Revision and Postoperative Complication Rates After Conversion Total Hip Arthroplasty After Cephalomedullary Nailing of Intertrochanteric Femur Fractures: Systematic Review and Meta-Analysis

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Purpose: Failed intertrochanteric (IT) fracture fixation often requires conversion total hip arthroplasty (cTHA). Femoral component fixation during cTHA can be challenging because of implant removal complexity, deformity, and poor bone quality. Ideal femoral fixation strategy is unknown. The purpose of this study was to compare femoral fixation types and revision and postoperative complication rates of cTHA after cephalomedullary nailing of IT fractures.

Methods: PubMed and Embase databases were queried for studies examining outcomes of cTHA after prior cephalomedullary nailing for IT fracture. Rates of revision, infection, dislocation, and periprosthetic fracture (PPF) were assessed. Risk of bias was assessed using the Newcastle-Ottawa Scale. A random-effects model was employed to pool overall complication rates across studies. Subgroup analysis was performed to compare outcomes based on femoral component type.

Results: Seventeen studies, in which 1253 patients underwent cTHA, were included. Femoral component fixation type was specified in 799 cases. Primary cementless stems were most frequently used (47.9%), followed by primary cemented (38.8%), diaphyseal cementless (12.0%), and diaphyseal cemented (1.3%) stems. The overall pooled revision rate was 7% (5%–8%). Postoperative complication rates were 3% (2%–5%) for infection, 4% (3%–6%) for dislocation, and 6% (4%–8%) for PPF. Subgroup analysis compared primary cementless (n = 265), primary cemented (n = 220), and diaphyseal cementless (n = 17) implants. Primary cementless stems exhibited higher rates of revision (9.81% vs 2.27%), subsidence (7.92% vs 3.63%), dislocation (2.64% vs 2.27%), and PPF (7.17% vs 3.18%) relative to cemented stems. Diaphyseal cementless stems had no revision, subsidence, or PPF, but showed elevated dislocation (11.8%) and infection (5.9%) rates.

Conclusion: cTHA is an effective salvage option for failed IT fracture fixation but carries notable risks. In a limited sample size, primary cementless stems were associated with higher rates of revision, subsidence, and PPF. Optimal outcomes are achieved through careful selection of femoral components tailored to patient-specific factors.