Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

Spinal anaesthesia versus general anaesthesia for gynecological diagnostic laparoscopy: A retrospective comparative study.

Sunil Kumar Kedia[1]*, Ritika Kedia[2]
[1]Assistant Professor, Department of Anaesthesiology, Gouri Devi Institute of Medical Sciences and Hospital College, Rajbandh, West Bengal, India.
[2]Associate Professor, Department of Obstetrics and Gynaecology, Gautam Medical College and Hospital, Ranchi, Jharkhand, India.

ABSTRACT

Background
Diagnostic laparoscopy is widely used for evaluating infertility, chronic pelvic pain, adnexal pathology, and other pelvic disorders. General anaesthesia (GA) remains standard, while spinal anaesthesia (SA) may offer advantages in postoperative pain control, reduced postoperative nausea and vomiting (PONV), and faster recovery.

Objective
To compare perioperative outcomes of spinal and general anaesthesia in women undergoing gynecological diagnostic laparoscopy.

Materials and Methods
This retrospective comparative study included 120 women who underwent elective gynecological diagnostic laparoscopy at Gouri Devi Institute of Medical Sciences and Hospital, Rajbandh, West Bengal, between January 2024 and January 2025. Patients were categorized into SA (n=60) and GA (n=60) groups based on hospital records. Demographic, intraoperative, postoperative, recovery, and patient satisfaction outcomes were evaluated.

Results
Mean operative duration was comparable between groups (48.3±11.2 vs 49.5±10.7 minutes, p=0.54). Six-hour postoperative pain scores were significantly lower with SA (2.8±1.1 vs 4.6±1.4, p<0.001). PONV occurred in 8.3% versus 28.3% (p=0.005), and rescue analgesic requirement was 30.0% versus 71.7% (p<0.001) in SA and GA groups, respectively. Recovery room stay was shorter with SA (88.5±18.6 vs 112.4±24.3 minutes, p<0.001), with higher patient satisfaction.

Conclusion
SA was associated with improved postoperative analgesia, reduced PONV and analgesic requirements, and faster recovery compared with GA, with comparable operative outcomes.

Recommendation
SA may be considered an alternative to GA in appropriately selected women undergoing short-duration gynecological diagnostic laparoscopy.

Keywords: *Diagnostic laparoscopy, spinal anaesthesia, general anaesthesia, postoperative pain, gynecology, retrospective study.*
Submitted: *March 20, 2026* ***Accepted:*** *May 20, 2026* ***Published:*** *June 30, 2026*

Corresponding Author: *Sunil Kumar Kedia*
Email: *drskkedia@gmail.com*
Assistant Professor, Department of Anaesthesiology, Gouri Devi Institute of Medical Sciences and Hospital College, Rajbandh, West Bengal, India

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

INTRODUCTION

Gynecological diagnostic laparoscopy has become an indispensable minimally invasive procedure for evaluating infertility, chronic pelvic pain, endometriosis, pelvic adhesions, and adnexal pathology. Compared with conventional laparotomy, laparoscopy is associated with reduced postoperative pain, shorter hospitalization, earlier return to normal activities, and lower postoperative morbidity, making it the preferred diagnostic modality in contemporary gynecological practice.[1–3]

General anaesthesia (GA) remains the standard anaesthetic technique for laparoscopic procedures because it provides optimal airway protection, controlled ventilation during pneumoperitoneum, profound muscle relaxation, and excellent patient comfort. Despite these advantages, GA is associated with postoperative nausea and vomiting (PONV), airway-related complications, delayed recovery, increased opioid consumption, and higher healthcare costs.[4–6]

Recent advances in minimally invasive surgery have renewed interest in spinal anaesthesia (SA) as a feasible alternative for selected laparoscopic procedures. Lower pneumoperitoneum pressures, shorter operative duration, and improved perioperative monitoring have contributed to the successful use of spinal anaesthesia in gynecological laparoscopy. Several studies have demonstrated that SA provides superior postoperative analgesia, reduced opioid requirements, lower incidence of PONV, earlier ambulation, and greater patient satisfaction while maintaining comparable surgical outcomes.[7–10]

Nevertheless, spinal anaesthesia has certain limitations, including intraoperative shoulder tip pain, hypotension secondary to sympathetic blockade, patient anxiety during surgery, and the possibility of conversion to general anaesthesia in selected cases. Appropriate patient selection and experienced perioperative management remain essential for successful outcomes.[11–13]

Although several studies have compared spinal and general anaesthesia for laparoscopic surgery, evidence specifically addressing gynecological diagnostic laparoscopy remains limited, particularly in tertiary care hospitals in India. Therefore, the present retrospective comparative study was undertaken to evaluate perioperative characteristics, postoperative recovery, complications, analgesic requirements, and patient satisfaction among women undergoing diagnostic gynecological laparoscopy under spinal or general anaesthesia.

MATERIALS AND METHODS

Study Design

This was a retrospective comparative observational study based on hospital medical records. The study compared perioperative and postoperative outcomes among women undergoing elective gynecological diagnostic laparoscopy under spinal anaesthesia (SA) or general anaesthesia (GA).

Study Setting

The study was conducted in the Department of Anaesthesiology at Gouri Devi Institute of Medical Sciences and Hospital, Rajbandh, West Bengal, India. The study involved patients undergoing elective gynecological diagnostic laparoscopy, with perioperative anaesthetic and surgical data obtained from hospital medical records. Data collection and analysis were performed retrospectively following approval from the Institutional Ethics Committee.

Study Duration

The study included patients who underwent elective gynecological diagnostic laparoscopy between January 2024 and January 2025. Retrospective data collection and analysis were performed after Institutional Ethics Committee approval.

