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/10.51168/9aczze49
Original Article

Opioid-Free Total Intravenous Anaesthesia Improves Postoperative Quality of Recovery After Ambulatory Gynecologic Laparoscopy: A Retrospective Comparative Study.

[1]*Sunil Kumar Kedia, [2]Ritika Kedia

[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:

To compare postoperative quality of recovery and perioperative outcomes between opioid-free total intravenous anaesthesia (OFTIVA) and conventional opioid-based total intravenous anaesthesia (OTIVA) in women undergoing ambulatory gynecologic laparoscopy.

Materials and Methods:

This retrospective comparative study included 120 women who underwent elective ambulatory gynecologic laparoscopy under total intravenous anaesthesia at Gouri Devi Institute of Medical Sciences and Hospital, West Bengal, India, from March 2025 to April 2026. Patients were categorized into OFTIVA (n=60) and OTIVA (n=60) groups according to the anaesthetic technique documented in hospital records. The primary outcome was the Quality of Recovery-15 (QoR-15) score at 24 hours. Secondary outcomes included postoperative pain, postoperative nausea and vomiting (PONV), rescue analgesic requirement, time to ambulation, post-anaesthesia care unit (PACU) stay, haemodynamic variables, and patient satisfaction.

Results:

The OFTIVA group had significantly higher QoR-15 scores than the OTIVA group (130.6 ± 7.8 vs 119.4 ± 9.3; $p<0.001$). VAS pain scores were significantly lower with OFTIVA at 2, 6, 12, and 24 hours (all $p<0.001$). PONV occurred in 10.0% versus 31.7% of patients ($p=0.003$), while rescue analgesia was required in 26.7% versus 65.0% ($p<0.001$). OFTIVA was associated with earlier ambulation (5.9 ± 1.5 vs 7.8 ± 2.0 hours; $p<0.001$) and shorter PACU stay (76.5 ± 15.3 vs 98.7 ± 19.6 minutes; $p<0.001$). Patient satisfaction was also significantly higher with OFTIVA ($p=0.002$). Mean heart rate was lower with OFTIVA (73.8 ± 7.5 vs 79.4 ± 8.6 beats/min; $p<0.001$), while hypotension and bradycardia did not differ significantly.

Conclusion:

OFTIVA was associated with improved postoperative recovery and comparable haemodynamic outcomes compared with OTIVA in women undergoing ambulatory gynecologic laparoscopy.

Recommendation:

OFTIVA may be considered for appropriately selected patients undergoing gynecologic laparoscopy. Prospective multicentre studies are recommended to confirm these findings.

Keywords: *opioid-free anaesthesia; total intravenous anaesthesia; ambulatory surgery; gynecologic laparoscopy; postoperative recovery; QoR-15.*

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/10.51168/9aczze49
Original Article

INTRODUCTION

Ambulatory surgery has transformed modern perioperative care by enabling patients to undergo elective surgical procedures with discharge on the same day, thereby reducing healthcare costs, minimizing hospital-acquired complications, and improving patient satisfaction. Among ambulatory procedures, gynecologic laparoscopy has become the preferred minimally invasive approach for the evaluation and management of infertility, chronic pelvic pain, endometriosis, ovarian cysts, tubal pathology, and other benign gynecological disorders because of reduced tissue trauma, shorter hospitalization, faster functional recovery, and improved cosmetic outcomes compared with open surgery.[1–3]

Total intravenous anaesthesia (TIVA) has become increasingly popular for ambulatory surgery because it provides smooth induction, rapid emergence, excellent control of anaesthetic depth, and reduced postoperative nausea and vomiting compared with inhalational anaesthesia. Conventionally, TIVA combines intravenous hypnotic agents such as propofol with short-acting opioids, particularly fentanyl or remifentanil, to provide intraoperative analgesia and suppress sympathetic responses to surgical stimulation. Although effective, perioperative opioid administration is associated with several undesirable adverse effects including postoperative nausea and vomiting (PONV), respiratory depression, delayed gastrointestinal recovery, opioid-induced hyperalgesia, excessive sedation, urinary retention, and prolonged discharge times.[4–6]

Growing awareness of opioid-related complications has led to the development of opioid-free anaesthesia (OFA), which utilizes multimodal non-opioid analgesic techniques to achieve adequate intraoperative analgesia while avoiding systemic opioids. Opioid-free TIVA typically combines propofol with agents such as dexmedetomidine, ketamine, lidocaine, magnesium sulphate, paracetamol, and non-steroidal anti-inflammatory drugs, thereby targeting multiple pain pathways simultaneously. This multimodal strategy aims to maintain haemodynamic stability, reduce postoperative pain, minimize opioid-related adverse events, accelerate recovery, and improve overall patient satisfaction.[7–10]

Recent randomized trials and systematic reviews have demonstrated that opioid-free anaesthesia significantly reduces postoperative nausea and vomiting, decreases postoperative opioid requirements, improves quality-of-recovery scores, and enhances early mobilization following ambulatory surgery. Nevertheless, available evidence remains inconsistent regarding postoperative pain control and haemodynamic stability, particularly in gynecological laparoscopic procedures. Differences in patient populations, anaesthetic protocols, and outcome measures have contributed to variability among published studies.[11–14]

Quality of recovery has emerged as an important patient-centred outcome reflecting physical comfort, emotional well-being, pain, independence, and overall satisfaction following surgery. The validated Quality of Recovery-15 (QoR-15) questionnaire has become one of the most widely accepted instruments for evaluating postoperative recovery and is increasingly recommended in perioperative clinical research. Improved QoR-15 scores have been associated with enhanced patient satisfaction, earlier discharge, and better functional recovery following ambulatory procedures.[15–17]

Despite increasing interest in opioid-free anaesthesia, evidence regarding its effectiveness in ambulatory gynecologic laparoscopy within Indian tertiary care settings remains limited. Therefore, the present retrospective comparative study was undertaken to evaluate postoperative quality of recovery, postoperative pain, nausea and vomiting, rescue analgesic requirement, recovery characteristics, haemodynamic stability, and perioperative complications among women undergoing ambulatory gynecologic laparoscopy managed with opioid-free total intravenous anaesthesia or conventional opioid-based total intravenous anaesthesia.

