

Increased Risk of Pulmonary Complications With Long Cephalomedullary Nails in Geriatric Intertrochanteric Femur Fractures: A Retrospective Review of 881 Patients

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Purpose: Pulmonary complications following treatment of intertrochanteric (IT) femur fractures have significant morbidity; however, the impact of cephalomedullary nail (CMN) length in geriatric patients is not well established. This study compared rates of postoperative pulmonary complications in geriatric patients with IT femur fractures treated with short/intermediate or long CMNs.

Methods: Consecutive patients age 65 years or older with AO/OTA 31A1-A3 fractures treated with either short/intermediate CMNs (SIN) or long CMNs (LN) between 2008 and 2020 were retrospectively identified at a single Level I trauma center. The primary outcome was postoperative pulmonary complications. Secondary outcomes included patient mortality, surgical duration, and postoperative complications. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were calculated using logistic regression to adjust for surgical duration, chronic obstructive pulmonary disease (COPD), smoking status, age, OTA classification, and an ASA score of 3 or more.

Results: In total, 881 patients were treated with either an SIN (n = 327) or an LN (n = 554). The SIN group was older (80.7 ± 9.1 vs 79.3 ± 8.4 years, $p = 0.016$), had a higher proportion of AO/OTA 31A1 fractures ($p < 0.001$), and included more patients with an ASA score of 3 or more (89% vs 84%, $p = 0.035$). Median surgical duration was shorter in the SIN group (60 vs 81 minutes, $p < 0.001$). Postoperative pneumonia was more likely to develop in patients treated with LNs (AOR: 2.24; 95% CI: 1.09–5.00; $p = 0.028$), as well as pulmonary embolism (AOR: 4.44; 95% CI: 1.11 – 29.8; $p = 0.033$), and the need for transfusion (AOR: 1.42; 95% CI: 1.06–1.91; $p = 0.020$). There were no differences in patient mortality or other postoperative complications ($p > 0.05$).

Conclusion: Geriatric patients with IT femur fractures treated with LNs had increased surgical duration; postoperative pneumonia, pulmonary embolism, and the need for transfusion were more likely to develop. However, mortality and other postoperative complications were comparable. Surgeons should consider the potential for increased pulmonary complications in addition to patient-specific factors when selecting the appropriate CMN length.