Study Population

The study population comprised female patients who underwent elective gynecological diagnostic laparoscopy under either spinal anaesthesia or general anaesthesia during the study period.

Sample Size

A total of 120 patients with complete hospital records were included in the study. Sixty patients received spinal anaesthesia and 60 received general anaesthesia.

Sampling Technique

A consecutive sampling technique was used. Eligible patient records fulfilling the predefined selection criteria were retrieved from the Medical Record Department until the required sample size was achieved.

Inclusion Criteria

- Women aged 18–45 years.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

- Patients who underwent elective gynecological diagnostic laparoscopy.
- American Society of Anesthesiologists (ASA) Physical Status I or II.
- Complete perioperative anaesthetic and surgical records available.
- Procedures performed under either spinal or general anaesthesia.

Exclusion Criteria

- Emergency laparoscopic procedures.
- Therapeutic or major operative laparoscopic surgeries.
- ASA Physical Status III or higher.
- Patients with significant cardiovascular, pulmonary, hepatic, or renal disease.
- Known contraindications to spinal anaesthesia.
- Conversion to laparotomy.
- Incomplete or missing medical records.

Anaesthetic Technique

Spinal Anaesthesia Group

Patients received subarachnoid block at the L3–L4 or L4–L5 intervertebral space using a 25G Quincke spinal needle under strict aseptic precautions. Hyperbaric 0.5% bupivacaine (2.8–3.2 mL) was administered intrathecally. Supplemental oxygen was delivered through a face mask throughout the procedure. Standard intraoperative monitoring, including electrocardiography, pulse oximetry, and non-invasive blood pressure, was maintained. Pneumoperitoneum was established using a low intra-abdominal pressure of 10–12 mmHg whenever feasible. Intravenous midazolam or fentanyl was administered only when clinically indicated.

General Anaesthesia Group

General anaesthesia was induced using intravenous propofol (2–2.5 mg/kg) and fentanyl (2 µg/kg). Endotracheal intubation was facilitated using atracurium (0.5 mg/kg). Anaesthesia was maintained with oxygen, nitrous oxide, and sevoflurane, with intermittent doses of atracurium as required. Mechanical ventilation was adjusted to maintain normocapnia. At the conclusion of surgery, residual neuromuscular blockade was reversed using neostigmine and glycopyrrolate before extubation.

Data Collection

Data were extracted from hospital records and included demographic, intraoperative, postoperative, recovery, and patient satisfaction variables.

Demographic Variables

- Age
- Body mass index (BMI)
- ASA physical status
- Indication for diagnostic laparoscopy

Intraoperative Variables

- Duration of surgery
- Duration of anaesthesia
- Heart rate
- Mean arterial pressure
- Intraoperative hypotension
- Bradycardia
- Shoulder tip pain

Postoperative Variables

- Visual Analogue Scale (VAS) pain score at 2, 6, 12, and 24 hours
- Postoperative nausea and vomiting (PONV)
- Rescue analgesic requirement
- Time to ambulation
- Recovery room stay
- Length of hospital stay
- Patient satisfaction score using a 4-point Likert scale

Outcome Measures

Primary Outcome

The primary outcome was postoperative pain assessed using the Visual Analogue Scale at predefined postoperative intervals.

Secondary Outcomes

Secondary outcomes included incidence of PONV, rescue analgesic requirement, recovery room stay, time to ambulation, intraoperative haemodynamic stability, patient satisfaction, and perioperative complications.

Bias and Measures to Minimize Bias

As this was a retrospective observational study, potential selection and information biases were considered. Selection bias was minimized by using predefined inclusion and exclusion criteria and consecutive sampling of eligible patient records. Information bias was minimized by extracting data from available hospital records using

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

predefined study variables. Patients with incomplete or missing medical records were excluded. Baseline demographic and clinical characteristics were compared between the two groups to assess their comparability. However, residual confounding and selection bias could not be completely excluded because the anaesthetic technique was not randomly assigned.

Statistical Analysis

Data were entered into Microsoft Excel 2021 and analysed using IBM SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. The normality of continuous variables was assessed using the Shapiro–Wilk test. For normally distributed continuous variables, comparisons between the SA and GA groups were performed using the independent-samples t-test. The Mann–Whitney U test was used for non-normally distributed continuous variables. Categorical variables were compared using the Chi-square test or Fisher's exact test, as appropriate. A two-tailed p-value <0.05 was considered statistically significant.

Ethical Considerations

The study was conducted in accordance with institutional ethical requirements and was approved by the Institutional Ethics Committee before retrospective data collection and analysis. As the study involved retrospective review of hospital medical records, patient data were handled confidentially and used solely for the study.

RESULTS

A total of **120 women** who underwent elective gynecological diagnostic laparoscopy during the study period were included in the final analysis. Of these, **60 patients received spinal anaesthesia (SA)** and **60 received general anaesthesia (GA)**.

The baseline demographic and clinical characteristics of the two groups are presented in **Table 1**. The mean age was **31.9 ± 6.8 years** in the SA group and **32.6 ± 7.1 years** in the GA group (p=0.61). There were no statistically significant differences between the groups regarding body mass index (BMI), ASA physical status, or indication for diagnostic laparoscopy, indicating comparable baseline characteristics.