MATERIALS AND METHODS

Study Design

This retrospective comparative observational study was conducted using hospital medical records to compare postoperative quality of recovery and perioperative outcomes between women who received opioid-free total intravenous anaesthesia (OFTIVA) and those who received conventional opioid-based total intravenous anaesthesia (OTIVA) during ambulatory gynecological laparoscopic surgery.

Study Setting

The study was conducted in the Department of Anaesthesiology, Gouri Devi Institute of Medical Sciences and Hospital, Rajbandh, West Bengal, India. Medical records of patients who underwent ambulatory gynecological laparoscopic surgery under total intravenous anaesthesia were reviewed.

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/10.51168/9aczze49
Original Article

Study Duration
Patients who underwent surgery between March 2025 and April 2026 were included in the study. Data were retrospectively extracted from hospital records and analyzed after obtaining approval from the Institutional Ethics Committee.

Study Population
The study population comprised women who underwent elective ambulatory gynecological laparoscopic procedures under total intravenous anaesthesia.

Sample Size
A total of 120 patients with complete perioperative records were included in the final analysis. Sixty patients received opioid-free total intravenous anaesthesia (OFTIVA), and 60 received conventional opioid-based total intravenous anaesthesia (OTIVA).

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

Inclusion Criteria
The inclusion criteria were:

- Women aged 18–50 years.
- Elective ambulatory gynecological laparoscopic procedures.
- American Society of Anesthesiologists (ASA) Physical Status I or II.
- Surgery performed under total intravenous anaesthesia.
- Complete perioperative and postoperative medical records available.

Exclusion Criteria
Patients were excluded if they underwent emergency surgery, had ASA Physical Status III or IV, had chronic opioid use or opioid dependence, had significant hepatic, renal, cardiovascular, or pulmonary disease, had a known allergy to study anaesthetic medications, underwent conversion to open surgery, or had incomplete or missing medical records.

Anaesthetic Technique

Opioid-Free Total Intravenous Anaesthesia Group

Anaesthesia was induced with intravenous propofol (2–2.5 mg/kg) and opioid-free adjuncts, including dexmedetomidine (loading dose 0.5–1 µg/kg followed by infusion), ketamine (0.3–0.5 mg/kg), and intravenous lidocaine (1–1.5 mg/kg followed by infusion), according to the institutional protocol. Neuromuscular blockade was achieved using atracurium. Anaesthesia was maintained using a propofol infusion and adjunct medications without intraoperative opioid administration. Standard intraoperative monitoring was maintained throughout the procedure.

Conventional Opioid-Based Total Intravenous Anaesthesia Group

Anaesthesia was induced with intravenous propofol (2–2.5 mg/kg) and fentanyl (2 µg/kg). Atracurium was administered to facilitate endotracheal intubation. Anaesthesia was maintained using continuous propofol infusion with supplemental fentanyl doses as required during surgery. Mechanical ventilation was adjusted to maintain normocapnia, and neuromuscular blockade was reversed using neostigmine and glycopyrrolate before extubation.

Data Collection
Data were retrospectively extracted from hospital medical records. Demographic variables included age, body mass index (BMI), ASA physical status, and indication for laparoscopic surgery. Intraoperative variables included duration of surgery, duration of anaesthesia, heart rate, mean arterial pressure, hypotension, bradycardia, rescue opioid administration, and total propofol consumption. Postoperative variables included QoR-15 score at 24 hours, VAS pain scores at 2, 6, 12, and 24 hours, PONV, rescue analgesic requirement, time to ambulation, recovery-room stay, length of hospital stay, and patient satisfaction.

Outcome Measures
The primary outcome was postoperative quality of recovery measured using the Quality of Recovery-15 (QoR-15) questionnaire at 24 hours after surgery. Secondary outcomes included postoperative pain measured by VAS, incidence of PONV, rescue analgesic requirement, recovery-room stay, time to ambulation, haemodynamic stability, patient satisfaction, and perioperative complications.

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/10.51168/9aczze49
Original Article

Bias

Potential selection bias was minimized by using consecutive sampling of eligible patient records according to predefined inclusion and exclusion criteria. Information bias was minimized by extracting demographic, anaesthetic, intraoperative, and postoperative variables from hospital records using predefined study variables. Records with incomplete or missing information were excluded according to the study criteria. As this was a retrospective study, residual confounding and inaccuracies related to the completeness of medical documentation could not be completely eliminated.

Statistical Analysis

Data were entered into Microsoft Excel 2021 and analyzed 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. Normality of continuous variables was assessed using the Shapiro–Wilk test.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

A total of **120 women** who underwent elective ambulatory gynecological laparoscopic surgery during the study period were included in the final analysis. Based on the anaesthetic technique documented in the hospital records, **60 patients received opioid-free total intravenous anaesthesia (OFTIVA),** and **60 patients received conventional opioid-based total intravenous anaesthesia (OTIVA)**. The study flow is illustrated in **Figure 1**.

The baseline demographic and clinical characteristics of the two groups are presented in **Table 1 (Figure 1)**. There were no statistically significant differences between the OFTIVA and OTIVA groups regarding age, body mass index (BMI), ASA physical status, or indication for surgery ($p>0.05$ for all variables), indicating that both groups were comparable at baseline.

Table 1. Baseline Demographic and Clinical Characteristics

Variable	OFTIVA (n=60)	OTIVA (n=60)	p-value
Age (years), Mean ± SD	32.4 ± 6.9	31.8 ± 7.2	0.64
BMI (kg/m²), Mean ± SD	24.8 ± 3.4	24.5 ± 3.6	0.67
ASA I	39 (65.0%)	37 (61.7%)	0.71
ASA II	21 (35.0%)	23 (38.3%)	
Infertility	26 (43.3%)	24 (40.0%)	0.89
Ovarian cyst	18 (30.0%)	20 (33.3%)	
Chronic pelvic pain	11 (18.3%)	12 (20.0%)	
Endometriosis	5 (8.4%)	4 (6.7%)	

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/10.51168/9aczze49
Original Article

