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Research Article

A Prospective Comparative Study of Inguinal Hernia Repair under Local Anesthesia versus Spinal Anesthesia

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ABSTRACT
Background: Inguinal hernia repair is one of the most commonly performed surgical procedures worldwide. The selection of an appropriate anaesthetic technique significantly influences perioperative safety, postoperative pain, recovery, and patient satisfaction. This study aimed to compare the effectiveness and safety of local anaesthesia versus spinal anaesthesia in patients undergoing elective inguinal hernia repair.
Materials and Methods: This prospective comparative study included 120 patients undergoing elective open inguinal hernia repair, divided into two groups: local anaesthesia (n = 60) and spinal anaesthesia (n = 60). Demographic characteristics, intraoperative parameters, postoperative pain scores, analgesic requirements, recovery characteristics, anaesthesia-related complications, and patient satisfaction were compared between the groups.
Results: The mean duration of surgery was 48.60 ± 9.25 minutes under local anaesthesia and 46.80 ± 8.75 minutes under spinal anaesthesia. At six hours postoperatively, mean VAS scores were 2.80 ± 1.10 and 3.85 ± 1.15, respectively. Time to first rescue analgesia was longer under local anaesthesia (5.80 ± 1.65 versus 3.90 ± 1.40 hours). Local anaesthesia was associated with earlier mobilisation (3.20 versus 6.40 hours), shorter hospital stay (18.50 versus 27.80 hours), and lower incidences of hypotension (3.33% versus 20.00%) and urinary retention (1.67% versus 15.00%). Patient satisfaction was also higher under local anaesthesia.
Conclusion: Local anaesthesia may provide favourable postoperative analgesia, faster recovery, fewer complications, and greater patient satisfaction compared with spinal anaesthesia, making it a feasible alternative for appropriately selected patients undergoing elective inguinal hernia repair.

Keywords: Inguinal Hernia, Local Anaesthesia, Spinal Anaesthesia, Lichtenstein Hernioplasty, Postoperative Pain, Patient Satisfaction.

INTRODUCTION

Inguinal hernia is one of the most frequently encountered surgical conditions in general surgical practice, accounting for a substantial proportion of elective surgical procedures worldwide. It occurs due to the protrusion of intra-abdominal contents through a weakened area of the inguinal canal and is more commonly observed in males[1]. Surgical repair remains the definitive treatment for symptomatic inguinal hernias, with the primary objectives of relieving symptoms, preventing complications, and restoring normal functional activity. Inguinal hernia repair can be performed under various anaesthetic techniques, including general, spinal, epidural, and local anaesthesia. The selection of an appropriate technique depends on patient characteristics, associated comorbidities, surgeon experience, procedural feasibility, safety, patient preference, and economic considerations [2,3].Advances in surgical techniques, particularly the introduction of tension-free mesh hernioplasty, have significantly improved surgical outcomes and reduced recurrence rates. However, the choice of anaesthesia continues to influence perioperative safety, postoperative pain, recovery, and hospital stay. Spinal anaesthesia is widely employed for inguinal hernia repair because it provides reliable sensory blockade, adequate muscle relaxation, and favourable operating conditions. Nevertheless, it may be associated with complications such as hypotension, bradycardia, urinary retention, post-dural puncture headache, and delayed mobilisation due to residual motor blockade. These complications can prolong postoperative

observation and delay hospital discharge [4-6].Local anaesthesia has gained increasing attention as a safe, effective, and economical alternative for elective open inguinal hernia repair. It involves infiltration of local anaesthetic agents into the operative field, providing adequate analgesia while preserving motor function and maintaining relative haemodynamic stability [7,8]. Its potential advantages include reduced systemic complications, early postoperative mobilisation, faster recovery, shorter hospital stay, and decreased healthcare expenditure. These benefits are particularly relevant in resource-limited settings and day-care surgical practice[9-11].Despite these advantages, local anaesthesia may be associated with intraoperative discomfort, incomplete analgesia, and the occasional requirement for supplemental sedation or conversion to another anaesthetic technique. Its effectiveness also depends on appropriate patient selection, surgical expertise, and adequate anaesthetic infiltration. Previous comparative studies have suggested favourable recovery outcomes with local anaesthesia; however, differences in postoperative pain, patient satisfaction, surgical conditions, and anaesthesia-related complications require further evaluation [12].Therefore, the present prospective comparative study was undertaken to evaluate the effectiveness and safety of local anaesthesia versus spinal anaesthesia in patients undergoing inguinal hernia repair.