Table 1. Baseline Demographic and Clinical Characteristics

Variable	Spinal Anaesthesia (n=60)	General Anaesthesia (n=60)	p-value
Age (years), Mean ± SD	31.9 ± 6.8	32.6 ± 7.1	0.61
BMI (kg/m²), Mean ± SD	24.3 ± 3.2	24.7 ± 3.5	0.48
ASA I	38 (63.3%)	36 (60.0%)	0.71
ASA II	22 (36.7%)	24 (40.0%)	
Infertility	30 (50.0%)	28 (46.7%)	0.89
Chronic pelvic pain	18 (30.0%)	20 (33.3%)	
Suspected endometriosis	8 (13.3%)	9 (15.0%)	
Adnexal pathology	4 (6.7%)	3 (5.0%)	

Intraoperative findings are summarized in **Table 2 and Figure 1**. The mean duration of surgery was comparable between both groups (**48.3 ± 11.2 minutes vs 49.5 ± 10.7 minutes**, p=0.54). Intraoperative hypotension occurred more frequently in the SA group (16.7% vs 5.0%, p=0.04), whereas shoulder tip pain was observed exclusively among patients receiving spinal anaesthesia (13.3%).

Table 2. Intraoperative Characteristics

Variable	SA (n=60)	GA (n=60)	p-value
Duration of surgery (minutes)	48.3 ± 11.2	49.5 ± 10.7	0.54
Duration of anaesthesia (minutes)	66.5 ± 12.4	71.8 ± 13.7	0.03*
Mean intraoperative HR (beats/min)	76.4 ± 8.2	79.1 ± 7.8	0.07
Mean arterial pressure (mmHg)	84.5 ± 7.9	86.8 ± 8.1	0.12
Hypotension	10 (16.7%)	3 (5.0%)	0.04*
Bradycardia	5 (8.3%)	2 (3.3%)	0.24
Shoulder tip pain	8 (13.3%)	0	<0.001*

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

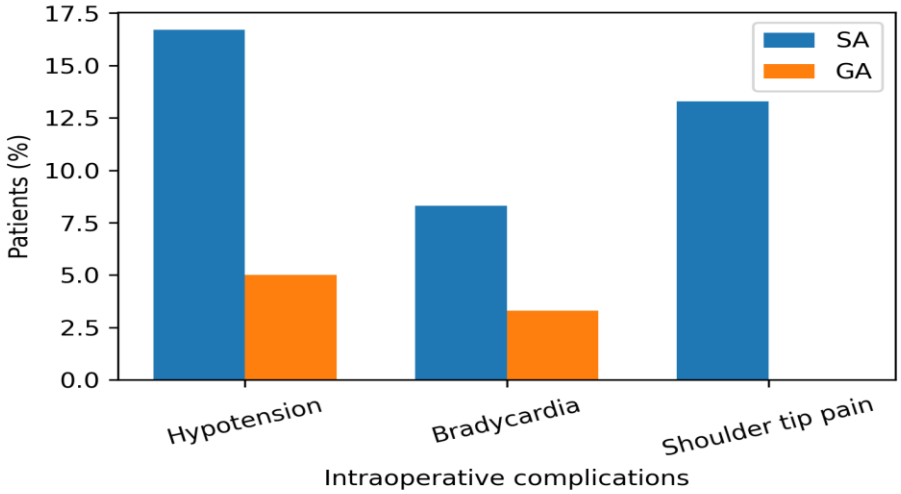

Figure 1. Comparison of intraoperative complications.

Postoperative pain assessment demonstrated significantly lower Visual Analogue Scale (VAS) scores among patients receiving spinal anaesthesia at all evaluated time points (**Table 3**, **Figure 2**). The greatest difference was observed at 6 hours following surgery (2.8 ± 1.1 vs 4.6 ± 1.4, p<0.001).

Table 3. Postoperative Pain Scores (VAS)

Time	SA	GA	p-value
2 hours	2.1 ± 0.9	3.9 ± 1.2	<0.001
6 hours	2.8 ± 1.1	4.6 ± 1.4	<0.001
12 hours	2.5 ± 1.0	3.8 ± 1.3	<0.001
24 hours	1.7 ± 0.8	2.6 ± 1.0	<0.001

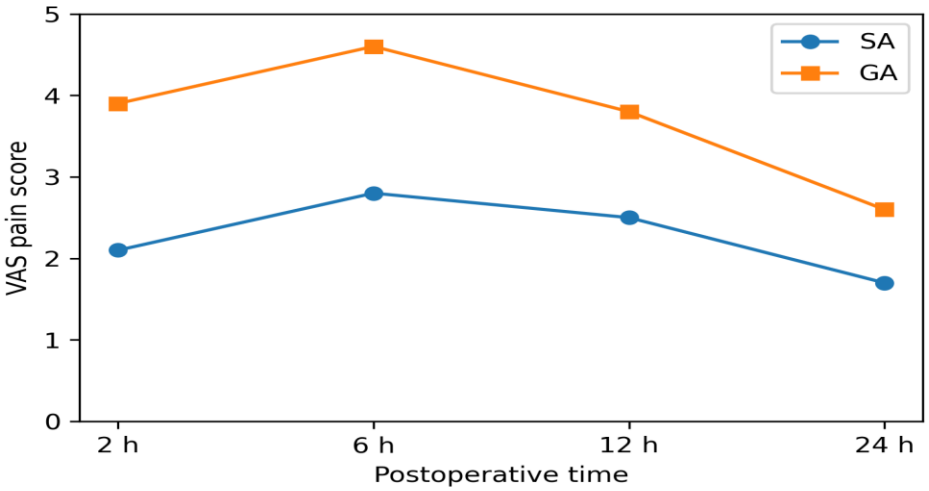

Figure 2. Mean postoperative VAS pain scores.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

Postoperative recovery outcomes are summarized in **Table 4 and Figure 3**. The incidence of postoperative nausea and vomiting was significantly lower in the SA group (8.3% vs 28.3%, p=0.005). Rescue analgesic requirement was also significantly reduced (30.0% vs 71.7%, p<0.001). Patients receiving spinal anaesthesia demonstrated earlier ambulation and shorter recovery room stay.