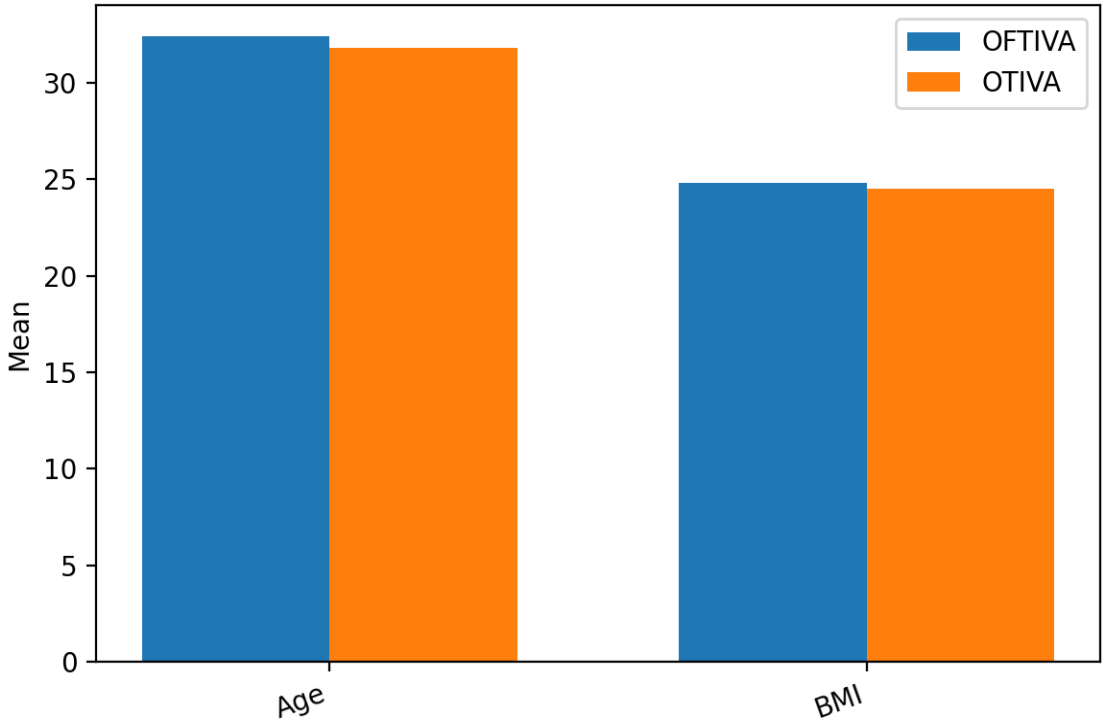

Figure 1. Baseline demographic characteristics of the study groups.

Intraoperative characteristics are summarized in **Table 2 (Figure 2)**. The duration of surgery was similar between both groups (p=0.59). Patients receiving OFTIVA demonstrated significantly lower intraoperative heart rate and reduced requirement for rescue opioid administration. No significant differences were observed in the incidence of hypotension or bradycardia.

Table 2. Intraoperative Characteristics

Variable	OFTIVA	OTIVA	p-value
Duration of surgery (minutes)	51.4 ± 10.6	52.2 ± 11.4	0.59
Duration of anaesthesia (minutes)	72.3 ± 11.7	74.1 ± 12.5	0.41
Mean heart rate (beats/min)	73.8 ± 7.5	79.4 ± 8.6	<0.001*
Mean arterial pressure (mmHg)	84.6 ± 7.2	85.9 ± 7.8	0.33

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/10.51168/9aczze49
Original Article

Hypotension	8 (13.3%)	6 (10.0%)	0.57
Bradycardia	6 (10.0%)	4 (6.7%)	0.51
Rescue intraoperative opioid	3 (5.0%)	15 (25.0%)	0.002*

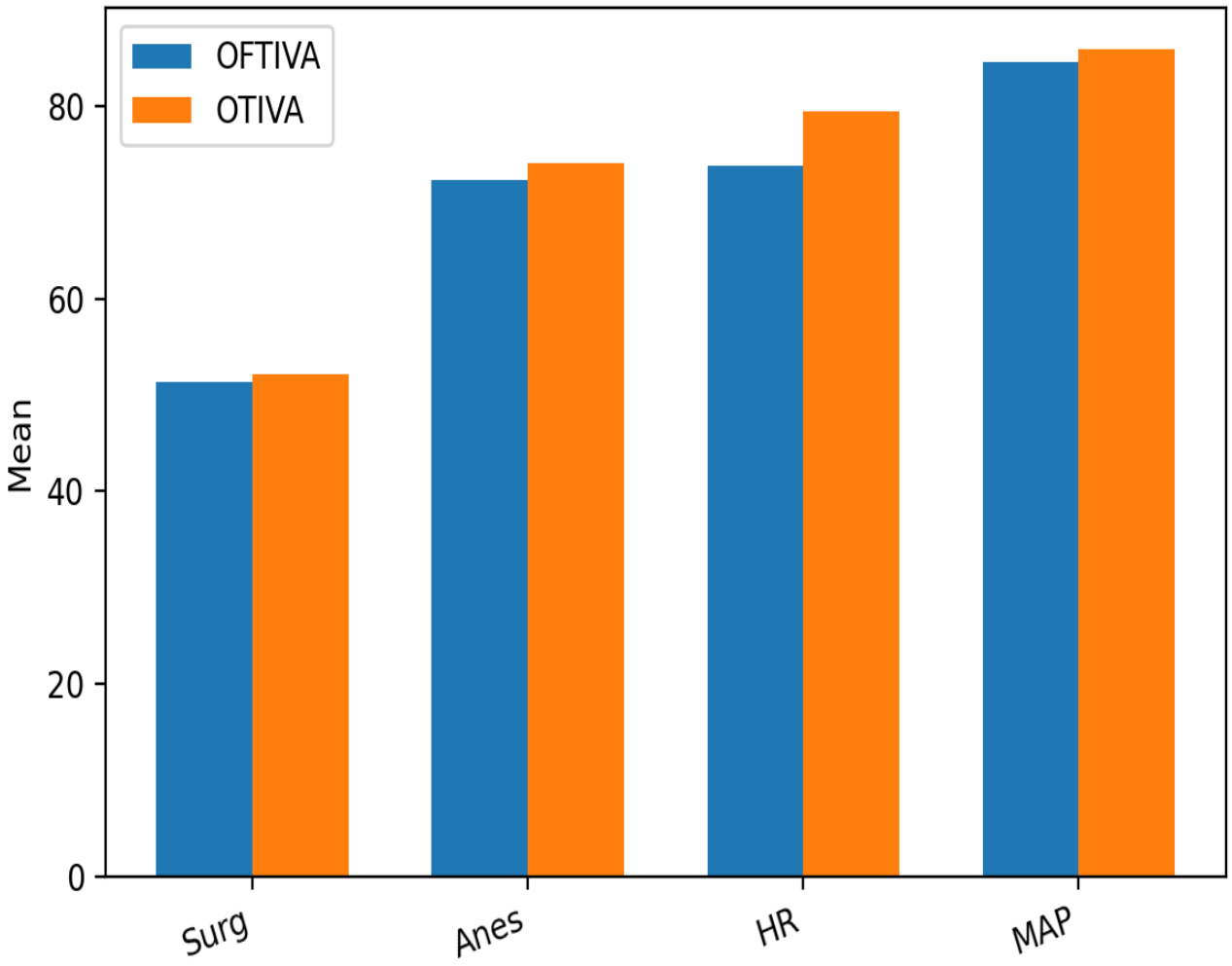

Figure 2. Comparison of intraoperative variables.

