

Revision of Deformed Distal Tibia Non-Union to TibioTaloCalcaneal Arthrodesis

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INTRODUCTION

A 69-year-old patient presented to my office for treatment of non-displaced distal tibial and fibular fractures with delayed union.

The patient was weight-bearing in a removable cast, with gradual collapse at the non-union site.

Clinical history of triple arthrodesis for bilateral clubfoot was present.

Upon radiologic examination, it was determined that a TTC fusion with the In2Bones TriWay[®] TTC Nail and removal of retained hardware was the appropriate procedure (**Figures 1 & 2**).

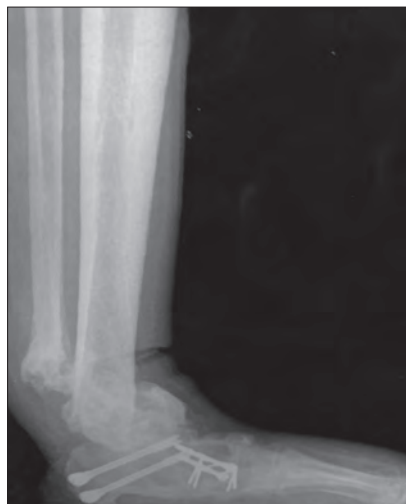


Figure 1. Lateral pre-op X-ray



Figure 2. AP pre-op X-ray

PROCEDURE

The patient was placed in the lateral position for the first of three sequential procedures.

Attention was directed to the posterior aspect of the left foot to remove the painful retained hardware, with an approximately three-millimeter incision, which was deepened to the level of the posterior aspect of the heel. The screw heads were identified in the calcaneus and the hardware was removed in total.

Following the removal of the calcaneal screws, an incision was made over the distal fibula. The fibula was transected and the ankle joint was debrided of all cartilaginous surfaces. Subchondral bone was heavily fenestrated until subchondral bleeding was observed.

The non-union site was identified and debrided of all non-viable tissue. Bone graft was packed at the non-union and ankle arthrodesis sites.

The deformity was corrected and retained in position with the 3.2 x 350mm guide wire for the In2Bones TriWay TTC Nail. The position of the arthrodesis site and the overall alignment of the ankle and hindfoot were evaluated and confirmed under fluoroscopy.

Using the provided soft tissue protector and 7.0mm cannulated drill from the TriWay System, initial preparation for the TTC nail was performed. This step was followed by reaming with a 14.0mm reamer to the level of the tibia.

The tibial canal was then prepared using cannulated flexible reamers sequentially and flushed with saline.

A 10x160mm TriWay TTC Nail was placed across the non-union site, maintaining the appropriate distal alignment.

Using the TriWay TTC Targeting Guide, the distal holes were prepared.

A 5.0mm TriWay Cotter Screw was placed through the nail in the



TriWay[®] TTC Nail

calcaneus. Subtalar compression was achieved with a 6.5mm IBS[®] Screw placed through the nail and across the subtalar joint.

Manual compression was performed to compress the tibiotalar joint.

The targeting guide was then pivoted laterally to allow for placement of the proximal tibia screws through the guide.

The two proximal tibia holes were prepared and filled with 5.0mm TriWay Cotter Screws.

Fluoroscopy was utilized to evaluate the position of the



TriWay[®] TTC Nail with Targeting Jig Assembly



Figure 3. Final lateral X-ray



Figure 4. Final AP X-ray



Figure 5. Three-month post-op lateral X-ray

arthrodesis (**Figures 3 & 4**).

The wound was irrigated and closed in a normal fashion.

POST-OPERATIVE COURSE

Following the operation, the patient was placed in a well-padded sugar-tong splint with instructions to remain non-weight-bearing until the 14-day follow-up visit.

The patient was transitioned to a short leg non-weight-bearing cast at fourteen days post-op, then to a removable cast boot at six-weeks with

limited weight-bearing.

RESULTS

The radiographic evaluation at the three-month post-op visit showed alignment was maintained at neutral (**Figures 5 & 6**).

Additional clinical examination revealed minimal swelling, and incision sites were healing as expected (**Figures 7 & 8**).

DISCUSSION

The TriWay TibioTaloCalcaneal

Arthrodesis System features a solid nail construct with multi-planar fixation. With a side-specific design, three diameters, and three lengths, this system provides an array of options to fit each patient's anatomy.

The seven-degree posterior offset of the nail to the calcaneocuboid joint line is designed to provide increased bone purchase in the calcaneus, with bone preparation completed using a straight nail philosophy and flexible reamers.



Figure 6. Three-month post-op AP X-ray



Figure 7. Three-month post-op clinical image



Figure 8. Three-month post-op clinical image