Table 4. Postoperative Recovery Outcomes

Variable	SA	GA	p-value
PONV	5 (8.3%)	17 (28.3%)	0.005*
Rescue analgesia	18 (30.0%)	43 (71.7%)	<0.001*
Time to ambulation (hours)	6.5 ± 1.8	8.4 ± 2.2	<0.001*
Recovery room stay (minutes)	88.5 ± 18.6	112.4 ± 24.3	<0.001*
Hospital stay (hours)	27.6 ± 6.2	30.8 ± 7.5	0.01*

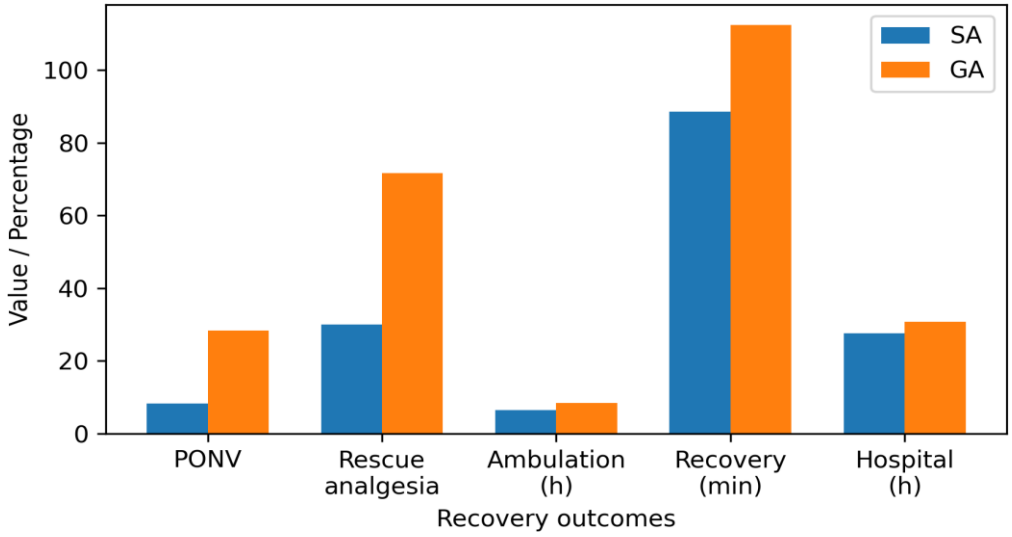

Figure 3. Comparison of postoperative recovery outcomes.

Patient satisfaction scores were significantly higher in the spinal anaesthesia group (**Table 5**, **Figure 4**). Overall, 85.0% of patients in the SA group reported excellent or good satisfaction compared with 61.7% in the GA group (p=0.004).

Table 5. Patient Satisfaction

Satisfaction	SA	GA
Excellent	28 (46.7%)	16 (26.7%)
Good	23 (38.3%)	21 (35.0%)
Fair	7 (11.7%)	16 (26.7%)
Poor	2 (3.3%)	7 (11.6%)

p = 0.004

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

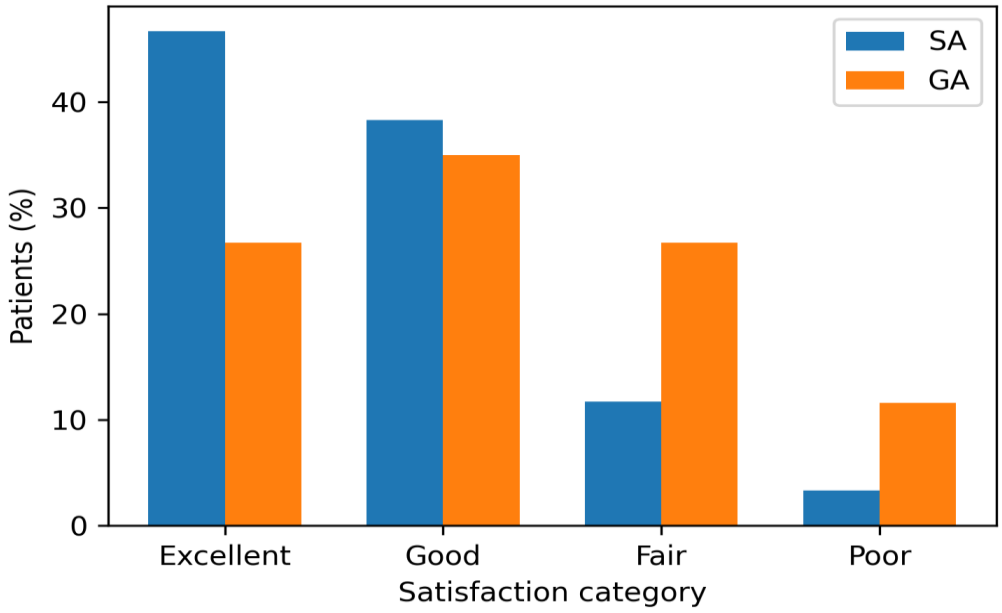

Figure 4. Distribution of patient satisfaction scores.

Perioperative complications are presented in **Table 6 and Figure 5**. No major anaesthesia-related complications, intensive care admissions, conversion to laparotomy, or mortality were observed in either study group.

