Clinical, Radiographic and Return to Sport Outcomes Following Autologous Osteochondral Transplantation of the Talus in Athletes

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Disclosures

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Clinical Outcomes and Return to Sports

**Clinical Outcomes**
- Overall Successful Clinical Outcomes in 87% of Talar AOT
- Most of the evidence from level IV studies

**Return to Sport**
- *Paul et al*
  - Talus AOT in 131 athletes (20% “competitive”)
  - 75% satisfied or very satisfied
- *Hangody et al*
  - 354 competitive athletes
  - 63% had full RTS; 9% had failed RTS
- *Kennedy & Murawski*
  - 95% Full RTS (FU = 28 mths) @ mean 13 wks


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Study Objectives

1. Assess Clinical Outcomes after AOT in a High-Demand Athletic Cohort

2. Assess Return to Sport and Attrition at Mid-term Follow-up
Methods

- Retrospective Case Series of 36 Athletes
  - 21 Professional
  - 15 Recreational

- Age = 31 (16-43) yrs; Mean 5.9 yr Follow-up

- 36 AOT procedures; Knee as donor site in all cases

- Trauma noted in all patients
**Methods**

**Pre / Post-Operative Assessment**

**AOFAS** Score at Pre-op & Final Follow-up Visit

**MRI** @ 12 months Post-op

- Quantitative Assessment (MOCART Score)
- Qualitative Assessment
  - Union of Malleolar Osteotomy
  - Cartilage Congruence
  - Cyst Formation

**Rehabilitation**: All Patients

- Early ROM (Standardized Rehab 0-6wks)
- At 12 Weeks Sport Specific Training Commenced
Methods – Assessing RTS

12 months → 24 months → Final Follow-up

Consensus of team trainers and athlete

• Full Return:
  – Same competition level & Regular schedule game play
  – Time in game >75% of pre-injury (team sports)

• Restricted Return
  – Lower competitive level OR Changed Sports
  – Symptoms Affecting Functional Performance

• No Return
  – Unable / Unwilling to RTS - any competitive sports or mod-high intensity athletic activity
Results – Clinical

• AOFAS improved from 66 to 89 ($p=0.01$)

• 86 % Successful Clinical Outcomes at 6 years Follow-up

• Donor site morbidity = 8 %

• 1 Failed Graft Requiring Repeat AOT

<table>
<thead>
<tr>
<th>Patient Variable</th>
<th>Result</th>
<th>Affect on AOFAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesion Size (mm$^2$)</td>
<td>133 (range: 56 – 380)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Patient Age</td>
<td>31 ($\pm$ 7.7) years</td>
<td>n.s</td>
</tr>
<tr>
<td>Prior Cartilage Surgery (%)</td>
<td>15</td>
<td>n.s</td>
</tr>
<tr>
<td>Lesion Location % (Med: Cent: Lat)</td>
<td>64:13:23</td>
<td>n.s</td>
</tr>
<tr>
<td>Containment % (Yes : No)</td>
<td>61:39</td>
<td>n.s</td>
</tr>
<tr>
<td>Mean duration of symptoms (months)</td>
<td>18 ($\pm$ 8)</td>
<td>n.s</td>
</tr>
</tbody>
</table>
Results – Radiological

MOCART Score = Mean of 71 @ 1 year

Cyst Formation in 33% of Patients

Osteotomy Union Achieved in All Patient by 1 year

MRI Findings Did Not Correlate with Clinical Outcomes in Our Study (p > 0.05)
Timing of Return to Sports = 23 weeks (range 15-52)

Full RTS:
- 90% at 12 months;
- 86% at 24 months;
- 80% at mean 71 mths

No RTS in 5% (12mth – Final FU)
- Static Throughout Study Period

MRI outcomes did not appear to affect RTS outcomes (n.s)
Assessing RTS After AOT is Problematic

• Subjective testing in Athletes may be unreliable

• Reports of decline in sports function over time

• No Standardization of Return to Sport

• Scoring Systems Not Validated for Ankle Cartilage
  • Tegner Activity Scale (Knee Injury)
  • Activity Rating Scale (Knee score)

• Heterogeneous patient populations
  • Demographics and Athletic demands
Conclusions

Good Clinical Outcomes at Mid-term in Athletes

Return to Previous Functional Sports Level was High with Low Attrition Rate from 1-6 years

Effects of Cyst and Donor Symptoms at Long Term Not Clear
References