Journal of
PERIOPERATIVE AND CRITICAL CARE SCIENCES
JPCCS | VOLUME 2, ISSUE 1 | JUNE 2025 | CC BY 4.0

Original article

Comparison of Spinal Anaesthesia Vs General Anaesthesia in Patient Undergoing Appendectomy

Hafiz Muhammad Mursleen Safdar[1], Muhammad Zeeshan Raza[1], Malik Ahmad Arif[1], Inam Ullah[2]
[1] BS Anesthesia Technology, Department of Health Professions Technologies, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan
[2] Lecturer, MS Allied Health Sciences (Anesthesia Technology), Department of Health Professions Technologies, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

*** Correspondence: Inam Ullah, inamullah@dhpt.uol.edu.pk; inamkhanswat1276@gmail.com**

Received: 9 February 2025 | **Accepted**: 19 April 2025 | **Published**: 30 June 2025

How to Cite: Safdar, H.M.M. et al. 2025. Comparison of Spinal Anaesthesia Vs General Anaesthesia in Patient Undergoing Appendectomy. Journal of Perioperative and Critical Care Sciences. 2, 1 (Jun. 2025), 1–8.

ABSTRACT

Background: Appendectomy is a common emergency surgical procedure, and the choice of anesthetic technique may influence early postoperative recovery. Evidence directly comparing spinal anesthesia (SA) and general anesthesia (GA) for appendectomy in Pakistan remains limited. Objective: To compare early postoperative outcomes among patients undergoing appendectomy under SA or GA. Methods: A comparative observational study was conducted from January to April 2025 at Mayo Hospital and Nawaz Sharif Social Security Hospital, Lahore, Pakistan. Sixty-two patients undergoing appendectomy were enrolled through convenience sampling; 31 received SA and 31 received GA according to routine clinical practice. Outcomes included postoperative pain, postoperative nausea and vomiting (PONV), time to first analgesic requirement, length of hospital stay, and oral diet initiation. Data were analyzed using IBM SPSS Statistics version 27.0, with $p<0.05$ considered statistically significant. Results: PONV occurred in 6.5% of patients receiving SA compared with 38.7% receiving GA. Time to first analgesic requirement was longer with SA (5.03±1.43 vs 3.19±0.95 hours; $p<0.001$), while hospital stay was shorter (1.94±0.73 vs 2.77±0.72 days; $p<0.001$). Oral diet was initiated on postoperative day 1 in 83.9% of the SA group compared with 45.2% of the GA group ($p=0.004$). Postoperative pain severity progressively decreased over 24 hours in the overall cohort. Conclusion: SA was associated with less PONV, prolonged postoperative analgesia, shorter hospitalization, and earlier oral intake compared with GA and may represent a useful anesthetic option for appropriately selected patients undergoing appendectomy. Keywords: Appendectomy; General anesthesia; Spinal anesthesia; Postoperative nausea and vomiting; Postoperative pain; Analgesia; Hospital stay; Postoperative recovery.

EDITORIAL INFORMATION

Author Contributions: HMMS, IU; Design: HMMS, MZR, IU; Data Collection: HMMS, MZR, MAA; Analysis: MAA, IU; Drafting: HMMS, MZR, MAA, IU.
Ethical Approval: Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan.
Informed Consent: Written informed consent was obtained from all participants
Conflict of Interest: The authors declare no conflict of interest; **Funding**: No external funding; **Data Availability**: Available from the corresponding author on reasonable request; **Acknowledgments**: N/A.

INTRODUCTION

Acute appendicitis is one of the most common surgical emergencies worldwide, and appendectomy remains a definitive treatment for patients requiring operative management. Both open and laparoscopic appendectomy require an anesthetic technique that provides adequate surgical conditions while minimizing perioperative complications and facilitating postoperative recovery (1). The choice of anesthesia may therefore influence clinically important outcomes such as postoperative pain, nausea and vomiting, analgesic requirements, return to oral intake, length of hospital stay, and overall recovery.

