

# Increasing Use of Cemented Stems is Associated with Reduced Early Fracture after Total Hip Arthroplasty: A Single Statewide Arthroplasty Registry Perspective

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**INTRODUCTION:** The Michigan Arthroplasty Registry Quality Collaborative Initiative (MARCQI) identified periprosthetic fracture as the most common reason for early total hip arthroplasty (THA) revision of uncemented hips. This analysis describes a state-wide quality improvement project to reduce fracture and early revision.

## METHODS:

MARCQI reports data to participants through reports and in-person meetings and incorporated post-operative hip fracture into pay-for-performance incentives as part of a quality improvement project in 2018. The percent of cemented stems and incidence of fracture within 90 days of surgery was analyzed by age, sex, and year of surgery.

## RESULTS:

The overall use of cemented stems in THA rose from 2.7% in 2017 to 6.8% in 2022. Only 0.7% of men and 1.8% of women under 75 years were cemented in 2017 while 4.7% and 10.4% in patients 75 and older were cemented, respectively. By 2022, 10.8% of men and 26.8% of women 75 and older were cemented. In elderly females, the incidence of fracture after THA has dropped to 1.7% in 2022 from a peak of 3.5% in 2018 as the use of cement has increased.

**DISCUSSION AND CONCLUSION:** Early fracture often leads to revision and may be preventable. This analysis demonstrated a direct correlation between the use of cemented stems and decreased post-operative fracture rates in elderly females. Statewide fractures increased from 2012 to 2018 (peak at 1.26%). Since the beginning of the MARCQI fracture reduction quality initiative there was a steady decline to 0.96% in 2022. Stratifying by age and gender, cementing in older women increased 16% and fracture rates decreased by nearly 2%. With this MARCQI initiative there was an estimated 280 fewer revisions secondary to fractures in Michigan. Surgeons should consider using cemented femoral stems for THA in elderly women.

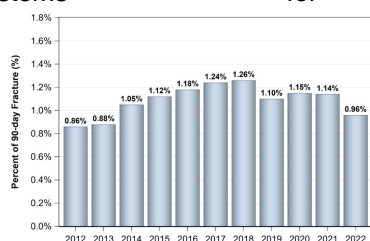


Figure 1

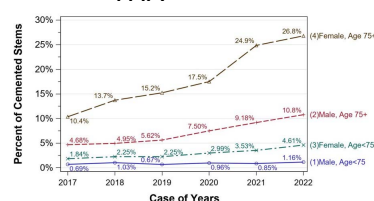


Figure 2

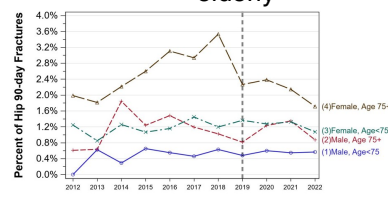


Figure 3