

Post-Operative Outcomes of Cemented vs. Cementless Total Hip Arthroplasty

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INTRODUCTION: Cementless stem fixation accounts for the majority (95%) of total hip arthroplasty (THA) in the US. The current AAOS clinical practice guidelines give a moderate recommendation for cemented stem fixation in older adult patients due to the reported lower risk of periprosthetic fracture. However, cemented stems for primary THA were found to have a higher risk for postoperative complications such as aseptic loosening and infection compared to cementless stems. The purpose of this study was to assess differences in complications rates between cemented and cementless primary THA in a large cohort of patients at a single health system to further substantiate the current recommendations.

METHODS: We conducted a retrospective review of patients undergoing total hip arthroplasty (THA) for degenerative joint disease between December 2015 and April 2024 at UPMC facilities. Patient who received THA for oncologic indications, trauma, or conversion surgery were excluded. Patients were stratified into 2 groups; cementless (press-fit) femoral stem fixation or cemented stem fixation. Post-operative outcomes including readmissions, patient-reported outcome scores, and incidence of complications were retrieved from the institutional joint database. Multivariate regression and logistic regression analyses were performed to compare groups to identify independent risk factors for complications.

RESULTS:

A total of 17,111 patients underwent THA for primary osteoarthritis indications by 95 surgeons across 17 facilities. 819 patients (4.8%) had cement fixation and 16,292 (95.21%) patients had uncemented stem fixation during THA. Cemented THA patients were older (mean 70.7 ± 12.2 years) compared with press-fit THA patients (mean 65.2 ± 10.9 years, $p < 0.01$). Patients who received cemented THA had higher Elixhauser comorbidity scores (2.2 ± 1.8) but lower BMI (32.2 ± 7.9 kg/m²) compared with press-fit THA Elixhauser (2.0 ± 1.6 , $p < 0.01$) and BMI (33.7 ± 7.3 kg/m², $p < 0.01$). Mean duration of surgery was significantly longer for cemented THA (105 ± 36 minutes) compared with cementless THA (83 ± 30.1 minutes, $p < 0.01$).

Multivariate regression analysis controlling for BMI, age, race, and Elixhauser revealed that cemented THA had 0.311 less ED returns ($p < 0.01$), higher intraoperative blood loss of 52.3mL ($p < 0.01$), longer surgery duration of 22.6 minutes ($p < 0.01$), higher rate of 1-year mortality (OR=2.40, $P < 0.01$), and higher rate of within-90-day readmissions (OR= 1.7, $p < 0.05$), compared with cementless THA, but not a higher rate of readmission within 30 days or significant difference in incidence of complications. There was a significant increase in cemented stem utilization from 2016-2024 ($p < 0.001$).

DISCUSSION AND CONCLUSION: Based on the current study, cemented THA utilization has grown in recent years. While cemented THA has expected longer surgery duration and higher blood loss, there appears to be a higher 90-day readmission rate, possibly related to slightly higher Elixhauser and age in the cemented THA cohort. While cemented THA is recommended for older patients, patient selection and preoptimization needs to be emphasized for this population.