General anesthesia (GA) is commonly used for appendectomy because it provides unconsciousness, airway control, muscle relaxation, and predictable operating conditions. Nevertheless, exposure to general anesthetic agents and perioperative opioids may contribute to postoperative nausea and vomiting (PONV), pain, delayed recovery, and other anesthesia-related adverse effects (2,3). PONV remains particularly relevant because it can impair patient comfort, delay oral intake and mobilization, increase the requirement for rescue medication, and potentially prolong postoperative recovery (2,3).

Spinal anesthesia (SA) provides neuraxial blockade while allowing spontaneous respiration and avoiding routine airway instrumentation. In appropriately selected patients undergoing lower abdominal surgery, it may provide effective intraoperative anesthesia together with postoperative analgesic benefits. Comparative evidence has suggested that neuraxial techniques may be associated with reduced postoperative pain and analgesic requirements and, in some settings, faster postoperative recovery than GA (1,4). In a prospective randomized study of laparoscopic appendectomy, Erdem et al. demonstrated the feasibility of spinal/epidural blockade as an alternative to GA and reported favorable postoperative outcomes with regional anesthesia (4). Similarly, a multicenter international analysis by El Moheb et al. examined general versus neuraxial anesthesia for appendectomy and supported the feasibility of neuraxial anesthesia in appropriately selected patients (1). Clinical evidence from other settings has also demonstrated the potential effectiveness of spinal anesthesia for appendectomy (5).

Despite these findings, selection of an anesthetic technique for appendectomy must account for patient characteristics, surgical requirements, institutional practice, and the potential advantages and limitations of each approach. Evidence generated in one healthcare environment may not be directly applicable to another because perioperative protocols, resource availability, patient characteristics, and postoperative care practices can differ. Published Pakistani evidence directly comparing postoperative outcomes after SA and GA for appendectomy remains limited, although anesthesia-related postoperative complications following appendectomy have been reported locally (6). Additional context-specific evidence may therefore assist clinicians in understanding how the two anesthetic approaches are associated with early postoperative recovery in routine clinical practice.

The present study compared postoperative outcomes among patients undergoing appendectomy under spinal or general anesthesia at Mayo Hospital and Nawaz Sharif Social Security Hospital, Lahore. The study specifically evaluated postoperative pain, PONV, time to first analgesic requirement, length of hospital stay, initiation of oral intake, and patient satisfaction to determine whether these early postoperative outcomes differed between patients receiving the two anesthetic techniques.

MATERIALS AND METHODS

A comparative observational study was conducted from July 2024 to October 2024 in the Departments of Anesthesia at Mayo Hospital and Nawaz Sharif Social Security Hospital, Lahore, Pakistan. The study compared early postoperative outcomes among patients undergoing appendectomy under spinal anesthesia (SA) or general anesthesia (GA) in routine clinical practice.

A total of 62 patients undergoing appendectomy were enrolled through convenience sampling after written informed consent. Patients aged 18–50 years with American Society of Anesthesiologists (ASA) physical status I–III and a body mass index (BMI) <29.9 kg/m² were eligible for inclusion. Patients with a known allergy to anesthetic drugs, those receiving beta-blockers or anticoagulant therapy, and those unwilling to participate were excluded. The final study population comprised 31 patients who received SA and 31 who received GA.

The anesthetic technique was determined according to routine hospital practice, clinical considerations, and the judgment of the attending anesthesiologist; participants were not randomly assigned to the two groups. Before surgery, demographic characteristics, relevant medical history, ASA physical status, and preoperative clinical information were recorded using the structured study data-collection form. Participants were subsequently classified according to the anesthetic technique received and followed during the early postoperative period for assessment of the predefined outcomes.

Postoperative pain was assessed using the Visual Analog Scale (VAS), ranging from 0 to 10, at 2, 6, 12, and 24 hours after surgery. Postoperative nausea and vomiting (PONV) occurring during the postoperative observation period were recorded. Additional recovery outcomes included time from completion of surgery to the first requirement for postoperative analgesia, length of hospital stay, postoperative day of oral diet initiation, and patient satisfaction during hospitalization. Outcome information was recorded on the study data-collection form while maintaining participant confidentiality.

