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Research Article

Comparative Assesment of Postoperstive Analgesia, Patient Satisfaction and Early Ambulation Following Spinal versus Local Anesthesia for Anorectal Surgeries

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ABSTRACT
Background: Effective postoperative analgesia, early ambulation, and patient satisfaction are essential for optimal recovery following anorectal surgeries. Spinal anaesthesia provides reliable surgical anaesthesia but may delay mobilisation and cause postoperative complications. Local anaesthesia offers a potential alternative with faster recovery and fewer adverse effects.
Aim: To compare postoperative analgesia, patient satisfaction, and early ambulation following spinal versus local anaesthesia in patients undergoing anorectal surgeries.
Materials and Methods: This prospective comparative study was conducted over 18 months and included 60 patients undergoing elective anorectal surgeries. Patients were divided into Group S (spinal anaesthesia, n = 30) and Group L (local anaesthesia, n = 30). Postoperative pain was assessed using the Visual Analogue Scale (VAS). Rescue analgesic requirements, time to first ambulation, hospital stay, patient satisfaction, and postoperative complications were evaluated.
Results: Postoperative VAS scores at 6 hours were significantly lower in Group L (2.80 ± 1.05) than Group S (4.20 ± 1.25; $p<0.001$). Time to first rescue analgesia was longer in Group L (6.42 ± 1.56 versus 3.85 ± 1.12 hours; $p<0.001$). Patients receiving local anaesthesia ambulated earlier (2.15 ± 0.86 versus 5.80 ± 1.42 hours) and had shorter hospital stays (16.20 ± 4.38 versus 22.40 ± 5.65 hours). Patient satisfaction was higher in Group L (4.33 ± 0.84 versus 3.77 ± 1.10), with fewer complications.
Conclusion: Local anaesthesia demonstrated advantages in postoperative analgesia, early ambulation, patient satisfaction, and recovery compared with spinal anaesthesia in selected anorectal surgeries.

Keywords: Anorectal Surgery, Spinal Anaesthesia, Local Anaesthesia, Postoperative Analgesia, Patient Satisfaction; Early Ambulation.

INTRODUCTION

Anorectal disorders, including haemorrhoids, anal fissures, fistula-in-ano, and perianal abscesses, are commonly encountered conditions in general surgical practice that frequently require surgical intervention[1]. Most anorectal procedures are relatively short and can be performed on a day-care basis. However, postoperative pain and discomfort remain important concerns because of the rich sensory innervation of the anorectal region. Effective anaesthetic management is therefore essential to ensure adequate intraoperative analgesia, postoperative pain relief, early mobilisation, and improved patient satisfaction [2,3].Various anaesthetic techniques, including general anaesthesia, spinal anaesthesia, epidural anaesthesia, local perianal infiltration, and local anaesthesia combined with sedation, are employed for anorectal surgeries. The selection of an appropriate technique depends on the nature and complexity of the procedure, patient characteristics, associated comorbidities, and the expertise of the anaesthesiologist and surgeon. In ambulatory surgical settings, the preferred anaesthetic technique should provide effective analgesia while facilitating rapid recovery, early ambulation, and timely hospital discharge [4-6].

Spinal anaesthesia is widely practised for anorectal procedures because of its technical simplicity, reliable sensory blockade, effective intraoperative analgesia, and adequate relaxation of the anal sphincter. However, it may be associated with complications such as hypotension, bradycardia, postoperative urinary retention, post-dural puncture headache, and delayed mobilisation due to residual motor blockade. These adverse effects

may prolong postoperative observation and delay discharge, thereby increasing patient discomfort and healthcare expenditure [7-9].Local anaesthesia, particularly perianal infiltration or field block, has emerged as a practical alternative for selected anorectal procedures. It provides targeted analgesia while preserving lower-limb motor function and avoiding several complications associated with neuraxial blockade. Long-acting local anaesthetic agents, such as bupivacaine and ropivacaine, may provide sustained postoperative pain relief, reduce rescue analgesic requirements, and facilitate earlier ambulation. Nevertheless, inadequate blockade, discomfort during infiltration, and the potential need for supplementary anaesthesia remain important limitations [10-12].Postoperative analgesia, patient satisfaction, and early ambulation are important indicators of anaesthetic effectiveness and postoperative recovery. Adequate pain control improves patient comfort, reduces analgesic consumption, and facilitates early mobilisation. Similarly, patient satisfaction reflects the overall perioperative experience, including intraoperative comfort, postoperative complications, and recovery time. Although both spinal and local anaesthesia are established techniques, their comparative effects on these recovery parameters require further evaluation [13,14].Therefore, the present study was undertaken to compare postoperative analgesia, patient satisfaction, and early ambulation following spinal versus local anaesthesia in patients undergoing anorectal surgeries.

