Racial Discrepancies in Rate of Need for Manipulation Under Anesthesia following Total Knee Arthroplasty

Micah Rose Richardson[1], Indigo Milne[2], Nicholas Rowe, Nikkole Marie Haines
[1]Penn State Hershey Medical Center, [2]Penn State College of Medicine

INTRODUCTION:

Although racial disparities associated with worse outcomes after total knee arthroplasty (TKA) are well established, there is limited data regarding demographic differences in rates of manipulation under anesthesia (MUA). This study assesses if postoperative arthrofibrosis requiring MUA is impacted by race and ethnicity when controlling for comorbidities.

METHODS:

A review of the Trinet-X Global Collaborative Network was performed to compare cohorts of patients requiring and not requiring MUA after TKA from January 1, 2000 to January 1, 2024. The database was queried using corresponding CPT and ICD-10 codes. Of 266,414 patients undergoing TKA, 8,606 patients were identified as requiring MUA after TKA. Propensity score matching was performed to balance cohorts, and accounted for age, sex, and comorbidities including ASA classification, diabetes mellitus, obesity, hypertension, arthritis diagnosis (RA vs. OA), tobacco use, COPD, dialysis dependence and cancer diagnosis. Statistical analysis was performed using TriNetX analytics tools which utilize R and SAS to run and verify, including z-test to compare percentage of cohort with specific outcome or demographic factor.

RESULTS:

During the study period, Black or African American as well as Hispanic or Latino patients were more likely to require MUA (11.6% vs 17%, $p<0.0001$, 4.7% vs 6.2%, $p<0.0001$, respectively). White patients were less likely to develop arthrofibrosis requiring MUA (73.3% vs 66.8%, $p<0.0001$). There was no significant difference in MUA requirement noted for other races.

DISCUSSION AND CONCLUSION:

Despite controlling for important risk factors with propensity-matched cohorts, race independently predicts an increased likelihood of requiring MUA after TKA. This supports a continued need to better understand genetic predispositions, cultural differences, socioeconomic disparities, or other factors contributing to arthrofibrosis requiring MUA to make total joint arthroplasty (TJA) care more equitable for all.

Table 1. Demographic Information for Patient Cohorts with and without MUA Following TKA

	Research Network		
	No MUA (N=8,606)	MUA (N=8,606)	P-Value
Age at Index Procedure	62 ± 9.74	61.8 ± 9.76	0.2056
Male	2,914 (33.86%)	2,933 (34.081%)	0.7598
Female	5,331 (61.945%)	5,299 (61.573%)	0.6157
Unknown Gender	374 (4.346%)	361 (4.195%)	0.6241
Not Hispanic or Latino	6,621 (76.935%)	6,732 (78.224%)	0.0425
Unknown Ethnicity	1,584 (18.406%)	1,342 (15.594%)	<0.0001
Hispanic or Latino	401 (4.66%)	532 (6.182%)	<0.0001
White	6,304 (73.251%)	5,746 (66.767%)	<0.0001
Unknown Race	927 (10.772%)	965 (11.213%)	0.3544
Black or African American	994 (11.55%)	1,498 (17.406%)	<0.0001
Other Race	185 (2.15%)	215 (2.498%)	0.1291
Asian	146 (1.696%)	137 (1.592%)	0.5896
Native Hawaiian or Other Pacific Islander	26 (0.302%)	15 (0.174%)	0.0854
American Indian or Alaska Native	24 (0.279%)	30 (0.349%)	0.4135