Data were analysed using IBM SPSS Statistics version 27.0. Categorical variables were summarized as frequencies and percentages, whereas continuous variables were summarized as mean ± standard deviation (SD) and, where appropriate, median and interquartile range (IQR). Categorical outcomes were compared between the SA and GA groups using the Chi-square test or Fisher's exact test when expected cell frequencies were small. Continuous variables were compared using the independentsamples t-test when parametric assumptions were appropriate, while the Mann–Whitney U test was used for non-normally distributed continuous or ordinal outcomes. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant.

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and the requirements of the Ethical Review Committee of the Faculty of Allied Health Sciences, The University of Lahore (Ref. No.: DRC/DHPT012/07/24). Written informed consent was obtained from all participants before enrollment. Participants were informed about the purpose of the research and the voluntary nature of participation and were permitted to withdraw without affecting their medical care. Participant information was handled confidentially and data were recorded anonymously for analysis.

RESULTS

A total of 62 patients undergoing appendectomy were included in the analysis, with 31 (50.0%) receiving spinal anesthesia (SA) and 31 (50.0%) receiving general anesthesia (GA). Overall, 31 (50.0%) participants were male and 31 (50.0%) were female. Regarding preoperative physical status, 23 (37.1%) patients were classified as ASA I, 29 (46.8%) as ASA II, and 10 (16.1%) as ASA III. Postoperative nausea and vomiting (PONV) occurred in 14 (22.6%) patients overall. The available demographic data were reported for the entire cohort rather than separately by anesthetic group; therefore, between-group baseline comparisons were not performed (Table 1).

Table 1. Table 1. Demographic and Characteristics of Participants

Characteristic	n (%)
Gender	
Male	31 (50.0)
Female	31 (50.0)
ASA physical status	
ASA I	23 (37.1)
ASA II	29 (46.8)
ASA III	10 (16.1)
Anesthetic technique	
Spinal anesthesia	31 (50.0)
General anesthesia	31 (50.0)
Postoperative nausea/vomiting	
No	48 (77.4)
Yes	14 (22.6)

ASA, American Society of Anesthesiologists.

Postoperative pain severity progressively decreased during the first 24 hours after surgery. At 2 hours, moderate pain was reported in 37 (59.7%) patients and severe pain in 21 (33.9%), whereas only 4 (6.5%) reported mild pain. By 6 hours, the proportion with severe pain had decreased to 5 (8.1%), while 44 (71.0%) had moderate pain. At 12 hours, mild pain became the most frequent category, affecting 33 (53.2%) patients, and only one patient (1.6%) continued to report severe pain. At 24 hours, no patient reported severe pain; 41 (66.1%) had mild pain, 12 (19.4%) had moderate pain, and 9 (14.5%) reported no pain. These findings demonstrate a progressive reduction in postoperative pain severity across the overall cohort (Table 2). Because the available pain-frequency data were not stratified by anesthetic group, a direct SA-versus-GA comparison was not made from these values.

Table 2. ASA, American Society of Anesthesiologists.

Postoperative pain severity progressively decreased during the first 24 hours after surgery. At 2 hours, moderate pain was reported in 37 (59.7%) patients and severe pain in 21 (33.9%), whereas only 4 (6.5%) reported mild pain. By 6 hours, the proportion with severe pain had decreased to 5 (8.1%), while 44 (71.0%) had moderate pain. At 12 hours, mild pain became the most frequent category, affecting 33 (53.2%) patients, and only one patient (1.6%) continued to report severe pain. At 24 hours, no patient reported severe pain; 41 (66.1%) had mild pain, 12 (19.4%) had moderate pain, and 9 (14.5%) reported no pain. These findings demonstrate a progressive reduction in postoperative pain severity across the

overall cohort (Table 2). Because the available pain-frequency data were not stratified by anesthetic group, a direct SA-versus-GA comparison was not made from these values.

