



Impact of Spinal Versus General Anesthesia on Urinary Retention and Nausea Following Same-Day Discharge Total Joint Arthroplasty

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BACKGROUND

TJA & Same-Day Discharge:

- Ambulatory total joint arthroplasty (TJA) is increasingly adopted to reduce cost, improve efficiency, and maintain safety.¹⁻⁵

Anesthesia Considerations:

- Spinal Anesthesia (SA) is commonly preferred in TJA for its association with lower postoperative pain and opioid consumption.²²⁻²⁴
- General Anesthesia (GA) may be selected when SA is contraindicated or declined, but carries higher rates of postoperative nausea.¹⁷⁻¹⁹
- In practice, anesthesia choice may be based on provider preference rather than comparative outcomes.

Evidence Gap:

- Few studies compare SA vs. GA outcomes specifically in the ambulatory same-day discharge TJA setting.²⁰⁻²²

Objective:

- To evaluate whether anesthesia type is associated with differences in postoperative urinary retention and postoperative nausea in patients undergoing ambulatory THA and TKA.

METHODS

Design:

Retrospective cohort study

Setting: Mayo Clinic Florida, January 2022 – August 2024

Population: 1,002 patients undergoing ambulatory total hip

arthroplasty (THA) and total knee arthroplasty (TKA)

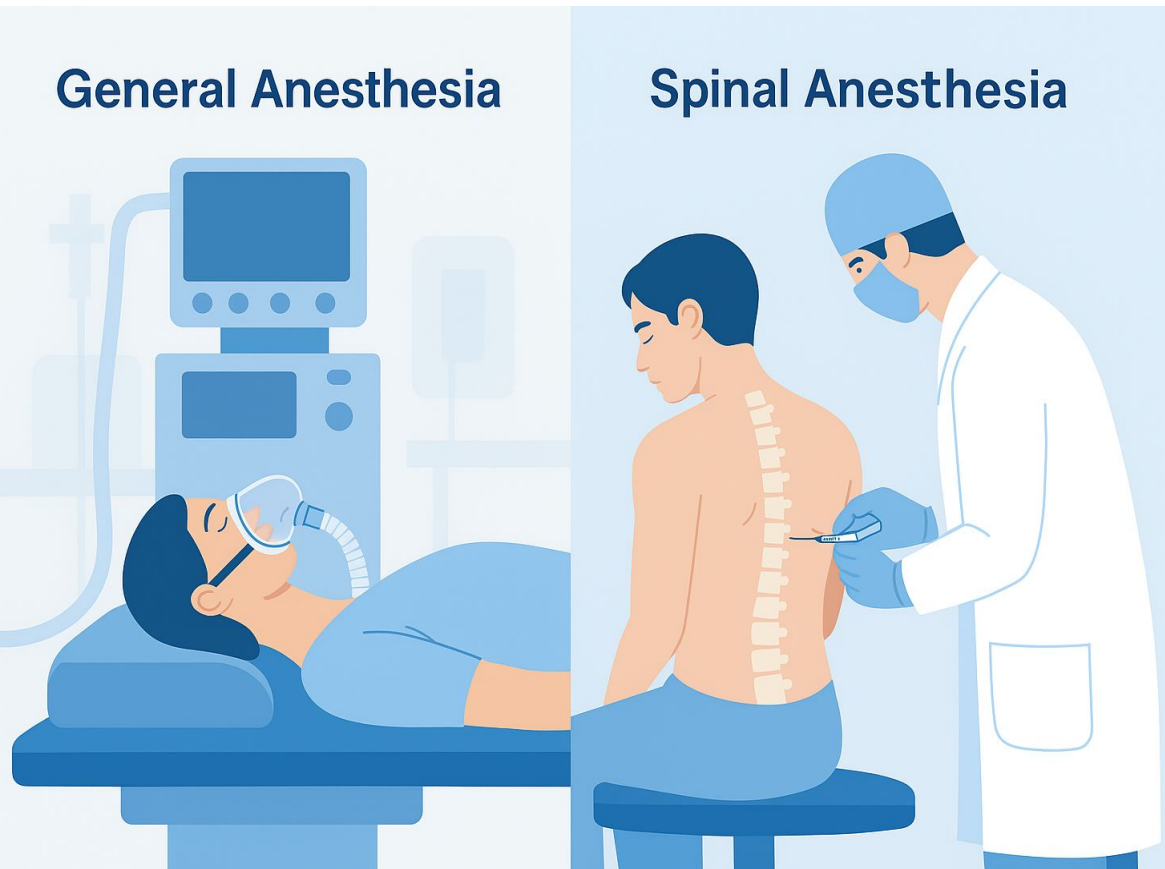
Primary Outcomes: Postoperative urinary retention (defined as need for bladder catheterization), postoperative nausea/vomiting (defined as nausea or vomiting requiring antiemetic administration).

