

Anesthesia Use and Trends Among Primary Versus Revision Hip and Knee Arthroplasty Procedures

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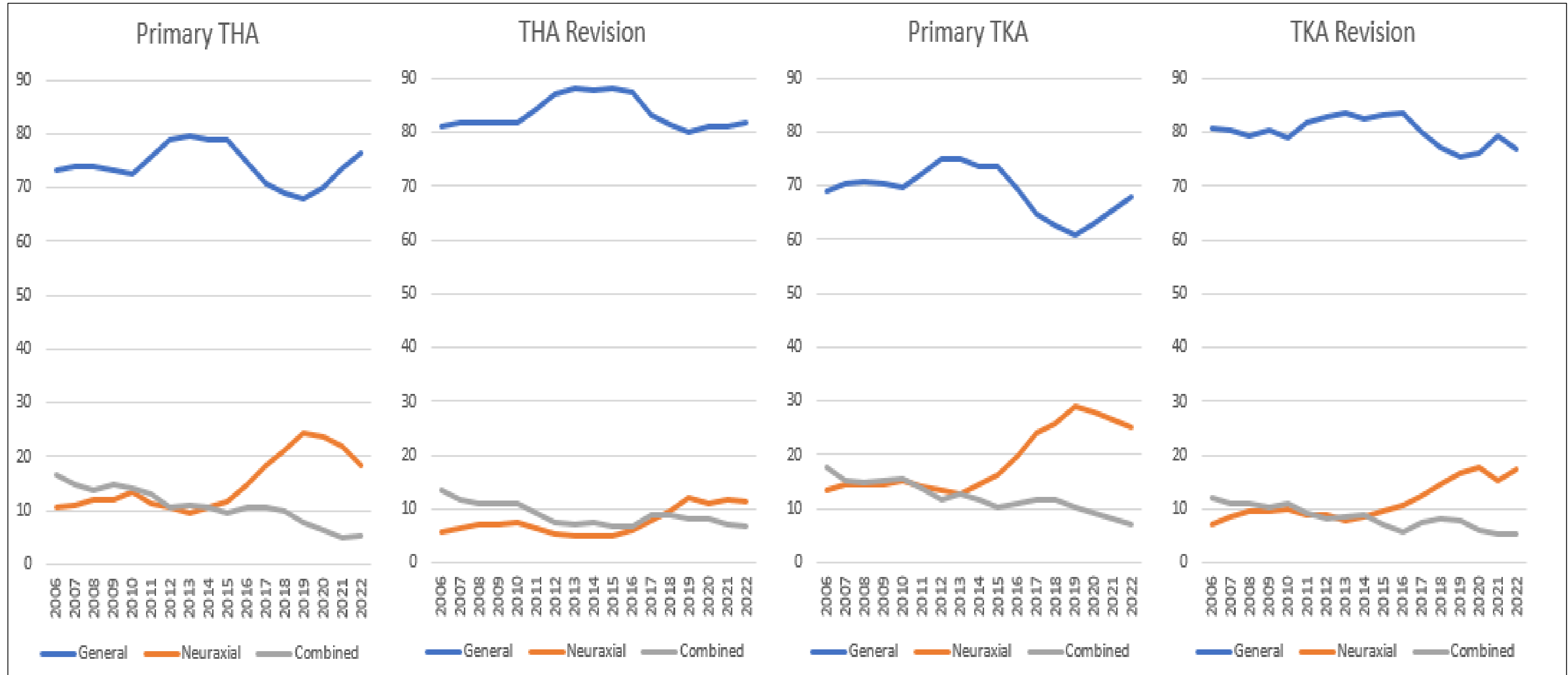
INTRODUCTION

- With an aging population and ever increasing volume of primary hip and knee joint arthroplasties (THA, TKA), demand for revisions of these procedures is also increasing.
- Additionally, in line with evolving evidence, it is likely that anesthetic management for primary and revision TJAs has shifted throughout the years.
- We sought to describe patterns in terms of anesthesia type and peripheral nerve block (PNB) use for primary and revision TJAs.

METHODS

- This study was approved by the Institutional Review Board at our hospital (IRB#2012-050).
- The requirement for written informed consent was waived given the de-identified nature of the data.
- Using the Premier Healthcare Database, from 2006 to 2022 we identified:
 - 1,232,434 primary THAs
 - 158,440 revision THAs
 - 2,099,341 primary TKAs
 - 224,733 revision TKAs
- Type of anesthesia (general, neuraxial, combined, other/unknown/missing) and PNB use was identified using billing codes.
- Patients with missing anesthesia type in the billing records were included in table 1 characteristics but excluded from further analysis.

“Neuraxial anesthesia use increased from 2006 to 2022 across all procedure groups although general remained as the most common type used.”



RESULTS

General anesthesia was the most common type of anesthesia across all four procedure groups throughout the study period and more common in revision procedures (revision THA=69.6%, revision TKA 64.4%) in comparison to primary procedures (THA=58.0%, TKA=54.6%). Inversely, neuraxial use was more common in primary procedures (THA=11.8%, TKA=14.2%) in comparison to revision procedures (revision THA=5.8%, revision TKA=9.0%). Similarly, PNBs were more commonly used in primary procedures (THA=13.0%, TKA=23.8%) than in revision procedures (revision THA=7.9%, revision TKA=18.2%). Across all four procedure groups, neuraxial anesthesia use increased from 2006 to 2022 whereas combined neuraxial/general anesthesia use decreased (Figure 1). General anesthesia fluctuated throughout the study period but remained largely unchanged from 2006 to 2022.

Table 1. Anesthesia type and peripheral nerve block use among primary and revision procedure patients

	Primary THA	THA Revisions		Primary TKA	TKA Revisions	
	N (%)	N (%)	P-value	N (%)	N (%)	P-value
Anesthesia Type			<.001			<.001
General	679,900 (58.0)	105,204 (69.6)		1,098,169 (54.6)	138,496 (64.4)	
Neuraxial	138,110 (11.8)	8,838 (5.8)		284,880 (14.2)	19,306 (9.0)	
Combined	98,817 (8.4)	10,820 (7.2)		194,626 (9.7)	14,482 (6.7)	
Other/Unknown	250,339 (21.3)	25,770 (17.0)		421,068 (20.9)	41,929 (19.5)	
Missing	5,755 (0.5)	640 (0.4)		11,803 (0.6)	895 (0.4)	
Peripheral Nerve Block Use	152,389 (13.0)	11,924 (7.9)	<.001	477,617 (23.8)	39,046 (18.2)	<.001

DISCUSSION

Our study showed general anesthesia is the most common anesthesia type across all procedure groups, with neuraxial anesthesia and peripheral nerve block use more common among primary procedures in comparison to revision procedures. Neuraxial anesthesia use increased from 2006 to 2022 across all procedure groups although general remained as the most common type used.

