

## Metaphyseal Distal Tibia Fractures: A Cohort, Single-Surgeon Study Comparing Outcomes of Patients Treated with Minimally Invasive Plating Versus Intramedullary Nailing

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**Purpose:** The optimal treatment of metaphyseal distal tibia fractures has been debated in the literature. In recent years, minimally invasive plate osteosynthesis (MIPO) and intramedullary nail (IMN) fixation have been commonly used to treat this injury pattern. Both treatment modalities use biology-preserving (indirect) techniques for fracture reduction but the implants' designs and their application are very different. We hypothesized that there would be no difference in clinical or functional outcomes when using MIPO or IMN to treat distal tibia fractures in a similar population.

**Methods:** We evaluated all patients with metaphyseal distal fractures (<5 cm from the joint) treated with MIPO or IMN at a busy trauma center by a single fellowship-trained orthopaedic trauma surgeon from 2003 to 2013. Clinical and radiographic evaluation at a minimum of 1-year follow-up was obtained along with limb-specific assessments (Olerud and Molander's ankle score [OMAS], American Orthopaedic Foot & Ankle Society [AOFAS] ankle-hindfoot instrument), and whole-person assessment with the Short Form-36 (SF-36) tool.

**Results:** We studied 86 patients with distal tibia fractures treated with MIPO (43) and IMN (43). 37 patients in the MIPO group and 27 in the IMN group met inclusion criteria. All patients ultimately healed, with the average time to union of 23 weeks in both groups. Complications were similar between the two groups (MIPO vs IMN, respectively), and included nonunion (8% vs 7%), malalignment (3.6% vs 3%), wound complications (3.6% vs 3%). The need for secondary procedures for removal of implants was 18.5% in the IMN group (distal locking screws only in 4/5) versus 8% in the MIPO group (P = 0.19). Additionally, AOFAS score and SF-36 domains scores were similar between the two groups. OMAS was significantly better in the MIPO group (86.6 vs 78.4, respectively; P <0.02).

**Conclusion:** Similar clinical results and functional outcomes were obtained when treating non- or minimally articular metaphyseal distal tibia fractures with MIPO or IMN except for one of two ankle scores that favored MIPO.