MATERIALS AND METHODS

The present study was designed as a prospective, comparative, hospital-based study conducted in the Department of Anaesthesiology in collaboration with the Department of General Surgery at a tertiary care teaching hospital. The study compared postoperative analgesia, patient satisfaction, and early ambulation following spinal anaesthesia versus local anaesthesia in patients undergoing elective anorectal surgeries.A total of 60 patients undergoing elective anorectal surgeries were included in the study. The patients were divided into two groups of 30 patients each according to the anaesthetic technique administered.

- Group S (n = 30): Patients who underwent anorectal surgery under spinal anaesthesia.
- Group L (n = 30): Patients who underwent anorectal surgery under local anaesthesia.

Inclusion Criteria

Patients were included in the study based on the following criteria:

1. Patients aged 18–65 years.
2. Patients of either sex.
3. Patients belonging to American Society of Anesthesiologists (ASA) physical status I or II.
4. Patients scheduled for elective anorectal surgeries, including haemorrhoidectomy, fissurectomy, fistulectomy, and other minor anorectal procedures.
5. Patients who provided written informed consent for participation.

Exclusion Criteria

Patients were excluded from the study based on the following criteria:

1. Patients who refused to participate in the study.
2. Patients with contraindications to spinal or local anaesthesia.
3. Patients with known hypersensitivity to local anaesthetic agents.
4. Patients with coagulation disorders or receiving anticoagulant therapy that contraindicated spinal anaesthesia.
5. Patients with infection at the proposed site of anaesthetic administration.
6. Patients with significant cardiovascular, respiratory, hepatic, or renal disorders.
7. Patients with neurological or psychiatric disorders affecting pain assessment.
8. Patients with chronic pain disorders or a history of prolonged opioid consumption.
9. Patients undergoing emergency anorectal surgery.

Preoperative Assessment

All patients underwent a detailed preoperative evaluation, including medical history, physical examination, airway assessment, and routine laboratory investigations as indicated. Demographic characteristics, including age, sex, body mass index (BMI), ASA physical status, and type of anorectal surgery, were recorded. The anaesthetic procedure, possible complications, and postoperative assessment methods were explained to all patients. Written informed consent was obtained before surgery.

Anaesthetic Technique

Group S – Spinal Anaesthesia

Patients allocated to Group S received spinal anaesthesia under strict aseptic precautions.

After establishing intravenous access and applying standard monitoring, patients were positioned appropriately for subarachnoid blockade. Spinal anaesthesia was administered at the L3–L4 or L4–L5 intervertebral space using a suitable spinal needle and an appropriate dose of hyperbaric bupivacaine. The adequacy of sensory and motor blockade was assessed before commencement of surgery. Heart rate, blood pressure, oxygen saturation, and other relevant intraoperative parameters were monitored throughout the procedure.

Group L – Local Anaesthesia

Patients allocated to Group L underwent anorectal surgery under local anaesthesia. After appropriate positioning and aseptic preparation, local anaesthetic infiltration or perianal field block was administered using an appropriate local anaesthetic solution. Adequacy of the block was confirmed before surgical incision. Additional local anaesthetic supplementation was provided when required, within the recommended maximum safe dose. Standard intraoperative monitoring was maintained throughout the procedure.

Postoperative Assessment

Following completion of surgery, all patients were monitored in the postoperative recovery area. Postoperative analgesia, patient satisfaction, early ambulation, and anaesthesia-related complications were assessed and recorded.

