

Predictors of early failure in young patients with displaced femoral neck fractures

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Introduction: Displaced femoral neck fractures in young patients are potentially devastating injuries. Treatment typically involves open or closed reduction and internal fixation with either cannulated screws (CS) or a fixed-angle sliding hip screw (SHS). There is no difference in the literature with regards to the clinical results of patients treated with CS and SHS fixation for femoral neck fractures. This study aims to identify the incidence and compare the early failure rates of sliding hip screw (SHS) and cannulated screw (CS) constructs in patients <60-years of age with displaced femoral neck fractures.

Materials & Methods: A prospectively collected trauma database at three level-one trauma centers was reviewed. Inclusion criteria included patients <60-years of age, with displaced intracapsular femoral neck fractures (OTA 31.B2/31.B3) treated with open or closed reduction and CS or SHS fixation. Ninety-one patients were identified between 2000-2010. 23 patients were excluded. Final cohort was 69 displaced femoral neck fractures in 68 patients (SHS N=40, CS N=29). Primary outcome was early failure requiring a return to the operating room within 6-months of the index procedure.

Results: One patient (3%) with SHS fixation and 6 patients (21%) with CS fixation had loss of fixation within 6 months ($P = 0.04$). Overall complication rates were similar (SHS:CS 25% :31%; $p=0.60$). Multivariate logistic regression analysis demonstrated type of fixation (SHS vs. CS, $P = 0.005$) and quality of reduction (fair vs. excellent/good, $P = 0.04$) are independent predictors of early failure and only quality of reduction is a predictor of any complication (early failure, nonunion or AVN) ($P = 0.008$).

Conclusion: SHS constructs demonstrate a significantly lower short-term mechanical failure rate than CS constructs. Furthermore, quality of fracture reduction is an essential predictor in terms of both short and long-term complications.