Secondary Outcomes: Pain scores until discharge (median, IQR), opioid consumption (oral morphine equivalents), ambulation distance (first PT session), PT sessions to discharge, length of stay, 90-day readmission/reoperation rates.

Statistical Analysis:

Chi-square and Fisher's exact tests were used for categorical variables; t-tests and Wilcoxon rank-sum tests were used for continuous variables. Significance was defined as $p < .05$.

GENERAL VS SPINAL



General Anesthesia

- Deeper sedation
- Inhaled or IV agents
- Often requires intubation

Spinal Anesthesia

- Awake or lightly sedated
- Local anesthetic injection
- Intubation not typically required

RESULTS

Table 1: Patient Demographics by Anesthesia Type

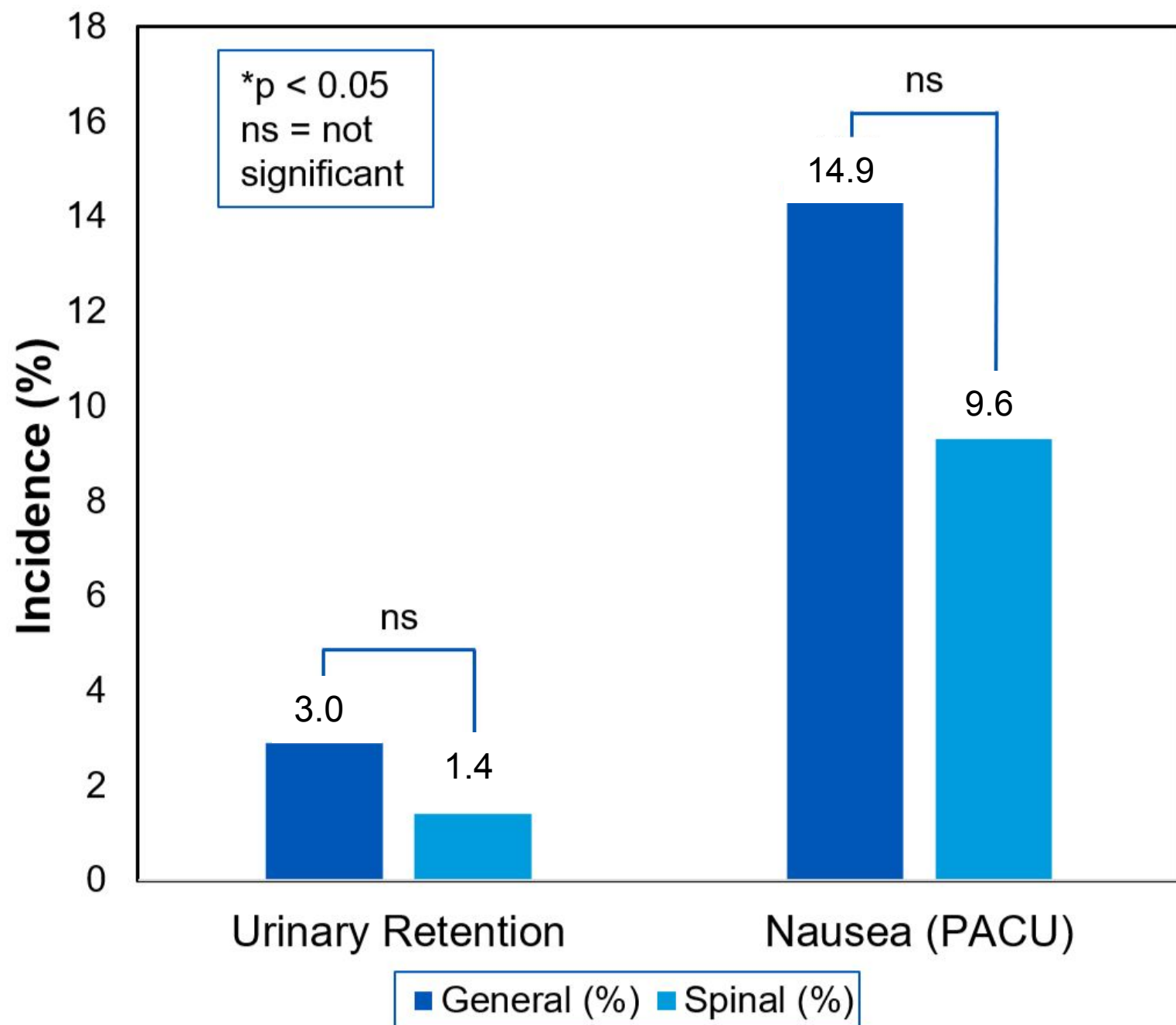
Variable		General Anesthesia (n =134)	Spinal Anesthesia (n =868)	P-Value
Age (yrs) (Mean ± SD)		63.5 ± 11.2	63.4 ± 8.87	.283
Gender (n (%))	Female	54 (40.3%)	395 (45.5%)	.259
	Male	80 (59.7%)	473 (54.5%)	
BMI (Mean ± SD)		34.1 ± 6.89	31.9 ± 6.48	<.001
Race (n (%))	White	118 (88.1%)	774 (89.2%)	.225
	African American	12 (9.0%)	50 (5.8%)	
	Other	4 (3.0%)	44 (5.1%)	
ASA Score (n (%))	1	1 (0.7%)	9 (1.0%)	<.001
	2	51 (38.1%)	480 (55.3%)	
	3	82 (61.2%)	379 (43.7%)	
Surgery Duration (min) (Median (IQR))		91 (82–104)	90 (81–102)	.194

