A Unique Technique for Salvaging a Total Ankle Replacement after Aseptic Loosening of the Talar Component: A Case Report

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Statement of Purpose:

Patients with severe ankle arthritis have limited options for treatment. Historically, ankle arthrodesis has been the procedure of choice however, total ankle replacements (TAR) have become increasingly popular. TARs can provide improved joint range of motion but also have a high incidence of failure, more so than hip or knee replacements, creating the need for either revision, conversion to an arthrodesis, or amputation (1,2). The purpose of this poster is to portray a salvage technique for a patient with extensive foot and ankle surgical history after slippage and eventual failure of the talar component of her TAR.

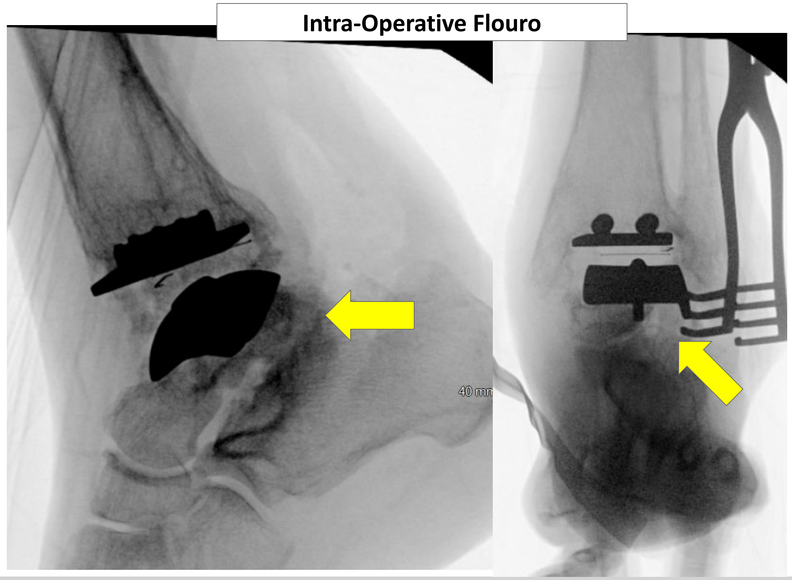
Literature Review:

The annual volume of TARs being performed has increased tremendously within the past 15 years (4). As more individuals are receiving this option for end stage ankle arthritis, long term follow- up has discovered modes of failure to be a common complication. Aseptic loosening is one mode and can involve the mobility of either the talar and/or tibial components (3). There are multiple surgical options in literature for TAR failure. A systematic review by Jennison et al. reports that 26.9% of revision ankle arthroplasty required further surgical intervention. 13% underwent a conversion to ankle arthrodesis (1). Of those patients, 8% of the conversions to arthrodesis failed and 14.4% of patients who underwent revisional TAR procedures failed (1).

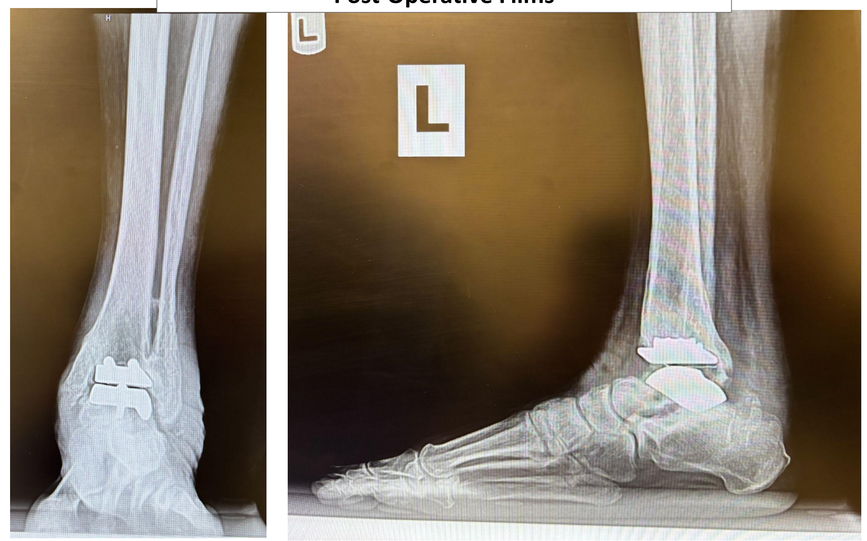
When determining the revisional procedure of choice, long term outcomes are an important assessment. Kamrad et al. found within a study utilizing *The Sweden Ankle Registry* that the revisional TAR 10-year survival rate was 55% (2). Performing a revisional TAR and replacing either or both components creates a higher risk for complications and decreased patient satisfaction (1). These unknowns with revisional procedures allow for ankle arthrodesis to become the procedure of choice, as the ankle is usually deemed no longer salvageable.

