

Manipulation Under Anesthesia After Total Knee Arthroplasty: Who Still Requires a Revision?

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Introduction: Stiffness after total knee arthroplasty (TKA) is a multifactorial complication involving patient, implant, surgical technique and rehabilitation factors occasionally necessitating manipulation under anesthesia (MUA) or revision. Few modern databases contain sufficient longitudinal information on all of these factors. We characterized the MUA after primary TKA population and identified independent risk factors for early revision TKA after MUA from the American Joint Replacement Registry (AJRR).

Methods: We retrospectively reviewed primary TKAs for patients ≥ 65 years old in the AJRR from 01/01/2012-3/31/2019. We linked these to the Centers for Medicare and Medicaid Services database to identify MUA and revision TKA procedure codes. We compared groups with Chi-squared testing and identified independent risk factors for subsequent revision with multivariable logistic regression presented as odds ratios with 95% confidence intervals.

Results: Of 871,032 primary TKAs included, 5,491 (0.6%) underwent MUA after a median of 2.0 ± 1.0 months. Revision surgery occurred in 350 (4.7%) of MUA patients after median of 7 months. The timing of MUA was not different between revision and no revision patients ($p=0.26$). Patients undergoing MUA were older than non-manipulation patients (70 vs. 67 years old, $p<0.01$) with a higher incidence of tobacco use (4.8% vs. 1.5%, $p<0.01$). However, younger age was an independent risk factor for revision after MUA (0.97, 0.96-0.98, $p<0.01$). The utilization of cruciate retaining implants was significantly lower in both MUA patients (13% vs. 55%, $p<0.01$) and patients undergoing revision after MUA (24% vs. 50%, $p<0.01$). Cruciate retaining design was not independently associated with revision TKA after MUA ($p=0.73$).

Conclusions: The incidence of MUA after primary TKA is low at 0.6% in the Medicare population but 4.7% of MUA patients progress to early revision after a median 7 months. Younger age was associated with revision TKA after MUA.