Table 2: Primary and Secondary Outcomes by Anesthesia Type

Variable	General Anesthesia (n=134)	Spinal Anesthesia (n=868)	P-Value
Primary Outcomes			
Urinary Retention (n (%))	4 (3.0%)	12 (1.4%)	.168
Nausea (n (%))	20 (14.9%)	83 (9.6%)	.057
Secondary Outcomes			
Phase 1 PACU Time (min) (Mean ± SD)	43.8 ± 63.48	54.5 ± 70.46	.112
Length of Stay (hr) (Mean ± SD)	10.3 ± 2.52	10.30 ± 2.64	.933
Postop Opioid Use (OME) (Mean ± SD)	15.8 ± 15.06	10.7 ± 11.55	<.001
Pain Scores Until Discharge (Median (IQR))	3.6 (2.0, 5.0)	2.2 (0.8, 3.7)	<.001
90-day Readmissions (n (%))	3 (2.2%)	1 (0.1%)	.009
90-day Reoperations (n (%))	1 (0.7%)	1 (0.1%)	.249
PT Sessions to Discharge (Mean ± SD)	1.1 ± 0.30	1.1 ± 0.32	.773
Ambulation Distance in the First PT Session (ft) (Mean ± SD)	147.6 ± 78.79	151.8 ± 72.00	.506

