

Intramedullary Nail Fixation of Tibia Fractures Distal to a Total Knee Arthroplasty

ABSTRACT

Purpose: This study aims to report the technique and outcomes of tibia fractures distal to a total knee arthroplasty (TKA) treated with intramedullary nail fixation (IMN).

Methods: This is a series of patients with tibial fractures distal to a total knee arthroplasty (Felix Type 3A) fixed with an intramedullary nail between 2012-2022 at 5 level 1 trauma centers. Outcomes of interest included union, infection, reoperation, and prosthetic complications. All patients were followed for a minimum of six-months or until radiographic and clinical union.

Results: 20 patients with a mean follow-up of 12.7 months (range: 3-24) were included. Mean age was 72.4 ± 11.6 years, and a majority were females (13/20, 65%). 7 (35%) patients had a high-energy injury. 15 patients sustained midshaft tibia fractures and 5 had a distal-third tibia fracture. 5 (25%) had open fractures.

Patients were treated using either a suprapatellar (6, 30%), parapatellar (8, 40%), or infrapatellar (6, 30%) approach with nail diameter ranging between 8.5-10mm. 16 (80%) patients were allowed to weight-bear as tolerated immediately. An entry awl was used in 7 (35%) cases and an entry reamer in 13 (65%) patients.

2 patients developed post-operative infections (1 superficial, 1 deep). No incidence of knee prosthesis infection or loosening occurred. 3 patients had an unplanned re-operation (2 for revision fixation and 1 for debridement and irrigation). Revision fixation was carried out for a loss of reduction in the first patient, who developed a 5° valgus displacement and shortening, whereas the other patient had an exchange nailing for non-union. Both then went on to successful union. At final follow-up, 1 other patient had a malunion.

Conclusions: Intramedullary nailing of tibia fractures distal to TKA, using careful surgical technique, can be performed successfully with low rates of complication.