Table 2. Distribution of Postoperative Pain Severity During the First 24 Hours

Postoperative time	No pain, n (%)	Mild pain, n (%)	Moderate pain, n (%)	Severe pain, n (%)	Postoperative time
2 hours	0 (0.0)	4 (6.5)	37 (59.7)	21 (33.9)	2 hours
6 hours	0 (0.0)	13 (21.0)	44 (71.0)	5 (8.1)	6 hours
12 hours	0 (0.0)	33 (53.2)	28 (45.2)	1 (1.6)	12 hours
24 hours	9 (14.5)	41 (66.1)	12 (19.4)	0 (0.0)	24 hours

PONV differed substantially according to anesthetic technique. It occurred in 2 of 31 patients (6.5%) receiving SA compared with 12 of 31 (38.7%) receiving GA. Consequently, 93.5% of patients in the SA group remained free of PONV compared with 61.3% in the GA group. Based on these reported event counts, the relative risk of PONV with SA compared with GA was 0.17 (95% CI 0.04–0.68), indicating a markedly lower observed risk of PONV among patients receiving SA (Table 3).

Table 3. Postoperative Nausea and Vomiting According to Anesthetic Technique

PONV	Spinal anesthesia (n = 31), n (%)	General anesthesia (n = 31), n (%)
Yes	2 (6.5)	12 (38.7)
No	29 (93.5)	19 (61.3)

PONV, postoperative nausea and vomiting. Derived relative risk for SA versus GA = 0.17 (95% CI 0.04–0.68).

The duration of postoperative analgesia also differed between groups. The mean time to first analgesic requirement was 5.03 ± 1.43 hours following SA compared with 3.19 ± 0.95 hours following GA. Median times were 5.0 hours (IQR 4.0–6.0) and 3.0 hours (IQR 2.5–4.0), respectively. The difference was statistically significant ($p < 0.001$, Mann–Whitney U test). The reported means corresponded to a 1.84-hour longer interval before the first analgesic requirement in the SA group, with an approximate 95% CI for the mean difference of 1.24–2.44 hours (Table 4).

Table 4. Time to First Postoperative Analgesic Requirement According to Anesthetic Technique

Anesthetic technique	Mean ± SD, hours	Median (IQR), hours	Range, hours	p-value
Spinal anesthesia (n = 31)	5.03 ± 1.43	5.0 (4.0–6.0)	2–7	<0.001
General anesthesia (n = 31)	3.19 ± 0.95	3.0 (2.5–4.0)	2–5	

SD, standard deviation; IQR, interquartile range. Comparison by Mann–Whitney U test. Mean difference based on the reported group means = 1.84 hours; approximate 95% CI, 1.24–2.44 hours.

Length of hospital stay was shorter among patients receiving SA. The mean hospital stay was 1.94 ± 0.73 days in the SA group compared with 2.77 ± 0.72 days in the GA group ($p < 0.001$). In the SA group, 8 (25.8%) patients were discharged after one day, 15 (48.4%) after two days, and 8 (25.8%) after three days; none remained hospitalized for four days. In comparison, only 2 (6.5%) patients in the GA group had a one-day stay, while 13 (41.9%), 11 (35.5%), and 5 (16.1%) remained hospitalized for two, three, and four days, respectively. The mean between-group difference was 0.83 days shorter with SA, with an approximate 95% CI of 0.47–1.19 days (Table 5)

Table 5. Length of Hospital Stay According to Anesthetic Technique

Hospital stay	Spinal anesthesia (n = 31), n (%)	General anesthesia (n = 31), n (%)
1 day	8 (25.8)	2 (6.5)
2 days	15 (48.4)	13 (41.9)
3 days	8 (25.8)	11 (35.5)
4 days	0 (0.0)	5 (16.1)

Hospital stay	Spinal anesthesia (n = 31), n (%)	General anesthesia (n = 31), n (%)
Mean ± SD, days	1.94 ± 0.73	2.77 ± 0.72
p-value	<0.001	

