Previous Bone Marrow Stimulation Negatively Impacts Clinical Outcomes of Autologous Osteochondral Transplantation for Osteochondral Lesions of the Talus

Andrew W. Ross, Ethan J. Fraser, Christopher D. Murawski, Keir A. Ross, Huong Do, Timothy W. Deyer, John G. Kennedy

Hospital for Special Surgery, New York, NY
Disclosures

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Introduction

- Microfracture is considered the primary surgical treatment strategy to repair smaller osteochondral lesions of the talus.

- By comparison, autologous osteochondral transplantation (AOT) is indicated for large lesions, or when primary microfracture fails.
Purpose

• To determine if patient reported outcomes and MRI outcomes, including T2 mapping and MOCART analyses, were significantly different between patients receiving primary AOT and patients receiving secondary AOT surgery following failed microfracture.
Methods

• A group of 77 consecutive patients was retrospectively analyzed.

• Twenty-three patients received primary AOT and 54 received secondary AOT following failed microfracture.

• Patient reported outcomes were analyzed using the Foot and Ankle Score (FAOS) score.

• Morphologic analysis was conducted using T2-mapping and Magnetic Resonance Observation of Cartilage Repair Tissue (MOCART) score.
Results

- The average follow-up time was 51 months with a mean patient age of 35.83 years.

- There was no difference in age ($p=0.97$), gender ($p=0.43$), lesion size ($p=0.78$), or follow-up time between groups ($p=0.27$).

- Post-operative FAOS scores were significantly higher in the primary AOT group ($p<0.05$)

- Change of FAOS score on average 9 points lower for the secondary AOT with failed microfracture group ($p<0.05$).
Results

• There was no significant difference in MOCART score (p=0.80), superficial T2 (p=0.30) and deep T2 values (p=0.18).

• No significant difference in normal and repair cartilage T2 values between groups in superficial (p=0.40) and deep tissue (p=0.99).
Results

Figure 1. Clinical outcome scoring using FAOS. (* p<0.05)
## Results

### MOCART Score and T2 Mapping Results

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Index AOT</th>
<th>Prior Mfx&lt;sup&gt;1&lt;/sup&gt;</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOCART score</td>
<td>86.47 ± 9.31</td>
<td>86.7 ± 9.34</td>
<td>85.95 ± 9.44</td>
<td>0.804</td>
</tr>
<tr>
<td>AOT T2 - Deep</td>
<td>30.62 ± 7.74</td>
<td>31.64 ± 8.18</td>
<td>28.69 ± 6.60</td>
<td>0.177</td>
</tr>
<tr>
<td>Control T2 - Deep</td>
<td>29.89 ± 5.99</td>
<td>30.9 ± 6.43</td>
<td>27.96 ± 4.57</td>
<td>0.074</td>
</tr>
<tr>
<td>T2 Deep Relaxation Time</td>
<td>0.74 ± 6.60</td>
<td>0.74 ± 6.55</td>
<td>0.73 ± 6.88</td>
<td>0.996</td>
</tr>
<tr>
<td>AOT T2 - Superficial</td>
<td>41.54 ± 8.49</td>
<td>42.32 ± 8.87</td>
<td>40.06 ± 7.71</td>
<td>0.295</td>
</tr>
<tr>
<td>Control T2 - Superficial</td>
<td>35.62 ± 5.92</td>
<td>35.76 ± 6.39</td>
<td>35.37 ± 5.06</td>
<td>0.816</td>
</tr>
<tr>
<td>T2 Superficial Relaxation</td>
<td>5.92 ± 7.95</td>
<td>6.57 ± 8.34</td>
<td>4.69 ± 7.18</td>
<td>0.398</td>
</tr>
</tbody>
</table>

Table 4. MRI analysis using MOCART score and T2 mapping (<sup>1</sup> denotes microfracture, control represents adjacent healthy articular cartilage)
Conclusions

• This study indicates that primary AOT provides better functional outcomes when compared to secondary AOT following failed microfracture surgery.

• No significant differences in T2 mapping relaxation times and MOCART scores were identified.

• Current guidelines may need to be reexamined to include AOT as a primary repair method for osteochondral lesions of the talus.
References