

Tibiotalar Arthrodesis Using Antegrade Intramedullary Tibial Nails: A Salvage Procedure

*Yusuf O. Hasan, MD; Jonathan Bourget-Murray, MD; Jowan G. Penn-Barwell;
Robert Christopher Handley, FRCS
John Radcliffe Hospital, Oxford University Hospitals, Oxford, United Kingdom*

Purpose: This study describes the clinical outcomes and complication rate of tibiotalar arthrodesis (TTA) performed using a tibia intramedullary nail (IMN). Retrograde tibiotalocalcaneal (TTC) arthrodesis with a hindfoot nail has become an accepted technique for distal tibia fractures in high-risk, low-demand patients. This procedure is an alternative to TTC arthrodesis that preserves the accommodative motion of the subtalar joint.

Methods: A retrospective review was performed to identify patients who underwent TTA using a tibial IMN at a Level I major trauma center. Patient demographics, comorbidities, and 30-day complications were collected. Fractures were classified using the OTA / AO and modified Gustilo Anderson classification.

Results: 17 underwent TTA with a tibial IMN. The median patient age was 79 years (range, 51-102) with a male:female ratio of 2:15. Six patients had an open fracture at presentation. Average time to TTA was 37 days (range, 1-107). Four patients died from causes unrelated to surgery. One patient developed a deep surgical site infection within 30 days of surgery and ultimately required further surgery. At final follow-up, 16 patients reported good functional outcomes and have been able to return to baseline activity.

Conclusion: This study describes the clinical outcomes following TTA using a tibia IMN at our institution. This technique may serve as a salvage procedure with indications similar to those for TTC arthrodesis in lower-demand patients including complex distal tibial fractures and comminuted intra-articular fractures, especially for patients with vulnerable soft tissues. The added benefits of this technique over TTC arthrodesis is in preservation of the subtalar joint and motion thus avoiding the creation of a rigid lever arm from the calcaneus, terminating in the mid-tibia, and therefore risking periprosthetic fracture. The objective of this minimally invasive approach is to avoid disturbing soft tissue and bone vascularity, and thus minimizing postoperative complication.