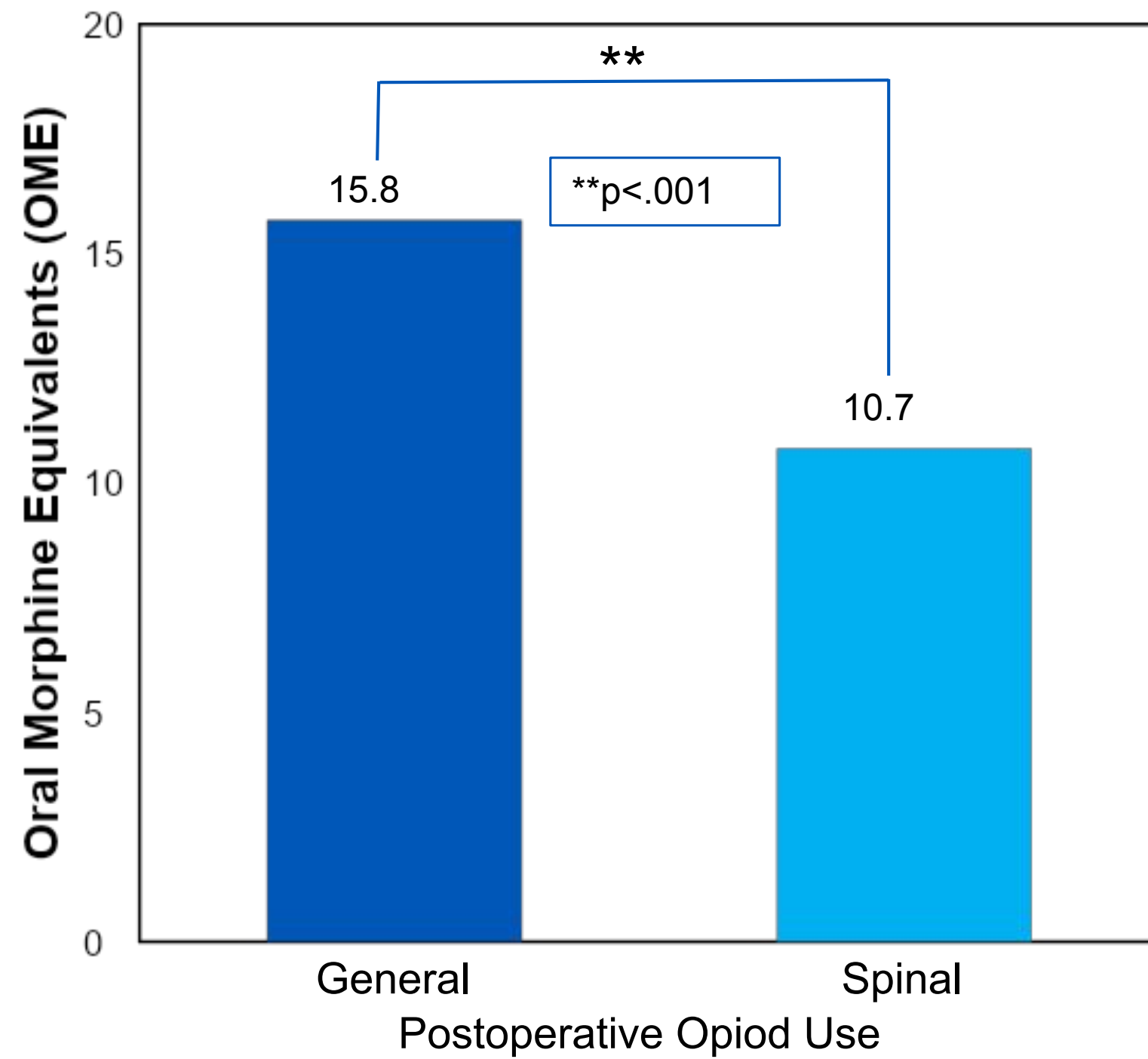
PRIMARY OUTCOMES

Figure 1: Percentage of Urinary Retention and Nausea by Anesthesia Type in TJA



