

Effects of Gender and Fixation on the Outcomes of Hemiarthroplasty for Femoral Neck Fracture: Analysis of the American Joint Replacement Registry

Anna Cohen-Rosenblum, Susan Marie Odum¹, Ayushmita De, Kara Lindsay Sarrel, Bryan Donald Springer²

¹Atrium Health Musculoskeletal Institute, ²Orthoc Carolina

INTRODUCTION: Despite strong recommendations from the American Academy of Orthopaedic Surgeons (AAOS) Clinical Practice Guideline for cementing femoral components during hip arthroplasty for femoral neck fracture (FNF), according to American Joint Replacement Registry (AJRR) data less than half of hemiarthroplasties (HA) done for FNF in the United States are cemented. This has ramifications for female patients who are more likely to have osteoporosis and therefore may be at higher risk for the devastating complication of periprosthetic fracture (PPFx). The purpose of this study was to evaluate gender-fixation interaction effects on revision and mortality rates. We hypothesized that compared to cementless HA, cemented HA would be associated with lower revision and mortality rates in females than in males.

METHODS:

For this retrospective study, the AJRR was queried to identify 84,687 patients over 65 years old undergoing HA for FNF. Patient and hospital characteristics, fixation, early 90-day revision and mortality, one-year revision and mortality were abstracted. Multivariable logistic regression models isolated gender-fixation interaction effects on each outcome. Of the 84,687 patients, 57,830 were women (68.3%), average age was 84 years, 38,564 (46%) were cemented, 46,123 (54%) were cementless.

RESULTS:

Of the 57,830 females, 47% underwent cemented fixation, compared to 43% of males ($p < 0.0001$). Compared to males, females with cemented HA had reduced odds of early all-cause revision (OR .87; 95% CI .70, 1.10), one-year all-cause revision (OR .87; 95% CI .71, 1.05), early revision for PPFx (OR .66; 95% CI .24, 1.86), one-year revision for PPFx (OR .56; 95% CI .26, 1.24), early mortality (OR .61 (95% CI .57, .65), and one-year mortality (OR .57 (95% CI .52, .61). The effects were significant for all-cause revision at one-year and mortality at both timepoints. Females undergoing cementless HA had lower odds of revision and mortality than men, however, the effects were smaller than in cemented HA.

DISCUSSION AND CONCLUSION:

These results support our hypothesis that compared to men, women benefit from cemented fixation of HA for FNF with lower revision and mortality rates, and this gender effect is larger among cemented HA than cementless HA. Future studies should explore variables contributing to these differences, and we encourage future AAOS guidelines to take into account gender differences when discussing evidence-based recommendations for the treatment of FNF.