AMERICAN ORTHOPAEDIC FOOT & ANKLE SOCIETY®

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# POSITION STATEMENT
# The Use of Total Ankle Replacement for the Treatment of Arthritic Conditions of the Ankle

## Position Statement

The American Orthopaedic Foot & Ankle Society (AOFAS) endorses the use of total ankle replacement surgery as an option for treatment of arthritic conditions of the ankle in select patients with this condition who have failed nonoperative treatment. We do not consider this procedure to be experimental.

The American Orthopaedic Foot & Ankle Society is a medical specialty society whose 2,500 members are orthopaedic surgeons specializing in the operative and nonoperative treatment of injuries, disease, and other conditions of the foot and ankle. The AOFAS promotes quality patient care through education, research, and training of orthopaedic surgeons and other healthcare providers, and serves as a resource for government, industry, and the healthcare community on issues concerning the medical and surgical care of the foot and ankle.

## Background

Ankle arthritis is a common source of ankle pain that occurs frequently after trauma (fracture or sprains) or as a result of an underlying inflammatory condition such as rheumatoid arthritis. This condition has several accepted operative and nonoperative treatment options. Operative treatment is generally considered for patients with persistent symptoms that fail to respond to appropriate and comprehensive nonoperative treatment measures. Surgical options include joint debridement, distraction arthroplasty, osteotomy, arthrodesis, and total ankle arthroplasty. Traditionally, arthrodesis was the favored treatment for end-stage ankle arthritis. However, there are concerns that the restricted motion following arthrodesis increases the stresses on the surrounding joints leading to further arthritic changes. The preserved motion of total ankle arthroplasty may be protective against further degeneration while providing equivalent pain relief. Over the past decade, total ankle replacement surgery has evolved as an alternative to ankle arthrodesis in select patients with ankle arthritis. These include adult patients with primary, post-traumatic, and inflammatory arthritis who have moderate or severe pain, loss of mobility, and loss of function of the involved ankle. Patients with previous hindfoot fusion or significant arthritic change in neighboring joints are also considered good candidates for replacement. Before considering total ankle replacement, patients should have exhausted or failed conservative treatment, should have satisfactory vascular perfusion in the involved extremity, and appropriate current or planned soft-tissue coverage about the ankle that affords a safe surgical approach to total ankle replacement.

## Peer-reviewed Publications on Total Ankle Replacement

Total ankle arthroplasty has evolved since its introduction in the 1970s. Improved clinical results have been demonstrated in the modern components compared to early designs.[1,3,6,10] (adding PMID: 25201330) In an appropriately indicated patient, evidence indicates that total ankle replacement safely relieves pain and may equivalent functional results when compared to ankle fusion. Additional concomitant or sequential surgical procedures may be required in some patients to optimize outcome.

Multiple studies have reported outcomes comparing ankle arthrodesis and ankle replacement.[4,5,11-15] In general, ankle replacement and ankle arthrodesis are both associated with pain reduction in the mid-term. A higher rate of complications requiring secondary surgical intervention has been reported after ankle replacement compared to ankle arthrodesis in several studies while a higher rate of adjacent joint hindfoot or midfoot fusions are performed after arthrodesis. (PMID: 17908889)

Most studies reviewing short-term outcomes indicate that the rate of reoperation is higher in the ankle replacement population. Reports of pain relief are similar when compared to ankle arthrodesis.[12] However, in the intermediate term, at least one review of the literature suggests that the outcomes of ankle arthrodesis and ankle replacement are similar.[4] Perhaps more importantly, patient reported outcome measures indicate that patients undergoing total ankle arthroplasty show marked improvement in quality of life, pain and function.[8] Further studies are required to minimized periprosthetic osteolysis that can occur in a subset of patients. (PMID: 28535724)

Maintaining ankle range of motion has long-term benefits in the protection of joints adjacent to the ankle and has been considered a benefit to ankle arthroplasty over arthrodesis.[2] (add PMC3705040 ) Gait analysis studies indicate that ankle joint replacement allows for ankle joint function that is closer to the normal ankle joint.[5] (PMID: 23669163) Queen et al demonstrated improvement in gait and function in patients with total ankle replacement,[9] however, both arthrodesis and replacement patients demonstrate improved gait postoperatively.

Additional studies of outcomes provide support for the performance of ankle replacement surgery in patients with arthritis, but most authors agree that a careful evaluation of the patient is important when selecting patients for a total ankle replacement procedure. Krause et al published a review outlining the decision-making process for total ankle replacement in terms of major and minor criteria. Age, cause of arthritis, deformity, instability, ankle motion and adjacent joint arthritis were all considered major considerations when selecting the appropriate procedure for a patient.[7]

Total ankle replacement surgery should be performed by board-certified or board-eligible allopathic or osteopathic orthopaedic surgeons with appropriate training in the entire lower limb alignment and education in joint replacement of the hip, knee, and ankle. When considering total ankle replacement, patients should consult with a qualified orthopaedic surgeon.

## Conclusion

Ankle arthritis is a condition that can result in substantial pain and dysfunction. The American Orthopaedic Foot & Ankle Society supports the use of total ankle replacement as an option for the treatment of ankle arthritis that has failed conservative management in select patients due to its demonstrated improved outcomes in multiple peer reviewed publications.

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