Prior Fragility Fracture Increases Failure Rate After Short Nail for Fixation of Intertrochanteric Fractures

***Maxwell Weinberg, MD**; Patrick Curtin, MD; Craig Kieran Norton, BA; Eric F. Swart, MD; Daniel Mandell, MD*
University of Massachusetts, Worcester, MA, United States

Purpose: Fixation of intertrochanteric fractures with an intramedullary device has become increasingly common as shown in multiple studies. With the increasing usage of short nails, it is necessary to study the outcomes and failures in a set of cases that were fixed with a short nail. The aim of this study was to determine the failure and revision surgery rate, and associated risk factors, in a set of geriatric hip fractures that were fixed with a short cephalomedullary nail.

Methods: Retrospective chart review was performed of our hip fracture database to identify all geriatric patients who underwent fixation with a short cephalomedullary nail. Data collected included demographics, operative details, imaging, and follow-up data. Radiographs were reviewed to determine AO classification, Dorr classification, and adequacy of reduction on immediate postoperative imaging. History of prior fragility fractures (proximal humerus, distal radius, or contralateral hip) was collected on all patients.

Results: Over a 10-year time period, 92 patients underwent fixation of an intertrochanteric fracture with a short Gamma nail. The overall reoperation rate was 22.7%. 13 patients required revision fixation for a distal periprosthetic fracture at an average of 3.4 years, and 2 patients underwent conversion to arthroplasty after lag screw cutout at an average of 5 months. 2 patients underwent surgery for deep infection. The odds of experiencing a distal femur periprosthetic fracture were 4.3× higher in patients with a history of prior fragility fracture ($P = 0.02$). There was no difference between groups in Charlson comorbidity index or American Society of Anesthesiologists (ASA) score. There was a significantly higher percentage of Dorr C femurs in the non-failed group compared to the failed group ($P = 0.02$).

Conclusion: This study found a high reoperation rate in patients who underwent intertrochanteric fracture fixation with a short cephalomedullary nail, with most revisions due to a distal periprosthetic fracture. Patients who underwent a revision surgery after a short nail due to distal periprosthetic fracture had a significantly higher odds of a prior fragility fracture.