Assessment of Postoperative Pain

Postoperative pain intensity was assessed using the Visual Analogue Scale (VAS), ranging from 0 to 10, where 0 indicated no pain and 10 represented the worst imaginable pain. Pain scores were recorded at 1, 2, 4, 6, 12, and 24 hours after surgery. Rescue analgesia was administered according to the institutional postoperative analgesic protocol when clinically indicated. The time to first rescue analgesic administration and total analgesic consumption during the first 24 postoperative hours were recorded.

Assessment of Patient Satisfaction

Patient satisfaction with the anaesthetic technique was assessed 24 hours after surgery using a five-point Likert scale, where 1 indicated very dissatisfied, 2 dissatisfied, 3 neutral, 4 satisfied, and 5 very satisfied. Satisfaction scores were compared between the two groups.

Assessment of Early Ambulation

Early ambulation was assessed by recording the time from completion of surgery to the patient's first successful independent ambulation. Patients were encouraged to mobilise once they were haemodynamically stable, adequately alert, and free from significant motor weakness or dizziness. The mean time to ambulation was compared between the two groups.

Assessment of Postoperative Complications

Postoperative complications, including nausea, vomiting, hypotension, bradycardia, urinary retention, post-dural puncture headache, dizziness, and other anaesthesia-related adverse events, were monitored and documented during the postoperative observation period.

Outcome Measures

The primary outcome measures were postoperative pain scores, time to first rescue analgesic requirement, patient satisfaction scores, and time to first ambulation.Secondary outcome measures included total postoperative analgesic consumption, incidence of anaesthesia-related complications, and duration of postoperative hospital stay.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using SPSS.27statistical software. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. The independent Student's t-test or Mann–Whitney U test was used to compare continuous variables between the two groups, depending on data distribution. The Chi-square test or Fisher's exact test was applied to compare categorical variables. Repeated postoperative pain measurements were analysed using an appropriate repeated-measures statistical method. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The present study included 60 patients undergoing anorectal surgeries, who were equally divided into two groups: Group S (spinal anaesthesia, n = 30) and Group L (local anaesthesia, n = 30).The demographic and baseline clinical characteristics of both groups were comparable. The majority of patients belonged to the 31–50-year age group, with a predominance of males in both Group S (73.33%) and Group L (70.00%). Most patients were classified as ASA physical status I (63.33% and 66.67%, respectively). The mean

BMI was 24.62 ± 3.18 kg/m² in Group S and 24.85 ± 3.42 kg/m² in Group L. The mean duration of surgery was 38.60 ± 9.42 minutes and 37.80 ± 8.96 minutes, respectively, indicating similar baseline characteristics between the groups (Table 1).Regarding the distribution of anorectal procedures, haemorrhoidectomy was the most commonly performed surgery, accounting for 38.33% of cases, followed by fissurectomy (28.33%), fistulectomy (23.33%), and other minor anorectal procedures (10.00%). The distribution of surgical procedures was similar between the two groups (Table 2 and Figure 1).Postoperative pain assessment using the Visual Analogue Scale (VAS) demonstrated significantly lower pain scores in Group L compared with Group S at 2 hours (1.50 ± 0.75 vs. 2.10 ± 0.88; p = 0.006), 4 hours (2.10 ± 0.91 vs. 3.40 ± 1.12; p < 0.001), 6 hours (2.80 ± 1.05 vs. 4.20 ± 1.25; p < 0.001), and 12 hours (2.90 ± 0.98 vs. 3.60 ± 1.10; p = 0.012). However, the differences at 1 hour (p = 0.577) and 24 hours (p = 0.194) were statistically insignificant. These findings indicated better postoperative pain control with local anaesthesia during the early postoperative period (Table 3 and Figure 2).The mean time to first rescue analgesic administration was significantly longer in Group L (6.42 ± 1.56 hours) compared with Group S (3.85 ± 1.12 hours; p < 0.001). Rescue analgesia within 24 hours was required by 86.67% of patients in Group S compared with 56.67% in Group L (p = 0.010). Furthermore, the mean number of rescue analgesic doses was significantly lower in Group L (1.50 ± 0.72) than in Group S (2.40 ± 0.85; p < 0.001), demonstrating reduced postoperative analgesic requirements with local anaesthesia (Table 4).

