Clinical Outcomes Rollowing Intramedullary Nailing of Periarticular Distal Tibia Fractures

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Purpose: With increases in the use of intramedullary nail (IMN) fixation of distal tibia fractures, including periarticular fractures, the objective of this study was to evaluate outcomes of distal tibia fractures following IM nailing. We hypothesized that there would be a higher incidence of ankle arthrosis in fractures with articular involvement. Further we expected that intra-articular fractures would be associated with increased rates of nonunion, malunion, and infection.

Methods: A retrospective chart review of 280 tibia fractures treated with IMN fixation was performed. Of these, 134 fractures were located in the distal-third tibia. Fractures with displacement of the articular surface were treated with additional independent fixation, typically screw fixation. Outcome measures included ankle arthrosis, malunion, nonunion, and infection. These outcomes were compared between distal tibia fractures with and without intra-articular extension.

Results: All fractures (n = 134 of 134) were treated with IMN fixation. Intra-articular extension was present in 36% of fractures (n = 48). There was a 2% (n = 1 of 48) ankle arthrosis rate in the intra-articular group and none in the extra-articular group. There was a 17% (n = 8 of 48) nonunion rate in periarticular fractures, which was not significantly higher than the 11% (n = 9 of 86) nonunion rate in extra-articular fractures (P = 0.18). Similarly there was no significant difference in the incidence of infection in the intra-articular group with 8% (n = 4 of 48) versus 4% (n = 3 of 86) in the extra-articular group (P = 0.25). Malunion was present in 10% (n = 5 of 48) of intra-articular fractures, whereas malunion of extra-articular distal shaft fractures was 20% (n = 17 of 86) (P = 0.01).

Conclusion: This study suggests that IMN fixation of intra-articular distal tibia fractures is an acceptable fixation option. There is no significant increase in nonunion, infection, or ankle arthrosis when intra-articular distal tibia fractures are treated with IMN fixation. The lower rate of malunion following IM nailing of intra- articular fractures potentially is due to indirect shaft reduction with articular reduction and fixation.

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