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Roundtable Discussion: Ankle Arthritis

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Roundtable Discussion

Ankle Arthritis

What are the most common causes for ankle arthritis that you see (rheumatoid, degenerative, trauma)?

Berlet: In frequency seen in elective practice is posttraumatic, degenerative, and rheumatoid. The posttraumatic arthritic patients are arguably the most challenging as they will frequently present with a soft tissue component to their injury.

DiDomenico: The most common form of ankle arthritis seen is posttraumatic arthritis. This is followed by rheumatoid arthritis. Degenerative arthritis in the ankle is very unusual to see.

Panchbhavi: In my practice, the most common cause for ankle arthritis in younger individuals is following trauma. In older folks, it is usually degenerative, and I see rheumatoid affecting the ankle less frequently.

Steck: By far the most common ankle arthritis that I see is posttraumatic. I also see a fair amount of rheumatoid arthritis. Primary degenerative joint disease of the ankle joint is pretty unusual, however arthritis after chronic ankle sprains that have been neglected is not uncommon and most likely responsible for most of the degenerative cases that I see.

What types of conservative treatment have you used successfully?

Berlet: Nonoperative care is beneficial in almost all cases initially. Patients frequently present when they are at their wit's end with pain. It is important to control the pain, at least temporarily,

so an informed decision can be made about longer term strategies for their arthritis. Nonoperative care that has been helpful in my practice includes cortisone injections, AFO braces, and oral anti-inflammatories. Visco supplementation has a potential role but has been limited by insurance coverage to date.

Glucosamine and supplements may benefit some patients, although the scientific data supporting their use are limited.

DiDomenico: Successful conservative care is very dependent upon the stage of the arthritis and the patients' age and motivation level. Conservative modalities range from nonsteroid anti-inflammatory drugs (NSAIDs), physical therapy, corticosteroid injections, and braces.

Panchbhavi: In my opinion, a combination of different conservative methods work better than any single method. NSAIDs/ankle supports/shoe inserts, and modifications are the measures that I institute concurrently with reasonable success. Ankle supports of various kinds are available for use, depending on the degree of stability they afford to the ankle, the extent of degeneration, and/or patient expectations and demands. A variety is available off the shelf with or without a prescription, and some can be molded. I usually start off with off-the-shelf ones and move to the molded ones if symptoms are not adequately controlled. In the most demanding of cases, use of an Arizona-type leather molded ankle lace-up brace along with a rocker sole and an ankle-high boot have worked the best.

Steck: In addition to standard non-operative care (NSAIDs/glucosamine, OTC

Each issue, we ask 4 different practitioners how they treat a certain condition. This month's topic is ankle arthritis, and our participants are **Gregory C. Berlet, MD**, Chief Section of Foot and Ankle and Clinical Assistant Professor, Ohio State University Department of Orthopedics; **Lawrence A. DiDomenico, DPM, FACFAS**, Director, Reconstructive Rearfoot & Ankle Surgical Fellowship, Ankle & Foot Care Centers, Ohio College of Podiatric Medicine; **Vinod K. Panchbhavi, MD, FRCS**, Assistant Professor, Chief, Foot & Ankle Division, Program Director, Foot & Ankle Fellowship, Department of Orthopaedics, University of Texas Medical Branch; and **Jerome K. Steck, DPM, FACFAS**, Southern Arizona Orthopedics, Assistant Clinical Professor of Surgery, University of Arizona.

bracing, cortisone) I think custom bracing has been fairly successful, especially with patella tendon-bearing (PTB) braces. These are quite cumbersome, however, and can be a deterrent from people wearing them. Men are much more likely to wear these than women for cosmetic reasons. Certainly this is a step that I take and at least talk about with the patient before surgical management is performed.

Describe your different surgical options according to the degree of arthritis.

Berlet: The operative options evolve with patients' pain and disability.

Imaging studies do not always correlate with the functional impairment and should be considered as only one factor in determining appropriate intervention.

A well-positioned ankle fusion is a very successful operation for pain relief, albeit at a functional cost. For many patients, this will represent the most predictable technique for pain relief, return to function, and gainful employment.

Joint-sparing approaches enjoy the benefit of a higher functional activity level, but with the risk of later operations being necessary.

For a well-aligned ankle with synovitis and mild arthritis, an arthroscopic debridement can be very successful. The outcomes following arthroscopic ankle debridement for arthritis mimics the experience of the knee—it is a temporizing procedure that is effective in controlling discomfort for the correct patient.

Malalignment with asymmetric joint wear may respond to realignment osteotomy coupled with an arthroscopic debridement. The malalignment falls into 3 large groups: (1) traumatic medial ligamentous injury with joint subluxation (deltoid ligament), (2) chronic lateral ligamentous instability, and (3) malunion of tibial plafond fracture.

With medial instability, the ankle arthritis is lateral from an incongruous loading of the talus within the mortise. It may be associated with a syndesmotic diastasis. A joint-sparing approach to the ankle includes osteotomies of the calcaneus to shift the calcaneal tuberosity medially and reconstruction of the medial soft tissues (deltoid). This is often part of a staged approach with the consideration of total ankle arthroplasty as the second stage, provided a successful soft tissue balance was achieved in the first stage.