Postoperative quality of recovery assessed using the **Quality of Recovery-15 (QoR-15)** questionnaire is shown in **Table 3 (Figure 3)**. Patients receiving OFTIVA achieved significantly higher QoR-15 scores at 24 hours than those receiving OTIVA

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/10.51168/9aczze49
Original Article

(130.6 ± 7.8 vs 119.4 ± 9.3, p<0.001). Postoperative pain scores were also significantly lower in the OFTIVA group at every assessment interval.

Table 3. Quality of Recovery and Postoperative Pain

Variable	OFTIVA	OTIVA	p-value
QoR-15 score (24 h)	130.6 ± 7.8	119.4 ± 9.3	<0.001*
VAS at 2 h	2.2 ± 0.8	3.8 ± 1.1	<0.001*
VAS at 6 h	2.9 ± 1.0	4.5 ± 1.3	<0.001*
VAS at 12 h	2.3 ± 0.9	3.5 ± 1.2	<0.001*
VAS at 24 h	1.5 ± 0.7	2.4 ± 0.9	<0.001*

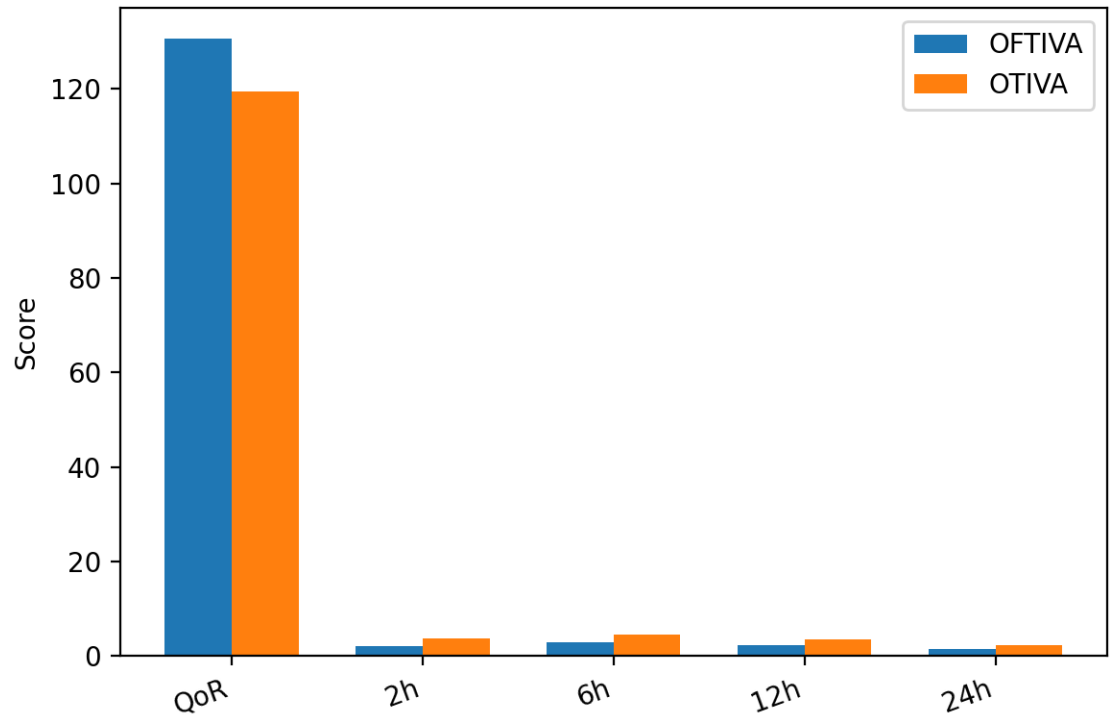

Figure 3. Comparison of QoR-15 scores and postoperative pain.

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/10.51168/9aczze49
Original Article

Postoperative recovery outcomes are presented in **Table 4 (Figure 4)**. The OFTIVA group had a significantly lower incidence of postoperative nausea and vomiting (PONV), reduced rescue analgesic requirement, earlier ambulation, and shorter post-anaesthesia care unit (PACU) stay compared with the OTIVA group.

Table 4. Postoperative Recovery Outcomes

Variable	OFTIVA	OTIVA	p-value
PONV	6 (10.0%)	19 (31.7%)	0.003*
Rescue analgesia	16 (26.7%)	39 (65.0%)	<0.001*
Time to ambulation (hours)	5.9 ± 1.5	7.8 ± 2.0	<0.001*
PACU stay (minutes)	76.5 ± 15.3	98.7 ± 19.6	<0.001*
Hospital stay (hours)	23.8 ± 4.7	26.4 ± 5.5	0.006*