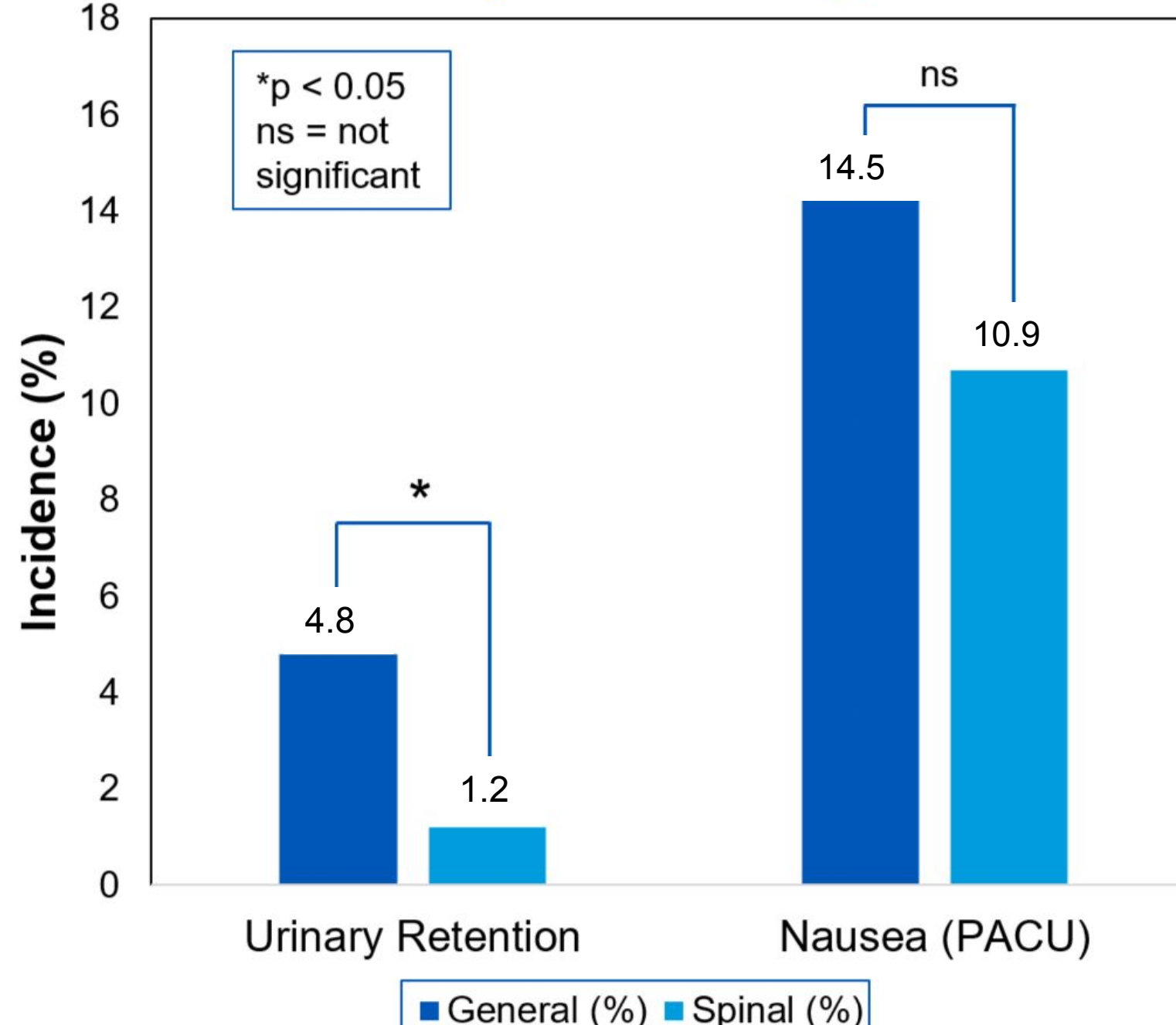
No significant difference in urinary retention or postoperative nausea was observed between SA and GA ($p > .05$ for both).

