PostOP)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Rate of more than satisfied grade in patient satisfaction (%)</strong></td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time interval of return to daily living (month)</strong></td>
<td>8</td>
<td>7.2</td>
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<tr>
<td><strong>Bone union at final F/U (%)</strong></td>
<td>Anterior &amp; middle facet</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Posterior facet</td>
<td>100</td>
</tr>
</tbody>
</table>
DISCUSSION

• Using a single 7.0mm lag screw across the posterior facet of the subtalar joint results in fusion of the subtalar joint in 98% of 101 cases.  
  - Haskell A et al, Foot Ankle Int. 2004 –

• 86 subtalar arthrodesis attempt using two cannulated cancellous lag screws were successful.  
  - Flemister AS et al, Foot Ankle Int. 2000 –

• Plantar to superior and posterior to anterior cannulated screw fixation techniques for subtalar arthrodesis provide approximately the same magnitude of compression force across the fusion site. (8 paired cadaver study)  
  - Christine G et al, J FAS. 2006 –
CONCLUSION

• We introduced new ST arthrodesis technique. (Anterior-Posterior fixation)

• This technique is **ideal for ST arthrodesis**, because it is **aim to fuse all three facets of ST joint**.

• However, the current comparison of clinical and radiologic outcome of P2 and A1P1 showed **no significant results difference**.

• **However, long term follow-up study with larger no of cases** are required in the future.
REFERENCES


