

Fixation Failure and Time to Reoperation After Internal Fixation of Young Femoral Neck Fractures: A Population-Based Study

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Purpose: Non-geriatric patients with femoral neck fractures treated with internal fixation frequently experience reoperations for painful hardware, osteonecrosis, and nonunion. Conversion to total hip arthroplasty (THA) is a definitive marker of failed joint preservation and the need for salvage surgery. The primary aim of this study was to determine the reoperation rate and time to reoperation following internal fixation of young femoral neck fractures.

Methods: This study used linked provincial health databases to create a retrospective cohort of all British Columbia residents between the ages of 18 and 50 years who underwent internal fixation for a femoral neck fracture during 1997-2013. Patients with concomitant pelvis or acetabular fractures were excluded. A Kaplan-Meier analysis was performed to estimate the rate of failure of the index procedure for any reoperation and for THA specifically. A Cox proportional-hazards regression model was used to study the dependency of time to reoperation on sex and age.

Results: 796 young femoral neck fracture patients were treated with internal fixation during the study period. The patient population was primarily male (60.8%) with a median age of 43 years at time of injury (interquartile range [IQR]: 35-48). 235 (29.5%) experienced at least 1 reoperation at a median of 15.7 months (IQR: 7.6-30.6) from the index surgery. The majority of reoperations were for hardware removal (n = 192, 54.7%), followed by conversion to THA (n = 102, 29.1%). The median time to THA was 26.8 months (IQR: 11.5-50.4) from the initial fracture. Neither sex (hazard ratio [HR]: 1.13, 95% confidence interval [CI]: 0.88-1.48, P = 0.33) nor age (HR: 0.84, 95% CI: 0.64-1.09, P = 0.18) had a significant effect on time to reoperation.

Conclusion: 10% of young femoral neck fracture patients treated with internal fixation required conversion to THA within 5 years from their injury. When including other fracture-related indications for reoperations, 30% of these patients underwent at least 1 reoperation. These results highlight the common need for reoperation after a young femoral neck fracture and patients must be counseled accordingly. Given these failure rates, patients and surgeons may wish to consider primary arthroplasty for patients nearing 50 years of age.