Comparing Treatment Options for Large Talar Osteochondral Lesions

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Disclosures

• We have no potential conflicts with this presentation
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  – Rebecca Cerrato MD
  – Clifford Jeng MD

• Our disclosures are in the AOFAS Mobile App
Large OCD Lesions of the Talus

- Treatment options remain challenging
- Amongst several modalities of operative treatment, three have been popularized in recent years:
  - Osteochondral autograft [OATS] (Arthrex OATS®; Naples, FL)
  - Allograft cartilage extracellular matrix [ACEM] (Arthrex BioCartilage®; Naples, FL)
  - Particulated juvenile articular cartilage allograft [PJAC] (Zimmer DeNovo®; Warsaw, IN)
- Due to the relative rarity of these procedures, the literature comparing these three modalities is scarce. The aim of this study was to assess midterm clinical outcomes after these surgical treatments for large or revision talar OCD lesions.
<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
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</thead>
<tbody>
<tr>
<td><strong>Microfracture</strong></td>
<td>• Quick • Technically easier • Low cost</td>
<td>• Fibrocartilage • <strong>Poor outcomes in larger lesions</strong></td>
</tr>
<tr>
<td><strong>OATS®</strong></td>
<td>• Live hyaline cartilage • Low cost</td>
<td>• Donor site morbidity • Technically demanding • Osteotomy needed</td>
</tr>
<tr>
<td><strong>DeNovo® (JPAC)</strong></td>
<td>• Technically easy • Arthroscopic options</td>
<td>• $$$ • Short shelf life</td>
</tr>
<tr>
<td><strong>Biocartilage® (ACEM)</strong></td>
<td>• Technically easy • Arthroscopic options • Longer shelf life</td>
<td>• $ • Requires BMAC or PRP</td>
</tr>
</tbody>
</table>
Methods

- Hospital IRB approval was obtained
- Reviewed surgical case logs - identified 78 total patients between 2003-2015 for inclusion in this retrospective study.
- 33 patients - excluded due to incomplete preoperative or postoperative outcome scoring data
- 24 patients - pending followup
- N = 24 patients (5 OATS, 7 JPAC, 12 ACEM)
- Functional outcomes preoperatively and postoperatively were evaluated
  - Short Form 12-item Physical and Mental Health Survey (SF12M and SF12P)
  - Foot Function Index (FFI) scores
  - Ability to return to sport or work
  - The need to return to the OR for revision surgery
- Statistics - paired student’s t-test and a one way ANOVA.
Results

- Mean age at the time of surgery - 38 years
- Mean duration of followup - 4.3 years (range 1.1-12.5 years)
- N = 24 patients (5 OATS, 7 JPAC, 12 ACEM)
- Mean OCD lesion size
  - $12.8 \times 8.5 \text{mm} = 107.7 \text{mm}^2$
    - OATS – 105.9 mm$^2$
    - JPAC – 105.2 mm$^2$
    - ACEM – 112.8 mm$^2$
  - 7.6 mm depth
### SF-12M

<table>
<thead>
<tr>
<th></th>
<th>Preop</th>
<th>Postop</th>
<th>Difference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEM</td>
<td>59</td>
<td>53.6</td>
<td>-5.4</td>
<td>0.06</td>
</tr>
<tr>
<td>JPAC</td>
<td>57.5</td>
<td>55.1</td>
<td>+2.4</td>
<td>0.63</td>
</tr>
<tr>
<td>OATS</td>
<td>49</td>
<td>44.6</td>
<td>+4.4</td>
<td>0.25</td>
</tr>
</tbody>
</table>

None of the three groups demonstrated a significant improvement in SF12M scores.
Only the allograft ACEM and JPAC groups showed a significant improvement in SF12P scores.
All groups showed a significant improvement in FFI score ($p < 0.05$) at the last follow-up visit, when compared to preoperative baseline.

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</tr>
</thead>
<tbody>
<tr>
<td>ACEM</td>
<td>83.9</td>
<td>58.3</td>
<td>25.6</td>
<td>0.03</td>
</tr>
<tr>
<td>JPAC</td>
<td>84</td>
<td>65.3</td>
<td>18.7</td>
<td>0.05</td>
</tr>
<tr>
<td>OATS</td>
<td>116.6</td>
<td>70.8</td>
<td>45.8</td>
<td>0.03</td>
</tr>
</tbody>
</table>
Results

- Return to work – 22/22 (100%)
- Return to Sport – 8/11 (73%)
- No significant differences between the three groups when comparing postoperative SF12 and FFI scores, and return to sport or work
- Return to the OR for revision surgery - 6/22 (28%)
- Post hoc power analysis
  - limited statistical power (0.23)
  - effect size (f=0.32)
  - may have been due to small sample size (N = 24).
Conclusions

• All three treatment methods resulted in good medium-term functional results for the treatment of large or revision talar OCD lesions.
• We were unable to distinguish significant differences between OATS, ACEM, and JPAC, likely due to small cohort numbers and low power.
• Further study is warranted with increased patient numbers to improve power and differentiate among the three treatment options, as well as provide longer clinical and radiographic follow-up.