Uncemented Hip Hemi-Arthroplasty is Associated with Increased Fracture Risk and Complications Compared to Cemented Hemi-Arthroplasty

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Purpose: Hip hemiarthroplasty (HHA) is the preferred treatment for femoral neck fractures in the elderly. Multiple randomized controlled studies, meta-analyses, and database studies have reported higher rates of intraoperative and postoperative fractures and reoperations with uncemented HHA. However, individual surgeons continue to perform uncemented HHA, and we have specifically noted this in our hospital system. The primary goal of our study was to evaluate our local treatment practices and outcomes and determine if the literature results are consistent within our patient population.

Methods: A retrospective chart review was completed of patients within our hospital system age >50 years who sustained an intracapsular femoral neck fracture (ICD-9 820.00-820.19, ICD-10 S72.000 – S72.099) treated with hemiarthroplasty (CPT 272236) between 2009 and 2017. Primary outcome was the rate of intraoperative and postoperative fractures. Other outcomes included operative time, infection, dislocation, reoperation rates, and mortality. Categorical data were analyzed with $\chi 2$ and parametric data were analyzed with Student t tests.

Results: 3820 patients met inclusion criteria: 382 treated with cemented HHA (9%) and 3438 uncemented HHA (91%). Patients were 69% female, with a mean age of 81 years, and 89% with American Society of Anesthesiologists (ASA) class 3 or greater, with no differences between the 2 groups. The incidence of fractures was significantly higher in the uncemented group compared to the cemented group (11.7% vs 6.5%), including intraoperative fractures (2.8% vs 0.8%, P = 0.02), and postoperative fractures (8.9% vs 5.8%, P = 0.04). Total complications were also significantly higher in the uncemented group (15.9% vs 11.0%, P = 0.015), while reoperation rates trended higher (13.1% vs 10.2%, P = 0.107). The mean operative time was 27 minutes longer for the cemented group (1 hour 26 min vs 59 mins).

Conclusion: The data from our local hospital system demonstrate a higher rate of fractures with uncemented HHA (3.5 relative risk of intraoperative fractures, and 1.8 relative risk of overall fractures), and a higher rate of complications. Despite the expanding knowledge regarding the risks of uncemented HHA, the majority of HHA performed in our hospital system were uncemented (91%). In our opinion, the shorter operative times for uncemented HHA is outweighed by the increased fracture rate in this frail population, with severely negative clinical and economic consequences. This study underscores the importance of critical evaluation of evidence and the applicability of literature-guided practices. We plan to use this information in a quality improvement program in our hospital system and establish evidence-based protocols to improve patient care.