



Intramedullary Nail Treatment of Distal Tibia Fractures: Is Adjunctive Fibular Fixation Beneficial?

Yash P. Chaudhry, DO; Micheal Raad, MD; Jose M. Gutierrez-Naranjo, MD; Luis Salazar, MD; Jason Goodrum, MD; Kitchai Luksameenranothai, MD; Efstratios Papadelis, DO; Boris A. Zelle, MD; Erik A. Hasenboehler, MD

INTRODUCTION

- One of the most common complications associated with distal tibia fractures is malalignment, even with the use of intramedullary fixation
- One proposed theory to decrease rates of malalignment is fixation of associated fibula fractures to provide improved stability and maintain reduction
- The aim of this study was to identify factors associated with malalignment in distal tibial fractures with associated fibular shaft fractures

METHOD

- A retrospective review of distal tibia fractures with associated fibular shaft fractures treated with intramedullary nailing were identified at two level one trauma centers between 2015-2019
- Cases involving malalignment (>5 degrees of deviation from anatomic axis on either coronal/sagittal axis) on final follow up (at least 3 months after surgery) were compared with regards to patient demographics, fracture characteristics, intraoperative characteristics, and postoperative complications

RESULTS

- Seventeen of the 122 (14%) cases involved fixation of the fibula. One of these seventeen (5.9%) had malalignment on final follow up, compared to 15 (14% of cases without fibular fixation ($p = 0.466$))
- The total rate of malalignment on final follow up was 13%
- Nail diameter > 10 mm was associated with a higher rate of final malalignment on univariate analysis (47% vs. 20%, $p = 0.021$) as well as multivariate analysis (odds ratio, 4.05; 95% confidence interval 1.25-13.11)
- No other variables demonstrated associations with final malalignment

CONCLUSION

- Fibula fixation does not appear associated with a decreased rate of malalignment in distal tibia fractures treated with intramedullary nails
- Larger nail diameter was the only associated factor, likely representing wider intramedullary canals and thinner cortices seen in older patients with poorer bone quality



Figure 1: Example of a 73 year old male with postoperative malalignment at 3 months follow up following intramedullary fixation of a tibia and fibula fracture.