The Effects of Cephalomedullary Nail and Sliding Hip Screw on Perioperative Morbidity in Cases Being Converted to Total Hip Arthroplasty

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Background/Purpose: Intertrochanteric hip fractures can be treated with cephalomedullary nail (CMN) or sliding hip screw (SHS) devices. There has been an increased use of cephalomedullary nails in the last decade to treat these fractures. Some arthroplasty surgeons have suggested there is increased morbidity with the use of CMNs when a failure occurs and hips are converted to total hip replacement. These authors have suggested this is a reason to avoid using CMNs in treating intertrochanteric hip fractures, because there is a higher rate of trochanteric nonunions and increased perioperative morbidity. We hypothesized that this was not the case and sought to validate these findings by evaluating the perioperative differences for conversion to THA after the use CMN or SHS at our institution.

Methods: An 8-year, IRB-approved, retrospective review (2004-2012) was performed of patient charts, operative notes, and radiographs of conversion to THA cases. 142 patients were identified who required conversion to THA during this time period. 31 hips underwent conversion to THA after treatment for intertrochanteric hip fracture (SHS 17, CMN 15). Perioperative data, in addition to initial fracture stability (AO/OTA classification) and type of femoral stem used were collected.

Results: Median age was 80 years in the SHS group, 75 years in the CMN group (range, 53-93; $P = 0.56$). The SHS group comprised 6 stable fractures and 11 unstable fracture patterns. In the CMN group there were 8 stable and 7 unstable fracture patterns. Indications for conversion to THA in the CMN group included symptomatic osteoarthritis, osteonecrosis, and loss of fixation resulting in nonunion or malunion. Estimated blood loss (EBL), operating room (OR) time, transfusion rate, body mass index (BMI), and length of stay were similar between groups ($P > 0.05$). Complications in the SHS group consisted of a sciatic nerve palsy, femoral artery thrombosis, 1 periprosthetic infection, 1 superficial infection, 1 wound dehiscence, and 2 trochanteric nonunions. The CMN group had a trochanteric nonunion, a deep infection, and a periprosthetic fracture. The SHS group used 1 cemented, 10 metaphyseal, and 6 diaphyseal stems. The CMN group used 1 cemented, 6 metaphyseal, and 8 diaphyseal stems.

Conclusion: Whether a CMN or SHS was used for primary fixation of an intertrochanteric hip fracture; both implants had similar effects on the perioperative complication rate when a conversion to THA became necessary. Our series differ from other reports that demonstrated increased risk of trochanteric nonunion and increased perioperative complications for CMN. Our results demonstrated no differences in perioperative morbidity regardless of the implant used for primary fracture fixation, suggesting any morbidity observed with conversion to THA is related to factors other than the initial fracture fixation device. The complexity of revision surgery should not affect the decision to use a CMN or SHS as primary treatment for intertrochanteric hip fractures.

See pages 99 - 147 for financial disclosure information.