

## **Long vs. Short Intramedullary Nails for Trochanteric Hip Fractures: A Secondary Analysis of the INSITE Trial**

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### **INTRODUCTION:**

We aimed to use data from a recent randomized controlled trial (RCT) comparing the sliding hip screw vs. intramedullary nailing for trochanteric fractures to examine outcomes between those managed with a short vs. long cephalomedullary nail.

### **METHODS:**

This is a secondary analysis using one arm of an RCT that included ambulatory patients 18 years and older with AO type 31-A1 or 31-A2 trochanteric fractures. We examined differences in fracture-related (femoral shaft fracture, implant failure, surgical site infection, nonunion, limb shortening, and pain) and medical adverse events (AE, organ failure, respiratory distress, stroke, deep vein thrombosis [DVT] gastrointestinal upset, pneumonia, myocardial infarction, sepsis, or urinary tract infection [UTI]), and readmission between those managed with a short vs. long IMN. We used logistic regression to examine the independent association between nail length and outcomes.

### **RESULTS:**

We included 412 trochanteric fracture patients managed with an IMN. Of these, 339 (82.2%) received a short (170mm-200mm) nail, while 73 (17.7%) received a long (260mm-460 mm) nail. Patients managed with a short nail were more likely to be admitted from an institution (vs. home), while those managed with a long nail were more likely to have comorbidities, and more complex fracture types.

Patients in the long nail group had higher rates of fracture-related AE (12.3%) vs. the short IMN group (3.5%). Specifically, the unadjusted rates of surgical site infection (SSI) and pain were significantly higher in the long group (SSI: 5.5%, pain: 2.7%) compared to the short group (SSI: 0.3%, pain: 0.0%). Similarly, patients in the long group were more likely to develop DVT (Long: 2.7%; Short: 0.3%), and be readmitted to the hospital (Long: 28.8%; short: 20.7%).

Following covariable adjustment, long nails remained independently associated with a higher odds of fracture-related AE (5.11, 1.96-13.33) compared to short nails. We found no association between the odds of readmission and nail length following covariable adjustment (1.00, 0.52-1.94).

### **DISCUSSION AND CONCLUSION:**

Our analyses revealed that trochanteric fracture patients managed with long IMN nails may have a higher odds of fracture-related AE compared to short nails. While future research is required to validate these findings, the data supports the use of short nails for the majority of intertrochanteric hip fractures.