Higher Mortality Rates and Worse Postoperative Outcomes Following Total Hip Arthroplasty with General Compared to Spinal Anesthesia

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INTRODUCTION: The use of general anesthesia (GA) was standard in total hip arthroplasty (THA) until spinal anesthesia (SA) came into popularity because of perceived improvement in recovery. The differences between them, particularly in short-term outcome measures, have not been fully elucidated. This study sought to understand how GA and SA impacted intraoperative and postoperative complications, as well as patient reported outcomes (PROs), following primary THA.

METHODS: A retrospective analysis was completed for 13,387 patients who underwent THA from 2016 to 2024 at a large institution, including patients who had either SA or GA, without a local or regional nerve block. There were 9,613 patients with SA and 3,774 with GA. Patient demographics, estimated blood loss (EBL), length of stay (LOS), and Centers for Medicare and Medicaid Services (CMS) defined postoperative complications data and readmission/mortality rates at 7-day, 30-day, 90-day, and 1-year time points were analyzed with multivariable linear and logistic regressions. This was also completed for various PROs. Significance was set to $p<0.05$.

RESULTS: Patients who underwent GA were older (66.4 vs. 65.2 years old, $p<0.01$) and more likely to be male (46.6% vs. 45.3%, $p<0.01$). They had higher body mass index (31.2 vs. 30.6, $p<0.01$) and ECI compared to the SA group (2.35 versus 1.8, $p<0.01$). After adjusting for these patient demographics, GA patients were found to have higher EBL (269.0 vs. 223.5 mL, $p<0.01$) and longer LOS (2.4 vs. 1.7 days, $p<0.01$) (Table 1). Patients in the GA group also had higher 90-day all-cause complications, mechanical failure, pneumonia, sepsis, and wound infection ($p<0.05$). Similarly, GA had higher mortality rates while in-house and at 30-day, 90-day, and 1–year time points ($p<0.05$). They also had higher readmission rates at 7-day, 30-day, and 90-day time points ($p<0.05$) (Table 2). The Hip Disability and Osteoarthritis Outcome Scores (HOOS) for the GA group were both higher preoperatively and at 1-year ($p<0.01$), though the change was similar ($p=0.09$). Other CMS postoperative outcomes and PROs were similar between groups.

DISCUSSION AND CONCLUSION: Higher short-term mortality, postoperative outcomes, and readmission rates are associated with GA after THA. This study results support the use of SA with its lower complication rates and recommend its wider use for THA.

Table 1: Demographics and perioperative variables

	Spinal (n = 9,613)	General (n = 3,774)	P-value
Male (%)	4,354 (45.29%)	1,759 (46.61%)	0.266
AGE (years)	65.15 (10.80)	66.36 (11.12)	<0.0001
BMI (kg/m^2)	30.57 (8.69)	31.20 (8.74)	0.0002
Estimated Blood Loss (mL)	223.51 (159.79)	268.99 (212.60)	<0.0001
LOS (days)	1.70 (1.43)	2.36 (2.44)	<0.0001
ELIXHAUSER SCORE	1.82 (1.52)	2.35 (1.79)	<0.0001

Table 2: Postoperative complications

Outcome	Spinal (n = 9,613) *	General (n = 3,774) *	p-value
90-Day All-Cause Complications	214 (2.25)	152 (4.11)	<0.0001
90-Day AMI	2 (0.02)	2 (0.05)	0.327
90-Day Death	2 (0.02)	21 (0.57)	<0.0001
90-Day Mechanical	130 (1.37)	81 (2.19)	0.001
90-Day PE	12 (0.13)	10 (0.27)	0.068
90-Day Pneumonia	9 (0.09)	9 (0.24)	0.037
90-Day Sepsis	7 (0.07)	8 (0.22)	0.029
90-Day Surgical Site Bleed	0 (0.00)	0 (0.00)	N/A
90-Day Wound Infection	59 (0.62)	38 (1.03)	0.014
90-Day SSI	48 (0.50)	35 (0.95)	0.004
In-House Mortality	1 (0.01)	5 (0.14)	0.003
30-Day Mortality	1 (0.01)	16 (0.43)	<0.0001
1-Year Mortality	56 (0.59)	69 (1.87)	<0.0001
7-Day Readmit	70 (0.74)	49 (1.33)	0.001
30-Day Readmit	247 (2.60)	167 (4.52)	<0.0001
90-Day Readmit	518 (5.45)	299 (8.09)	<0.0001

*All outcomes given as absolute number (percentage)