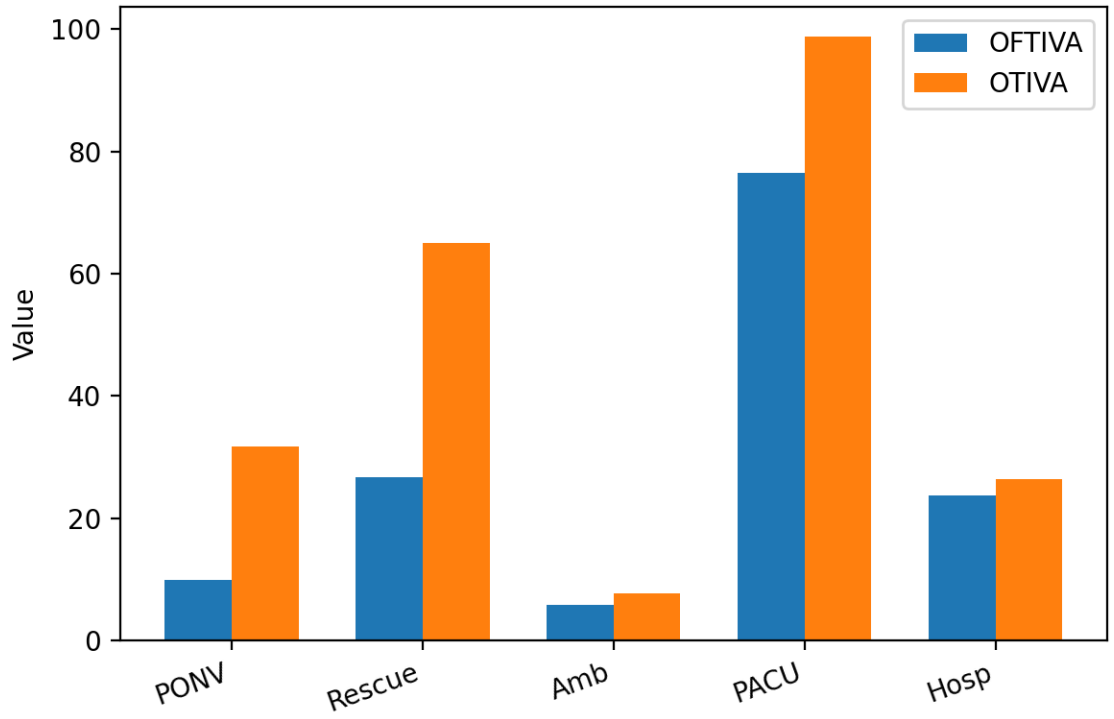

Figure 4. Comparison of postoperative recovery outcomes.

Patient satisfaction was significantly higher among women receiving OFTIVA (**Table 5, Figure 5**). Overall, **90.0%** of patients in the OFTIVA group rated their experience as excellent or good compared with **68.3%** in the OTIVA group (p=0.002).

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/10.51168/9aczze49
Original Article

Table 5. Patient Satisfaction

Satisfaction	OFTIVA	OTIVA
Excellent	31 (51.7%)	18 (30.0%)
Good	23 (38.3%)	23 (38.3%)
Fair	5 (8.3%)	14 (23.3%)
Poor	1 (1.7%)	5 (8.4%)

p = 0.002

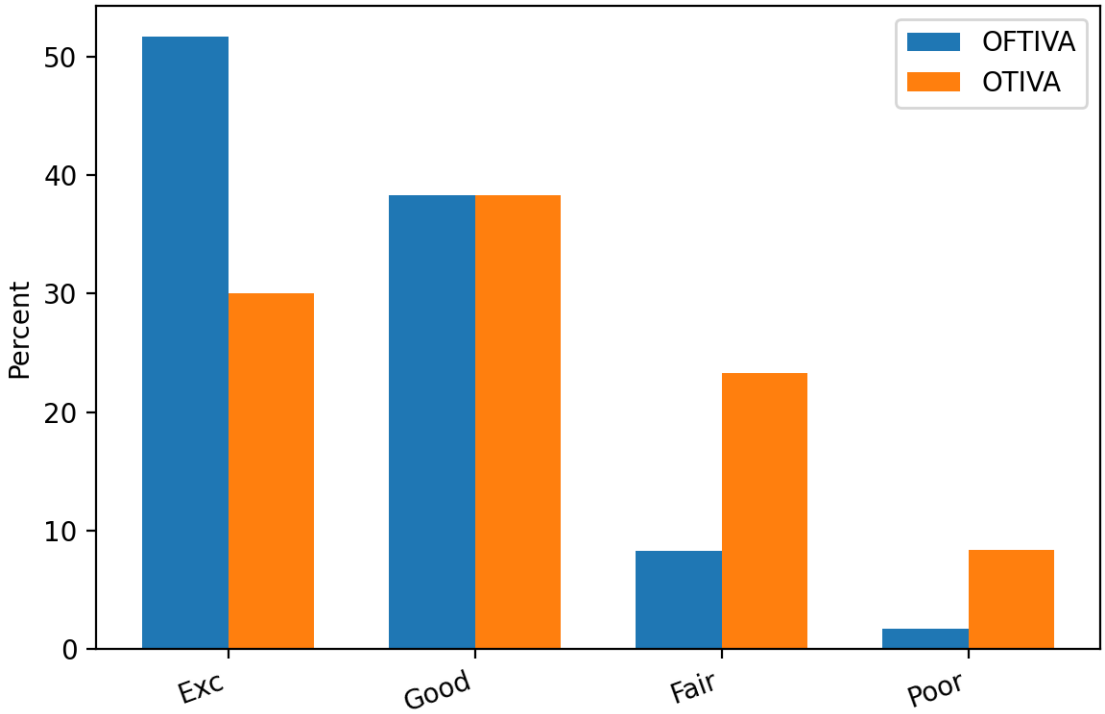

Figure 5. Distribution of patient satisfaction scores.

Perioperative complications are summarized in **Table 6, Figure 6**. No mortality, ICU admission, or conversion to open surgery occurred in either group. The incidence of airway-related complications and postoperative respiratory depression was lower in the OFTIVA group, although the difference did not reach statistical significance.

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/10.51168/9aczze49
Original Article

Table 6. Perioperative Complications

Complication	OFTIVA	OTIVA	p-value
Hypotension	8 (13.3%)	6 (10.0%)	0.57
Bradycardia	6 (10.0%)	4 (6.7%)	0.51
PONV	6 (10.0%)	19 (31.7%)	0.003*
Airway complication	1 (1.7%)	4 (6.7%)	0.17
Respiratory depression	0	2 (3.3%)	0.15
ICU admission	0	0	—
Conversion to open surgery	0	0	—
Mortality	0	0	—