Mean difference based on the reported group means = −0.83 days for SA versus GA; approximate 95% CI, −1.19 to −0.47 days

Earlier initiation of oral intake was also observed among patients receiving SA. Oral diet was initiated on the first postoperative day in 26 of 31 patients (83.9%) in the SA group compared with 14 of 31 (45.2%) in the GA group. Five patients (16.1%) receiving SA and 14 (45.2%) receiving GA initiated oral intake on postoperative day 2. No patient in the SA group required postponement until postoperative day 3, compared with 3 (9.7%) patients receiving GA. The overall difference in the timing of oral diet initiation was statistically significant (p = 0.004, Fisher's exact test). Based on the reported counts, patients receiving SA were approximately 1.86 times as likely to initiate oral intake on postoperative day 1 as patients receiving GA (RR 1.86, 95% CI 1.22–2.82) (Table 6).

Table 6. Postoperative Oral Diet Initiation According to Anesthetic Technique

Oral diet initiation	Spinal anesthesia (n = 31), n (%)	General anesthesia (n = 31), n (%)	p-value
Postoperative day 1	26 (83.9)	14 (45.2)	
Postoperative day 2	5 (16.1)	14 (45.2)	0.004
Postoperative day 3	0 (0.0)	3 (9.7)	

Comparison by Fisher's exact test. For initiation of oral intake on postoperative day 1, derived RR for SA versus GA = 1.86 (95% CI 1.22–2.82).

Overall, SA was associated with a lower observed incidence of PONV, a longer interval before the first postoperative analgesic requirement, shorter hospitalization, and earlier initiation of oral intake than GA. Postoperative pain severity declined progressively over 24 hours in the overall study population. Although the original study also identified patient satisfaction as an outcome, numerical satisfaction scores or category frequencies were not available in the analyzed results and therefore were not included in the comparative statistical presentation.

