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

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INTRODUCTION:

Management of failed intertrochanteric (IT) fracture fixation often requires conversion total hip arthroplasty (cTHA), but complication and reoperation rates remain poorly characterized in the literature. This study aimed to characterize revision and postoperative complication rates for cTHA after cephalomedullary nailing of IT fractures.

METHODS:

A systematic review and meta-analysis was conducted following PRISMA guidelines. PubMed and Embase were queried for studies examining cTHA outcomes after prior cephalomedullary nailing for IT fractures. The primary outcome was revision rate, while secondary outcomes included rates of infection, dislocation, subsidence, and periprosthetic fracture (PPF). Risk of bias was assessed using the Newcastle-Ottawa Scale. A random-effects model was employed to pool overall and implant-specific complication rates.

RESULTS:

Seventeen studies with 1,253 cTHA patients met inclusion criteria. Implant type was specified in 799 cases: primary cementless stems (47.9%), primary cemented (38.8%), diaphyseal cementless (12.0%), and diaphyseal cemented (1.3%). Overall revision rate was 6.7%, infection rate was 3.3%, dislocation rate was 4.5%, and PPF rate was 5.9%. Subgroup analysis across six studies allowed for comparison between primary cementless (n=265), primary cemented (n=220), and diaphyseal cementless (n=17) implants. Cemented stems had a revision rate of 2.4%, an infection rate of 1.8%, a dislocation rate of 2.4%, a subsidence rate of 3.8%, and a PPF rate of 3.2%, compared to cementless (10.1%, 2.8%, 3.3%, 8.1%, 7.7%) and diaphyseal cementless (7.0%, 8.9%%, 18.3%, 7.0%, 7.0%) stems.

DISCUSSION AND CONCLUSION:

cTHA is an effective salvage option for failed IT fracture fixation but carries notable postoperative risks compared to primary THA. Each femoral component fixation method was associated with a specific complication profile, with cemented components demonstrating the lowest complication rates. However, larger sample sizes are needed for statistical comparison. Optimal outcomes require careful femoral component selection tailored to patient-specific factors.