



Hospital-level Neuraxial Anesthesia Use And Racial Disparity In Elective Total Joint Arthroplasty Across A Multi-Hospital System

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INTRODUCTION

- Total hip and knee arthroplasty are among the most common surgeries in the United States, projected to exceed 4 million cases per year by 2030.
- Neuraxial anesthesia is associated with improved perioperative outcomes compared to general anesthesia.
- Prior studies show racial minority patients receive regional anesthesia less often.

RESEARCH QUESTION

- Does hospital-level neuraxial anesthesia use contribute to racial disparities in the anesthesia provided for total joint arthroplasty?

METHODS

- Retrospective review of elective primary total knee and hip arthroplasties in adult patients performed between 2015 and 2025.
- Primary outcome was the type of anesthesia used (neuraxial vs general).
- Mixed-effects logistic regression clustered by primary surgeon and accounting for significant patient and system-level confounders.

RESULTS

Table 1. Characteristics of the 12 hospitals and 78,613 elective primary total joint arthroplasty cases performed between August 2015 and August 2025.

Factor		Neuraxial n=58,999	General n=19,614	p-value
Type of Hospital [‡]	Community	29415 (49.9%)	12732 (64.9%)	<0.001
	Tertiary	28987 (49.1%)	5989 (30.5%)	
	Trauma/Urban	597 (1.0%)	893 (4.6%)	
Total Joint Arthroplasty [^]	Knee	19277 (39.1%)	6846 (43.5%)	<0.001
	Hip	29968 (60.9%)	8901 (56.5%)	
ASA Classification	1	813 (1.4%)	132 (0.7%)	<0.001
	2	29000 (49.2%)	6572 (33.5%)	
	3	28703 (48.7%)	12441 (63.4%)	
	4	482 (0.8%)	469 (2.4%)	

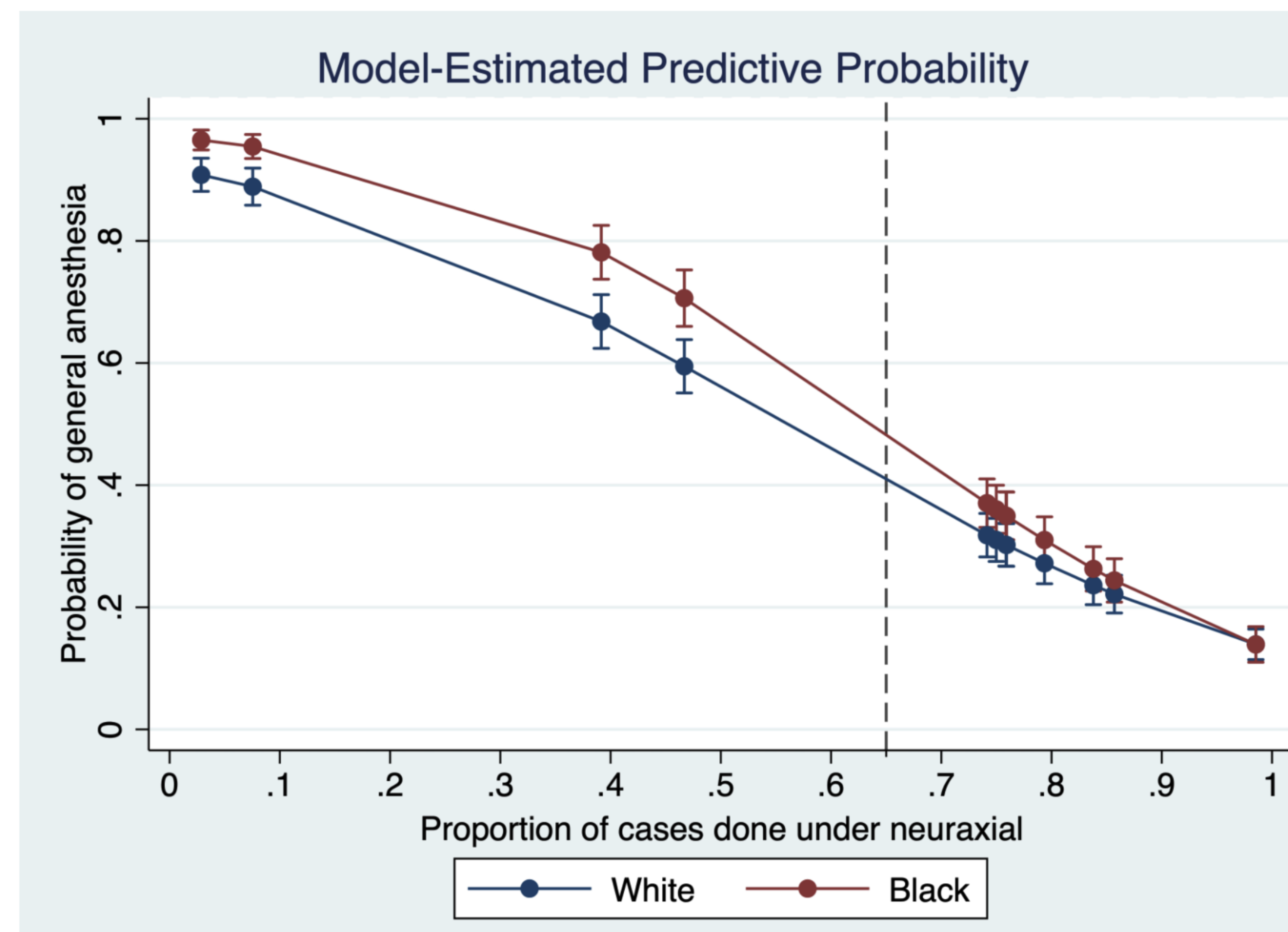
[‡]From the 12 hospitals, there were seven community hospitals, four tertiary hospitals, and two urban trauma centers. [^]Both total knee and hip arthroplasty surgeries include open, robotic assisted, and minimally invasive.

Table 2. Demographic characteristics of the patients undergoing primary total joint arthroplasty.

Factor		Neuraxial n=58,999	General n=19,614	p-value
Age	in years, median (IQR)	67 (61, 73)	67 (61, 74)	0.037
Sex	Woman	34507 (58.5%)	11309 (57.7%)	0.041
	Man	24490 (41.5%)	8305 (42.3%)	
Race	White	54292 (92.0%)	18136 (92.5%)	<0.001
	Black	3553 (6.0%)	1188 (6.1%)	
	Other	376 (0.6%)	104 (0.5%)	
Ethnicity	Hispanic	50575 (99.6%)	16648 (99.3%)	<0.001
	Non-Hispanic	186 (0.4%)	115 (0.7%)	

Hospitals performing general anesthesia in more than 35% of elective total joint arthroplasty cases show a significant racial disparity favoring general over neuraxial anesthesia for black patients.

Figure 1. Association of neuraxial anesthesia use at the hospital level and the probability of undergoing general anesthesia for total knee or hip arthroplasty, by race.



RESULTS

- The proportion of cases performed under neuraxial anesthesia varied widely across hospitals, from 2.9% to 98.5%.
- Black patients had higher odds of receiving general anesthesia, odds ratio 1.1, 95%CI 1.10-1.32.
- Patients undergoing neuraxial were discharged less frequently to skilled nursing facilities, 8.3% vs 12.8%, p<0.001.
- Other small yet significant reductions in postoperative length of stay and readmission rates were observed.

CONCLUSION

- Despite study limitations, these findings suggest that increasing neuraxial anesthesia use may help reduce racial disparities in anesthesia care and represent a target for hospital and systems-level interventions.