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Case report

# Conversion of ankle autofusion to total ankle replacement using the Salto XT revision prosthesis

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ABSTRACT

Few reports in the literature have described the conversion of a surgically fused ankle to a total ankle replacement. The takedown of an autofusion and conversion to a prosthesis has not been described. We report the case of a patient with severe rheumatoid arthritis with an ankle autofusion fixed in equinus and severe talonavicular arthritis that was converted to ankle replacement using the Salto XT revision system. We describe the reasons why the decision was made to perform total ankle arthroplasty while concomitantly fusing the talonavicular joint, and discuss the rationale of the various surgical treatment options considered. We describe the clinical and radiographic outcomes achieved in this case. At 12 months post-operatively the patient reported significant reduction of pain, increased FAOS scores and had increased ankle range of motion.



## 1. Introduction

Rheumatoid arthritis can result in severe foot and ankle joint pain [1]. Ankle autofusion is uncommon in inflammatory arthropathy, and though it may lead to decreased ankle pain, increased stress at adjacent hindfoot joints may exacerbate pre-existing arthritis. This may be compounded by an autofusion that heals in equinus. Preserving motion at the ankle with a total ankle arthroplasty has demonstrated a lower incidence of progression of adjacent joint arthritis when compared to ankle arthrodesis [2]. There have been previous reports of conversion of painful ankle arthrodesis to total ankle arthroplasty, with the majority of patients experiencing improvement in pain, function and range of motion [3,4]. To the authors' knowledge however, there have been no reported cases in the literature of the takedown of an ankle autofusion from rheumatoid arthritis and conversion to total ankle arthroplasty with the use of the Salto XT revision prosthesis (Tornier US, Edina, MN) revision implant system. The purpose of this report is to present the case of a patient with rheumatoid arthritis who presented with an ankle autofusion in equinus and concomitant severe talonavicular arthritis that was treated with an ankle arthroplasty and talonavicular arthrodesis.

### 1.1. Case report

A 70-year-old female with a medical history significant for rheumatoid arthritis presented with right ankle and foot pain, which significantly affected her ability to walk. She was diagnosed with rheumatoid arthritis 17 years prior to her presentation, and had demonstrated relative remission of rheumatoid arthritis symptoms except for progressive pain in her right ankle. She reported the inability to place her foot flat on the ground, and had adapted by wearing high heeled shoes to avoid walking on her toes. In addition, she reported pain at the posterior aspect of her ipsilateral knee when walking barefoot or in a flat shoe.

On exam, she stood with physiologic hindfoot valgus, a stiff ankle equinus contracture, and knee hyperextension in order to place her foot on the ground. Her forefoot alignment appeared otherwise normal and she had better than expected range of motion in the triple joint complex, albeit with crepitus. She had severe pain to palpation focused at the dorsal aspect of the talonavicular joint. Her posterior tibial and dorsalis pulses were both 2+ and her strength was 5/5 throughout with the exception of plantar flexion strength which could not be assessed due to the ankle autofusion.

Weightbearing radiographs of the foot and ankle demonstrated an ankle autofusion positioned in about 15° of equinus. In addition, there were findings of severe talonavicular and, to a lesser extent, calcaneocuboid and subtalar joint arthritis consistent with the sequelae of rheumatoid arthritis (Fig. 1). Injection of corticosteroid and anesthetic into the talonavicular joint resulted in near-complete

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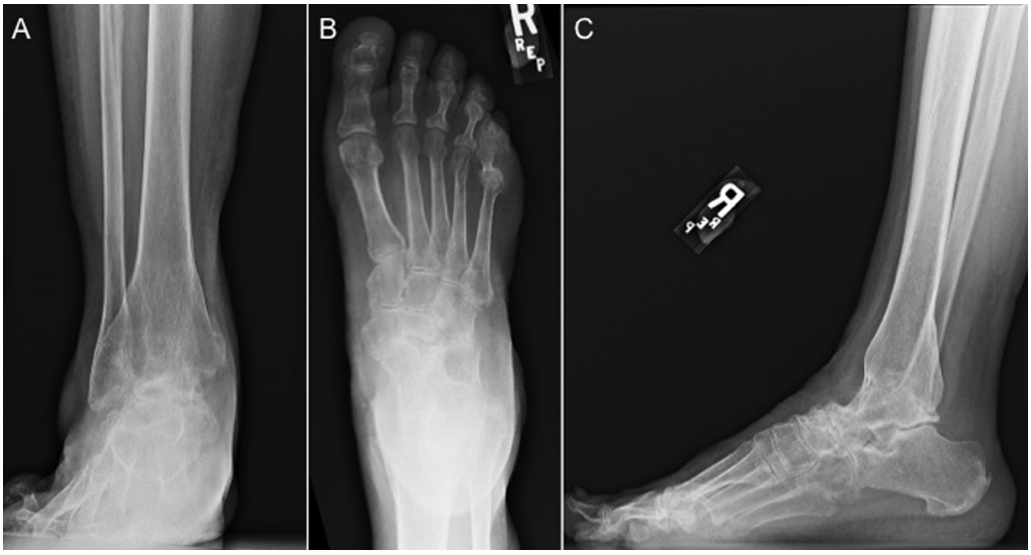