MATERIALS AND METHODS

The present study was designed as a hospital-based, prospective comparative study conducted in the Department of General Surgery of a tertiary care teaching hospital. The study compared the effectiveness, safety, and postoperative outcomes of local anaesthesia and spinal anaesthesia in patients undergoing elective open inguinal hernia repair.

Study Population

The study population comprised adult patients diagnosed with uncomplicated inguinal hernia who were admitted for elective open inguinal hernia repair. Patients were evaluated clinically and underwent routine preoperative investigations and anaesthetic assessment before inclusion in the study.A total of 120 patients undergoing elective inguinal hernia repair were included in the study. The patients were divided into two groups of 60 patients each according to the anaesthetic technique used.

- Group A (Local Anaesthesia): 60 patients underwent inguinal hernia repair under local anaesthesia.
- Group B (Spinal Anaesthesia): 60 patients underwent inguinal hernia repair under spinal anaesthesia.

Sampling Technique and Group Allocation

Eligible patients were enrolled prospectively according to the predefined selection criteria. Patients were allocated to the local anaesthesia or spinal anaesthesia group according to the anaesthetic technique selected after preoperative assessment and discussion with the patient. Both groups underwent open tension-free mesh hernioplasty using the Lichtenstein technique.

Inclusion Criteria

1. Patients aged 18 years and above.
2. Patients diagnosed with unilateral, uncomplicated inguinal hernia.
3. Patients scheduled for elective open inguinal hernia repair.
4. Patients classified as American Society of Anesthesiologists (ASA) physical status I–III.
5. Patients who provided written informed consent for participation in the study.

Exclusion Criteria

1. Patients with obstructed, strangulated, or irreducible inguinal hernia requiring emergency intervention.
2. Patients with recurrent or bilateral inguinal hernia.
3. Patients with known hypersensitivity to local anaesthetic agents.
4. Patients with contraindications to spinal anaesthesia, including coagulopathy, infection at the injection site, or significant spinal deformity.
5. Patients with severe uncontrolled systemic illness.
6. Patients who declined participation or were unwilling to undergo the selected anaesthetic technique.

Preoperative Assessment

All enrolled patients underwent a detailed preoperative evaluation, including documentation of demographic characteristics, medical history, presenting complaints, duration of symptoms, associated comorbidities, and previous surgical history. A comprehensive general physical examination

and local examination of the inguinal region were performed to assess the type, side, size, and reducibility of the hernia.Routine preoperative investigations, including complete blood count, blood glucose, renal function tests, and other investigations as clinically indicated, were performed. All patients underwent pre-anaesthetic evaluation, and their ASA physical status was recorded. The nature of the surgical procedure, anaesthetic technique, potential complications, and postoperative recovery were explained to the patients before obtaining written informed consent.

Anaesthetic Technique

Group A: Local Anaesthesia (n = 60)

Patients allocated to Group A underwent elective open inguinal hernia repair under local anaesthesia. Standard monitoring, including heart rate, non-invasive blood pressure, and peripheral oxygen saturation, was established before the procedure.After appropriate skin preparation and draping, local anaesthetic infiltration was performed using lignocaine and bupivacaine in concentrations and doses within recommended safety limits. The anaesthetic solution was infiltrated into the skin, subcutaneous tissues, and deeper tissue planes along the proposed incision. Ilioinguinal and iliohypogastric nerve blockade was performed where appropriate to provide adequate analgesia.Additional local anaesthetic infiltration was administered during dissection when required, while ensuring that the maximum permissible dose was not exceeded. Intraoperative discomfort, the requirement for supplemental analgesia or sedation, and any anaesthesia-related complications were recorded.

