



Comparison of Recovery Outcomes Between Mepivacaine and Bupivacaine Spinal Anesthesia in Total Joint Arthroplasty

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INTRODUCTION

Ambulatory Joint Surgery:

Rapid recovery and prompt discharge are vital for optimizing patient throughput and satisfaction.

Rationale:

- *Mepivacaine* duration: ~1.5–2 hours
- *Bupivacaine* duration: ~2.5–4 hours
- Shorter procedures may benefit from mepivacaine’s quicker offset.

Objective:

Quality Improvement initiative to assess whether transitioning from hyperbaric bupivacaine to mepivacaine for spinal anesthesia in total joint arthroplasty at UPMC Passavant improves post-operative recovery and patient satisfaction.

METHODS

Design: Retrospective chart review

Population: Adult patients undergoing total joint replacements at UPMC Passavant (December 2023–April 2024)

Interventions:

- Spinal anesthesia with mepivacaine vs. bupivacaine

Data Collected:

Patient demographics
Surgical procedure details
Opioid use in PACU
Urinary catheterization rates
Recovery/PACU times

Analysis:

- Chi-square for proportions
- t-tests for parametric data

Ethics: No patient identifiers; exempt from IRB review per UPMC policy

DISCUSSION

Key Finding:

- Mepivacaine’s shorter duration facilitated earlier ambulation and effective in-hospital pain control, enhancing patient comfort and satisfaction

PACU Stay:

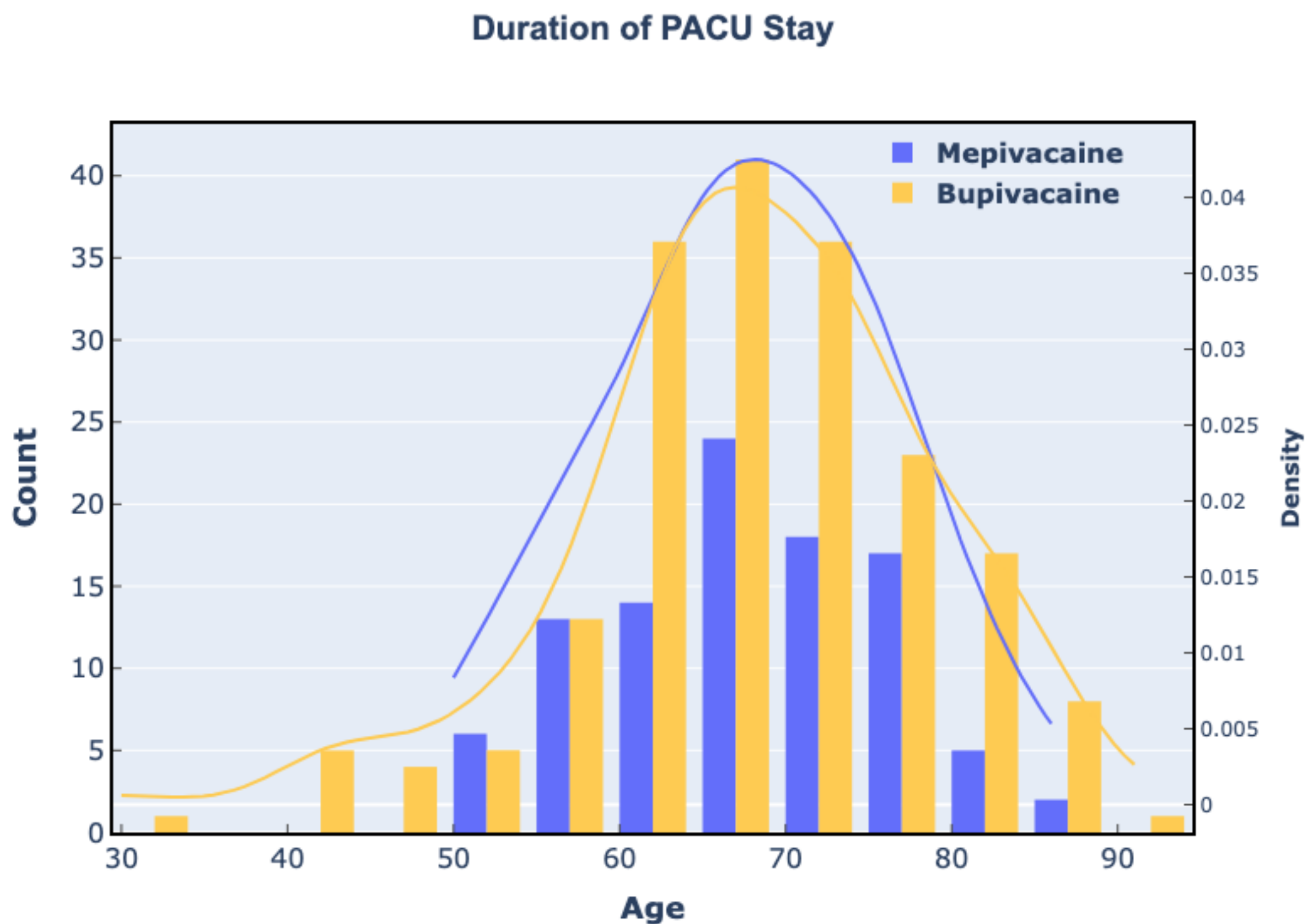
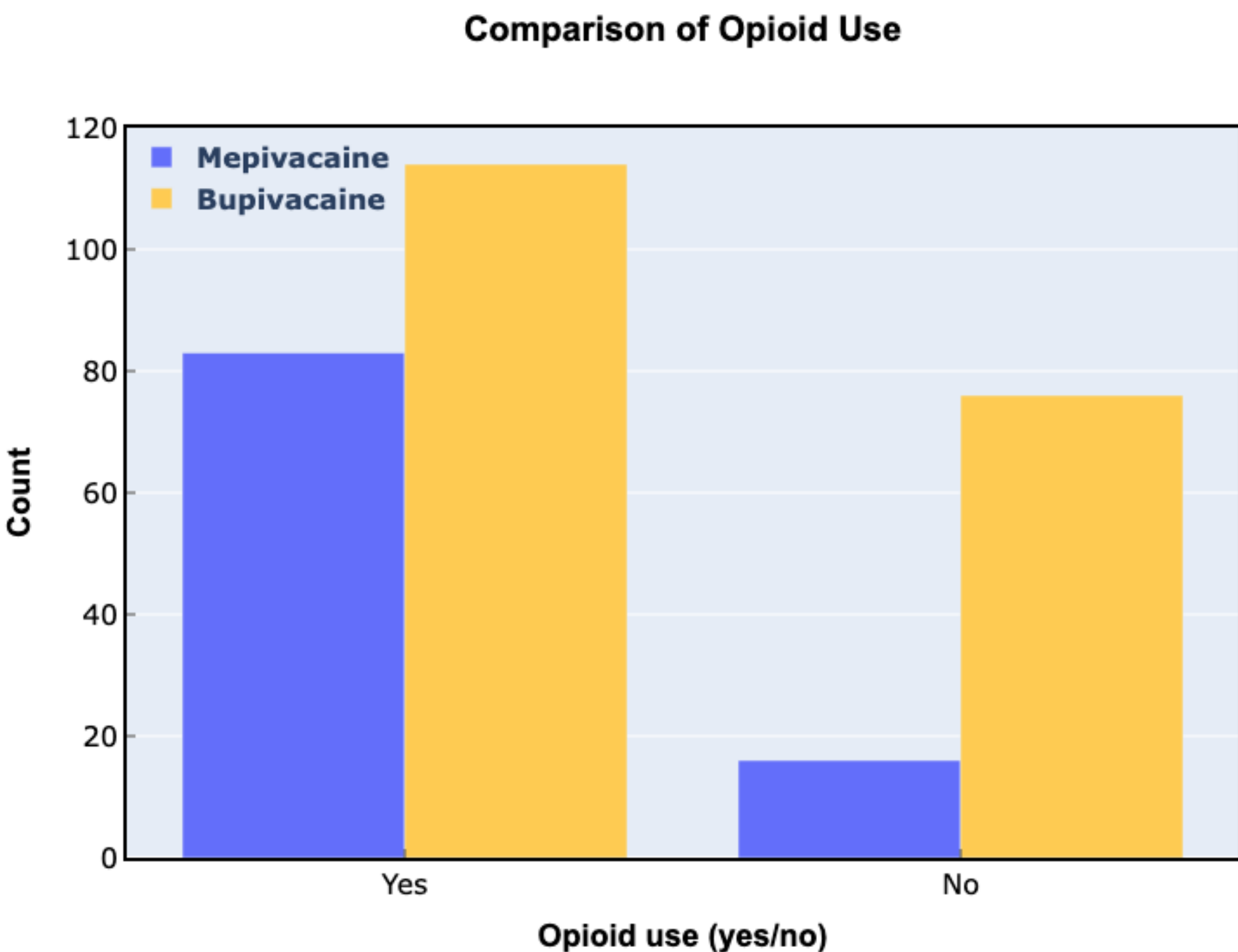
- PACU times were significantly shorter for mepivacaine
- Mepivacaine wore off quicker, patients received more post-spinal opioids before discharge
- Despite this, patients who received opioids had comparable time to discharge in either group
- Mepivacaine patients had an earlier incidence of post-op pain which was promptly addressed before discharge

