Decreased Periprosthetic Fracture Rates with Increased Utilization of Cement in Total Hip Arthroplasty

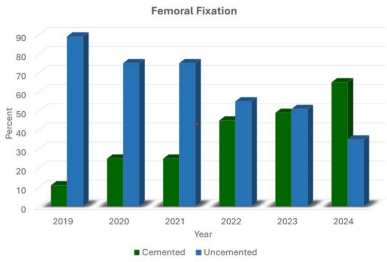
Clayton Foster, James Fuchs Gannon, Shashank Chitta, Victoria Aquilino, Karl C Roberts

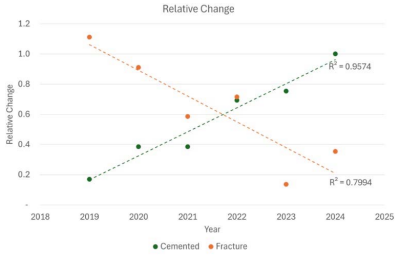
INTRODUCTION: There is strong evidence demonstrating that the use of cemented femoral components in total hip arthroplasty is not only safe, but is also associated with lower rates of periprosthetic fractures - especially in elderly females. The importance of preventing periprosthetic fractures is often understated, as these injuries are associated with significant cost, morbidity, and mortality for the patients affected, with literature suggesting mortality rates as high as 18% at one year. Despite substantial evidence to support the use of cemented femoral components in this population, US surgeons have been slow to adopt this technique.

METHODS: Given this discrepancy between evidence and practice, a performance measure was implemented at our institution with the goal of decreasing the rate of periprosthetic fracture following THA. Educational efforts were initiated at both the state and hospital level to educate surgeons on the role of cemented stems in at-risk populations. All female patients over 70 years of age who underwent primary total hip arthroplasty with any of nine fellowship trained arthroplasty surgeons at a single institution between 2019 and 2024 from were included, and data was collected using the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) database.

RESULTS: As a result of this initiative, the use of cemented femoral components in females over the age of 70 at this institution has increased from 11% in 2019 to 65% in 2024. This has resulted in a corresponding decrease in periprosthetic fractures within 90 days of surgery, from 3.11% to <1%, over the same timeframe.

DISCUSSION AND CONCLUSION: This data both provides further evidence that cemented femoral components are associated with decreased rates of periprosthetic fracture in this population, and also highlights the value of registry data as a powerful tool to drive quality improvement in healthcare. The success of this initiative in decreasing the rate of periprosthetic fractures through the use of cemented femoral components in women over 70 years of age should encourage other providers and institutions to follow suit.





Year	2019	2020	2021	2022	2023	2024
% Cemented	11	25	25	45	49	65
% Fracture	3.1	2.6	1.6	2.0	0.4	0.9