Hardware Removal after Tibial Fracture Has Healed

Reference:

Scientific Literature Review

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Podiatric Relevance:
Presently, no guidelines exist as to whether or not a surgeon should extract implanted tibial intramedullary nails after fracture healing; this article offers useful information to help surgeons decide which factors correlate to removing intramedullary nails.

Methods:
This study involved a retrospective chart analysis of 1 physician’s office over 9 years; 130 patients were examined with 134 traumatic tibial fractures. Pathological fractures were excluded, as were patients younger than 16, and those older than 70. A titanium locked reamed tibial nail (DePuy ACE or Synthes) was utilized, and each patient was tracked until fracture union. 2 patients required removal of the intramedullary nail secondary to infection and non-union and were excluded. Symptoms after healing included anterior knee pain, tibial pain, and pain over the locking bolts. Removal included any part of the nail or the entire nail, and both sets of data were analyzed separately. Factors analyzed included: age, sex, mechanism of the fracture, union or nonunion, diameter, WCB status, litigation, insurance status, height, weight, and BMI. Patients were followed up by phone, and Microsoft Excel was used to analyze the statistics. The student’s t-test as well as the x^2 test were used to evaluate nonparametric data.

Results:
42 of the 134 fractures (31.3%) required removal of the hardware; locking bolts were taken out of 14 out of the 42 fractures, and the entire nail was taken out of 28 of the fractures. In both cases, the primary indication for removal was pain. Patients who needed to have their implants removed due to delayed union, nonunion, infection, or fracture were then excluded. 29 fractures remained and were evaluated based on symptomatology; the overall tibial intramedullary nail removal rate was 23.9%, and the mean time leading to removal was 25.19 months. Age, weight, height, BMI, fracture location, WCB status, insurance status, diameter, and mechanism of injury did not associate with the rate of intramedullary nail removal after healing. Patient sex and litigation status did correlate to the rate of removal of the entire nail after healing (33% of men that wanted their hardware removed were in litigation, while 57% of females who requested removal were litigants). 9 out of 29 patients were unable to be contacted at follow-up, but it was shown that 77.8% of patients who asked for removal of the nail would do it again, and the mean pain rating after removal was 4 out of 10.

Conclusions:
Factors found to correlate with tibial intramedullary nail removal were sex and litigation status, and 72.2% of patients showed improvements in their symptoms after their hardware was removed.