Figure 3: Mean Postoperative Opioid Use by Anesthesia Type



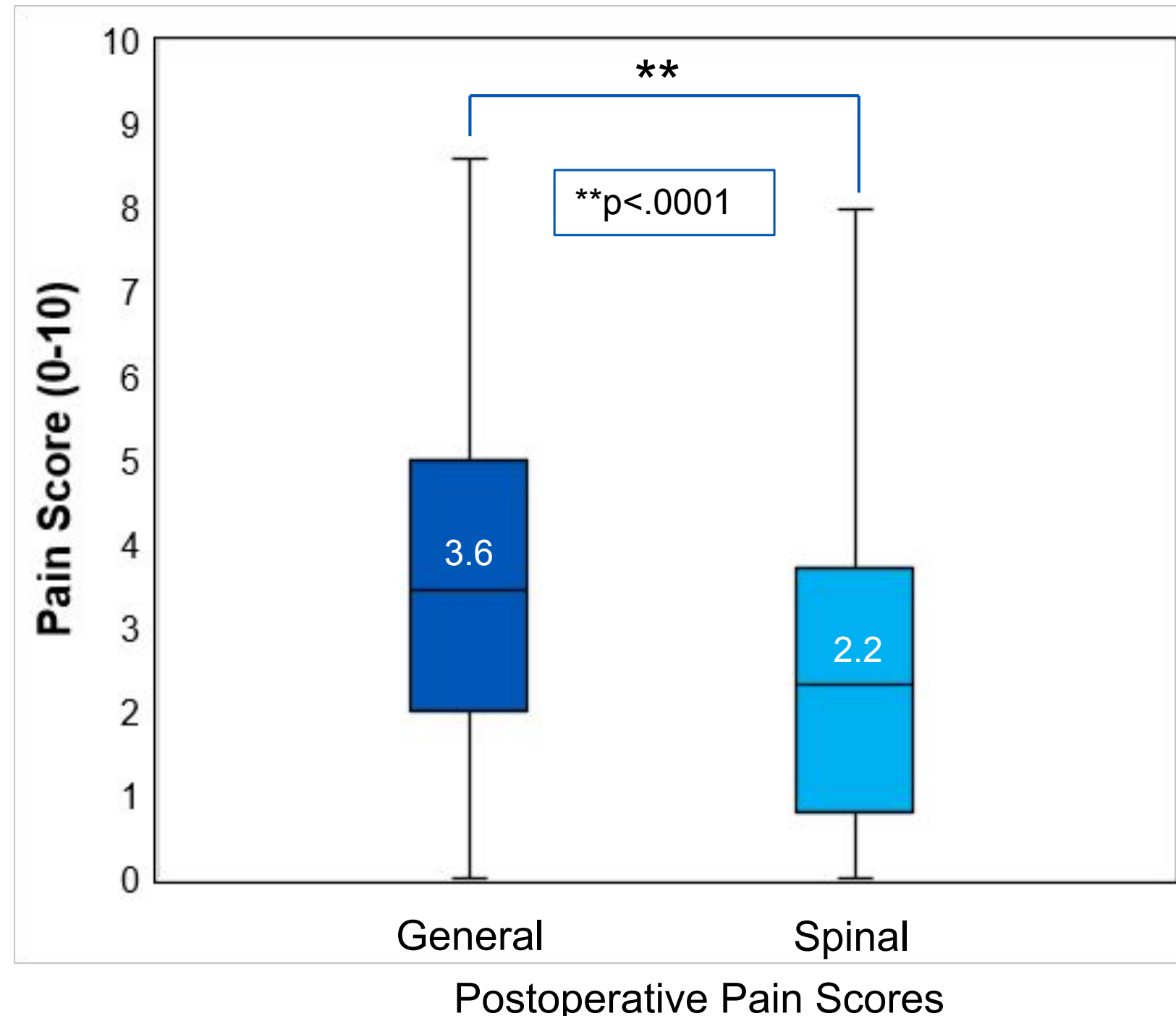
Patients receiving SA used significantly less opioids postoperatively compared to GA (10.8 vs. 15.7 OME, $p < .0001$).

Figure 2: Percentage of Urinary Retention and Nausea by Anesthesia Type in THA



Urinary retention was significantly lower in the THA SA group compared to GA (1.2% vs. 4.8%, $p = .042$).

Figure 4: Postoperative Pain Scores Until Discharge by Anesthesia Type



Patients receiving SA reported significantly lower postoperative pain scores compared to GA (median 2.2 vs. 3.6, $p < .001$).

DISCUSSION

- Postoperative nausea was not statistically significantly different between GA and SA (14.9% vs. 9.6%, $p = .057$).
- Urinary retention was not statistically significantly different between GA and SA (3.0% vs. 1.4%, $p = .168$).
- When separated by surgery type, GA patients were more likely to have urinary retention in the THA group only (4.8% vs. 1.2%, $p = .042$). This contrasts with traditional concerns of higher urinary retention rates in SA.¹³⁻¹⁴
- No significant differences were observed in early functional outcomes (ambulation distance, PT sessions to discharge).
- The use of mepivacaine as the spinal agent may have contributed to lower UR rates compared to bupivacaine.¹⁵⁻¹⁶
- SA was associated with significantly lower postoperative opioid use (10.7 vs. 15.8 OME, $p < .001$) and pain scores until discharge (median 2.2 vs. 3.6, $p < .001$).
- 90-day readmission was significantly lower in SA patients (0.1% vs. 2.2%, $p = .009$).

CONCLUSION

- The imbalance in group sizes (134 general vs. 868 spinal) may reflect institutional preference and limit comparability.
- Intraoperative antiemetic administration was inconsistent; over 50% of patients with postoperative nausea did not receive prophylaxis per current guidelines.²¹
- Retrospective design and lack of randomization introduce potential confounding and selection bias.
- Functional outcomes may be influenced more by PT and rehabilitation quality than anesthetic technique.
- Inclusion of additional covariates such as anticholinergic administration, comorbidities, and preoperative urologic history may strengthen future studies.
- Data gaps in postoperative variables highlight the need for more standardized documentation in future prospective studies.
- SA should remain a vital component of modern outpatient hip and knee arthroplasty protocols.¹⁻⁵
- Further prospective studies are warranted to optimize anesthesia protocols and define outcome-driven practices in ambulatory TJA.

REFERENCES



ABSTRACT