Table 6. Perioperative Complications

Complication	SA	GA	p-value
Hypotension	10 (16.7%)	3 (5.0%)	0.04
Bradycardia	5 (8.3%)	2 (3.3%)	0.24
Shoulder tip pain	8 (13.3%)	0	<0.001
PONV	5 (8.3%)	17 (28.3%)	0.005
Airway complication	0	2 (3.3%)	0.15
ICU admission	0	0	—
Mortality	0	0	—

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

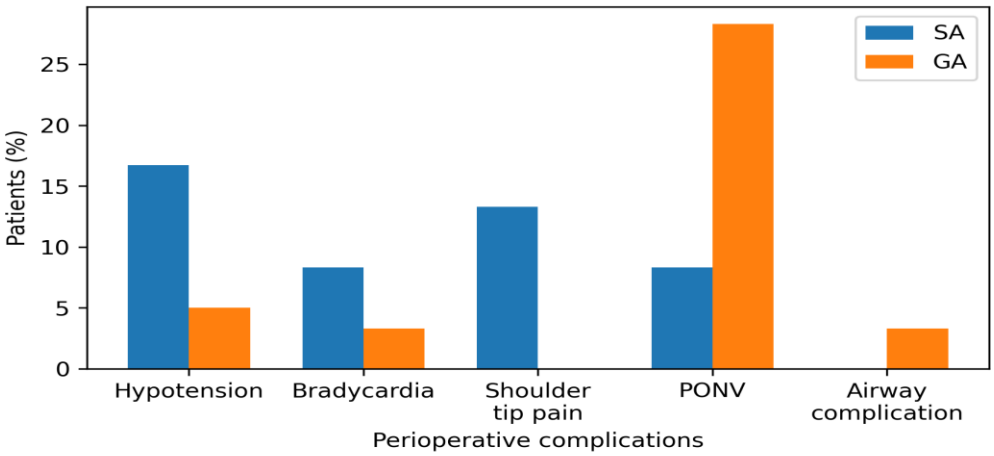

Figure 5. Comparison of perioperative complications.

DISCUSSION

The present retrospective comparative study evaluated the perioperative and postoperative outcomes of spinal anaesthesia and general anaesthesia in women undergoing elective gynecological diagnostic laparoscopy. The findings demonstrated that spinal anaesthesia provided superior postoperative analgesia, significantly reduced postoperative nausea and vomiting (PONV), decreased rescue analgesic requirements, facilitated earlier postoperative recovery, and resulted in higher patient satisfaction, while maintaining comparable operative duration and overall perioperative safety. The mean operative duration was comparable between the spinal anaesthesia and general anaesthesia groups (48.3 ± 11.2 vs. 49.5 ± 10.7 minutes, p = 0.54). These findings suggest that spinal anaesthesia is a feasible alternative to general anaesthesia in appropriately selected patients undergoing diagnostic gynecological laparoscopy.

Baseline demographic and clinical characteristics were comparable between the two study groups. The mean age was 31.9 ± 6.8 years in the spinal anaesthesia group and 32.6 ± 7.1 years in the general anaesthesia group (p = 0.61). BMI was also comparable between the groups (24.3 ± 3.2 vs. 24.7 ± 3.5 kg/m², p = 0.48), while ASA physical status (p = 0.71) and indications for diagnostic laparoscopy (p = 0.89) showed no statistically significant differences. This similarity in baseline characteristics reduced the potential influence of measured baseline differences on the observed perioperative outcomes. Comparable baseline characteristics have also been reported in previous comparative studies evaluating regional and general anaesthesia for laparoscopic procedures.[15,16]

The mean operative duration did not differ significantly between the spinal and general anaesthesia groups (48.3 ± 11.2 vs. 49.5 ± 10.7 minutes, p = 0.54), indicating that the choice of anaesthetic technique did not adversely influence surgical efficiency. However, the mean duration of anaesthesia was significantly shorter in the spinal anaesthesia group than in the general anaesthesia group (66.5 ± 12.4 vs. 71.8 ± 13.7 minutes, p = 0.03). Similar operative times have been described by Imbelloni et al. and Pursnani et al., who demonstrated that spinal anaesthesia can be successfully employed for short laparoscopic procedures without prolonging operative time or compromising surgical performance.[17,18]

One of the most important findings of the present study was the significantly lower postoperative pain scores observed among patients receiving spinal anaesthesia. VAS scores were significantly lower in the spinal anaesthesia group at 2 hours (2.1 ± 0.9 vs. 3.9 ± 1.2, p < 0.001), 6 hours (2.8 ± 1.1 vs. 4.6 ± 1.4, p < 0.001), 12 hours (2.5 ± 1.0 vs. 3.8 ± 1.3, p < 0.001), and 24 hours (1.7 ± 0.8 vs. 2.6 ± 1.0, p < 0.001) following surgery. This improvement in postoperative pain was accompanied by a markedly reduced requirement for rescue analgesics, which occurred in 30.0% of patients in the spinal anaesthesia group compared with 71.7% in the general anaesthesia group (p < 0.001). These findings are consistent with previous studies demonstrating that intrathecal local anaesthetic administration provides prolonged sensory blockade, attenuates central sensitization, and reduces postoperative opioid consumption.[19–21] Reduced opioid exposure is particularly beneficial because

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

it may minimize opioid-related adverse effects while improving overall postoperative recovery.

Postoperative nausea and vomiting occurred significantly less frequently in the spinal anaesthesia group than in the general anaesthesia group (8.3% vs. 28.3%, p = 0.005). This reduction is likely attributable to avoidance of volatile anaesthetic agents, reduced perioperative opioid administration, and decreased airway manipulation. Similar reductions in PONV have consistently been reported in previous randomized and observational studies comparing spinal and general anaesthesia for laparoscopic surgery.[22–24] Lower PONV contributes substantially to improved patient comfort and may facilitate earlier oral intake and discharge.

