

Intramedullary Nail Versus Sliding Hip Screw for Intertrochanteric Fractures: Comparison of Postoperative Complications and Risk Factors Associated With Conversion to Total Hip Arthroplasty in a Matched Cohort Analysis

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Purpose: The purposes of this investigation were to (1) compare the incidence of 90-day postoperative complications between intramedullary nail (IMN) and sliding hip screw (SHS) for the treatment of intertrochanteric fractures and (2) identify risk factors associated with conversion to total hip arthroplasty (THA).

Methods: A retrospective analysis of a national insurance database was conducted to identify individuals with intertrochanteric fractures that underwent IMN or SHS. To assess trends in IMN and SHS for intertrochanteric fractures, linear regression analyses were performed. Subsequently, individuals in the IMN and SHS groups were matched based on age, sex, obesity, and other comorbidities. Pearson's χ^2 tests were performed to compare demographics, medical comorbidities, and 90-day complication rates between the matched groups. Multiple logistic regression analyses were also used to identify factors associated with conversion to THA within 2 years after IMN and SHS with significance defined as $P < 0.05$ for all statistical analysis.

Results: There was a significantly increasing trend in use of IMN ($P = 0.0007$) and a significantly decreasing trend in use of SHS ($P = 0.0012$) to treat intertrochanteric femur fracture over time. After matching, there were 10,934 patients included in the study ($n = 5467$ IMN; $n = 5467$ SHS). Despite 1:1 matching, patients in the IMN group had significantly higher rates of medical conditions, including of obesity ($P = 0.0002$), diabetes ($P = 0.03528$), hypertension ($P = 0.0007$), smoking history ($P = 0.0129$), and history of depression or anxiety ($P < 0.0001$). During the 90-day postoperative period, the incidence of surgical site infection ($P = 0.0008$), wound dehiscence ($P = 0.038$), and blood transfusion ($P = 0.0263$) were significantly higher in the SHS group. The incidence of urinary tract infection ($P = 0.003$) and sepsis ($P = 0.0342$) were significantly higher in the IMN group. There was little difference in conversion to THA within 2 years between IMN and SHS groups (0.68% vs 0.66%, $P = 0.9065$). Female sex (odds ratio [OR]: 0.56, 95% confidence interval [CI]: 0.47-0.66, $P < 0.0001$) and chronic obstructive pulmonary disease (COPD) (OR: 0.65, 95% CI: 0.54-0.78, $P < 0.0001$) significantly decreased odds of conversion to THA. On the other hand, age < 5 years (OR: 1.42, 95% CI: 1.13-1.76, $P = 0.0019$), obesity (OR: 1.64, 95% CI: 1.40-1.92, $P < 0.0001$), smoking history (OR: 1.34, 95% CI: 1.13-1.58, $P = 0.0006$), and alcohol abuse (OR: 1.67, 95% CI: 1.34-2.07, $P < 0.0001$) significantly increased odds of conversion to THA.

Conclusion: The findings of this investigation suggest that SHS fixation of intertrochanteric femur fractures had an increased incidence of early wound complications and malunion/nonunion within 2 years after surgery when compared to IMN; however, conversion to THA was similar in both groups. Young age, obesity, smoking history, and alcohol abuse were independently associated with conversion to THA.