Δ Factors Associated with Revision Surgery Following Internal Fixation of Hip Fractures

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Purpose: Femoral neck fractures are associated with high rates of revision surgery following management with internal fixation. Using data from a multicenter trial evaluating different methods of internal fixation in patients with femoral neck fractures, we investigated the association between key baseline and surgical factors and the need for additional surgery to promote healing, relieve pain, treat infection, or improve function over 24 months post surgery. Additionally, we investigated factors specifically associated with (1) hardware removal and (2) implant exchange from cancellous screws (CS) or sliding hip screws (SHS) to total hip arthroplasty (THA), hemiarthroplasty (HA), or another internal fixation device.

Methods: We identified 15 potential factors a priori from baseline data, fracture characteristics, and surgical data from the trial that may be associated with additional surgery to promote healing, relieve pain, treat infection, or improve function. We also identified 7 factors that may be associated with hardware removal and 14 with implant exchange. We used multivariable Cox regression analyses to investigate these associations.

Results: Factors associated with increased risk of additional surgery included: female sex, (hazard ratio [HR] 1.79, 95% confidence interval [CI] 1.25-2.50; P = 0.001), higher body mass index (for every 5-point increase) (HR 1.19, 95% CI 1.02-1.39; P = 0.027), displaced fracture (HR 2.16, 95% CI 1.44-3.23; P <0.001), unacceptable quality of implant placement (HR 2.70, 95% CI 1.59-4.55; P <0.001), smokers treated with CS compared to smokers treated with SHS (HR 2.94, 95% CI 1.35-6.25; P = 0.006), and a fracture configuration corresponding to a Pauwels Type III as compared to Type II (HR 2.13, 95% CI 1.28-3.57; P = 0.004).

Conclusion: Results of this study may inform future research by identifying high-risk patients who may benefit from novel interventions, alternative rehabilitation strategies, and adjuncts to care.

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See pages 401 - 442 for financial disclosure information.