Cementless Hemiarthroplasty Complication Risk Does Not Justify Current Utilization Patterns

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INTRODUCTION:

Hemiarthroplasty (HA) is commonly performed in the setting of femoral neck fracture to allow for early mobilization. The femoral component may be press fit or cemented into the femoral canal, with consideration given to operative time and patient factors such as bone quality and medical comorbidities. The purpose of this study was to compare cemented and cementless hemiarthroplasty utilization and complications.

METHODS:

A retrospective analysis was performed on a multicenter hip fracture database. During 2010-2019, cementless HAs (577, 58.6%) were more commonly performed over cemented HAs (407, 41.4%), Patient demographics and surgical details were compared between cemented and cementless patients. The primary outcome of this study was revision due to periprosthetic fracture. Secondary outcomes included surgical complications (Dislocation, PJI) and mortality. Logistic regression analysis was performed to compare risk of various complications, adjusting for age, sex, BMI, and comorbidity status.

RESULTS:

There was a trend towards increasing cemented fixation over the study period (p<0.001). Cementless HA patients were younger (77.7 vs 81.8,p<0.001). Operative times were shorter for cementless HAs (90.5 \pm 35.7 vs 105.0 \pm 38.7 min, p<0.001). Cementless HA patients were less likely to return to independent ambulation (8.2%vs19.2%,p<0.001), and patients with cementless HA were significantly more likely to undergo revision surgery for periprosthetic fracture (2.6% vs 0.3% p=0.004; Odds Ratio (OR) 11.06, 95% Confidence Interval (1.43-85.38), p=0.021). Dislocation rates were higher with cementless HA (6.1% vs. 2.7%, p=0.014; OR 2.29 (CI 1.13-4.67), p=0.022), while periprosthetic joint infection rates were comparable (4.0% vs 4.9%, p=0.483; OR 0.71 (CI 0.38-1.36), p=0.306). Ninety-day mortality was lower with cementless HA (10.8% vs 19.2%, p<0.001) however mortality rates were comparable at final follow up (OR 1.23, 0.94-1.62, p=0.130).

DISCUSSION AND CONCLUSION:

The surgical complication risk of cementless hemiarthroplasty for femoral neck fracture is higher than cemented HA with an 11-fold increased risk of periprosthetic fracture compared to cemented HA. Surgeons should consider routine use of cemented fixation for hemiarthroplasties performed for femoral neck fractures to decrease risk of fracture and future surgery.