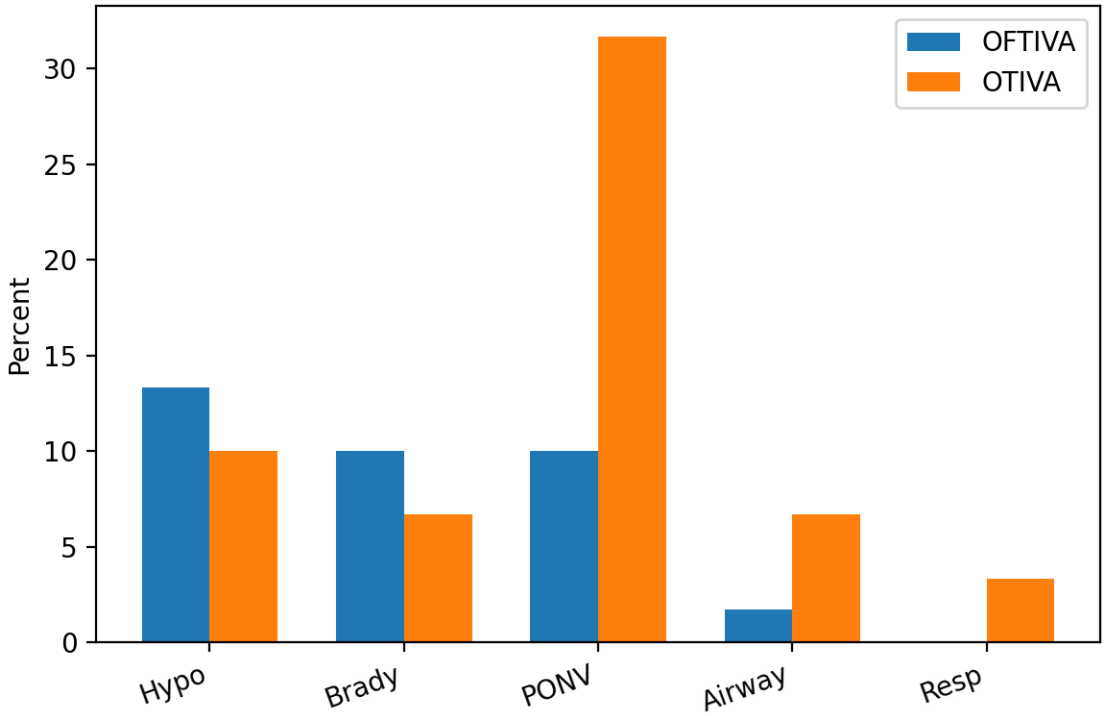

Figure 6. Comparison of perioperative complications.

DISCUSSION

Key Findings

The present retrospective comparative study evaluated the impact of opioid-free total intravenous anaesthesia (OFTIVA) on postoperative recovery among women undergoing ambulatory gynecological laparoscopic surgery. OFTIVA was associated with significantly improved postoperative recovery compared with conventional opioid-based total intravenous anaesthesia (OTIVA). The mean Quality of Recovery-15 (QoR-15) score at 24 hours was significantly higher in the OFTIVA group than in the OTIVA group (130.6 ± 7.8 vs 119.4 ± 9.3; $p<0.001$). Postoperative VAS pain scores were also significantly lower with OFTIVA at 2, 6, 12, and 24 hours (all $p<0.001$). These

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/10.51168/9aczze49
Original Article

findings are consistent with previous studies reporting improved postoperative recovery following multimodal opioid-free anaesthetic strategies.[14,17,18]

The OFTIVA group also demonstrated a significantly lower incidence of postoperative nausea and vomiting (PONV) than the OTIVA group (10.0% vs 31.7%; p=0.003). This finding is consistent with previous evidence identifying perioperative opioid exposure as an important contributor to PONV and demonstrating reduced PONV with opioid-free or opioid-sparing anaesthetic approaches.[22–24] The reduced requirement for rescue analgesia in the OFTIVA group (26.7% vs 65.0%; p<0.001) further supports the effectiveness of multimodal non-opioid analgesia in controlling postoperative pain.[19–21]

Recovery characteristics also significantly favoured OFTIVA. Patients receiving OFTIVA achieved earlier ambulation (5.9 ± 1.5 vs 7.8 ± 2.0 hours; p<0.001), shorter PACU stay (76.5 ± 15.3 vs 98.7 ± 19.6 minutes; p<0.001), and shorter overall hospital stay (23.8 ± 4.7 vs 26.4 ± 5.5 hours; p=0.006). These findings are consistent with Enhanced Recovery After Surgery (ERAS) principles, which emphasize multimodal analgesia, reduction of opioid exposure, early mobilization, and accelerated postoperative recovery.[25,26]

Patient satisfaction was also significantly higher in the OFTIVA group, with 90.0% of patients reporting an excellent or good experience compared with 68.3% in the OTIVA group (p=0.002). Improved pain control, lower PONV incidence, earlier mobilization, and shorter recovery time may have contributed to this finding. Patient-reported recovery and satisfaction are increasingly recognized as important outcomes in ambulatory surgical care.[29,30]

Postoperative Quality of Recovery

The primary outcome of this study was postoperative quality of recovery measured using the QoR-15 questionnaire. Patients receiving OFTIVA had significantly higher QoR-15 scores at 24 hours than those receiving OTIVA (130.6 ± 7.8 vs 119.4 ± 9.3; p<0.001). The QoR-15 is a validated patient-reported measure incorporating physical comfort, pain, physical independence, psychological support, and emotional state, and has been increasingly used to evaluate recovery following surgery.[15–18]

The improvement observed in the present study may be related to the multimodal nature of the OFTIVA protocol, which combined propofol with dexmedetomidine, ketamine, and intravenous lidocaine. These agents act through complementary analgesic and sympatholytic mechanisms and may reduce opioid-related adverse effects while providing effective perioperative analgesia. Previous studies have similarly reported favourable postoperative recovery with opioid-free anaesthetic techniques.[17,18]

Postoperative Pain and Rescue Analgesia

Postoperative pain scores were significantly lower in the OFTIVA group at all assessed time points. The reduced pain intensity was accompanied by a substantial reduction in rescue analgesic requirements. Multimodal analgesia using agents with different mechanisms of action can provide effective analgesia while reducing reliance on systemic opioids.[19–21]

The present findings therefore support the potential role of opioid-free multimodal anaesthesia in minimizing postoperative opioid requirements without compromising postoperative analgesic control. However, because of the retrospective design, differences in perioperative analgesic administration that were not captured in the medical records cannot be completely excluded.

