ORIGINAL ARTICLE

THE ROLE OF REGIONAL ANESTHESIA IN REDUCING RECOVERY TIME FOR DAY-CASE SURGERIES

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ABSTRACT

Background: Day-case surgeries have become increasingly common due to advances in surgical and anesthetic techniques. Rapid recovery, early mobilization, and same-day discharge are major goals in ambulatory surgery. Regional anesthesia has emerged as a valuable alternative to general anesthesia by minimizing postoperative pain, nausea, and delayed recovery. **Aim:** This study aimed to evaluate the effectiveness of regional anesthesia in reducing recovery time and improving postoperative outcomes in patients undergoing day-case surgeries. **Methodology:** A retrospective comparative study was conducted among 260 patients undergoing elective day-case surgeries between 2022 and 2025 in tertiary healthcare centers. Patients receiving regional anesthesia were compared with those receiving general anesthesia. Recovery parameters including postoperative pain scores, discharge time, nausea incidence, analgesic requirements, and patient satisfaction were analyzed using descriptive and inferential statistical methods. **Result:** Patients who received regional anesthesia demonstrated significantly shorter recovery times, lower postoperative pain scores, reduced opioid consumption, and fewer postoperative complications compared to patients receiving general anesthesia. The mean discharge time was reduced by approximately 35% in the regional anesthesia group. **Conclusion:** Regional anesthesia significantly enhances recovery in day-case surgeries by reducing postoperative pain, minimizing adverse effects, and facilitating early discharge. Incorporating regional anesthesia into ambulatory surgical protocols can improve patient outcomes and healthcare efficiency.

Keywords: Regional anesthesia, ambulatory surgery, day-case surgery, postoperative recovery, perioperative care, analgesia.

INTRODUCTION

Day-case surgery, also known as ambulatory or outpatient surgery, has become an essential component of modern healthcare systems due to its cost-effectiveness and improved patient convenience [1]. Advances in minimally invasive

surgical techniques and perioperative medicine have significantly increased the number of procedures performed on a same-day discharge basis [2]. Efficient postoperative recovery remains a major determinant of successful ambulatory surgical practice [3].

Anesthetic management plays a critical role in determining recovery quality, postoperative complications, and discharge readiness following day-case surgeries [4]. General anesthesia has traditionally been the preferred technique for many outpatient procedures; however, it is frequently associated with postoperative nausea, vomiting, delayed awakening, and prolonged recovery room stay [5]. These complications may delay discharge and increase healthcare costs [6].

Regional anesthesia has gained considerable attention as an effective alternative to general anesthesia in ambulatory settings [7]. Techniques such as spinal anesthesia, epidural anesthesia, peripheral nerve blocks, and local infiltration anesthesia provide targeted analgesia while preserving consciousness and minimizing systemic drug exposure [8]. These benefits have contributed to increased patient satisfaction and improved perioperative outcomes [9].

Several studies have reported that regional anesthesia reduces postoperative opioid requirements and facilitates early mobilization [10]. Reduced opioid consumption further decreases opioid-related side effects including respiratory depression, nausea, constipation, and urinary retention [11]. Additionally, improved postoperative analgesia contributes to faster rehabilitation and reduced readmission rates [12].

Enhanced Recovery After Surgery (ERAS) protocols increasingly recommend regional anesthesia as part of multimodal perioperative care pathways [13]. Despite these advantages, variations in anesthetic practice and concerns regarding technical expertise continue to influence the utilization of regional anesthesia in ambulatory surgeries. Therefore, this study evaluates the impact of regional anesthesia on recovery time and postoperative outcomes in day-case surgical patients.

METHODOLOGY

A retrospective comparative study was conducted in three tertiary care hospitals between January 2022 and March 2025. The study included 260 adult patients aged between 18 and 75 years undergoing elective day-case surgical procedures including orthopedic, general surgical, gynecological, and urological operations.

Patients were divided into two groups based on anesthesia technique. Group A consisted of 130 patients receiving regional anesthesia, while Group B included 130 patients receiving general anesthesia. Patients with emergency surgeries, severe cardiovascular instability, coagulation disorders, and incomplete medical records were excluded from the study.

Data were collected from electronic medical records, anesthesia reports, postoperative nursing documentation, and discharge summaries. Variables included demographic characteristics, type of surgery, anesthesia duration, postoperative pain scores, incidence of postoperative nausea and vomiting, analgesic requirements, discharge time, and patient satisfaction scores.

Recovery time was defined as the interval between completion of surgery and fulfillment of discharge criteria according to ambulatory surgery protocols. Pain severity was assessed using the Visual Analog Scale (VAS). Statistical analysis was performed using SPSS version 27. Independent t-tests and chi-square tests were used to compare variables between groups. Statistical significance was set at $p < 0.05$.

