

Perioperative Periprosthetic Femur Fractures Are Strongly Correlated with Fixation Method: An Analysis from the American Joint Replacement Registry (AJRR)

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Introduction: Perioperative periprosthetic femur fractures (PPFx) following total hip arthroplasty (THA) remain a leading cause of early stem failure and revision and are associated with high rates of morbidity and mortality. We sought to analyze AJRR data to determine the relationship of femoral stem fixation to PPFx requiring revision.

Methods: All early (= 3 months from index arthroplasty) linked primary and revision hip arthroplasties where both procedures were reported to AJRR between 2012-2017 were analyzed to identify revisions for PPFx. We evaluated patient demographics, device characteristics (hemiarthroplasty vs. THA) and stem fixation.

Results: There were 10,277 linked revisions reported to AJRR during the time period of the study. Early PPFx requiring revision occurred in 622 patients (6.1%). The diagnosis for the index arthroplasty was osteoarthritis in 404 (65.0%) and femoral neck fracture in 218 (35.0%). 522 patients (84%) were treated with THA and 100 patients with hemiarthroplasty (16%). There was a preponderance of revisions for PPFx in females (70%). 58% of patients were =70 years of age, while 20% were =80 years of age. Cementless femoral fixation was associated with 93.7% (583 vs. 39) of the periprosthetic fractures. Patients with cementless stems were 2.6 times (95% CI 0.59-11.1) more likely to undergo early revision for PPFx than those with cemented fixation, although with the numbers of cemented stems available this was not statistically significant.

Conclusions: Mirroring other studies and national registries, there was an association between cementless fixation and PPFx in the AJRR. Nevertheless, there has been a trend over time of increasing utilization of cementless femoral fixation for both THA and hemiarthroplasty reported to the AJRR, with cementless fixation accounting for 93% of THA stems with early periprosthetic fracture. Additional analysis is needed to better understand this phenomenon, especially in the elderly.