Hindfoot Nailing without Joint Preparation for Fragility Ankle Fractures is a Safe Alternative to Open Reduction and Internal Fixation, however with Inferior Patient-Reported Outcomes

Dan Prat, Isaac Zachi Baran[1], Snir Balziano[1]
[1]Orthopaedic Surgery

INTRODUCTION:
In the context of the aging population, the incidence of fragility fractures of the ankle is increasing. Tibiotalocalcaneal (TTC) nailing without joint preparation has been indicated as an alternative to open reduction and internal fixation (ORIF) in the treatment of unstable fragility ankle fractures. We hypothesized that primary hindfoot nailing and immediate weight-bearing can provide a safe and effective treatment for fragility fractures of the ankle compared to ORIF, in terms of complication rates and patient-reported outcomes (PROMs).
METHODS:
A single-center cohort was retrospectively reviewed for all surgically treated ankle fractures in patients aged 75 years and older between 2016-2021. The cases were categorized by the surgical technique as a binary variable: Standard ORIF or TTC nailing. Diagnosis and treatment were validated by a review of the preoperative and postoperative radiographs and the patients' charts. Outcome parameters included complications rates and revision rates. The PROMs questionnaires included the Foot and Ankle Ability Measure Activity of Daily Living (FAAM-ADL) form and the Olerud-Molander Ankle Score (OMAS) form.
RESULTS:
Out of 409 cases, 46 were included in this study; 18 in the TTC group and 28 in the ORIF group. The average follow up was 46.4 months (Median 49.5, SD 25.3). The mean age of the TTC group was significantly higher (88.6 versus 81.6, $p<0.001$). The female to male ratio was 71.4% in the ORIF group versus 100% in the TTC group ($p=0.014$). Surgery duration was similar on average (76.4 minutes in the TTC group vs. 85.1 minutes in the ORIF group, $p=0.452$), as well as the length of stay (10.7 days in the TTC group vs. 7.0 days in the ORIF group, $p=0.081$). The complication rate was 46.4% in the ORIF group versus 22.2% in the TTC group ($p=0.097$). The revision rates were 21.4% in the ORIF group versus 16.7% in the TTC group ($p=0.691$) The FAAM-ADL was higher in the ORIF group (55% vs. 32%, $p=0.084$%), as well as the OMAS (59.0 vs. 32.9, $p<0.001$).
DISCUSSION AND CONCLUSION:
Tibiotalocalcaneal nailing for unstable fragility ankle fractures in the elderly provides a safe alternative to ORIF in low-demand patients with poor soft tissue envelope. However, inferior PROMs compared to traditional ORIF can be expected.

Figure 1: Ankle radiographs of an 82 years old female patient following hindfoot nailing of a fracture dislocation of the right ankle.