be corrected in more than 85% of cases when adjuvant soft tissue of TAR in deformed ankles, is that preoperative deformities could improve foot and ankle function.

osteotomies (SMO) are performed to realign the distal tibia and articular deformity using a larger intra-articular cut that is the use of additional operative procedures.

TAR in patients with more than 10 degrees of varus deformity with 48%, compared to 90% in the group with neutral alignment.

ankles with preoperative varus or valgus greater than 10 degrees the varus malalignment comes from. mechanical failure will follow regardless of where the location of ankle replacement is posttraumatic arthritis and this is frequently replacement, because the most common pathology leading to coronal plane deformity will eventually lead to failure of the implant, and/or leg. We have to assume that failure to correct coronal plane deformity leads to quicker failure if the varus malalignment comes from.

The purpose of this case presentation is to demonstrate the ability simultaneously treat both tibial and ankle deformities through a CT guided ankle replacement and external fixator bone transport software. We are unaware of any documentation of this surgical approach.

One of the most challenging issues that foot and ankle surgeons are whether to perform a joint-sparing or a joint-destructive procedure.1 This is especially challenging for patients with end-stage ankle arthritis. The decision challenge then becomes harder when faced with a significant deformity such as a varus or valgus deformity of the foot, ankle, and/or leg. We have to assume that failure to correct coronal plane deformity will eventually lead to failure of the ankle implant regardless of where the location of the variance malalignment comes from. DiDomenico et al. reported on 17 ankles with preoperative varus or valgus greater than 10 degrees in their series, and at 8 years, the survival rate of this group was 85%, compared to 98% in the group with neutral alignment.4 However, other researchers reported satisfactory results using TAR or patients with more than 10 degrees of varus deformity with the use of additional operative procedures.4

Generally in ankle replacement surgery, patients are not candidates for an extra-articular deformity using a larger intra-articular cut that is the use of additional operative procedures.4 Supramalleolar osteotomies (SMO) are performed to realign the distal tibia and improve foot and ankle function.1,5 SMOs can correct deformities in all planes. When performing the osteotomy, the goal is to create a planar deformity that will correct the deformity to restore abnormal ankle to close to normal as possible and to achieve the proper biomechanical function.1 Historically, the options for the osteotomy are a lateral closing wedge, medial opening wedge, or dome osteotomy.6 The general impression reviewing the literature reporting on outcomes of TAR in deformed ankles, is that preoperative deformities could not be included in more than 3 cases when adjuvant soft tissue procedures and osteotomies were performed.4 No cases have yet been reported in conjunction with bone transport external fixation and total joint replacement.

A 57 yr male presented with degenerative joint disease and right ankle pain for greater than 5 years. He experienced difficulty running and included Percocet and Ibuprofen. His surgical options included Total Ankle Replacement, 48% and ORIF of the leg, femur, and should from the MVA. He had NDA, was a 52 year old right knee and ankle motor vehicle accident (MVA). He had an end-stage DJD with limited range of motion of the ankle with a pain level of 8/10. He presented with severe long bony deformity and the remaining physical examination was otherwise unremarkable. The patient underwent a phase correction change with a Dynamic ankle instability. Total Ankle Replacement along with a tibial and lateral osteotomy

The patient had the tibial frame on for >120 days which was removed after adequate consolidation of the newly formed bone was appreciated on X-ray and CT evaluation. An open Achilles tendon lengthening with manipulation of the ankle under general anesthesia was placed in a fiberglass cast for approximately 4 weeks then transitioned into a fracture boot and given permission to weight bear with the aid of a brace. 4 months after the TAO, the patient had custom Patellar tendon bearing (PTB) ankle arthroplasty with a CT guided software allowing for gradual, calculated manipulation of bone growth. In similar fashion, total joint replacement, or arthroplasty, has improved similarly with the incorporation of CT guided software allowing for more precise and predictable outcomes.

Ideally, a tibial osteotomy is advocated toward prevention or treatment of early degenerative changes in the ankle. When the ankle arthritis has progressed, then surgical options include ankle arthrodesis versus arthroplasty. The motion of the ankle joint prevents a protective function for the remaining joints in the foot, which can develop arthritis because of increased stress of a fixed ankle. Supramalleolar osteotomies have been performed in primary one stage ankle arthroplasty and arthrodesis procedures and are performed to realign the distal tibia and improve foot and ankle function. With increasing availability of CT guided software allowing for gradual, calculated manipulation of bone growth, in similar fashion, total joint replacement, or arthroplasty, has improved similarly with the incorporation of CT guided software allowing for more precise and predictable outcomes. The authors think that implant will continue to the procedure of choice for selected patients who suffer from end-stage ankle arthritis. Combined total ankle arthroplasty and supramalleolar osteotomy lead to pain relief and significantly improved clinical outcomes in patients with end-stage ankle arthritis. We are able to correct the deformity of the distal tibia and achieve a well aligned proximal tibial surface when supramalleolar osteotomy was performed in conjunction with total ankle

Discussion

Ankle replacement in the presence of a varus deformity is an evolving field. Lower limb deformity correction through bone transport has advanced significantly with the incorporation of CT guided software allowing for gradual, calculated manipulation of bone growth. In similar fashion, total joint replacement, or arthroplasty, has improved similarly with the incorporation of CT guided software allowing for more precise and predictable outcomes.

Likewise, a tibial osteotomy is advocated toward prevention or treatment of early degenerative changes in the ankle. When the ankle arthritis has progressed, then surgical options include ankle arthrodesis versus arthroplasty. The motion of the ankle joint prevents a protective function for the remaining joints in the foot, which can develop arthritis because of increased stress of a fixed ankle. Supramalleolar osteotomies have been performed in primary one stage ankle arthroplasty and arthrodesis procedures and are performed to realign the distal tibia and improve foot and ankle function. With increasing availability of CT guided software allowing for gradual, calculated manipulation of bone growth, in similar fashion, total joint replacement, or arthroplasty, has improved similarly with the incorporation of CT guided software allowing for more precise and predictable outcomes. The authors think that implant will continue to the procedure of choice for selected patients who suffer from end-stage ankle arthritis. Combined total ankle arthroplasty and supramalleolar osteotomy lead to pain relief and significantly improved clinical outcomes in patients with end-stage ankle arthritis. We are able to correct the deformity of the distal tibia and achieve a well aligned proximal tibial surface when supramalleolar osteotomy was performed in conjunction with total ankle

References

6. Rymanam DB, Myerson MS, Total ankle arthroplasty management of varus deformity of the ankle. Foot Ankle Int. 2003 Mar;24(3):233-34.