Recovery characteristics showed significantly earlier ambulation in Group L compared with Group S (2.15 ± 0.86 vs. 5.80 ± 1.42 hours; p < 0.001). The mean duration of hospital stay was also significantly shorter in Group L (16.20 ± 4.38 hours) than in Group S (22.40 ± 5.65 hours; p < 0.001). Additionally, 50.00% of patients in Group L were very satisfied compared with 26.67% in Group S. The overall satisfaction score was significantly higher in Group L (4.33 ± 0.84) than in Group S (3.77 ± 1.10; p = 0.030), suggesting improved postoperative recovery and patient satisfaction with local anaesthesia (Table 5).Postoperative adverse effects and complications were generally more frequent in Group S than in Group L. Urinary retention was observed in 23.33% of patients in Group S compared with 6.67% in Group L, while hypotension occurred in 20.00% and 3.33%, respectively. Nausea (16.67% vs. 6.67%), vomiting (10.00% vs. 3.33%), and dizziness (13.33% vs. 6.67%) were also more frequently reported in Group S. Bradycardia (10.00%) and post-dural puncture headache (6.67%) were observed exclusively in Group S. These findings suggested a more favourable postoperative complication profile with local anaesthesia, although statistical significance for individual complications was not assessed (Table 6 and Figure 3).

Table 1. Comparison of Demographic and Baseline Clinical Characteristics between the Two Groups (N = 60)

Characteristics	Group S (n = 30)	Group L (n = 30)
Age group (years), n (%)		
18–30	7 (23.33)	8 (26.67)
31–40	9 (30.00)	8 (26.67)
41–50	8 (26.67)	9 (30.00)
51–65	6 (20.00)	5 (16.67)
Sex, n (%)		
Male	22 (73.33)	21 (70.00)
Female	8 (26.67)	9 (30.00)
ASA physical status, n (%)		
ASA I	19 (63.33)	20 (66.67)
ASA II	11 (36.67)	10 (33.33)
BMI (kg/m²), mean ± SD	24.62 ± 3.18	24.85 ± 3.42
Duration of surgery (minutes), mean ± SD	38.60 ± 9.42	37.80 ± 8.96

Table 2. Distribution of Patients According To Type of Anorectal Surgery (N = 60)

Type of surgery	Group S (n = 30), n (%)	Group L (n = 30), n (%)	Total (N = 60), n (%)
Haemorrhoidectomy	12 (40.00)	11 (36.67)	23 (38.33)

Fissurectomy	8 (26.67)	9 (30.00)	17 (28.33)
Fistulectomy	7 (23.33)	7 (23.33)	14 (23.33)
Other minor anorectal procedures	3 (10.00)	3 (10.00)	6 (10.00)
Total	30 (100.00)	30 (100.00)	60 (100.00)

