Cemented Femoral Fixation for Total Hip Arthroplasty Reduces the Risk of Periprosthetic Femur Fracture in Patients 65 Years or Older: An Analysis from the American Joint Replacement Registry

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INTRODUCTION:
Postoperative periprosthetic femur fracture (PPFx) is a severe complication after total hip arthroplasty (THA). Despite concerns for increased risk of PPFx, cementless fixation continues to be the preferred fixation method for primary THA in the United States. We examine the risk for PPFx comparing cemented to cementless femoral fixation.
METHODS:
An analysis of the American Joint Replacement Registry (AJRR) data from 2012-2020 was performed. We identified all primary THA procedures age $\geq$ 65 over the study period and linked cases to supplemental Centers for Medicare and Medicaid (CMS) where available. Cases with incomplete component information were excluded. Patient demographics and femoral fixation, cemented or cementless were recorded. PPFx fracture outcome included revision or open reduction and internal fixation for PPFx. Analysis comparted cemented to cementless femoral fixation. Between group differences were determined with chi-squared and independent t-tests. Cox proportional hazard regression analysis with competing risk of death was used to evaluate the association of fixation and fracture risk with adjusting for potential confounders.
RESULTS:
We identified 279,052 primary THA cases with reported femoral stem fixation characteristics available for analysis. In total, there were 266,040 (95.3%) cementless and 13,012 (4.66%) cemented. Age $\geq$80 versus 65-79 ($p=0.005$) and female gender ($p<0.001$) were associated with PPFx. Compared to cemented stems, the cementless stems had an elevated risk of PPFx HR 7.701 ([95% CI 3.17, 18.62] $p < 0.0001$).
DISCUSSION AND CONCLUSION:
This study demonstrates an increased risk of PPFx with cementless fixation for THA in patients $\geq$65 years old. Surgeons in the US should consider more use of cemented femoral fixation in this population to decrease the risk of PPFx.