Recovery characteristics also favored spinal anaesthesia. Patients receiving spinal anaesthesia demonstrated significantly earlier ambulation, with a mean time to ambulation of 6.5 ± 1.8 hours compared with 8.4 ± 2.2 hours in the general anaesthesia group (p < 0.001). Recovery room stay was also significantly shorter in the spinal anaesthesia group (88.5 ± 18.6 vs. 112.4 ± 24.3 minutes, p < 0.001). In addition, mean hospital stay was shorter following spinal anaesthesia (27.6 ± 6.2 vs. 30.8 ± 7.5 hours, p = 0.01). Enhanced recovery following regional anaesthesia has been attributed to superior postoperative pain control, lower incidence of nausea, earlier mobilization, and reduced requirement for systemic analgesics. These findings are consistent with the principles of Enhanced Recovery After Surgery (ERAS) pathways, which emphasize multimodal analgesia and early postoperative rehabilitation.[25,26]

Although spinal anaesthesia demonstrated several postoperative advantages, the present study observed a higher incidence of intraoperative hypotension and shoulder tip pain among patients receiving spinal anaesthesia. Hypotension occurred in 16.7% of patients in the spinal anaesthesia group compared with 5.0% in the general anaesthesia group (p = 0.04). Shoulder tip pain was observed in 13.3% of patients receiving spinal anaesthesia compared with none in the general anaesthesia group (p < 0.001). Hypotension is an expected physiological consequence of sympathetic blockade and, according to the study protocol, was managed with intravenous fluids and vasopressor support without resulting in serious complications. Shoulder tip pain, attributed to diaphragmatic irritation from carbon dioxide pneumoperitoneum, remains one of the recognized limitations of laparoscopic surgery under regional anaesthesia. Previous investigators have similarly reported that reducing pneumoperitoneum pressure and providing supplemental analgesia or sedation can effectively minimize this complication.[27–29]

Other intraoperative parameters were comparable between the groups. Mean intraoperative heart rate was 76.4 ± 8.2 beats/min in the spinal anaesthesia group and 79.1 ± 7.8 beats/min in the general anaesthesia group (p = 0.07), while mean arterial pressure was 84.5 ± 7.9 versus 86.8 ± 8.1 mmHg, respectively (p = 0.12). Bradycardia occurred in 8.3% of patients receiving spinal anaesthesia and 3.3% receiving general anaesthesia, although this difference was not statistically significant (p = 0.24).

Importantly, no major perioperative complications, intensive care admissions, conversion to laparotomy, or mortality were observed in either study group. Airway complications occurred in 2 patients (3.3%) in the general anaesthesia group and in none of the spinal anaesthesia patients; however, this difference was not statistically significant (p = 0.15). These findings support the safety of both anaesthetic techniques when appropriate patient selection, standardized monitoring, and experienced perioperative management are ensured. Similar safety profiles have been documented in previous studies evaluating regional anaesthesia for minimally invasive abdominal surgery.[30,31]

Patient satisfaction was significantly higher among women who underwent surgery under spinal anaesthesia. Excellent or good satisfaction was reported by 85.0% of patients in the spinal anaesthesia group compared with 61.7% in the general anaesthesia group (p = 0.004). The distribution of satisfaction ratings further demonstrated a higher proportion of patients reporting excellent satisfaction with spinal anaesthesia (46.7% vs. 26.7%), while poor satisfaction was less frequent (3.3% vs. 11.6%). Superior pain control, lower incidence of nausea and vomiting, faster recovery, and earlier mobilization likely contributed to this improved satisfaction. Patient-centered outcomes are increasingly recognized as important indicators of anaesthetic quality, and previous investigations have similarly demonstrated higher satisfaction scores among patients receiving regional anaesthesia for ambulatory surgical procedures.[32,33]

The findings of the present study have important clinical implications. In carefully selected patients undergoing short-duration gynecological diagnostic laparoscopy, spinal anaesthesia may serve as an effective alternative to general anaesthesia, particularly in patients at increased risk of postoperative nausea and vomiting or those in whom avoidance of airway instrumentation is desirable. Nevertheless, the higher incidence of intraoperative hypotension and shoulder tip pain observed in the spinal anaesthesia group highlights the importance of appropriate patient selection, experienced anaesthesia providers,

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

adequate intraoperative monitoring, and the use of low-pressure pneumoperitoneum.[34]

Generalizability

The findings may apply primarily to relatively healthy women aged 18–45 years with ASA Physical Status I or II undergoing elective, short-duration gynecological diagnostic laparoscopy. The study was conducted at a single tertiary care hospital and involved patients treated under specific institutional anaesthetic and perioperative practices. Therefore, the findings may not be directly generalizable to women undergoing emergency, major therapeutic, or prolonged laparoscopic procedures, or to patients with significant cardiovascular, pulmonary, hepatic, or renal disease. Multicentre prospective studies involving more diverse patient populations are required to determine the broader applicability of these findings.

CONCLUSION

The present retrospective comparative study demonstrated that spinal anaesthesia is a safe, effective, and feasible alternative to general anaesthesia for appropriately selected women undergoing elective gynecological diagnostic laparoscopy. Although both anaesthetic techniques provided comparable operative conditions and surgical safety, spinal anaesthesia was associated with significant clinical advantages, including superior postoperative pain control, reduced postoperative nausea and vomiting, lower rescue analgesic requirements, earlier ambulation, shorter recovery room stay, and higher patient satisfaction.

While a slightly higher incidence of transient intraoperative hypotension and shoulder tip pain was observed in the spinal anaesthesia group, these events were successfully managed with standard perioperative measures and did not adversely affect surgical outcomes. Importantly, no major anaesthesia-related complications, intensive care admissions, conversion to laparotomy, or mortality were encountered in either group, confirming the overall safety of both anaesthetic approaches.

These findings suggest that spinal anaesthesia may be considered a valuable alternative to general anaesthesia for short-duration gynecological diagnostic laparoscopic procedures, particularly in patients who may benefit from avoidance of airway manipulation, reduced opioid exposure, and enhanced postoperative recovery. Careful patient selection, experienced anaesthetic management, and the use of low-pressure pneumoperitoneum remain essential for achieving optimal outcomes.

