Integrated Dual Lag Screw Cephalomedullary Nails are Associated with Higher Reoperation Rates vs. Single Lag Screw Cephalomedullary Nails for Intertrochanteric Femur Fractures

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INTRODUCTION: Systematic reviews and meta-analyses comparing the treatment of intertrochanteric (IT) fractures with integrated dual lag screws (IDL) or single lag (SL) component cephalomedullary nails (CMN) have reported mixed results in terms of reoperation risk. The purpose of this study was to analyze a large cohort of patients to assess reoperation rates between patients treated with IDL or SL CMNs for intertrochanteric femur fractures. We hypothesized that there would be no difference in reoperation rates between the groups.

METHODS: Adults who sustained IT fractures (AO/OTA 31A1-A3) between 1/2014 and 5/2021 at thirteen level I trauma centers across the United States treated with SL or IDL CMNs with a minimum of 3 months follow up were included. Exclusion criteria included non-IT fractures and pathologic fractures. Initial differences in outcomes were analyzed with a chi-squared test. Multivariable regression that controlled for age, sex, mechanism, fracture pattern, and reduction quality was used to compare outcomes.

RESULTS: A total of 2,132 patients met inclusion criteria. Head segment fixation included 289 (13.6%) IDL CMNs and 1,843 (86.4%) SL CMNs. In total, 101 (4.7%) patients underwent a reoperation, most commonly for fixation failure (28.7% of all reoperations). Patients with IDL CMNs had significantly higher rates (7.6% vs. 4.3%, $p = 0.013$) and odds (OR 1.83 [95% CI 1.11-3.01], $p = 0.018$) of reoperation as well as significantly higher rates (4.2% vs. 0.9%, $p < 0.001$) and odds (OR 4.79 [95% CI 2.22-10.31], $p < 0.001$) of reoperation for fixation failure compared to patients with SL CMNs.

DISCUSSION AND CONCLUSION: In this study, intertrochanteric fractures treated with SL CMNs were associated with significantly lower rates of reoperation compared to IDL CMNs. After controlling for age, sex, mechanism, fracture pattern, and reduction quality, IDL CMNs were found to be significantly associated with nearly twice the odds of reoperation and five times the odds of reoperation for fixation failure compared to SL CMNs. Future studies are warranted to confirm these results and to evaluate specific modes of failure between IDL and SL CMNs.