Secondary Treatment of Osteochondral Defects of the Talus

HemiCAP® Contoured Articular Resurfacing

**Introduction**

- Focal defects of the talar dome are not uncommon, are characterized by being deep and often cup-shaped and can lead to subchondral cysts¹ or joint degeneration.²

- Systemic review of talar dome procedures such as Osteochondral Autograft Transplantation (OATS), Autologous Chondrocyte Implantation (ACI) and Bone Marrow Stimulation (BMS) showed 76-87% success rate. Retrograde drilling and fixation showed success rates of 88 and 89%.³

- A subset of patients fail their primary procedure. These patients may be suitable candidates for the HemiCAP® resurfacing prosthesis as a secondary treatment option.

- Perpendicular access to the talar dome is crucial for the treatment of these lesions.⁴

- The implant is placed 0.5 mm recessed to the surrounding healthy cartilage.¹,²

- Advantages of Focal Inlay Resurfacing System:
  - A family of implant convexities to address all 3 surfaces: Dome, ridge and wall
  - 3D mapping for a patient specific defect fill
  - Reproducible surgical technique
  - Strong, beadblasted screw fixation with taperlock
  - Joint preserving with exit into arthroplasty or fusion

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**Surgical Steps** ⁴,⁵

- Correct technique avoids articular step-off while maintaining perpendicular access.
- Re-fixation screws are pre-drilled at 60° in relation to the tibial axis and the osteotomy is made at 30° in relation to the tibial axis. Minimal bone is sacrificed when performing the osteotomy by using a thin saw blade. The articular cartilage is separated by osteotome to avoid cartilage loss.
- Introduction of the compression screws through the predrilled bone tunnels will result in a smooth joint surface during re-fixation.
Preliminary Clinical Results\textsuperscript{5}

- 10 patients with a secondary medial talar defect treated with HemiCAP\textsuperscript{®} resurfacing.
- Non-weight-bearing for 6 weeks.
- Follow-up 3, 6, 12 months post-operative.

Outcomes:
- Numeric Rating Scale for Pain (NRS 0-10 worst)
- AOFAS Ankle-Hindfoot score (0-100 best)
- FAOS (0-100 best)

Radiographic Results

- There were no progressive degenerative changes of the ankle joint, as compared to preoperatively.
- There were no implant-related complications.
- The medial malleolar osteotomy was fully healed.

<table>
<thead>
<tr>
<th>NRS Pain and AOFAS Scores</th>
<th>Pre-operative</th>
<th>6 months postoperative</th>
<th>12 months postoperative</th>
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</thead>
<tbody>
<tr>
<td>NRS at Rest</td>
<td></td>
<td></td>
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<tr>
<td>median (range) 0=best,10=worst</td>
<td>3.0 (0-7)</td>
<td>1.0 (0-5)</td>
<td>0.5 (0-4)</td>
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<tr>
<td>NRS Walking</td>
<td></td>
<td></td>
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<tr>
<td>median (range) 0=best,10=worst</td>
<td>6.5 (4-8)</td>
<td>3.0 (0-9)</td>
<td>1.5* (0-5)</td>
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<tr>
<td>AOFAS</td>
<td></td>
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<tr>
<td>median (range) 0=worst,100=best</td>
<td>69.5 (47-75)</td>
<td>72.5 (43-90)</td>
<td>85.5* (69-100)</td>
</tr>
</tbody>
</table>

* NRS at walking and AOFAS improved significantly (*) at final follow-up (p-value < 0.016) in comparison to the preoperative scores.

Conclusion

- Short-term results of the HemiCAP\textsuperscript{®} metallic inlay resurfacing procedure showed very encouraging results for the treatment of secondary osteochondral defects of the talus.
- A larger cohort and longer follow-up is underway and will be needed to confirm the stability of the results and implant construct.

References