

## **Tibiototalcalcaneal Nailing Allows Early Weightbearing Without Increased Complication Risk in Unstable Geriatric Malleolar Ankle Fractures**

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**INTRODUCTION:** Geriatric ankle fractures are common injuries that pose a difficult clinical problem for orthopaedic surgeons, due medical frailty and poor bone quality. Patients with unstable ankle fractures may need a prolonged period of non-weightbearing after traditional fracture fixation, but this may increase risk of sarcopenia, medical complications, or functional decline in the already frail geriatric population. More recently, tibiototalcalcaneal nail (TTC) constructs have been employed in comorbid populations for acute ankle fracture fixation to allow for early weightbearing and reduce construct failure rates. The current study investigates complications and discharge disposition in geriatric patients who undergo unstable ankle fracture fixation with both conventional constructs and TTC fixation.

**METHODS:** Adult patients over 60 years of age who underwent operative fixation of malleolar ankle fractures with evidence of tibiotalar instability were identified through a retrospective review at an academic trauma practice. Tibial plafond fractures or patients with less than 6 weeks of radiographic follow-up were excluded. Data was reviewed for complications, reoperations, and discharge disposition. Multivariate logistic regression and propensity score matched analyses were employed to compare complication rates and discharge disposition between cohorts.

**RESULTS:** 130 geriatric patients underwent operative fixation with TTC (39) or traditional (91) constructs, with mean follow-up of 34 weeks. Patients who underwent TTC nailing were likely to be older, have higher Charleston Comorbidity Index (CCI), have neuropathy, and have trimalleolar ankle fractures. Patients with TTC nails (1.6wks) were allowed to weightbear sooner than conventional constructs (9.8wks) ( $p < 0.001$ ). Multivariate regression analysis and matched cohorts controlling for CCI, neuropathy, and smoking status found no difference in reoperation, implant failure, or deep infection rates between TTC and conventional fixation. Construct selection had no effect on discharge disposition for fractures treated during an inpatient admission.

**DISCUSSION AND CONCLUSION:** In geriatric patients with higher levels of comorbidity and frailty, TTC fixation of unstable malleolar ankle fractures is comparable in risk profile to conventional fixation, and can safely be employed to allow earlier weightbearing. Despite this, TTC fixation may not have a significant influence on improving rates of home discharge in the elderly.