Isolated Subtalar Arthrodesis for Avascular Necrosis of the Talus

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James A. Nunley, MD
Samuel B. Adams, MD
Disclosure

- No conflicts to disclose

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Our disclosures are in the final AOFAS Mobile App.
We have no potential conflicts with this presentation.
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- Avascular necrosis (AVN) of the talus can lead to subtalar arthritis, pain, and decreased function.

- Primary subtalar arthrodesis in the setting of AVN is thought to restore a degree of vascularity due to calcaneal bone ingrowth.

- Hypothesis: Primary successful fusion rates will be lower in patients with traumatic etiology for talar AVN and thus will have increased rates of secondary procedures.
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Methods
- 12 patients identified
  - 6 patients traumatic etiology
  - 6 patients atraumatic etiology

- Surgical Technique
  - Lateral approach: 7 cases
  - Posterior approach: 3 cases
  - Medial approach: 2 cases
  *** Biologic adjuvant added in all cases

- Follow up:
  - Minimum: time point of fusion
  - Maximum: 8.4 years
  - Average: 3.8 years (7mo- 8.4 years)
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Results:

- Fusion occurred in 12/12 patients
- 3/3 radiographic fusion with no clinical symptoms
- 9/9 fused by CT using Glazebrook et. al.’s criteria with overall fusion mass of 73%
- Secondary procedures
  - Traumatic: 5/6 major secondary procedures
  - Atraumatic: 1/6 major secondary procedures

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Etiology</th>
<th>Pre-existing subtalar OA or pain</th>
<th>Percent CT Union</th>
<th>Orthobiologics at time of primary fusion</th>
<th>Subsequent Procedures</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>Traumatic</td>
<td>Yes</td>
<td>95.0%</td>
<td>Infuse BMP, Symphony PCS</td>
<td>Triple arthrodesis</td>
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<td>2</td>
<td>33</td>
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<td></td>
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<td>DBX</td>
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<td>3</td>
<td>35</td>
<td>Traumatic</td>
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<td>TTC</td>
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<td>TAR</td>
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<td>45</td>
<td>Traumatic</td>
<td></td>
<td>64.9%</td>
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<tr>
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<td>Chronic Alcoholism</td>
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<td>Radiographic fusion</td>
<td>Allograft Cancellous chips, Symphony PCS</td>
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<td>68</td>
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<td></td>
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<td>Allograft Cancellous chips, Symphony PCS</td>
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<td>95.0%</td>
<td>Allograft Cancellous chips, iliac crest BMAC, MAP3 stem cells</td>
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<tr>
<td>11</td>
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<td></td>
<td>85.0%</td>
<td>Allograft Cancellous chips, Infuse BMP, DBX</td>
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<tr>
<td>12</td>
<td>57</td>
<td>Inflammatory Arthritis</td>
<td>Yes</td>
<td>85.0%</td>
<td>Infuse BMP, Symphony PCS</td>
<td>TTC</td>
</tr>
</tbody>
</table>
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Case 1 Example: Traumatic
- 33 yo female
- Traumatic subtalar dislocation with secondary AVN
- **Surgery:** Subtalar fusion with two 7.5mm cannulated screws along with BMP, allograft bone chips and DBX.

**Final result:** Near complete fusion mass on both CT and radiographs with complete resolution of pain and no secondary procedures.
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Case 2 Example: Traumatic
- 35 yo female
- Traumatic AVN secondary to prior talar neck fracture
- Surgery: Subtalar fusion performed with two 7.5mm cannulated screws, a single 5.5mm screw and along with BMP, allograft bone chips and DBX.

Final result: A subsequent CT demonstrated medial talus collapse (C & D). The patient was revised to a TTC arthrodesis (E & F).
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Discussion:

- Study confirms Devalia et al. findings of 100% fusion rate in setting of talar AVN
- High incidence of secondary procedure in patients with traumatic etiology
- Atraumatic etiology has increased rate of both radiographic and clinical success
References

References