Chronic lateral ankle instability is usually associated with chronic peroneal tendon tears and a varus heel. The varus heel may be driven by the forefoot, as is seen in Charcot Marie Tooth disease. My experience is that we can control deformity up to 15 degrees of varus, but a comprehensive release and reconstruction is necessary. This includes a lateral ligament reconstruction using a nonanatomic teth-

ering technique, successful repair of the peroneal brevis tendon, lateralizing calcaneal osteotomy, and an intra-articular deltoid recession from the talar insertion. The success of the peroneal brevis repair with reestablishment of an active eversion force is paramount to the success of this joint-sparing approach. A successful reconstruction may be coupled with a total ankle arthroplasty when a successful balance has been achieved or ankle fusion if left with a painful residual varus.

With malunion tibial plafond, a realignment osteotomy (supramalleolar tibia opening wedge) is preferred as the first stage of a joint-sparing salvage.

Total ankle arthroplasty is a viable option with a well-balanced and aligned lower limb. Deformity correction is done through soft tissue balancing and osteotomies and not through the arthroplasty. I advocate minimal bone resections to facilitate revision or conversion to fusion if the index arthroplasty fails. Total ankle arthroplasty must be reserved for patients in later life as revisions become more likely after a decade of use and osteolysis will limit the success of these revisions. Total ankle arthroplasty must be approached with great respect by both the patient and surgeon and commits the surgeon to years of follow-up.

DiDomenico: There are several different surgical options for ankle arthritis. Patients who are experiencing ankle joint pain and are not responding to conservative modalities may choose to move forward with a more aggressive surgical treatment. For patients who have a mild degree of osteoarthritis and no malalignment, ankle arthroscopy often times will reduce symptoms for a significant amount of time. This is typically followed up with an aggressive physical therapy plan.

Those patients who suffer from a more moderate degree of ankle arthritis may benefit from an open arthrotomy/arthroplasty, especially if osteophytes are involved followed with an aggressive physical therapy plan.

Those patients who suffer from a severe degree of ankle arthritis may benefit from open arthrotomy and ankle arthrodiastasis. In my patient population, ankle

arthrodiastasis is used as a final effort in attempt to avoid procedures such as total ankle replacement or ankle arthrodesis. Unfortunately, ankle arthrodiastasis has only been successful in approximately 40% to 50% of my patient population on whom I have performed this procedure.

Those patients who suffer from severe ankle arthritis and have not responded to other treatment options are limited to choosing between total ankle replacement and ankle arthrodesis. In those patients who suffer from ankle arthritis and have malalignment—the malalignment must be addressed in all of the scenarios. Malalignment alone will cause pain. Prior to total ankle replacement, malalignment must be corrected otherwise the implant will most likely fail.

Panchbhavi: In early stages for focal problems such as osteophytes anteriorly or in the medial and lateral gutters, with localized and specific symptoms and signs, I try arthroscopic or mini open debridement. In addition, if there is a local mechanical malalignment, I will address that too, if necessary, by corrective osteotomy. I am still keeping an open mind about distraction arthroplasty. Of course, in advanced stages, arthrodesis is still a great option. I have started using Tornier ankle replacement in select patients.

Steck: I don't base my treatment on radiographic evaluation alone. I'd rather treat the patient's clinical symptoms. It is quite amazing that some patients who have significant arthritis on X-rays have minimal symptoms and vice versa. In other words, the amount or degree of arthritis that appears radiographically really doesn't direct my treatment protocol as far as surgical options are concerned. Surgical options are modified by degree of arthritis more with respect to soft tissue than with bone. If there is significant varus or valgus deformity/instability for instance and arthroplasty is considered, it is an absolute must that the joint be balanced either before or during arthroplasty. Failure to address this is lethal and quite complicated to

do correctly. These same issues must be addressed if joint sparing procedures are chosen as well.

Short of ankle replacement, what surgical treatments have worked best in your hand (vistraction, spur removal, cartilage replacement)?

Berlet: We had enjoyed good success with bulk fresh talar allografts for focal cartilage defects (OCD). These patients are not typically arthritic. The published results of fresh allografts for ankle arthritis have shown moderate results with a high complication rate. This is not recommended as a standard of care currently.

Best results are achieved with a cautious progression of treatment options, from bracing to minimally invasive debridement to definitive management, such as ankle fusion or ankle replacement.

DiDomenico: Again, based on the deformity and alignment issues, ankle arthrodesis has worked extremely well in patients with severe osteoarthritis/rheumatoid arthritis in the ankle. Short of ankle joint replacement, if the arthrodesis procedure is performed well, this appears to have the best long-term result with the most predictability.

Steck: I think spur removal and arthroscopy of the joint, so-called "clean out of the joint," plays a role and can be a temporizing measure short of joint destruction surgery. Certainly these minimally invasive or noninvasive techniques are preferable in my hands as opposed to more invasive techniques as a first line of treatment. Balancing an unstable joint can often take abnormal stress off the joint as well, for example a tibial or calcaneal osteotomy in an early arthritic ankle with a frontal plane deformity can be useful.

