Treatment of Intertrochanteric Femur Fractures with Long Versus Short Intramedullary Nails: Analysis of a Hip Fracture Registry

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Purpose: The purpose of this study was to assess failure and complications associated with short versus long cephalomedullary nails for intertrochanteric femur fractures. Risk of revision was the outcome of primary interest. Secondary outcomes included risk of periprosthetic fracture, blood loss, operative time, and length of stay.

Methods: We conducted a retrospective cohort study using data collected prospectively through our integrated health-care system's hip fracture registry with intertrochanteric femur fractures identified using ICD-9-CM code. A total of 5526 patients were identified with an intertrochanteric femur fracture who underwent treatment with a cephalomedullary nail between 2009 and 2014. Long nails were used in the treatment of 3108 patients and for 2418, short nails were used.

Results: 96 revisions occurred (1.7%) with 50 revisions among long nails (1.6%) and 46 among short nails (1.9%). 24 revisions were for periprosthetic fracture (0.4%) with 11 among long nails and 13 among short nails. Cox regression with propensity score weights (used to balance the groups on patient and device characteristics) indicated no significant difference in risk for revision, hazard ratio (HR) = 0.75 (0.48, 1.15), P = 0.186, or periprosthetic fracture, HR = 0.59 (0.23, 1.48), P = 0.258. Linear regression with propensity score weights indicated longer nails resulted in significant increases in operative time (minutes), b = 18.8 (17.33, 20.27), P <0.001, blood loss (mL), b = 41.10 (31.71, 50.48), P <0.001, and length of stay (days), b = 0.35 (0.12, 0.58), P = 0.003.

Conclusion: No difference was detected in the risk of revision or periprosthetic fracture for long versus short nails in the treatment of intertrochanteric femur fractures. Longer nails resulted in operative times that were approximately 19 minutes longer, 41 mL more blood loss, and a length of stay that was a third of a day longer.