PHYSICIAN RESOURCE CENTER

Ankle Arthritis

OVERVIEW

Ankle arthritis (i.e. tibiotalar arthritis) is a debilitating condition that causes pain along with decreased function and quality of life. While there is no cure for this pathology, in which the cartilage is progressively lost in the ankle joint, many recent discoveries, including total ankle replacement, seem to be paving the way for a brighter future for patients.

ANATOMY

The ankle joint is made up primarily of the tibia and the talus, but also includes the fibula. Its main function is to dorsiflex and plantar flex, although given the variable radii of curvature of the talus, external and internal rotation movement occurs as well. The bony anatomy provides stability through the joint. The lateral ankle ligaments, including the ATFL (anterior talofibular ligament) and the CFL (calcaneofibular ligament) as well as the deltoid ligament on the medial side impart stability as well. Injury to these ligaments may lead to deformity, further complicating the pathology present.

BIOMECHANICS

A substantial amount of force passes through this relatively small joint. In general, the ankle is able to dorsiflex and plantarflex about 50 degrees. The articular cartilage of the ankle has unique properties as well, which differ from those from other joints. It has a higher equilibrium modulus and dynamic stiffness as well as a lower hydraulic permeability.

PATHOGENESIS

Unlike hip or knee arthritis, the first and foremost cause of ankle arthritis is previous trauma. This can be in the form of either repeated sprains of the ankle, leading to chronic instability, or previous fracture of the tibial shaft, pilon, ankle joint, or talus. Approximately 80% of arthritis of the ankle occurs secondary to such conditions. Inflammatory arthritis, including entities such as rheumatoid arthritis, gout, and others make up for a less common percentage. Other conditions, including talar necrosis or an infection lead to even fewer cases. In all, it is rare to see idiopathic or primary osteoarthritis of the ankle.

CLINICAL PRESENTATION

Patients with ankle arthritis present with pain and swelling. In general, one should investigate for a history of trauma, particularly since the soft tissue complications after surgery are related to either previous injury or surgery. Patients should be asked about the history of an open fracture or postoperative infection. It is also important to note multiple sprains or fracture and whether patients have a feeling of instability in the ankle joint.

IMAGING STUDIES

Weightbearing radiographs of the ankle continue to provide the standard of care to assess ankle arthritis. Classic signs of arthritis include joint space narrowing (which may either be symmetric or asymmetric), spurs (either anterior or posterior), subchondral cysts (either in the talus or tibia), and deformity (either in the varus or valgus plane). Deformity of the tibia in the sagittal plane should be noted (i.e. recurvatum or procruvatum). It is also important to obtain weightbearing x-rays of the foot to assess for adjacent joint arthritis or deformity.

A CT scan can be particularly helpful to assess the bony anatomy and the presence and size of spurs and/or cysts. An MRI is perhaps less important, but can be used to better assess the specific nature and location of osteochondral defects.

TREATMENT

Nonoperative treatment represents the first line of therapy. Patients often regulate their own activities, but otherwise should be encouraged to carry out less impact activities in favor of bike, stationary bike, and swimming. Braces should be tried first. Steroids can be used in moderation and can be diagnostic, but tend not to last more than several months. Viscosupplementation has been controversial and probably at this point plays little role in treatment, particularly in advanced arthritis.

The gold standard of surgical treatment of advanced ankle arthritis has traditionally been to fuse the ankle. However, this overloads the other adjacent joints of the foot over time leading to arthritis. The ankle must be fused in an ideal position with slight hindfoot valgus, neutral dorsiflexion, and slight external rotation. There is a risk of nonunion after fusion. The arthrodesis can be carried out arthroscopically or with a mini-open approach if minimal deformity is present. With deformity, an anterior or lateral approach can be used, though the former may allow for future conversion to total ankle replacement. Fixation can include multiple screws and/or compression plates. In high-risk patients, including those with a history of infection or nonuion, an external fixator can be used.

Total ankle replacements are gaining increased promise. An ideal candidate is one that is 60 years or older, has good motion, and little deformity. A total ankle replacement preserves motion and gait better than a fusion. In general, however, there is a significant learning curve required

to perform these operations well. A total ankle replacement is ideal in patients with ipsilateral foot arthritis and/or bilateral ankle arthritis, in which a bilateral fusion would lead to very poor function. Contraindications are active infection, significant talar necrosis, or poor soft tissue envelope.

Finally, distraction arthroplasty with external fixator may be an option. Some studies have shown this to help increase joint space, creating fibrocartilage-type tissue. This can be particularly helpful in young patients in whom it is desirable to prolong the need either for a fusion or replacement.

CONCLUSION

In general, treatment of ankle arthritis continues to evolve. Promising total ankle implants have been designed whose results need to be followed over time and compared to one another. Fusion remains a viable alternative. The nature of posttraumatic arthritis makes this a more difficult joint to treat.

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