I do think that arthrodiastasis has a limited role. This seems to make sense to me and is most beneficial in patients with early arthritis with minimal or no deformity. However, I have not had good success with arthrodiastasis. Honestly, my biggest difficulty with joint distraction is

being able to tell a patient that they are going to be significantly better for a significant amount of time and it will be worth it to wear an external fixator for 4 to 6 weeks, or even longer, for really a minimal return. Certainly, people across the country tend to have different opinions on this and probably have better outcomes than I do. In my experience an arthroscopic "clean out" has just as good if not better outcomes than arthrodiastasis with much less intrusiveness into a patients life.

What has been your experience with ankle replacement and describe your patient selection in ankle-replacement surgery?

Berlet: Our experience with total ankle arthroplasty has been positive. I have been privileged to participate in the trials for the Buechal Pappas and STAR mobile bearing implants, as well as having experience with the fixed bearing implants Agility and Salto. The large majority of patients have enjoyed good pain relief and are pleased with their functional capacity.

The differences between arthroplasty and fusion are not as large as might be speculated. The Canadian Ankle Registry presented their data at the AOFAS Toronto meeting 2007 and showed similar functional and pain scores in ankle arthroplasty and fusion at 1 and 2 years follow-up.

The ideal patient is over age 60, which encourages a sedentary lifestyle. The alignment of the limb is normal with ligament integrity and a healthy soft tissue envelope. Although this ideal is difficult to control in all cases, a large deviation from these goals must be viewed with skepticism.

The ideal surgeon has experience with arthroplasty of other joints. This experience promotes respect for the challenges of arthroplasty and the complications of osteolysis and arthroplasty failure.

DiDomenico: My experience with ankle joint replacement has been very positive for me and my patients. Patient selection is extremely important in attempting to predict the outcomes for this procedure because not all patients with arthritic ankles exactly

fit into the "preferred selection criteria." The ideal patient for a total ankle replacement is typically older (retirement age), who is relatively thin and who is not involved with an occupation/activity that consists of high physical demand. Given that many patients do not exactly fit into this scenario, it is very important that the patients understand that the procedure is intended to improve function, decrease pain, and improve ankle joint range of motion. Based on the patient's medical condition, it is important that realistic expectations of the surgical outcome are provided to the patient.

Panchbhavi: I have tried a couple of different designs; I am very selective and offer it to patients over 60 after lot of discussion about the options. In carefully selected patients, ankle replacement has a place and can benefit our patients for at least some years. The more recent designs are more anatomic and likely have a better track record.

Steck: I believe that patient selection for this procedure is extremely important. I am very hesitant to put ankle replacements in patients who are young (less than 55 years old). Furthermore, patients who are extremely active and want to return to high-energy sports such as basketball, tennis, racquetball, and so on are poor candidates for ankle replacements and need an arthrodesis. Patients who have occupations that demand heavy lifting and strenuous activities are also poor candidates for arthroplasty. Typically, I believe the ideal candidate is at least 55 and more on the sedentary side and has minimal strenuous activity in their occupation and hobbies.

Also, I believe rheumatoid arthritic patients are very good candidates for ankle arthritis, regardless of age, and are probably the most happy patients after successful joint replacement surgery, in my experience. I believe that with proper patient selection and proper surgical technique, ankle replacement can give a long-lasting, good outcome with the end-point being no, or significantly reduced, pain in the ankle joint. Furthermore, ankle replacement reduces the chances

that the patient will have further hindfoot degenerative joint disease as time goes on, as opposed to ankle fusion.

This enthusiasm must be tempered with reality and arthroplasty must be approached with caution because failure both early and late is very difficult to manage. Infection is limb threatening at best.

There has been a lot of discussion about the learning curve for ankle replacement surgery, which I think is a real problem. It has been written that it takes 25 to 50 ankle replacement procedures to overcome the learning curve. In

my opinion, this is too high. I have come to the realization that the term *learning curve* is another way of saying we are hurting people and significantly disrupting their lives. I think it's mandatory for us to strive efficiently and quickly to help dampen the learning curve. This can be accomplished through better surgeon training and by continually improving instrumentation of the technique. The surgeon must be experienced with principles of total joint arthroplasty as well as seasoned in foot and ankle reconstruction. Having said that, once the learning

curve is weathered, ankle replacement is a viable alternative to ankle fusion in selected patients. In the *Journal of Bone and Joint Surgery* this past fall, Haddad et al¹ compared in meta-analysis form ankle arthroplasty and fusion. Ankle arthroplasty compared similarly in many areas but more data is still needed. **FAS**

Reference

1. Haddad SL, Coetzee JC, Estok R, et al. Intermediate and long-term outcomes of total ankle arthroplasty and ankle arthrodesis: a systematic review of the literature. *J Bone Joint Surg Am.* 2007;89:1899-1905.