Early Clinical and Radiographic Outcomes of Trabecular Metal Total Ankle: A Minimum Follow-up of 2 Years

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Disclosure

- No conflicts to disclose
Total Ankle Replacement

- Anterior approach:
  - purely soft tissue approach
  - possible risks of injury of neurovascular structures\(^1\)
  - wound healing issues\(^2-4\)

- Lateral transfibular approach:
  - may avoid anterior wound healing problems
  - better visualization of the COR of the ankle
  - allows curved cuts of the talus and tibia
  - longer operating time
  - possible complications regarding malunion or non-union of the fibula
Objectives

- There is a lack of literature on TAR using a lateral transfibular approach

- The objectives of our study were to:
  - assess prosthetic component stability, including surgical revision for any reason
  - determine TAR survivorship at short-term
  - assess the patients’ short-term clinical outcome, including postoperative pain relief and ankle ROM
Patient Cohort

- 56 consecutive patients (56 primary TAR):
  - between October 2012 and November 2014

- Patients’ demographics:
  - 30 male and 26 female patients
  - mean age of 66.7 ± 9.2 years (46.7-84.9 years)
  - etiology:
    - primary: 11 ankles
    - secondary: 6 ankles
    - posttraumatic: 39 ankles
Surgical Technique

- Zimmer Trabecular Metal Total Ankle:
  - 2-component, semi-constrained, non-mobile-bearing
  - highly cross-linked polyethylene

- Lateral transfibular approach:
  - oblique fibula osteotomy
  - distal fibula fragment was flipped distally/posteriorly
  - external fixator frame
  - bone resection was performed using a water irrigated rotating milling burr
  - non-cemented technique
Complications

- Intraoperative complications:
  - medial malleolus fracture in one patient
  - talus fracture in one patient

- Fibula healing:
  - no delayed or non-union
  - mean time to complete osseous union was 8.4 ± 2.9 weeks

- Postoperative complications:
  - superficial infection in two patients
    - successfully treated by I&D
  - medial malleolar stress fracture in one patient
    - successfully treated at 6 weeks with ORIF
Survivorship Analysis

- Survivorship analysis:
  - two patients the tibial component revision
  - overall survival rates 97% and 90% after 12 and 36 months

- We have continued to follow patients after 2 years:
  - 3 tibial components have been revised for aseptic loosening
  - 6 patients have supramalleolar pain and may have aseptic loosening
  - no talar components have been revised for aseptic loosening
## Radiographic Outcomes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>α-angle</td>
<td>87.0°</td>
<td>80° to 95°</td>
</tr>
<tr>
<td>β-angle</td>
<td>87.1°</td>
<td>75° to 100°</td>
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<tr>
<td>γ-angle</td>
<td>5.2°</td>
<td>-7° to 20°</td>
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Clinical Outcomes

- Mean FU 19.5 ± 5.2 months (12-32.8 months)
- Average VAS pain score:
  - 7.9 ± 1.3 → 0.8 ± 1.2 (p < 0.001)
- Range of motion:
  - DF: 2.7° ± 7.3° → 11.8° ± 5.9° (p < 0.001)
  - PF: 20.3° ± 9.8° → 28.3° ± 8.7° (p < 0.001)
Discussion

- No complications related to fibula OT
- Painful early loosening due to lack of bony ingrowth in 2/55 cases:
  - comparable to a recent review and meta-analysis\(^5\)
    - 58 publications with a total of 7942 ankle arthroplasties
    - annual failure of 1.2% (95%CI 0.7 to 1.6)
- We continue to follow these patients:
  - 6/75 cases had tibial pain
  - 3 revision of tibial components
  - no problems with talar component
- Clearly, longer term follow-up of this cohort and those from other surgeons will be needed
References