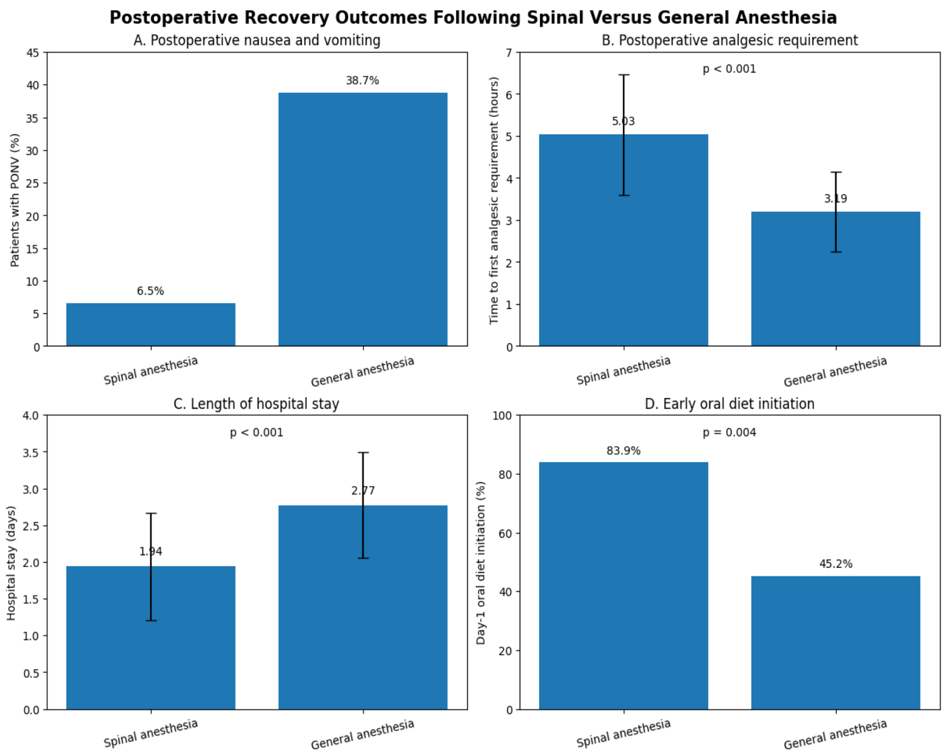

Figure 1. Postoperative recovery outcomes following spinal versus general anesthesia. Panel A shows PONV (6.5% vs 38.7%); Panel B shows time to first analgesic requirement (5.03 ± 1.43 vs 3.19 ± 0.95 hours; $p < 0.001$); Panel C shows length of hospital stay (1.94 ± 0.73 vs 2.77 ± 0.72 days; $p < 0.001$); and Panel D shows initiation of oral diet on postoperative day 1 (83.9% vs 45.2%; $p = 0.004$). Collectively, the observed postoperative profile favored SA, with less PONV, a longer interval before rescue analgesia, shorter hospitalization, and earlier oral intake.

DISCUSSION

The present study compared early postoperative outcomes among patients undergoing appendectomy under spinal anesthesia (SA) or general anesthesia (GA). The principal findings were that SA was associated with a lower occurrence of postoperative nausea and vomiting (PONV), a longer interval before the first postoperative analgesic requirement, a shorter hospital stay, and earlier initiation of oral intake. Postoperative pain severity also declined progressively during the first 24 hours in the overall cohort (7). Taken together, these findings suggest that SA may offer favorable early postoperative recovery characteristics in appropriately selected patients undergoing appendectomy, although the observational nature of the study does not establish a causal advantage of one anesthetic technique over the other.

A clinically important finding was the longer duration before rescue analgesia among patients receiving SA. The mean time to first analgesic requirement was 5.03 ± 1.43 hours after SA compared with 3.19 ± 0.95 hours after GA, representing a mean difference of 1.84 hours. This difference was statistically significant ($p < 0.001$) and is consistent with previous evidence suggesting a postoperative analgesic advantage of neuraxial anesthesia. Erdem et al. reported favorable postoperative analgesic outcomes with spinal/epidural blockade compared with GA in patients undergoing laparoscopic appendectomy (4,8). Similarly, Hasan et al. described spinal anesthesia as an effective anesthetic approach for appendectomy (5,9). The prolonged analgesic interval observed after SA is clinically plausible because neuraxial blockade may continue to provide sensory analgesia during the early postoperative period after completion of surgery.

Pain severity decreased progressively over the first postoperative day in the study population. At 2 hours, 33.9% of patients reported severe pain, whereas severe pain decreased to 8.1% at 6 hours and 1.6% at 12 hours, with no severe pain recorded at 24 hours. By 24 hours, 66.1% of participants reported only mild pain and 14.5% reported no pain (10). Although this temporal pattern indicates progressive postoperative pain resolution, the available pain-category data were not stratified by anesthetic group. Consequently, these findings demonstrate improvement over time in the overall cohort but cannot independently establish superior pain scores with SA. The longer time to first analgesic requirement in the SA group nevertheless provides comparative evidence of a difference in early postoperative analgesic requirements between the two anesthetic approaches.

PONV showed one of the largest between-group differences. PONV occurred in 6.5% of patients receiving SA compared with 38.7% receiving GA. Based on the observed event counts, the risk of PONV with SA was approximately 0.17 times that observed with GA. PONV is a common and clinically relevant postoperative complication that may adversely affect patient comfort, oral intake, mobilization, and recovery. The fourth consensus guidelines for the management of PONV identify anesthetic technique, exposure to volatile anesthetics, and perioperative opioid use among factors influencing postoperative emetic risk (2,11). A systematic review and meta-analysis by Amirshahi et al. also demonstrated the substantial burden of PONV following surgery and anesthesia (3,12). The lower PONV frequency observed with SA in the present study is therefore consistent with established perioperative evidence, although differences in prophylactic antiemetic use, anesthetic medications, opioid exposure, and individual PONV risk factors were not available for adjusted analysis.