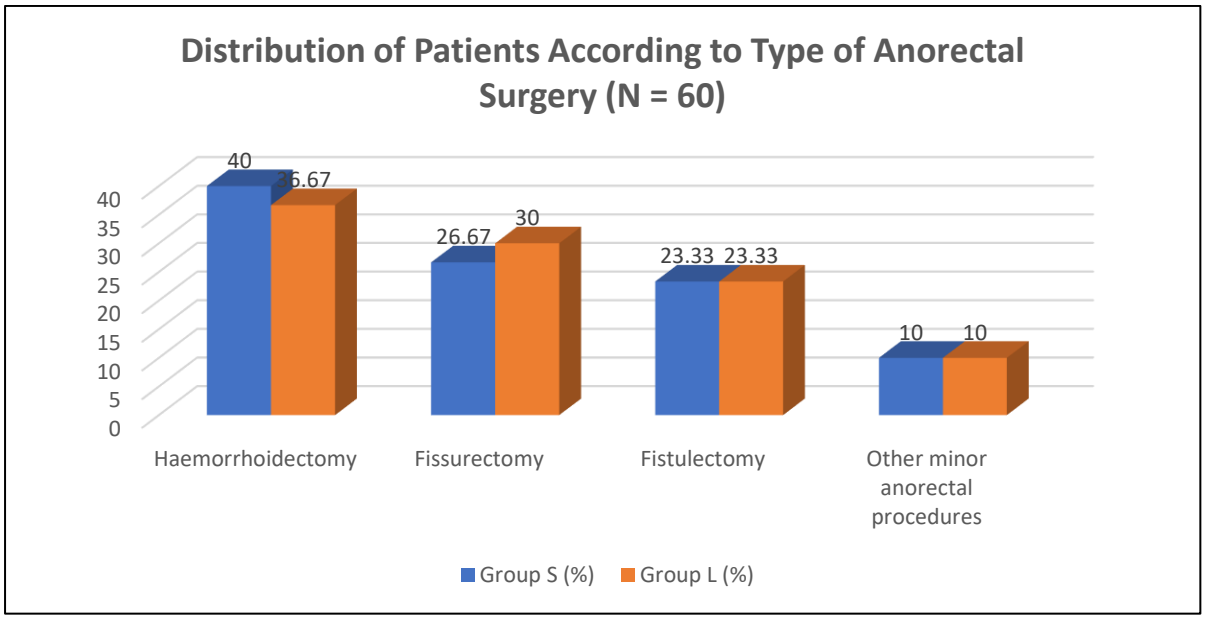


Figure 1 Distribution of Patients According To Type of Anorectal Surgery (N = 60)

Table 3. Comparison of Postoperative Pain Scores (VAS) At Different Time Intervals between the Two Groups (N = 60)

Postoperative time	Group S (n = 30), mean ± SD	Group L (n = 30), mean ± SD	p-value
1 hour	1.20 ± 0.72	1.10 ± 0.66	0.577
2 hours	2.10 ± 0.88	1.50 ± 0.75	0.006
4 hours	3.40 ± 1.12	2.10 ± 0.91	<0.001
6 hours	4.20 ± 1.25	2.80 ± 1.05	<0.001
12 hours	3.60 ± 1.10	2.90 ± 0.98	0.012
24 hours	2.40 ± 0.92	2.10 ± 0.85	0.194

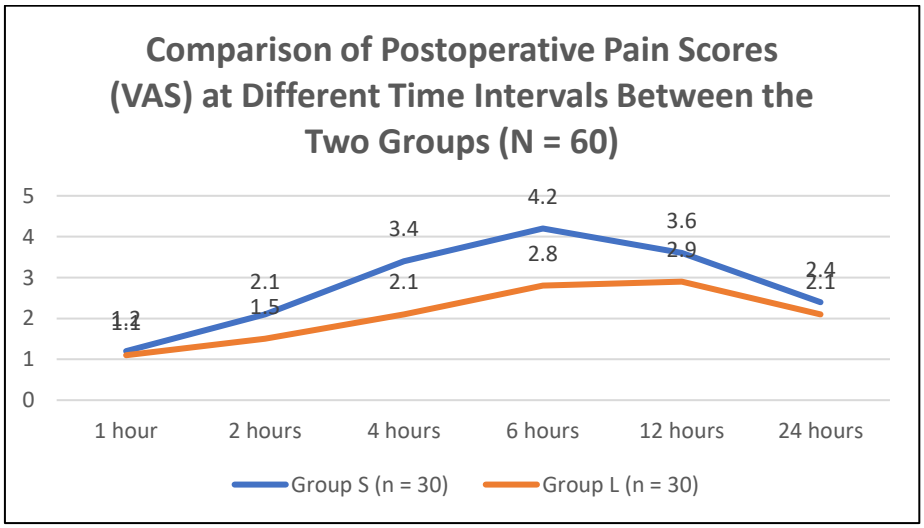


Figure 2. Comparison of Postoperative Pain Scores (VAS) At Different Time Intervals between the Two Groups (N = 60)

Table 4. Comparison of Postoperative Analgesic Requirements between the Two Groups (N = 60)

Analgesic parameters	Group S (n = 30)	Group L (n = 30)	p-value
Time to first rescue analgesic (hours), mean ± SD	3.85 ± 1.12	6.42 ± 1.56	<0.001
Patients requiring rescue analgesia within 24 hours, n (%)			
Yes	26 (86.67)	17 (56.67)	0.010
No	4 (13.33)	13 (43.33)	
Number of rescue analgesic doses in 24 hours, mean ± SD	2.40 ± 0.85	1.50 ± 0.72	<0.001

Table 5. Comparison of Early Ambulation, Recovery Characteristics and Patient Satisfaction between the Two Groups (N = 60)