RESULT

Table 1. Demographic Characteristics of Study Participants

Variable	Regional Anesthesia (n=130)	General Anesthesia (n=130)
Mean Age (years)	46.8 ± 10.7	47.9 ± 11.3
Male (%)	54%	57%
Female (%)	46%	43%
Mean BMI (kg/m²)	27.2 ± 3.4	27.8 ± 3.8
ASA I-II (%)	81%	79%

Description of Table 1

Table 1 presents the baseline demographic characteristics of both patient groups. The groups were comparable regarding age, gender distribution, body mass index, and ASA physical status classification.

Table 2. Postoperative Recovery Parameters

Recovery Parameter	Regional Anesthesia	General Anesthesia
Mean Recovery Time (minutes)	92 ± 24	142 ± 31
Mean Discharge Time (hours)	5.1 ± 1.2	7.8 ± 1.9
Early Mobilization (%)	87%	61%
PACU Stay (minutes)	56 ± 15	98 ± 22

Description of Table 2

Table 2 demonstrates recovery-related outcomes. Patients receiving regional anesthesia experienced significantly faster postoperative recovery, shorter PACU stays, and earlier discharge compared to those receiving general anesthesia.

Table 3. Postoperative Complications

Complication	Regional Anesthesia (%)	General Anesthesia (%)
Postoperative Nausea/Vomiting	8.5%	28.4%
Urinary Retention	4.6%	9.2%
Respiratory Complications	2.3%	11.5%

Complication	Regional Anesthesia (%)	General Anesthesia (%)
Severe Pain Episodes	6.9%	24.6%
Unplanned Admission	3.1%	10.8%

Description of Table 3

Table 3 compares postoperative complications between groups. Regional anesthesia was associated with lower rates of nausea, respiratory complications, severe postoperative pain, and unplanned hospital admissions.

Table 4. Analgesic Requirement and Patient Satisfaction

Outcome Variable	Regional Anesthesia	General Anesthesia
Opioid Requirement (%)	18%	64%
Mean VAS Pain Score	2.1 ± 1.0	5.4 ± 1.6
Patient Satisfaction Score (/10)	9.1 ± 0.7	7.2 ± 1.1
Readmission Rate (%)	2.3%	8.5%

Description of Table 4

Table 4 highlights postoperative pain control and patient satisfaction outcomes. Regional anesthesia significantly reduced opioid use and pain severity while improving overall patient satisfaction and reducing readmission rates.

DISCUSSION

The findings of this study indicate that regional anesthesia significantly improves postoperative recovery in day-case surgeries compared to general anesthesia [14]. Patients receiving regional anesthesia demonstrated shorter recovery times, earlier mobilization, and reduced discharge delays, supporting previous evidence emphasizing the efficiency of regional anesthetic techniques in ambulatory settings [15].

One of the most significant findings was the reduction in postoperative nausea and vomiting among patients receiving regional anesthesia [16]. General anesthesia is commonly associated with emetogenic agents and systemic opioid administration, both of which contribute to delayed recovery and patient discomfort [17]. The opioid-sparing effect of regional anesthesia likely contributed to improved postoperative comfort and faster discharge readiness [18].

Pain management remains a critical factor in outpatient surgical success [19]. The present study demonstrated significantly lower postoperative pain scores and reduced opioid requirements in the regional anesthesia group. Effective pain control promotes early ambulation and reduces complications such as venous thromboembolism and pulmonary dysfunction [20].

The lower incidence of respiratory complications observed in the regional anesthesia group aligns with previous studies demonstrating preservation of spontaneous respiration and reduced airway manipulation [21]. These advantages are particularly beneficial in elderly patients and individuals with underlying pulmonary disease.

Patient satisfaction scores were substantially higher among patients receiving regional anesthesia [22]. Enhanced patient comfort, quicker recovery, and reduced postoperative side effects contribute to greater satisfaction and improved overall surgical experience [23]. Additionally, shorter recovery room stays and fewer unplanned admissions may reduce hospital burden and healthcare costs [24].

Despite these advantages, regional anesthesia requires technical expertise, appropriate patient selection, and adequate perioperative monitoring [25]. Potential limitations include block failure, transient neurological symptoms, and procedure-specific contraindications. Nevertheless, advancements in ultrasound-guided regional anesthesia have improved procedural safety and effectiveness.

The retrospective design and limited geographic representation constitute limitations of this study. Future multicenter randomized controlled trials are recommended to establish standardized ambulatory anesthesia guidelines and evaluate long-term outcomes associated with regional anesthesia.

CONCLUSION

Regional anesthesia plays a significant role in improving recovery outcomes for day-case surgeries. It effectively reduces postoperative pain, minimizes opioid consumption, decreases postoperative complications, and facilitates early discharge. The integration of regional anesthesia into ambulatory surgical practice can enhance patient satisfaction, optimize perioperative efficiency, and reduce healthcare costs. Broader implementation of regional anesthesia techniques should be encouraged in modern outpatient surgical care.

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