Length of hospitalization also differed between the two groups. Patients receiving SA had a mean hospital stay of 1.94 ± 0.73 days compared with 2.77 ± 0.72 days among those receiving GA, corresponding to an observed difference of approximately 0.83 days ($p < 0.001$). None of the patients receiving SA remained hospitalized for four days, compared with 16.1% of those receiving GA. This finding is broadly consistent with evidence evaluating neuraxial anesthesia for appendectomy. In a multicenter international study, El Moheb et al. examined outcomes associated with general versus neuraxial anesthesia for appendectomy and demonstrated the feasibility of neuraxial techniques in appropriately selected patients (1,13). A shorter postoperative stay could potentially reflect differences in pain control, nausea and vomiting, mobilization, return of gastrointestinal function, or institutional discharge practices. However, because these potential determinants were not comprehensively adjusted for in the present study, the difference in hospital stay should be interpreted as an observed association rather than a direct effect of SA.

Earlier oral intake further supported the observed difference in postoperative recovery. Oral diet was initiated on postoperative day 1 in 83.9% of patients receiving SA compared with 45.2% receiving GA, while delayed initiation until postoperative day 3 occurred only in the GA group. Patients receiving SA were approximately 1.86 times as likely to initiate oral intake on the first postoperative day, and the overall distribution of diet initiation differed significantly between groups ($p = 0.004$). Earlier tolerance of oral intake is an important component of postoperative recovery and may contribute to patient comfort and readiness for discharge. The lower occurrence of PONV in the SA group may have contributed to the observed pattern, although the present data do not permit formal assessment of this potential relationship.

The findings have practical relevance in settings where both anesthetic techniques are available. Avoidance of routine airway manipulation, preservation of spontaneous respiration, and prolonged regional analgesia are potential advantages of spinal anesthesia in appropriately selected patients. Previous studies have supported the feasibility of neuraxial anesthesia for appendectomy (1,4,5), while local evidence has documented anesthesia-related postoperative complications following appendectomy in Pakistan (6,8,11). The present findings add context-specific information from two hospitals in Lahore by demonstrating measurable differences in several early postoperative outcomes between patients receiving SA and GA. Nevertheless, anesthetic selection should remain individualized according to patient characteristics, contraindications to neuraxial anesthesia, surgical requirements, anticipated operative course, anesthesiologist assessment, and institutional practice.

Several limitations should be considered when interpreting these findings. The sample consisted of only 62 patients recruited from two hospitals using convenience sampling, limiting statistical precision and external generalizability. Anesthetic technique was determined according to routine clinical practice and anesthesiologist judgment rather than random assignment, creating the possibility of selection bias and confounding by indication (14). Group-specific baseline demographic and clinical characteristics were not available for adjusted comparison; consequently, residual differences between patients receiving SA and GA cannot be excluded. In addition, detailed anesthetic drug regimens, perioperative opioid exposure, antiemetic prophylaxis, and other aspects of perioperative management were not available for adjustment and could have influenced PONV, analgesic requirements, and recovery. The available postoperative pain categories were reported for the overall cohort rather than separately for the two anesthetic groups, preventing a direct group-wise analysis of pain trajectories. Outcomes were limited to the early postoperative period, and longer-term complications or post-discharge recovery were not evaluated. These limitations mean that the findings should be interpreted as associations observed within the study population rather than evidence of causal superiority.

Despite these limitations, the study provides useful local comparative data on early recovery after appendectomy. Equal numbers of participants were included in the SA and GA groups, several clinically relevant postoperative outcomes were assessed, and consistent differences were observed across PONV, analgesic requirement, hospital stay, and oral diet initiation. Larger prospective multicenter studies with clearly standardized anesthetic and postoperative protocols, comprehensive baseline characterization, and appropriate adjustment for confounding would help determine whether these observed differences persist across broader patient populations and clinical settings.

CONCLUSION

Among patients undergoing appendectomy in this study, spinal anesthesia was associated with more favorable early postoperative outcomes than general anesthesia, including a lower occurrence of postoperative nausea and vomiting, a longer interval before the first analgesic requirement, shorter hospital stay, and earlier initiation of oral intake. These findings suggest that spinal anesthesia may represent a useful anesthetic option for appropriately selected patients undergoing appendectomy when clinically suitable. However, given the observational design, convenience sampling, small sample size, and non-random selection of anesthetic technique, the findings should be interpreted as associations rather than evidence of causal superiority.