Pre-Operative CT

Intra-Operative Flouro



Post-Operative Films



Case Report and Surgical Procedural Steps:

A 59-year-old female with extensive foot and ankle history presented with concern for loosening of the talar component of her TAR. She also previously suffered a 5th digit fracture as well as fibular and talus fracture due to accidental injuries. Her main complaint was pain when ambulating, localized to the hindfoot. Advanced imaging was obtained which did confirm movement of the talar component with an intact tibial component. The talar component was depressed posteriorly and laterally leaving behind a void. Many options were given to the patient but ultimately it was decided to undergo realignment of the talar component with subsequent subtalar joint arthrodesis (September of 2023). The patient did not want to lose motion to her ankle joint or undergo a repeat intensive surgery.

1. Calcaneal Autograft Harvest

Once the posterior superior portion of the calcaneus was visualized, a trapezoidal wedge was cut measuring 1.5 cm x 1.5 cm x 0.75 cm. The graft incorporated a medial and dorsal cortex leaving the lateral cortex intact with the calcaneus. Calcaneal void was filled with tricalcium phosphate and bone chips.

2. Distraction Arthrodesis of Subtalar Joint (STJ) with Augmentation of Autograft

The STJ was prepped in an appropriate fashion. Once all cartilage and soft tissues were removed, subchondral fenestration of the joint was performed for further osteogenic cell recruitment.

3. Application of the Talar Component Graft

The calcaneal graft was placed in the lateral talar void to help realign the talar component. The ankle was examined through full range of motion and the graft remained intact. No further hardware was needed as appropriate position was obtained on fluoroscopy and the graft again was stable and intact under the talar component.

Past Surgical History:

01/ 2015:
- Total Ankle Replacement

01/ 2023:
- Resection of pseudoarthrosis of the distal fibula with removal distal fibular hardware
- arthrotomy of the lateral ankle
- repair with bone graft to the lateral wall of the talus

Results:

Follow up revealed that our patient is living safely at home and can ambulate unaided in normal shoe gear, able to complete her activities of daily living without incident. Her pain is well controlled. The patient has retained range of motion in her ankle joint which was her greatest concern prior to repeat intervention. To the author's knowledge, the patient has not had any incidental injuries or further complications to her lower extremities.

Discussion:

Aseptic loosening is the most common etiology of TAR failure and indication for revisional procedures (3). Failure can further be divided into 3 subcategories: tibial tray, talar component, or both with the most common in literature being loosening of the talar component (5). Our case report is consistent with this literature. Revisional TAR can be a viable salvage option (5), however, it is not likely congruous with a patient who desired a TAR as an index procedure. To ameliorate the most common subcategory of a prominent etiology of TAR failure, some authors suggest performing a total talus replacement concurrent with the TAR (6). This is not always a viable financial option, which makes our procedure a practical and reproducible approach. This approach also granted the patient a shorter anesthesia and recovery time.

Level of Evidence: V

References:

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