Limitations

The retrospective design of the study introduces the possibility of selection bias and limits the ability to establish causal relationships between anaesthetic technique and outcomes. The study was conducted at a single tertiary care centre, which may limit the generalizability of the findings. The sample size was relatively small, and the anaesthetic technique was determined according to clinical practice rather than random allocation, potentially introducing confounding. In addition, long-term postoperative outcomes, quality-of-life measures, and cost-effectiveness were not evaluated. Variations in perioperative management among individual anaesthesiologists could also not be completely standardized because the study relied on retrospective hospital records.

Recommendation

Based on the observed postoperative benefits, spinal anaesthesia may be considered an alternative to general anaesthesia for appropriately selected women undergoing short-duration gynecological diagnostic laparoscopy. Its use should be guided by careful patient selection, experienced anaesthetic management, adequate haemodynamic monitoring, appropriate management of pneumoperitoneum, and consideration of the potential for intraoperative hypotension and shoulder tip pain. Further prospective, multicentre randomized controlled trials with larger sample sizes and longer follow-up are recommended to confirm these findings and establish standardized recommendations for the routine use of spinal anaesthesia in gynecological diagnostic laparoscopy.

List of Abbreviations

ASA — American Society of Anesthesiologists
BMI — Body Mass Index
GA — General Anaesthesia
HR — Heart Rate
ICU — Intensive Care Unit
PONV — Postoperative Nausea and Vomiting
SA — Spinal Anaesthesia
SD — Standard Deviation
VAS — Visual Analogue Scale

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Sunil Kumar Kedia: Conceptualization, study design, anaesthetic methodology, data collection, data

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

interpretation, manuscript preparation, and critical revision of the manuscript.
Ritika Kedia: Study conceptualization, clinical input, data interpretation, literature review, manuscript preparation, and critical revision of the manuscript.
Both authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Author Biography

Sunil Kumar Kedia is an Assistant Professor in the Department of Anaesthesiology at Gouri Devi Institute of Medical Sciences and Hospital, Rajbandh, West Bengal, India. He contributed to the conceptualization, methodology, data collection, analysis, and preparation of this manuscript.
Ritika Kedia is an Associate Professor in the Department of Obstetrics and Gynaecology at Gautam Medical College and Hospital, Ranchi, Jharkhand, India. She contributed to the clinical interpretation, literature review, manuscript preparation, and critical revision of the manuscript.

REFERENCES

1. Bajwa SJ, Kulshrestha A. Anaesthesia for laparoscopic surgery: General vs regional anaesthesia. J Minim Access Surg. 2016;12(1):4-9. https://doi.org/10.4103/0972-9941.169952
2. Joris JL. Anesthesia for laparoscopic surgery. In: Miller RD, editor. Miller's Anesthesia. 8th ed. Philadelphia: Elsevier; 2015. p. 2185-2202. https://doi.org/10.1016/B978-0-443-06959-8.00068-6
3. Sutton C. Practical Manual of Operative Laparoscopy and Hysteroscopy. 3rd ed. London: Informa Healthcare; 2008.
4. White PF, Kehlet H. Improving postoperative pain management: What are the unresolved issues? Anesthesiology. 2010;112(1):220-225. https://doi.org/10.1097/ALN.0b013e3181c6316e
5. Apfel CC, Korttila K, Abdalla M, Kerger H, Turan A, Vedder I, et al. A factorial trial of six interventions for the prevention of postoperative nausea and vomiting. N Engl J Med. 2004;350(24):2441-2451. https://doi.org/10.1056/NEJMoa032196
6. Gan TJ. Risk factors for postoperative nausea and vomiting. Anesth Analg. 2006;102(6):1884-1898. https://doi.org/10.1213/01.ANE.0000219597.16143.4D
7. Kaya Uğur B, Pirbudak L, Öztürk E, Balat Ö, Uğur MG. Spinal versus general anesthesia in gynecologic laparoscopy: A prospective, randomized study. Turk J Obstet Gynecol. 2020;17(3):186-195. https://doi.org/10.4274/tjod.galenos.2020.28928
8. Sinha R, Gurwara AK, Gupta SC. Laparoscopic surgery using spinal anesthesia. JSLS. 2008;12(2):133-138.
9. Imbelloni LE, Grigorio R, Fialho JC, Fornasari M, Pitombo PF. Spinal anesthesia for outpatient laparoscopic procedures: Feasibility and perioperative outcomes. Rev Bras Anestesiol. 2014;64(2):95-102.
10. Lennox PH, Chilvers C, Vaghadia H. Selective spinal anesthesia versus desflurane anesthesia in short-duration outpatient gynecological laparoscopy: A pharmacoeconomic comparison. Anesthesiology. 2002;94(3):565-568. https://doi.org/10.1097/00000539-200203000-00016
11. Asgari Z, Rezaeinejad M, Hosseini R, Nataj M, Razavi M, Sepidarkish M. Spinal anesthesia and spinal anesthesia with subdiaphragmatic lidocaine in shoulder pain reduction for gynecological laparoscopic surgery: A randomized clinical trial. Pain Res Manag. 2017;2017:1721460. https://doi.org/10.1155/2017/1721460
12. Della Corte L, Mercorio A, Morra I, Riemma G, De Franciscis P, Palumbo M, et al. Spinal anesthesia versus general anesthesia in gynecological laparoscopic surgery: A systematic review and meta-analysis. Gynecol Obstet Invest. 2022;87(1):1-11. https://doi.org/10.1159/000521364
13. Kehlet H, Wilmore DW. Evidence-based surgical care and the evolution of fast-track surgery. Ann Surg. 2008;248(2):189-198. https://doi.org/10.1097/SLA.0b013e31817f2c1a
14. Imbelloni LE, Fornasari M, Fialho JC, Sant'Anna R, Cordeiro JA. General anesthesia versus spinal anesthesia for laparoscopic cholecystectomy. Rev Bras Anestesiol. 2010;60(3):217-227. https://doi.org/10.1590/S0034-70942010000300001 https://doi.org/10.1016/S0034-7094(10)70030-1
15. Pursnani KG, Bazza Y, Calleja M, Mughal MM. Laparoscopic surgery under spinal anesthesia: A prospective study of feasibility and safety. Surg Endosc. 1998;12(4):362-364. https://doi.org/10.1007/s004649900785

