Novel Double Osteotomy Technique of Distal Tibia for Correction of Asymmetric Varus Osteoarthritic Ankle

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Disclosure

- No conflicts to disclose
Varus Ankle Osteoarthritis

- Patients with asymmetric varus ankle OA:
  - SMOT may be insufficient to re-orientate the talus\(^1\)
- Plafondplasty:
  - medial opening wedge osteotomy of the distal tibia\(^2-5\)
  - may not move the loading axis of the tibiotalar joint sufficiently medial
Objectives

- Novel double osteotomy technique of distal tibia

- The objectives of our study were to determine:
  - complications
  - postoperative pain relief
  - midterm functional and radiologic outcome
Patient Cohort

- 20 consecutive patients (20 ankles) between January 2005 and February 2010:
  - 12 male and 8 female patients
  - mean age of $44 \pm 12$ years (range, 17 – 60)
  - all patients had posttraumatic ankle OA

- Inclusion criteria:
  - varus ankle OA with ankle instability and a concomitant intraarticular defect of the medial tibial plafond

- Mean follow-up $5.9 \pm 2.1$ years (range, 4-11.2 years)
Weight bearing AP radiographs of the ankle
Surgical Technique

- Intraoperative fluoroscopy
Complications

- There were no intra- or perioperative complications
- Wound healing within 2 weeks
- In all patients, osteotomies healed within 6 months of surgery
- Full weight-bearing after a mean of 11.5 weeks (range, 8-15 weeks)
- 5 patients had hardware removal because of local discomfort
Clinical Outcomes

- **Visual analog scale:**
  - $7.9 \pm 1.3$ (6-10) → $1.3 \pm 1.6$ (0-7) ($P < 0.001$)
  - patient with persisting pain (VAS of 7):
    - 56-year-old man with a stage IIIb deformity
    - scheduled for TAR
- **All but 1 patient were very satisfied with obtained results**
- **AOFAS hindfoot score:**
  - $49 \pm 15$ (36-68) → $86 \pm 12$ (66-96) ($P < 0.001$)
- **Ankle range of motion:**
  - $39^\circ \pm 11^\circ$ (25°-46°) → $38^\circ \pm 9^\circ$ (28°-46°) ($P = 0.688$)
## Radiologic Outcomes

- **TSA:** 92.8° ± 3.5° → 88.2° ± 2.8° (P < 0.001)
- **Varus tilt:** 19.4° ± 8.2° → 6.9° ± 3.9° (P < 0.001)
- **TLS:** 19.2° ± 8.5° → 11.9° ± 3.5° (P < 0.001)
Conclusions

- Progression of OA of the tibiotalar joint:
  - our patient cohort → 3 of 20 patients (15%)
  - in the current literature → up to 25%⁶

- Significant pain relief and functional improvement:
  - improvement in gait biomechanics⁷,⁸

- Novel double osteotomy of the distal tibia:
  - efficient and successful to restore tibiotalar joint congruency