Postoperative Nausea and Vomiting

A major finding of this study was the significantly lower incidence of PONV in the OFTIVA group compared with the OTIVA group (10.0% vs 31.7%; p=0.003). Opioids are recognized contributors to PONV, and minimizing perioperative opioid exposure is an established component of strategies aimed at reducing this complication.[22–24]

The approximately three-fold lower incidence of PONV observed with OFTIVA may have contributed to the improved overall recovery and patient satisfaction observed in this group. This finding is particularly relevant in ambulatory surgery, where nausea and vomiting can delay oral intake, mobilization, discharge, and return to normal activities.[23,24]

Recovery and Haemodynamic Outcomes

Patients receiving OFTIVA demonstrated significantly earlier ambulation and shorter PACU and hospital stays. These findings are clinically relevant in ambulatory surgery because rapid functional recovery facilitates earlier discharge and efficient use of healthcare resources. The results are consistent with ERAS principles emphasizing multimodal analgesia and early postoperative mobilization.[25,26]

Although mean heart rate was significantly lower in the OFTIVA group than in the OTIVA group (73.8 ± 7.5 vs 79.4 ± 8.6 beats/min; p<0.001), the incidences of hypotension and bradycardia were not significantly different between

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/10.51168/9aczze49
Original Article

groups. The lower heart rate may be related to the sympatholytic properties of dexmedetomidine, which is commonly incorporated into opioid-free anaesthetic protocols.[27,28] Importantly, the observed haemodynamic changes were not associated with reported major adverse outcomes.

Patient Satisfaction and Safety

Patient satisfaction was significantly higher among patients receiving OFTIVA (p=0.002). The combination of better pain control, lower PONV, earlier ambulation, and shorter PACU stay may explain the improved patient experience. Patient satisfaction is an important patient-centred outcome in ambulatory anaesthesia and complements traditional clinical measures of recovery.[29,30]

No ICU admissions, conversion to open surgery, or mortality occurred in either group. Airway complications and respiratory depression were numerically less frequent in the OFTIVA group, although these differences were not statistically significant. Previous comparative studies and systematic reviews have reported that opioid-free anaesthesia can be used safely in appropriately selected patients when adequate monitoring and multimodal analgesic strategies are available.[31,32]

Clinical Implications

The findings suggest that OFTIVA may provide several advantages for ambulatory gynecological laparoscopy, including improved quality of recovery, better postoperative pain control, reduced PONV, lower rescue analgesic requirements, earlier mobilization, and shorter recovery-room stay. These outcomes are consistent with the broader principles of opioid-sparing perioperative care and ERAS pathways.[25,33,34]

However, the findings should be interpreted in view of the retrospective design and single-centre setting. Prospective randomized studies are required to determine whether the observed benefits are directly attributable to the opioid-free anaesthetic technique and to establish standardized protocols for its use in gynecological laparoscopic surgery.[31,32,35]

Generalizability

The findings of this study may be applicable to appropriately selected adult women undergoing elective ambulatory gynecological laparoscopic procedures under total intravenous anaesthesia, particularly in tertiary-care settings where standardized anaesthetic protocols and appropriate perioperative monitoring are available. However, generalization to patients with higher ASA physical status, significant systemic comorbidities, emergency surgical conditions, chronic opioid use, or procedures requiring conversion to open surgery should be undertaken cautiously because these patients were excluded from the present study. Furthermore, the single-centre retrospective design and relatively limited sample size may restrict the applicability of the findings to other institutions with different patient populations, anaesthetic practices, and perioperative care pathways.

Conclusion

The present retrospective comparative study demonstrated that opioid-free total intravenous anaesthesia (OFTIVA) was associated with significantly improved postoperative quality of recovery compared with conventional opioid-based total intravenous anaesthesia (OTIVA) in women undergoing ambulatory gynecological laparoscopic surgery. Patients receiving OFTIVA experienced higher QoR-15 scores, lower postoperative pain intensity, reduced PONV, decreased rescue analgesic requirements, earlier ambulation, shorter PACU stay, shorter hospital stay, and higher patient satisfaction while maintaining comparable intraoperative haemodynamic outcomes.

Although minor haemodynamic events such as hypotension and bradycardia occurred in both groups, no significant differences were observed between the groups. No ICU admissions, conversion to open surgery, or mortality occurred in either group. These findings support OFTIVA as a potentially useful opioid-sparing approach for appropriately selected patients undergoing ambulatory gynecological laparoscopy.

Limitations

This study has several limitations. First, its retrospective observational design limits the ability to establish causal relationships and introduces the possibility of selection bias. Second, the study was conducted at a single tertiary-care institution, which may limit the generalizability of the findings. Third, postoperative recovery was assessed during the early postoperative period, and long-term outcomes, chronic pain, functional recovery, and cost-effectiveness were not evaluated. Finally, minor variations in anaesthetic drug dosing and perioperative management among anaesthesiologists could not be completely standardized because the analysis was based on retrospective hospital records. These limitations should be considered when interpreting the findings.

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/10.51168/9aczze49
Original Article

Recommendation

Based on the findings of this study, opioid-free total intravenous anaesthesia may be considered as an opioid-sparing anaesthetic strategy for appropriately selected women undergoing elective ambulatory gynecological laparoscopic surgery. Prospective multicentre randomized controlled studies involving larger patient populations are recommended to confirm these findings, evaluate longer-term postoperative outcomes, and determine standardized protocols for opioid-free anaesthesia in gynecological laparoscopic surgery.

Acknowledgement

The authors acknowledge the support of the Department of Anaesthesiology and the Department of Obstetrics and Gynaecology, Gouri Devi Institute of Medical Sciences and Hospital, Rajbandh, West Bengal, for facilitating the conduct of the study and access to the relevant medical records.

List of Abbreviations

Abbreviation	Full form
ASA	American Society of Anesthesiologists
BMI	Body Mass Index
ERAS	Enhanced Recovery After Surgery
OFA	Opioid-Free Anaesthesia
OFTIVA	Opioid-Free Total Intravenous Anaesthesia
OTIVA	Opioid-Based Total Intravenous Anaesthesia
PACU	Post-Anaesthesia Care Unit
PONV	Postoperative Nausea and Vomiting
QoR-15	Quality of Recovery-15
SD	Standard Deviation
TIVA	Total Intravenous Anaesthesia
VAS	Visual Analogue Scale

Conflict of Interest

The authors declare that they have no conflict of interest.

Source of Funding

This study received no specific funding from any public, commercial, or not-for-profit organization.

Data Availability

The data generated and/or analysed during the current study are available from the corresponding author on reasonable request, subject to institutional policies and the protection of patient confidentiality.

