

Postoperative Complications of Dynamic Hip Screw Versus Cephalomedullary Nail for Treatment of Intertrochanteric Hip Fractures

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Purpose: Intertrochanteric hip fractures can be surgically treated with either cephalomedullary nails (CMN) or dynamic hip screws (DHS). Using a national database, the 30-day postoperative complication rates were compared for patients who underwent each method of surgical fixation.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database for the 2006-2012 years was queried to identify all patients who underwent either a DHS (CPT = 27244) or CMN (CPT = 27245) for treatment of an intertrochanteric hip fracture (ICD-9 = 820.20-820.21). The ACS-NSQIP is a statistically representative sample of prospectively collected perioperative surgical data from participating hospitals across the nation. Demographics, comorbidities, preoperative laboratory values, and 30-day postoperative complications were compared between the patients treated with DHS versus CMN. Multivariate analysis was then performed to adjust for confounding patient characteristics and comorbidities in order to identify whether the type of surgical treatment was an independent predictor of postoperative complications.

Results: This retrospective analysis identified 3652 patients who underwent CMN and 2127 patients who underwent DHS over 7 consecutive years. The average age of the patients was 80.7 years for the CMN group and 80.5 years for the DHS group ($P = 0.58$). The percentage of females was 72% for the CMN group and 69% for the DHS group ($P = 0.01$). Preoperative comorbidities were significantly greater in the CMN group, including higher American Society of Anesthesiologists physical status classification ($P = 0.01$) and greater prevalence of hypertension ($P = 0.02$), congestive heart failure ($P = 0.03$), dyspnea ($P = 0.05$), prior cardiac stents ($P = 0.01$), and peripheral vascular disease ($P = 0.01$). The percentage of patients with any complication within 30 days after surgery was 16% for both groups ($P = 0.98$). Rates of return to the operating room were 1.9% for the CMN group and 1.6% for the DHS group ($P = 0.46$). The 30-day mortality was 6.4% in the CMN group and 4.9% in the DHS group ($P = 0.02$). Surgical time was similar ($P = 0.26$) between the two groups (55.8 minutes for CMN vs. 56.9 minutes for DHS). Rates of blood transfusions were 38.3% for patients who underwent CMN and 35.9% for those who underwent DHS ($P = 0.06$). The reintubation rate was 1.6% for the CMN group and 0.8% for the DHS group ($P = 0.05$). Average postoperative hospital length of stay (LOS) was 5.5 days for the CMN group and 6.8 days for the DHS group ($P < 0.001$). The proportion of patients who were discharged home was 10.4% for the CMN group and 14.0% for the DHS group ($P < 0.001$). After incorporating multivariate analyses to adjust for confounding variables, having a DHS was independently associated with lower 30-day mortality (relative risk [RR] = 0.76, $P = 0.03$) and lower reintubation rates (RR = 0.57, $P = 0.04$). There was also a statistical trend toward lower risk of deep venous thrombosis (RR = 0.61, $P = 0.07$) with a DHS.

Conclusion: We found that 16% of the patients in this study developed at least one complication within 30 days after operative treatment of an intertrochanteric hip fracture. Although

patients undergoing CMN had more comorbid conditions than those undergoing DHS, performing CMN offered no advantage in operative time or transfusion requirement. When controlling for preoperative comorbidities, having a DHS, as compared to a CMN, was independently associated with decreased 30-day mortality and reintubation rates.

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