SYMPOSIUM 4: CURRENT CONTROVERSIES:
ANKLE ARTHRITIS
4:50 – 5:40 PM

ANKLE ARTHRITIS

Objectives:
Upon completion of this scientific session, learners should be able to:
• Analyze the various treatment options for the treatment of ankle arthritis,
• Determine the indications and contraindications for various techniques
• Analyze the evidence to support the use of these techniques

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

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

Distraction Arthroplasty: When you Should Consider it
Douglas N. Beaman, MD
Summit Orthopaedics
Emanuel Hospital
Portland, Oregon

What does the Evidence Show?
Timothy R. Daniels, MD
Associate Professor
Foot and Ankle Surgery, Trauma
Director, Foot and Ankle Program
University of Toronto
Toronto, Ontario, Canada
4:50 – 4:55 pm

Moderator
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Introduction:

- Arthritis is a debilitating chronic disease associated with pain, dysfunction and, in advanced stages, muscle atrophy, joint contractures and limb deformity.

- Approximately 6 to 13% of all cases of osteoarthritis are of the ankle joint; however, there is limited data documenting the patient characteristics, general health, severity of pain and loss of function in these patients.

- A level I prognostic study compared that used the short form 36 (SF-36) showing that ESAA has an equal severe negative effect on HRQL that is similar to patients with end-stage hip arthrosis.

- The goal of this symposium is to provide information on current and evidence based treatment options for ankle arthritis.

Treatment Options for End-stage Ankle Arthritis

Non-operative Treatment Options

- Non-operative treatments of ESAA should be considered prior to perusing surgical treatments.

- Current literature to support most of these non-operative treatments for ankle arthritis is of lesser quality with most being level IV papers.

- There is a need for a systematic review of the current literature to determine the level of evidence available to determine the grade of recommendation of non-operative treatment of ankle arthritis.

Operative Treatment Options

Ankle Arthrodesis

- Currently, the most accepted surgical treatment for ESAA is ankle arthrodesis.

- There exists ample evidence in the literature ranging from level I to IV studies to support a grade A recommendation (good evidence with consistent findings from Level I studies) or at least a grade B recommendation (fair evidence with consistent Level II or III studies) for the use of ankle arthrodesis in treatment of ESAA.

- In a recent systematic review of the literature Haddad et al examined 39 papers (1262 patients) on ankle arthrodesis for treatment of ESAA that ranged from Level I to Level IV evidence.

- Recently, ankle arthrodesis has been shown to be associated with arthritic changes in the ipsilateral tarsometatarsal and subtalar joints. Several Level III long-term studies demonstrated a high incidence of ipsilateral hindfoot arthritis following ankle arthrodesis, particularly of the subtalar joint.
• It can be concluded that long-term follow up of patients with ankle arthritis and/or ankle arthrodesis have a high incidence of ipsilateral hindfoot arthritis with the subtalar joint most commonly affected.

**Ankle Arthroplasty**

• Shortcomings of ankle arthrodesis such as increased rates of ipsilateral periarticular arthritis and possible long term amputation has cast doubt on the success of ankle arthrodesis for treatment of ESAA.

• Further, newer second and third generation TAA prostheses have shown positive short and medium term results in North America and Europe 12-15.

• The intermediate outcomes for the treatment of ESAA with TAA are actually superior to that of ankle arthrodesis. This is in part due to the fact that outcome studies on ankle arthroplasty are more recent and still only include intermediate term follow-up. What are lacking are comparative prospective studies and long term outcomes.

• In Haddad et al’s 5 review of the intermediate term outcomes for the use of TAA for treatment of ESAA 10 papers (852 patients) were identified that provided mainly Level II to Level IV evidence.

• Further, the complications rate was acceptable with a revision rate of 7% and 1% amputation rate.

• Another review more focused on survival and complications rates of TAA 16 examined 20 studies on the short and intermediate outcomes from a 10 year time period (1997-2007) with a sample size of at least 25 patients receiving TAA for treatment of ESAA. The rate of failed TAA reported in this review ranged from 1.3 to 32.3% with an overall mean of 12.4% failure at 64 months.

• In summary the literature supports TAA for treatment of ESAA with respect to efficacy and safety for intermediate term follow up with level II to IV evidence in favor of a grade B recommendation (fair evidence with consistent Level II or III studies).

**Ankle Distraction Arthroplasty**

• A review of the literature has revealed eleven papers, seven of which were expert opinion 8,17-22. Three 23-25 of the four remaining studies were level IV studies.

• The only level II study by Marijnissen et al 26 reported significant clinical benefit in three-fourths of the 57 patients studied. Interestingly, a subset of 17 patients that were randomized showed joint distraction to have significantly better results than debridement.

• While this treatment holds promise, especially in younger individuals data supporting a successful outcome are limited. There is a need for evidenced based literature that should be provided by surgeons with advanced training in external fixation procedures.

**Evidence Based Recommendation for treatment of Ankle Arthritis**

• Evidence from the past 11 years has been of much improved quality compared with publications from the preceding 3 decades.

• Both AA and TAA may be assigned a grade B recommendation (Fair evidence, Level II or III studies with consistent findings) for the surgical treatment of end stage ankle arthritis.
Analysis of the evidence suggests the possibility that equivalence in the outcomes of AA and TAA procedures, with both yielding satisfactory outcomes, but it is not yet known if it will in future fully replace AA.

Clearly more level I RCT’s directly comparing the outcomes of TAA and AA are needed to make any recommendations on which procedure is superior.

Summary

ESAA is a growing problem that has dramatic negative effects on HRQOL.

Once non operative treatment options have failed surgical techniques with evidence based literature support such as ankle arthrodesis and TAA should be considered.

Other surgical techniques such as distraction transplantation should be done in the confines of well designed studies in the hands of orthopaedic surgeons with advanced training.

Future studies should include well designed clinical and biomechanical studies that allow us to identify the most important surgical procedures and patient characteristics to provide optimal treatment of ESAA.

References

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