

Peri-Implant Femur Fractures After Intertrochanteric Hip Fractures Occur Late and are More Common in Short Nails in Long-term Follow-up

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Purpose: The surgical treatment of intertrochanteric femur fractures varies widely between orthopaedic providers. While small cohorts of intertrochanteric femur fractures show similar outcomes between short and long cephalomedullary nails (CMNs), the long-term failure and peri-implant fracture rates remain incompletely described. The purpose of this study is to better understand the complication rates of intertrochanteric femur fractures treated with short versus long CMNs.

Methods: 1013 patients were identified as having an intertrochanteric fracture that was fixed surgically with a CMN at a Level I trauma center over a 10-year period. For all patients, we recorded AO classification, patient demographics, operative details, imaging, and follow-up data.

Results: Of the 1013 patients, 922 were long CMNs and 91 were short CMNs. The average orthopaedic follow-up was 11.3 months, and average primary care follow-up in our hospital system was 21.9 months. 48 patients (4.7%) needed a revision of their initial surgery, with 24 being from distal fractures after mechanical falls and 22 from fixation failure/cutout. Fixation failure/screw cutout occurred in 18 (2.0%) of 922 long nails, compared to 4 of 91 (4.4%) for the short nails, which was not statistically significant ($P = 0.13$). Femur fracture distal to the implant occurred in 13 (1.4%) of the 922 long nails, compared to 11 of 91 (12.1%) of the short nails, which was statistically significant ($P < 0.0001$). These fractures occurred at a median of 8.0 months (range, 0.8-122 months) out from surgery.

Conclusion: In a large cohort of hip fracture patients with reliable longitudinal follow-up, there was an 8.5× higher rate of peri-implant distal femur fractures requiring surgery in short CMNs compared to long IMNs. This suggests that the clinical equivalence of short versus long nails that has previously been reported should undergo further scrutiny.