Parameters	Group S (n = 30)	Group L (n = 30)	p-value
Time to first ambulation (hours), mean ± SD	5.80 ± 1.42	2.15 ± 0.86	<0.001
Duration of hospital stay (hours), mean ± SD	22.40 ± 5.65	16.20 ± 4.38	<0.001
Patient satisfaction, n (%)			
Very satisfied	8 (26.67)	15 (50.00)	
Satisfied	12 (40.00)	11 (36.67)	
Neutral	6 (20.00)	3 (10.00)	
Dissatisfied	3 (10.00)	1 (3.33)	
Very dissatisfied	1 (3.33)	0 (0.00)	
Overall satisfaction score (1–5), mean ± SD	3.77 ± 1.10	4.33 ± 0.84	0.030

Table 6. Comparison of Postoperative Adverse Effects and Complications between the Two Groups (N = 60)

Postoperative complications	Group S (n = 30), n (%)	Group L (n = 30), n (%)
Nausea	5 (16.67)	2 (6.67)
Vomiting	3 (10.00)	1 (3.33)
Hypotension	6 (20.00)	1 (3.33)
Bradycardia	3 (10.00)	0 (0.00)
Urinary retention	7 (23.33)	2 (6.67)
Post-dural puncture headache	2 (6.67)	0 (0.00)
Dizziness	4 (13.33)	2 (6.67)

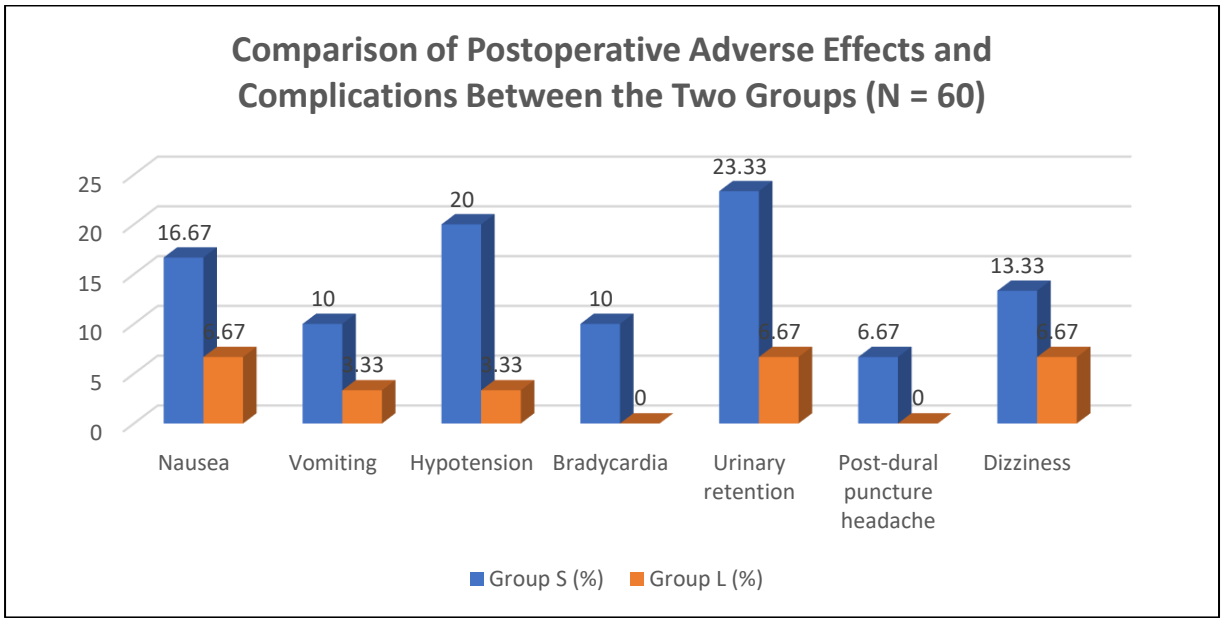


Figure 3 Comparison of Postoperative Adverse Effects and Complications between the Two Groups (N = 60)

