
4:56 – 5:01 pm

Ankle Arthrodesis is not Old School
David B. Thordarson, MD
Professor and Program Director
University of Southern California
Department of Orthopaedics
Los Angeles, California

I. End stage ankle arthritis surgical options.
   A. Arthrodesis-gold standard (still in my opinion)
   B. Joint replacement
   C. Distraction arthroplasty,- limited series
   D. Allograft replacement-high rate of short term failure

II. Ankle Arthrodesis Biomechanics
   A. With isolated ankle fusion most patients can walk with minimal to no detectable limp.
   C. Ankle arthrodesis energy expenditure 3% greater than normal, hip arthrodesis 30% greater

III. Ankle Fusion-durable, good for lifetime-can be used in all clinical scenarios including strict contraindication for replacement including AVN, active or recent infection, poor bone stock.
   A. Mann, et al- Foot and Ankle International,
      81 ankles followed for 35 months- satisfied 89%, dissatisfied 11%, AOFAS score improved 41 points to 74.
   B. Best long term study by Coester et. al JBJS 2001
      -23 patients followed for 22 years
-88% would have surgery again
-Radiographically greater arthritis ipsilateral subtalar, calcaneocuboid, talonavicular, tarsometatarsal, first MP
C. Ankle Fusion-Incidence of Ipsilateral Hind Mid foot DJD Sheradan, et al.
-68/70 patients had pre-existing hind or midfoot arthritis
-Subtalar joint most common
-Probably ankle fusion expedites deterioration of pre-existing arthritic joints instead of sole cause of arthritic joints
D. Cost effect analysis for total ankle arthroplasty JBJS, 2004, 86A
-Decisions model was created for the treatment of ankle arthritis where outcomes were weighted for quality adjusted life years. Cost effectiveness ratio for ankle arthroplasty was $18,419 per quality adjusted life year gain, the quality adjusted life year cost rises above $50,000 if the prosthesis is assumed to fail before seven years. Conclusion was that ankle arthroplasty has not been shown cost effective at the time of this analysis.

IV. Problems with ankle replacements
A. No long-term follow-up as with ankle fusions
B. Acute problems – wound breakdown, intraoperative malleolar fractures, tendon lacerations
C. Late problem -subsidence, loosening, heterotopic bone, malleolar abutment, incomplete pain relief, possible risk of amputation
D. Using California hospitals discharge database from 1995-2004 the short-term outcome includes rates of major revisions surgeries, pulmonary embolism, amputations and infections were examined there
-4705 ankle fusion and 480 ankle replacements
-Rates of major revision surgeries of total ankle replacement were 9% in one year, 23% at 5 years, compared to the 5% and 11% respectively for ankle arthrodesis. Ankle arthrodesis patients had a higher rate of subtalar fusion
- Concluded that ankle replacement is associated with a higher risk of complications but decreases risk of patients requiring subtalar fusion.

V. Ankle replacement, is it all Bad?
A. Definitely not. I perform approximately 1 ankle replacement for every 5 fusions that I do.
B. Pantalar fusion definitely poor function.
C. Gait studies have definitely indicated more normal gait with successful ankle replacement than fusion. However, remember replacement generally preserves rather than improves ankle motion.

VI. Conclusion
A. Ankle arthrodesis remains very good operation, durable with good function.
B. Pantalar fusion remains relatively poor functioning salvage operation
C. Ankle replacement definitely has a place especially with hindfoot fusion, hindfoot arthritis, bilateral ankle arthritis with ever expanding indications.
D. Ankle replacement continues to have more acute failures

References


Soo-hoo N., Komanski, G., Cost effectiveness analysis for total ankle arthroplasty, JBJS, 2004, 86A 2446-2455


Thomas, R., Daniels, T., Parker, K.Gait analysis and function outcome following ankle arthrodesis for isolated ankle arthritis  J Bone Joints Surg, 88A 526-535

5:02 – 5:07 pm

Show Me Ankle Arthritis that Cannot be Replaced
James K. DeOrio, MD
Associate Professor
Co-Director, Foot and Ankle Fellowship Program
Duke University Medical Center
Durham, North Carolina

The interest in total ankle arthroplasty (TAA) has never been greater. Recent investigations support our intuition that ankle replacement represents an attractive surgical alternative to arthrodesis for patients with advanced ankle arthritis. Increasingly, TAA is displacing arthrodesis as the surgical "gold standard". Indications for TAA include primary/post-traumatic and inflammatory arthritis. Contraindications to TAA include large areas of avascular necrosis, peripheral vascular disease, neuropathy, active/recent ankle infection, nonreconstructable ankle ligaments, loss of lower leg muscular control and severe osteopenia/osteoporosis. Furthermore, young, active patients with ankle arthritis, who may place too great a demand on a TAA may be better candidates for arthrodesis. There are four ankle systems currently approved for use in the U.S. One system features a nonconstrained polyethylene meniscus that articulates between the porous coated tibial and talar components, i.e. "mobile bearing"... The other three designs have a single tibial talar articulation. Only one ankle system requires the fusion of the fibula to the tibia. Accompanying these design improvements has been the development of more practical, effective, and safer instrumentation for implantation. For example, one system has a leg holder with the ability to obtain alignment fluoroscopically and then drill from the calcaneus up into the tibia. These refinements in surgical precision, albeit, often with a long learning curve, even in the most experienced surgeons’ hands, have been essential to the success of TAA. Complications with TAA are still more common when compared to TKA and THA, irrespective of surgeon’s training method. Wound healing and malleolar fractures are the most common problems. Fortunately, an individual surgeon’s experience increases the chances for favorable outcome. The combined improvements in implants, instrumentation, patient selection, and surgical technique make a greater than 90% ten-year implant survival realistic. Moreover, the incidence of malalignment, neurovascular injury, and material failure of TAA implants is diminishing. However, despite these improvements, impingement from bony proliferation, osteolysis/loosening, component subsidence, and failure to resolve pre-operative stiffness remain concerns. Further investigation will continue to define who is and who is not a candidate for a TAA and whether or not conversion of ankle arthrodesis to arthroplasty is advisable. Remembering to leave the fibula in all fusions of the ankle is essential in our ability to take them down for ankle replacement when appropriate. The future promises a full complement of revision and custom prostheses as well as using state-of-the-art adjuncts including computer navigation to ensure ideal alignment.