Risk of Early Manipulation in Cemented vs. Cementless TKA; An Analysis Using the American Joint Replacement Registry

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INTRODUCTION:

Cementless total knee arthroplasty (TKA) has recently regained popularity, yet data has raised concerns about rates of arthrofibrosis following these procedures. The purpose of this study was to utilize the American Joint Replacement Registry (AJRR) to compare rates of early manipulation under anesthesia (MUA) in cementless and cemented primary TKAs that use technology or manual instrumentation.

METHODS:

We queried the AJRR for all patients ages 18-95 who underwent cemented or cementless primary TKA from Jan 2016-Dec 2023. We then further divided patients based on whether technology (robotics or computer-assisted navigation) was used during the primary surgery. Groups were then compared for rates of MUA within 30-days of the index surgery using multivariate analysis and odds ratios.

RESULTS:

A total of 340,841 cases were included in the study, 78,397 (23%) of which used technology and 262,444 (77%) did not. There were 51,500 (65%) robotic and 26,897 (35%) navigated cases. Sixty-five percent of technology-assisted TKAs and 92% of manual TKAs were cemented. In the technology group, multivariate analysis demonstrated significantly higher odds of MUA in the cemented patients compared to cementless (OR 1.95, 95% CI 1.06,3.59; p=0.031). Robotic cases had significantly higher odds of MUA with cemented compared to cementless implants (OR 2.38, 95% CI 1.27,4.46; p=0.007), while there was no difference in MUA related to cementation in the navigated cases (OR 3.53, 95% CI 0.48,25.95; p=0.215). In the manual group, there were no significant differences in MUA rates related to cementation use (OR 1.14, 95% CI 0.8,1.64; p=0.462).

DISCUSSION AND CONCLUSION:

Cementless TKA did not increase odds of early MUA. In cases where technology was used, specifically with robotics, cemented TKAs had higher rates of early MUA than cementless. Identification of risk factors leading to early arthrofibrosis may be patient dependent and further study is required to elucidate any surgical considerations.