**Fig. 1.** Weightbearing radiographs including (A) anteroposterior ankle, (B) anteroposterior foot, and (C) lateral foot and ankle views demonstrate ankle autofusion with an equinus position of the foot. Severe talonavicular and lesser calcaneocuboid arthritis are also seen.

pain relief. A weightbearing, multiplanar axial imaging scan (3d-MP) also confirmed autofusion of the ankle joint in equinus, severe talonavicular joint arthritis, and moderate to severe calcaneocuboid and subtalar joint arthritis (Fig. 2).

The patient was not taking any disease-modifying antirheumatic drugs (DMARD) that needed to be discontinued in the perioperative period. She was on methotrexate, vitamin D and folic acid, which were not stopped for surgery.

### *1.2. Surgical technique*

The patient was positioned in the supine position with an ipsilateral wedge pillow underneath the leg, a bump underneath the hip to place the foot in a neutral position, and a contralateral hip post. Anesthesia consisted of a combined spinal-epidural anesthetic with sedation, and a popliteal and saphenous peripheral nerve block for postoperative pain control.

An anterior incision was then utilized to expose both the ankle and talonavicular joints and care was taken to protect the superficial peroneal nerve and the deep neurovascular bundle. The level of the ankle joint and the medial and lateral gutters were identified clinically and radiographically with an intraoperative image intensifier and freed using a combination of osteotomes, reciprocating saw, and a long thin rongeur (Fig. 3).

A pin was placed through an incision over the tibial tubercle and an osteotome was placed in the medial gutter to guide rotation of the tibial cut. The extramedullary guide was then pinned into place, and adjusted for correct orientation in rotation, medial-to-lateral translation, varus/valgus angulation, and sagittal slope. The tibia was sized for a size 1 tibial cutting guide which was attached

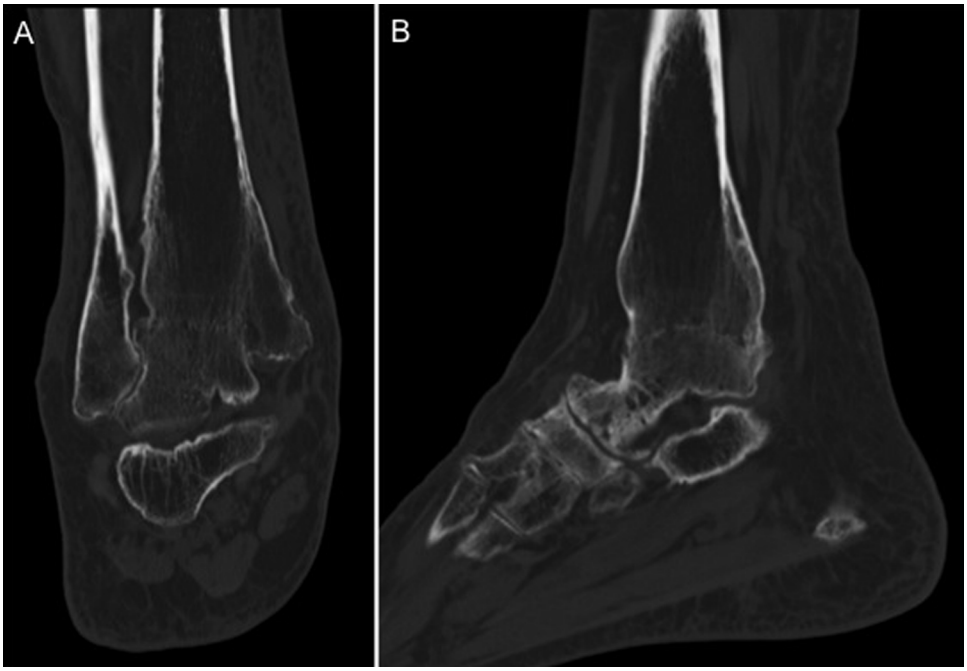


**Fig. 2.** Three dimensional, weightbearing multiplanar axial imaging (3d-MP) scan; (A) coronal and (B) sagittal images demonstrate autofusion of the ankle and severe talonavicular joint arthritis.