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

16. Tzovaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Spinal versus general anesthesia for laparoscopic cholecystectomy: Interim analysis of a controlled randomized trial. Arch Surg. 2008;143(5):497-501. https://doi.org/10.1001/archsurg.143.5.497
17. White PF. The changing role of non-opioid analgesic techniques in the management of postoperative pain. Anesth Analg. 2005;101(5 Suppl):S5-S22. https://doi.org/10.1213/01.ANE.0000177099.28914.A7
18. Kehlet H, Dahl JB. The value of multimodal or balanced analgesia in postoperative pain treatment. Anesth Analg. 1993;77(5):1048-1056. https://doi.org/10.1213/00000539-199311000-00030
19. Sinatra R. Causes and consequences of inadequate management of acute pain. Pain Med. 2010;11(12):1859-1871. https://doi.org/10.1111/j.1526-4637.2010.00983.x
20. Pierre S, Whelan R. Nausea and vomiting after surgery. Contin Educ Anaesth Crit Care Pain. 2013;13(1):28-32. https://doi.org/10.1093/bjaceaccp/mks046
21. Ljungqvist O, Scott M, Fearon KC. Enhanced Recovery After Surgery: A review. JAMA Surg. 2017;152(3):292-298. https://doi.org/10.1001/jamasurg.2016.4952
22. Van de Velde M, De Buck F. Anesthesia for laparoscopic surgery. Curr Opin Anaesthesiol. 2007;20(3):181-186.
23. Sinha R, Gurwara AK, Gupta SC. Laparoscopic surgery using spinal anesthesia. JSLS. 2008;12(2):133-138.
24. Myles PS, Williams DL, Hendrata M, Anderson H, Weeks AM. Patient satisfaction after anaesthesia and surgery: Results of a prospective survey of 10,811 patients. Br J Anaesth. 2000;84(1):6-10. https://doi.org/10.1093/oxfordjournals.bja.a013383
25. Wu CL, Naqibuddin M, Fleisher LA. Measurement of patient satisfaction as an outcome of regional anesthesia and analgesia: A systematic review. Reg Anesth Pain Med. 2001;26(3):196-208. https://doi.org/10.1097/00115550-200105000-00002 https://doi.org/10.1053/rapm.2001.22257
26. Neal JM, Barrington MJ, Brull R, Hadzic A, Hebl JR, Horlocker TT, et al. The second American Society of Regional Anesthesia and Pain Medicine evidence-based medicine assessment of ultrasound-guided regional anesthesia. Reg Anesth Pain Med. 2016;41(2):181-194. https://doi.org/10.1097/AAP.0000000000000331
27. Ballantyne JC, Carr DB, deFerranti S, Suarez T, Lau J, Chalmers TC, et al. The comparative effects of postoperative analgesic therapies on pulmonary outcome: Cumulative meta-analyses of randomized, controlled trials. Anesth Analg. 1998;86(3):598-612. https://doi.org/10.1213/00000539-199803000-00032 https://doi.org/10.1097/00000539-199803000-00032
28. Møiniche S, Kehlet H, Dahl JB. A qualitative and quantitative systematic review of pre-emptive analgesia for postoperative pain relief. Anesthesiology. 2002;96(3):725-741. https://doi.org/10.1097/00000542-200203000-00032
29. Joshi GP, Kehlet H. Procedure-specific pain management and outcome strategies. Best Pract Res Clin Anaesthesiol. 2014;28(2):191-201. https://doi.org/10.1016/j.bpa.2014.03.005
30. Gupta A, Stierer T, Zuckerman R, Sakima N, Parker SD, Fleisher LA. Comparison of recovery profile after ambulatory anesthesia with propofol, isoflurane, sevoflurane, and desflurane: A systematic review. Anesth Analg. 2004;98(3):632-641. https://doi.org/10.1213/01.ANE.0000103187.70627.57
31. Memtsoudis SG, Poeran J, Cozowicz C, Zubizarreta N, Ozbek U, Mazumdar M, et al. The impact of anesthetic technique on postoperative outcomes in orthopedic surgery. Reg Anesth Pain Med. 2019;44(1):53-58.
32. Macario A, Weinger M, Truong P, Lee M. Which clinical anesthesia outcomes are important to avoid? The perspective of patients. Anesth Analg. 1999;89(3):652-658. https://doi.org/10.1097/00000539-199909000-00022 https://doi.org/10.1213/00000539-199909000-00022
33. Myles PS. Measuring quality of recovery in perioperative clinical trials. Curr Opin Anaesthesiol. 2018;31(4):396-401. https://doi.org/10.1097/ACO.0000000000000612
34. Kehlet H. Fast-track surgery-an update on physiological care principles to enhance recovery.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.7 No. 2 (2026): June 2026 Issue
https://doi.org/10.51168/zzqsq433
Original Article

Langenbecks Arch Surg. 2011;396(5):585-590.
https://doi.org/10.1007/s00423-011-0790-y

PUBLISHER DETAILS:

Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
(ISSN 3006-1059) Print
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256 775 434 261
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa