

Title: Long-Term Complications and Recovery Following Intertrochanteric and Femoral Shaft Fracture Fixation in Geriatric Adults

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Introduction: Femoral shaft and intertrochanteric fractures commonly occur in geriatric patients (≥ 65 years) following trauma, due to bone fragility. Intertrochanteric fractures occur between the greater and lesser trochanter, while femoral shaft fractures affect the thigh bone's midsection. Surgical treatments include intramedullary nailing, ORIF, or hip arthroplasty. While postoperative complications have been studied, direct comparisons between these fracture types in elderly patients are limited. This study compares postoperative outcomes of intertrochanteric versus femoral shaft fractures treated with ORIF in geriatric patients.

Methods: A retrospective cohort study using the TriNetX database identified geriatric patients who underwent ORIF for femoral fractures. Patients were stratified by fracture type and matched for demographics and comorbidities using propensity scores. Postoperative complications were assessed at 90 days and 2 years, including wound disruption, infection, sepsis, thromboembolism (DVT/PE), nonunion, reoperation, and mortality. Risk ratios (RR) with 95% confidence intervals (CI) were calculated; $p < 0.05$ indicated significance.

Results: At 90 days, intertrochanteric ORIF had lower wound disruption risk (RR 0.66, $p = 0.032$), with no significant differences in infection, DVT, PE, or mortality. At 2 years, intertrochanteric ORIF was associated with lower risks of wound disruption (RR 0.70, $p = 0.017$), infection (RR 0.72, $p = 0.011$), nonunion (RR 0.38, $p < 0.001$), and reoperation (RR 0.28, $p < 0.001$), but a higher risk of sepsis (RR 1.16, $p = 0.021$). Mortality rates were similar.

Conclusion: Intertrochanteric ORIF in geriatric patients showed better short- and long-term outcomes than femoral shaft ORIF, despite a slightly increased sepsis risk. These findings highlight the need for fracture-specific care pathways and improved management strategies for femoral shaft fractures to reduce complications in elderly orthopedic patients.

Significance/Clinical Outcome

Overall, this study portrays that geriatric patients undergoing ORIF for IT fractures result in better postoperative outcomes compared to those with femoral shaft fractures. However, intertrochanteric fracture patients carried higher long term risk of sepsis, emphasizing the need for continuous medical management. Mortality rates were similar between the groups, conveying that systemic comorbidities often drive survival more than fracture type. From a clinical perspective, these results suggest that IT fractures are more reliably managed with current fixation strategies while femoral shaft fractures in the elderly need closer observation and potentially improved fixation or healing approaches.