The patient was a 66 year old female with past medical history significant for HTN, HLD, OA, Anxiety, Asthma and morbid obesity who is 2 years status-post 3 piece mobile bearing TAR (Total Ankle Replacement) surgery to her right ankle with tibiotalar arthroplasties lengthening. Her initial procedure was performed to address severe post-traumatic arthritis to her right ankle after suffering an ankle fracture years prior. 2 months after her initial total ankle replacement the patient fell at home fracturing her medial malleolus. She underwent ORIF of this fracture with the primary author without complication. At the time of the medial malleolar ORIF the TAR was appreciated to be in correct alignment without migration from the original implanted position.

The patient remained the medial malleolus fracture without issue through progression to full weight bearing she developed pain to both her ankle and subtalar joints. Serial CT imaging was obtained showing aseous progressive cystic changes to the subtalar joint, cystic changes surrounding the talus, and increased tibiotalar distance. A bone scan revealed increased uptake to the talus and ankle joint margins. The patient failed exhaustive conservative treatment including physical therapy, bracing and corticosteroid injection therapy. After 19 months without resolution of symptoms, and being unable to return to pre-operative levels of daily activity, the patient elected to pursue fusion to TFC (Tibiocalcaneal arthroplasty).

For the purpose of custom formation, the patient underwent a CT was obtained and measurements were collected for the creation of a custom cage with a central opening to allow for the passage of a TFC LM (intramedullary rod).

Operative Technique

Pre-operatively the patient underwent a right popliteal and saphenous nerve block. The patient was transported to the operating room and placed on the operating room table in a secure supine position and general endotracheal anesthesia was administered per the anesthesiologist. A well-padded tibial tourniquet was applied and a formal prep and drape of the right lower extremity was completed with ChloraPrep.

Attention was initially directed medially. A linear incision was made overlying the previous ORIF of the medial malleolus and the internal fixation was removed in total without incident. This incision was closed in anatomical layers and attention was redirected to the anterior ankle joint.

The anterior ankle arthroplasties were removed and a 10 mm partial thickness anterior deltoid flap was advanced over the talus and ankle joint. The tibiotalar arthroplasties were removed and an ankle arthroscopy of the talus and ankle joint was performed. Multiple factors need to be considered for successful management of a failed TAR, including loss of bone stock, malalignment, fractures or erosions of malunion, condition of soft tissues, degree of degeneration of articular cartilage, and the likelihood of obtaining sufficient bone stock for failed TAR must be aimed towards restoration of length, limb alignment, stability, and function. Failure to obtain sufficient bone stock due to the preservation of arthroplasties range of motion, but it also carries with it increased risks of complications and early failure in comparison to primary TAR. Daniels et al. reported persistent pain in 40% of patients undergoing revision TAR following failed TAR confirmed to persistent pain in 20% of patients undergoing arthrodesis arthroplasties (1). In addition, reluctance from the FDA for approval of long-steromedic strains has considerably narrowed surgical options in cases of talar collapse (4).

Although ankle arthrodesis is a more reliable means of treatment for failed TAR and provides more predictable outcomes in comparison to revision arthroplasty, successful surgical arthrodesis is more difficult to achieve by primary arthrodesis due to shortening of limb and difficulties with fusion due to variable vascular status of talus and or presence of talonavicular joint fusion (9). The high incidence of revision decision-making for surgery of failed TARs are the extent of large bone deficit, active infection, or poor vascular supply to the talus. In addition it is understandable due to the advantage of preservation ankle range of motion, however, it is also included with it increased risks of complications and early failure in comparison to primary TAR. Daniels et al. reported persistent pain in 40% of patients undergoing revision TAR following failed TAR confirmed to persistent pain in 20% of patients undergoing arthrodesis arthroplasties (1).

In addition, reluctance from the FDA for approval of long-steromedic strains has considerably narrowed surgical options in cases of talar collapse (9).

The patient was admitted to observation per PACU protocol. She was discharged to a skilled nursing facility post-day 2 once pain was controlled on Oral analgesics. She remained strictly non-weight bearing to the operative extremity for 12 weeks. Skin staples were removed post op-week 3 and capillary fill time remained immediately to the incision site and distal digits. No signs of surgical infection were appreciated, and the soft tissues healed without incident. She was then transitioned into a short leg cast for 12 weeks. At post op-week 12 she progressed to partial weight bearing and continued on cast for 5 additional weeks. Postoperative imaging demonstrated lack of any tibiotalocalcaneal arthroplasty is indicated (9).