CAS 2026

Ambulatory Abstracts

Combined serratus and parasternal intercostal block for ambulatory breast surgery: a randomized double-blind trial on hospital discharge time

Submission ID

54

AUTHORS

Singh, Priyanka;[1] Lukewich, Mark;[1] Newmarch, William;[1] Nagappa, Mahesh;[1] da Silva, Rodrigo M;[1] Hansebout, Christopher;[1] Dhir, Shalini;[1] Biswas, Abhijit[1]

[1]Department of Anesthesia & Perioperative Medicine, Schulich School of Medicine & Dentistry, Western University, London, Canada

INTRODUCTION

Breast surgery is an important treatment for breast cancer but can be associated with significant postoperative pain[1]. Effective perioperative pain management is essential to optimize recovery, improve patient satisfaction, and facilitate timely discharge[2]. Regional anesthesia has been associated with improved early postoperative recovery through enhanced analgesia and reduced perioperative opioid exposure and related adverse effects[3]. Recent anatomical studies suggest that combined ultrasound-guided deep serratus anterior (SAB) and parasternal infrapectoral (PIP) blocks provide more comprehensive neural coverage of the breast compared to single-plane techniques[4]. However, clinical evidence evaluating the impact of this combined approach on postoperative recovery outcomes remains limited. We evaluated whether adding SAB and PIP blocks to general anesthesia improves recovery compared with local anesthetic wound infiltration alone in unilateral ambulatory breast surgery. We hypothesized that this combined block technique would reduce postoperative recovery time and facilitate earlier hospital discharge.

METHODS

We conducted a prospective, randomized, placebo-controlled, double-blind trial involving adult female patients (ASA I-III) undergoing unilateral day-case breast surgery. Research Ethics Board approval was obtained prior to study initiation. Signed informed consent was also obtained from all participants. We randomized patients through external computer-generated block randomization of ten to receive either combined ultrasound-guided deep serratus anterior and parasternal infrapectoral blocks with ropivacaine plus sham surgical infiltration with saline, or placebo nerve blocks with saline plus ropivacaine wound infiltration by the surgeon. We blinded patients, anesthesiologists, surgeons, and outcome assessors to group allocation. We applied standardized general anesthesia and

postoperative analgesia protocols. Our primary outcome was time from post-anesthesia care unit (PACU) admission to hospital discharge. Secondary outcomes included PACU phase I and II recovery times, acute pain scores, opioid consumption, opioid- and block-related adverse events, quality of recovery (QoR-15) scores, and chronic postoperative pain. Statistical analysis was conducted using GraphPad Prism. For continuous variables, Student's t-test or the Mann-Whitney U test was used, and for categorical variables, chi-square tests or Fisher's exact test were applied. A P-value of ≤ 0.05 was deemed statistically significant.

RESULTS

Fifty-three participants were included in the final analysis (study group n=29; control group n=24). Perioperative data were collected from patient electronic charts and patient-reported outcomes were collected by telephone. Baseline demographic and surgical characteristics were similar between groups (Table 1). Significantly shorter PACU phase I recovery time was observed in patients receiving combined SAB and PIP blocks compared to controls (54.8±30.5 vs 78.7±42.3 minutes, P=0.023) (Table 2). PACU stage II duration, total recovery time, and time to hospital discharge were not significantly different. Pain scores, intraoperative opioid use, and postoperative opioid consumption were similar. Postoperative pain was the most common adverse event requiring treatment, with similar incidence between groups. Opioid-related adverse events were rare and comparable between groups. Overall QoR-15 scores were similar, although block patients reported feeling more rested at 24 hours (Table 3). Chronic postoperative pain was uncommon and did not differ between groups.

DISCUSSION

We found that combined serratus anterior and parasternal infrapectoral blocks shorted early PACU recovery time compared with wound infiltration alone, without significant differences in pain scores, opioid use, or overall discharge time. Block recipients also reported feeling more rested at 24 hours postoperatively. PACU stage II duration was not significantly different between groups, likely reflecting non-clinical logistics rather than analgesic efficacy. Our results support the use of combined SAB and PIP blocks to improve early postoperative recovery after ambulatory breast surgery in this patient population.

REFERENCES

1. Fecho K, Miller NR, Merritt SA, et al. Acute and persistent postoperative pain after breast surgery. *Pain Med*. 2009;10(4):708-715. doi:10.1111/j.1526-4637.2009.00611.x
2. Dunkman WJ, Manning MW. Enhanced Recovery After Surgery and Multimodal Strategies for Analgesia. *Surg Clin North Am*. 2018;98(6):1171-1184. doi:10.1016/j.suc.2018.07.005
3. Alshebly AA, Alhwaiti AS, Bahamdan O. Comparing Regional Anesthesia and General Anesthesia for Postoperative Pain Control in Abdominal Surgeries: A

Systematic Review and Meta-Analysis. *Cureus*. 2025;17(8):e90483. doi:10.7759/cureus.90483

4. Biswas A, Hang VP, Newmarch W, et al. Spread of Injectate After Combined Deep Serratus Anterior and Superficial Parasternal Intercostal Plane Injections: A Cadaver Study to Evaluate Their Utility in Breast Surgery. *Acta Anaesthesiol Scand*. 2025;69(10):e70134. doi:10.1111/aas.70134

Table 1: Demographic and Surgical Patient Data

Demographics	Group 1 Study Group (n=29)	Group 2 Control Group (n=24)	P value
Age (mean±SD, years)	55.45±12.53	60.38±14.98	0.2064
ASA II n(%)	14 (48.28%)	5 (20.83%)	0.0481
ASA III n(%)	15 (51.72%)	19 (79.17%)	
Lumpectomy n(%)	15 (51.72%)	14 (58.33%)	0.7826
Simple Mastectomy n(%)	14 (48.28%)	10 (41.67%)	

Table 2: Perioperative Analgesic and Recovery Outcomes

Outcomes	Group 1 Study Group (n=29)	Group 2 Control Group (n=24)	P value
PACU Stage I Pain Score median (IQR)	3 (0 – 5)	1 (0 – 5)	0.3846
PACU Stage II Pain Score median (IQR)	3 (1 – 3)	3 (1 – 3)	0.9752
Discharge Pain Score median (IQR)	2 (1 – 3)	2 (1 – 3)	0.4938
PACU Stage I Opioid Consumption (IV MME) (mean±SD, m	1.83±1.73	2.18±2.21	0.5181
PACU Stage II Opioid Consumption (IV MME)	1.67mg x 1 patient	3.3mg x 1 patient	
Side Effects Needing Treatment PACU Stage I n(%)	22 (75.86%)	19 (79.17%)	0.9999
Side Effects Needing Treatment PACU Stage II n(%)	8 (27.59%)	5 (20.83%)	0.7503
Total Recovery Time (mean±SD, minutes)	138.2±58.39	158.1±65.57	0.2485
PACU Stage I (mean±SD, minutes)	54.82±30.53	78.74±42.27	0.0232
PACU Stage II (mean±SD, minutes)	88.36±39.22	86.26±39.01	0.8498

Table 3: Patient Reported Quality of Recovery Scores

Quality of Recovery Elements	Group 1 Study Group (n=29)	Group 2 Control Group (n=24)	P value
Feeling rested at 24 hours post-operative	10 (7 – 10)	7 (5 – 9)	0.0271
Total QOR-15 score median (IQR)	137 (128 – 145)	135 (116 – 142)	0.2525
Persistent discomfort or pain at 3 months in the area of surgery n(%)	2 (6.9%)	1 (4.17%)	0.9999