REFERENCES

1. El Moheb M, Han K, Breen K, El Hechi M, Jia Z, Mokhtari A, et al. General versus neuraxial anesthesia for appendectomy: a multicenter international study. World J Surg. 2021;45(11):3295–3301.
2. Gan TJ, Belani KG, Bergese S, Chung F, Diemunsch P, Habib AS, et al. Fourth consensus guidelines for the management of postoperative nausea and vomiting. Anesth Analg. 2020;131(2):411–448.
3. Amirshahi M, Behnamfar N, Badakhsh M, Rafiemanesh H, Keikhaie KR, Sheyback M, et al. Prevalence of postoperative nausea and vomiting: a systematic review and meta-analysis. Saudi J Anaesth. 2020;14(1):48–56.
4. Erdem VM, Donmez T, Uzman S, Ferahman S, Hatipoglu E, Sunamak O. Spinal/epidural block as an alternative to general anesthesia for laparoscopic appendectomy: a prospective randomized clinical study. Wideochir Inne Tech Maloinwazyjne. 2018;13(2):148.
5. Hasan M, Nath SC, Hasnat A, Masum GKC, Abbasi A. A clinical study of effectiveness of spinal anesthesia for appendicectomy. The Insight. 2022;5(2):3–8.
6. Bilal A, Muneer B, Ullah MS, Shahbaz S, Ali R, Noman M. Postoperative complications of anaesthesia following appendectomy. Healer J Physiother Rehabil Sci. 2024;4(5):15–21.ye
7. Shahbaz S, Zakar R, Fischer F. Anesthesia health system capacities in public hospitals of Punjab, Pakistan. INQUIRY: The Journal of Health Care Organization, Provision, and Financing. 2021 Nov 14;58:00469580211059740.
8. Shahbaz S, Zakar R, Howard N. Anaesthesia provision challenges in public hospitals of Pakistan's Punjab province: a qualitative study of expert perspectives. BMJ open. 2023 Dec 1;13(12):e075108.
9. Bilal A, Muneer B, Ullah MS, Shahbaz S, Ali R, Noman M. Postoperative Complications of Anaesthesia following Appendectomy: Complications of Anaesthesia following Appendectomy. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2024 Sep 30;4(5):15-21.
10. Fayyaz M, Shahbaz S. A Narrative Review on Management of Cyanosis in Neonates: Management of Cyanosis in Neonates. Pakistan Journal of Health Sciences. 2023 Nov 30:14-9.
11. Khan A, Ullah I, Khawaja AZ, Bary A, Ullah TR, Shahbaz S, Ali N. Frequency and Risk Factors Associated with Postoperative Sore Throat (POST) in Adults Undergoing General Anesthesia during ENT and Eye Surgery: A Cross-Sectional Study: POST in Adults Undergoing General Anesthesia During ENT and Eye Surgery. Pakistan Journal of Health Sciences. 2025 May 31:110-6.
12. Ullah I, Bibi T, Shahbaz S, Tabassum H, Chaudhary WA. Efficacy of Femoral Nerve Block Compared to Adductor Canal Block for Post Operative Pain Management After Total Knee Arthroplasty: Femoral Nerve vs Adductor Canal Block After Total Knee Arthroplasty. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2024;4(6):22-9.
13. Fayyaz M, Muneer B, Iqbal A, Bilal MA, Tabassum H, Shahbaz S. Mechanical Causes of Osteoarthritis in Adults, its Diagnosis and Treatment: Osteoarthritis in Adults. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences). 2023 Dec 31:02-7.
14. Shahbaz S, Howard N. Anaesthesia delivery systems in low and lower-middle-income Asian countries: a scoping review of capacity and effectiveness. PLOS global public health. 2024 Mar 18;4(3):e0001953.