Author Contributions

Sunil Kumar Kedia: Conceptualization, study design, methodology, data collection, data analysis, interpretation of results, and manuscript preparation.

Ritika Kedia: Conceptualization, clinical oversight, interpretation of results, critical revision of the manuscript, and final approval of the submitted version.

Author Biography

Sunil Kumar Kedia: Dr. 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. His areas of clinical and academic interest include

Ritika Kedia: Dr. Ritika Kedia is an Associate Professor in the Department of Obstetrics and Gynaecology at Gautam Medical College and Hospital, Ranchi, Jharkhand, India. Her areas of clinical and academic interest include

References

1. 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
2. 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.

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/10.51168/9aczze49
Original Article

https://doi.org/10.1056/NEJMoa032196
3. 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
4. White PF. The role of non-opioid analgesic techniques in ambulatory anesthesia. Anesth Analg. 2002;94(3):577-585. https://doi.org/10.1097/00000539-200203000-00019
5. 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
6. 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
7. Beloeil H, Garot M, Lebuffe G, et al. Balanced opioid-free anesthesia with dexmedetomidine versus balanced anesthesia with remifentanil for major surgery. JAMA Surg. 2021;156(7):e210504.
8. Bakan M, Umutoglu T, Topuz U, et al. Opioid-free total intravenous anesthesia with propofol, dexmedetomidine and lidocaine improves postoperative recovery. Minerva Anestesiol. 2015;81(4):428-435.
9. Frauenknecht J, Kirkham KR, Jacot-Guillarmod A, Albrecht E. Analgesic impact of intraoperative lidocaine infusion. Br J Anaesth. 2019;122(6):e111-e123.
10. McDonnell C, Ní Mhuircheartaigh RJ, Tuite D, et al. Opioid-sparing anaesthesia: Current concepts. BJA Educ. 2020;20(8):258-264.
11. Lavand'homme P, Estebe JP. Opioid-free anesthesia: A different regard to anesthesia practice. Curr Opin Anaesthesiol. 2018;31(5):556-561. https://doi.org/10.1097/ACO.0000000000000632
12. Shanthanna H, Gilron I, Rajarathinam M, et al. Benefits and safety of perioperative opioid-free anesthesia: A systematic review and meta-analysis. Anesthesiology. 2021;135(6):1003-1015. https://doi.org/10.1097/ALN.0000000000003907
13. Fiore JF Jr, Olleik G, El-Kefraoui C, et al. Preventing opioid prescription after surgery. Can J Surg. 2019;62(6):476-485.
14. Beloeil H, Sulpice L, Perrot A, et al. Opioid-free anesthesia in adults undergoing surgery: A review. Anaesth Crit Care Pain Med. 2019;38(5):523-528. https://doi.org/10.1016/j.accpm.2019.05.002
15. Myles PS, Myles DB, Gallagher W, et al. Minimal clinically important difference for Quality of Recovery-15 score. Br J Anaesth. 2016;116(6):825-830.
16. Stark PA, Myles PS, Burke JA. Development and psychometric evaluation of the QoR-15 questionnaire. Br J Anaesth. 2013;111(2):161-169.
17. 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
18. Kleif J, Waage J, Christensen KB, Gögenur I. Systematic review of the QoR-15. Br J Surg. 2018;105(11):1401-1410.
19. White PF. Multimodal analgesia: Its role in preventing postoperative pain. Curr Opin Investig Drugs. 2008;9(1):76-82.
20. Joshi GP, Kehlet H. Procedure-specific pain management strategies. Best Pract Res Clin Anaesthesiol. 2014;28(2):191-201. https://doi.org/10.1016/j.bpa.2014.03.005
21. Wick EC, Grant MC, Wu CL. Postoperative multimodal analgesia pain management. Anesthesiol Clin. 2017;35(2):e89-e107.
22. 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
23. Apfel CC, Heidrich FM, Jukar-Rao S, et al. Evidence-based analysis of postoperative nausea and vomiting. Br J Anaesth. 2012;109(5):742-753. https://doi.org/10.1093/bja/aes276
24. Gan TJ, Belani KG, Bergese S, et al. Fourth Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. Anesth Analg. 2020;131(2):411-448. https://doi.org/10.1213/ANE.0000000000004833
25. 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
26. Kehlet H. Fast-track surgery-an update on physiological care principles to enhance recovery. Langenbecks Arch Surg. 2011;396(5):585-590. https://doi.org/10.1007/s00423-011-0790-y
27. Weerink MAS, Struys MMRF, Hannivoort LN, et al. Clinical pharmacokinetics and pharmacodynamics of dexmedetomidine. Clin Pharmacokinet. 2017;56(8):893-913. https://doi.org/10.1007/s40262-017-0507-7
28. Grape S, Kirkham KR, Frauenknecht J, Albrecht E. Intraoperative analgesia with dexmedetomidine. Br J Anaesth. 2019;122(6):e111-e123.

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/10.51168/9aczze49
Original Article

29. Macario A, Weinger M, Truong P, Lee M. Which clinical anesthesia outcomes are important to avoid? Anesth Analg. 1999;89(3):652-658. https://doi.org/10.1213/00000539-199909000-00022
30. 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
31. Beloeil H, Garot M, Lebuffe G, et al. Opioid-free anesthesia versus opioid-based anesthesia: A multicentre randomized clinical trial. Anesthesiology. 2021;134(4):541-551. https://doi.org/10.1097/ALN.0000000000003725
32. Shanthanna H, Gilron I, Rajarathinam M, et al. Opioid-free anesthesia for postoperative recovery: Systematic review and meta-analysis. Anesthesiology. 2021;135(6):1003-1015. https://doi.org/10.1097/ALN.0000000000003907
33. Thiele RH, Rea KM, Turrentine FE, et al. Standardization of perioperative care and enhanced recovery pathways. Anesthesiol Clin. 2022;40(2):239-255.
34. Miller TE, Thacker JKM, White WD, et al. Reduced length of hospital stay in enhanced recovery programs. Anesth Analg. 2014;118(5):1052-1061. https://doi.org/10.1213/ANE.0000000000000206
35. Della Corte L, Mercorio A, Morra I, Riemma G, De Franciscis P, Palumbo M, et al. Opioid-sparing and opioid-free anaesthesia strategies in minimally invasive gynaecological surgery: Current evidence and future perspectives. Gynecol Obstet Invest. 2022;87(1):1-11. https://doi.org/10.1159/000521364

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