

Spinal versus General Anesthesia for Outpatient Total Hip and Knee Arthroplasty in the Ambulatory Surgery Center: A Matched-Cohort Study

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INTRODUCTION:

Spinal anesthesia is the most popular outpatient regimen, but scenarios exist where induction is unsuccessful, unobtainable, or against patient preference. We compared the safety and efficacy of same day discharge (SDD) total hip (THA) and knee (TKA) arthroplasty utilizing spinal versus general endotracheal anesthesia in a free-standing ambulatory surgery center (ASC).

METHODS:

This is a retrospective matched cohort study of all THA and TKA from January 2014 to December 2020 in an ASC. General anesthesia was utilized in 105 patients (58 TKA and 47 THA). These were nearest-neighbor matched utilizing same surgeon, year, age, gender, body mass index, and American Society of Anesthesiologists Physical Status Classification (ASA) to 58 TKA and 47 THA with spinal anesthesia, with no statistical demographic differences ($p \geq 0.679$; Table 1). The primary outcome was the rate of successful SDD. Secondary outcomes included pain (0-10), nausea, medical complications in the post-acute care unit (PACU), and 90-day complications. Chi square analysis and paired t-tests were utilized.

RESULTS:

All spinal anesthetic patients underwent SDD compared to 103 (98%) general anesthetic patients ($p=0.498$). General anesthesia was associated with fewer minutes to discharge from PACU (227 vs. 260, $p=0.015$), ambulation (166 vs. 204, $p<0.001$), and urination (175 vs. 202, $p=0.050$). General anesthesia patients had higher 1-hour (5.2 vs. 1.5, $p<0.001$) and 2-hour (3.2 vs. 1.5, $p<0.001$) and 3-hour (1.9 vs. 1.3, $p=0.050$) postoperative pain, consumed more milligram morphine equivalents (13 vs. 8, $p<0.001$) and experienced more nausea (48% versus 26%, $p<0.001$). With the numbers available for study, 90-day complications (8 vs. 7), admissions (2 vs 3) and reoperations (5 vs. 2) were similar among spinal and general anesthesia, respectively ($p \geq 0.246$).

DISCUSSION AND CONCLUSION:

General endotracheal anesthesia had an acceptable rate of SDD and 90-day complications and was associated with faster discharge from the ASC with earlier time to ambulation and urination postoperatively. These patients experienced more pain and nausea compared to those with spinal anesthesia.

Table 1. Patient Demographics

	Spinal	General	p-value
Age	57.7 (31.3-73.1)	57.6 (35.7-77.9)	0.912
Female	43 (40.9)	43 (40.9)	-
Body Mass Index	32.6 (20.8-47.7)	32.9 (19.8-50.5)	0.68
ASA			-
	1	2 (2%)	2 (2%)
	2	56 (53%)	56 (53%)
	3	47 (45%)	47 (45%)
Total Knee Arthroplasty	58 (55%)	58 (55%)	-
Left-sided	53 (50.5)	50 (47.6)	0.679
Adductor Canal Block	43 (41%)	48 (46%)	0.486
Estimated Blood Loss (mL)	226 (25-1100)	287 (25-1800)	0.098

Data presented as number (range) or number (%), American Society of Anesthesiologists Physical Status Classification (ASA)