DISCUSSION

The present comparative study evaluated postoperative analgesia, patient satisfaction, and early ambulation following spinal versus local anaesthesia in 60 patients undergoing elective anorectal surgeries. The demographic characteristics were comparable between the groups, with male predominance in Group S (73.33%) and Group L (70.00%). The mean BMI was 24.62 ± 3.18 and 24.85 ± 3.42 kg/m², respectively. Haemorrhoidectomy was the most frequently performed procedure (38.33%). Similarly, Jinjil et al. (2018)[15], in a randomized study involving 60 patients, reported comparable demographic characteristics, ASA classification, and operative duration between spinal anaesthesia and perianal block groups. Postoperative pain scores were lower in the local anaesthesia group. At 4 hours, the mean VAS score was 3.40 ± 1.12 in Group S compared with 2.10 ± 0.91 in Group L ($p<0.001$). At 6 hours, the corresponding scores were 4.20 ± 1.25 and 2.80 ± 1.05 ($p<0.001$). These findings were consistent with Mohamedahmed et al. (2020)[16], who conducted a systematic review and meta-analysis of seven randomized controlled trials involving 440 patients. They reported significantly lower postoperative pain following local anaesthesia at 6 hours (mean difference −2.25; $p = 0.0001$) and 24 hours (mean difference −0.87; $p = 0.0002$). The mean time to first rescue analgesia was significantly longer in Group L (6.42 ± 1.56 hours) compared with Group S (3.85 ± 1.12 hours; $p<0.001$). Rescue analgesia was required in 56.67% and 86.67% of patients, respectively. Similarly, Jinjil et al. (2018)[15] reported a longer pain-free period following perianal block (287 ± 120 minutes) compared with spinal anaesthesia (128 ± 38 minutes). Only 13% of patients receiving perianal block required rescue analgesia, whereas all patients receiving spinal anaesthesia required diclofenac. Early ambulation was significantly faster following local anaesthesia (2.15 ± 0.86 hours) than spinal anaesthesia (5.80 ± 1.42 hours; $p<0.001$). Hospital stay was also shorter in Group L (16.20 ± 4.38 versus 22.40 ± 5.65 hours). Jinjil et al. (2018)[15] similarly observed earlier ambulation following perianal block (22.83 ± 29.32 minutes) compared with spinal anaesthesia (302 ± 92.41 minutes). Furthermore, Kulkarni et al. (2014), in a study involving 60 patients, reported that 93.3% of patients receiving local anaesthesia were discharged on the first postoperative day compared with 70% receiving spinal anaesthesia ($p = 0.02$). Patient satisfaction was higher in Group L, with 86.67% reporting satisfaction or high satisfaction compared with 66.67% in Group S. The mean satisfaction scores were 4.33 ± 0.84 and 3.77 ± 1.10, respectively ($p = 0.030$). Jinjil et al. (2018)[15] also reported greater satisfaction following perianal block (60%) compared with spinal anaesthesia (27.5%). However, Kulkarni et al. (2014)[17] observed no statistically significant difference in patient satisfaction between the two techniques. Postoperative urinary retention (23.33% versus 6.67%) and hypotension (20.00% versus 3.33%) were more frequent in Group S. Similarly, Kulkarni et al. (2014)[17] reported urinary retention in 30% of patients receiving spinal anaesthesia compared with 6.7% receiving local anaesthesia. Borges et al. (2017)[18], in a randomized study of 40 patients, reported earlier discharge following local infiltration (241.9 ± 8.1 versus 347.5 ± 27.6 minutes; $p = 0.0005$), although postoperative pain during the first two hours was greater in the local infiltration group.

CONCLUSION

The present study suggested that local anaesthesia offered advantages over spinal anaesthesia in patients undergoing elective anorectal surgeries. Local anaesthesia was associated with lower postoperative pain scores, prolonged analgesic duration, reduced rescue analgesic requirements, and earlier ambulation. It was also associated with shorter hospital stays, higher patient satisfaction, and fewer postoperative complications, particularly urinary retention and hypotension. Thus, local anaesthesia may be considered an effective and safe alternative to spinal anaesthesia for selected anorectal procedures, facilitating faster recovery and improved patient comfort.

Limitations

The present study was limited by its relatively small sample size of 60 patients, which may restrict the generalisability of the findings. The single-centre study design and inclusion of different anorectal procedures may have introduced variability in postoperative pain and recovery outcomes. The short postoperative follow-up period limited the assessment of long-term complications and patient satisfaction.

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