Safety Profile:

- No increase in urinary retention or other complications, aligning with previous literature (Coleman et al. 2024; Calkins et al. 2021).

Conclusion:

- Mepivacaine not only speeds recovery but also improves patient experience in outpatient joint arthroplasty.



RESULTS

Sample Size: 289 patients who underwent hip or knee replacement with single surgeon

Urinary Catheterization:

- *No significant difference* ($p = 0.322$)
- Bupivacaine: 82/190
- Mepivacaine: 36/99

Opioid Requirements (PACU):

- *Significantly higher* with mepivacaine ($p = 0.0001$)
- Bupivacaine: 112/190
- Mepivacaine: 83/99

Recovery Times:

- *Overall shorter* with mepivacaine (232 min vs. 117 min, $p = 0.707$)
- Despite more opioids in the mepivacaine group, pain was treated *in-hospital*, leading to improved comfort upon discharge.

Patient Satisfaction:

- Mepivacaine group reported less discomfort traveling home due to adequate on-site pain management.

REFERENCES

1. Coleman PW, Underriner TC, Kennerley VM, Marshall KD. Transitioning from intrathecal bupivacaine to mepivacaine for same-day discharge total joint arthroplasty: a quality improvement study. *Reg Anesth Pain Med.* 2024 Apr 2;49(4):254-259.
2. Calkins TE, McClatchy SG, Rider CM, Toy PC. Mepivacaine vs Bupivacaine Spinal Anesthesia in Total Hip Arthroplasty at an Ambulatory Surgery Center. *J Arthroplasty.* 2021 Nov;36(11):3676-3680.