Joint Preserving Surgery of Ankle Osteoarthritis

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Joint Preserving Surgery (JPS) for Valgus/Varus Ankle/Hindfoot OA

Introduction:
The most common cause of ankle osteoarthritis (OA) is posttraumatic, with around 80% of all cases, followed by primary and secondary ankle OA. Patients often present with asymmetric involvement of the tibiotalar joint, resulting in valgus or varus deformity of the ankle and hindfoot. The etiology of asymmetric arthritic ankles can be divided into 2 main etiologic and morphologic groups. The primary form of asymmetric ankle OA is characterized by severe deformity of the pes planovalgus, with insufficiency of the medial ligaments and end-stage tibial tendon dysfunction (Grade IV using the Myerson classification) in patients with valgus OA or severe cavovarus deformity in patients with varus OA. The second important etiologic category of asymmetric ankle OA is posttraumatic. Severe ankle fractures with valgus or varus impacted tibial plafond may end up in posttraumatic ankle OA. Furthermore, patients with malunited fibula fracture with shortened and externally rotated fibula may present with asymmetric valgus ankle OA.

Indications:
- Asymmetric lateral/medial ankle osteoarthritis with concomitant valgus/varus deformity with a medial/lateral partially preserved tibiotalar joint
- Osteochondral lesion on the talar aspect of the tibiotalar joint
- Corrections of posttraumatic deformities after lower leg fractures
- Hindfoot realignment before or together with ankle joint-sacrificing procedures (e.g. total ankle replacement, ankle arthrodesis)

Contraindications:
- End-stage ankle osteoarthritis with involvement of more than half of the tibiotalar joint surface
- Unmanageable hindfoot instability
- Acute osteomyelitis or infection
• Severe vascular and/or neurologic deficiency
• Heavy smoking (because of most likely expected high rate of non-union or delayed union)

**Relative Contraindications:**
• Advanced age (more than 70 y)
• Patients of poor general condition who are unable to perform postoperative non-weight-bearing rehabilitation
• Insulin-dependent diabetes (with or without diabetic polyneuropathy)
• Altered bone quality due to medication (e.g. long-term medication with steroids)
• Large cysts
• Osteopenia or osteoporosis
• Rheumatoid osteoarthritis

**Surgical Technique:**

**Risks/Complications:**
• Intraoperative injury of neurovascular structures and/or tendons
• Wound-healing problems/infections
• Undercorrection/overcorrection
• Loss of correction
• Delayed union/non-union
• Hardware removal because of pain/discomfort

**Conclusion:**
Realignment surgery in patients with asymmetric ankle OA may restore normal biomechanics of the ankle joint, resulting in substantial postoperative pain relief, functional improvement and slowing down of the degeneration process. Depending on the origin and classification of the underlying deformity, we recommend a step-by-step treatment algorithm, including osseous corrective procedures on the supramalleolar and inframalleolar level and soft-tissue reconstruction procedures. Overall, promising short-term and mid-term results have been observed in patients who underwent realignment surgery because of substantial valgus/varus deformity.

**References:**
• Barg A, Pagenstert GI, Leumann AG, Müller AM, Henninger HB, Valderrabano V. Treatment of the arthritic valgus ankle. Foot Ankle Clin 2012;17(4): 647-53