Group B: Spinal Anaesthesia (n = 60)

Patients allocated to Group B underwent elective open inguinal hernia repair under spinal anaesthesia. Standard monitoring was established, and intravenous access was secured before administering anaesthesia.

Under strict aseptic precautions, spinal anaesthesia was administered in the sitting or lateral position through an appropriate lumbar intervertebral space, usually L3–L4 or L4–L5, using a spinal needle. Hyperbaric bupivacaine was administered intrathecally in a dose determined by the attending anaesthesiologist according to patient characteristics and institutional protocol.The adequacy of sensory and motor blockade was assessed before the commencement of surgery. Intraoperative heart rate, blood pressure, oxygen saturation, and anaesthesia-related adverse events were monitored and recorded. Hypotension, bradycardia, nausea, vomiting, and other complications were managed according to standard institutional protocols.

Surgical Procedure

All patients underwent elective open inguinal hernia repair using the Lichtenstein tension-free mesh hernioplasty technique. Following adequate anaesthesia, an inguinal incision was made, and the inguinal canal was exposed. The hernia sac was identified, dissected, and managed according to the type of hernia. A polypropylene mesh was placed over the posterior wall of the inguinal canal and secured appropriately.Haemostasis was achieved, and the wound was closed in layers. The surgical technique and postoperative management protocol were kept as uniform as possible between the two groups to minimise procedural variations.

Parameters Evaluated

The following parameters were assessed and compared between the two groups:

1. Demographic and clinical characteristics: Age, sex, body mass index, ASA physical status, type of inguinal hernia, and associated comorbidities.
2. Intraoperative parameters: Duration of surgery, heart rate, blood pressure, oxygen saturation, adequacy of anaesthesia, intraoperative discomfort, and requirement for supplemental analgesia.
3. Postoperative pain: Pain intensity was assessed using the Visual Analogue Scale (VAS), ranging from 0 (no pain) to 10 (worst imaginable pain), at predefined postoperative intervals.
4. Analgesic requirements: Time to first rescue analgesia and total postoperative analgesic consumption were recorded.
5. Postoperative recovery: Time to first mobilisation, time to oral intake, and duration of hospital stay were documented.
6. Anaesthesia-related complications: Hypotension, bradycardia, nausea, vomiting, urinary retention, post-dural puncture headache, local anaesthetic-related adverse events, and other complications were recorded.
7. Patient and surgeon satisfaction: Satisfaction with the anaesthetic technique and overall surgical experience was

assessed using a predefined satisfaction scoring system.

Postoperative Monitoring and Follow-Up

Following surgery, all patients were monitored in the postoperative recovery area. Vital parameters, pain intensity, analgesic requirements, and immediate postoperative complications were recorded. Postoperative pain was assessed using the VAS at 2, 4, 6, 12, and 24 hours after surgery.Rescue analgesia was administered according to the institutional postoperative pain management protocol. The time required for independent mobilisation and the duration of hospital stay were recorded. Patients were assessed for complications such as urinary retention, nausea, vomiting, headache, wound-related problems, and other anaesthesia-related adverse events before discharge.

Outcome Measures

Primary Outcome Measures

The primary outcome measures included postoperative pain intensity, time to first rescue analgesia, and the incidence of anaesthesia-related complications in patients undergoing inguinal hernia repair under local versus spinal anaesthesia.

Secondary Outcome Measures

The secondary outcome measures included intraoperative haemodynamic stability, duration of surgery, requirement for supplemental analgesia, time to postoperative mobilisation, length of hospital stay, and patient and surgeon satisfaction.

Statistical Analysis

The collected data were entered into Microsoft Excel and analysed using SPSS.27 statistical software. Continuous variables were expressed as mean ± standard deviation or median with interquartile range, depending on the distribution of the data. Categorical variables were presented as frequencies and percentages.The independent Student's t-test was used to compare normally distributed continuous variables between the two groups, whereas the Mann–Whitney U test was applied for non-normally distributed variables. Categorical variables were compared using the Chi-square test or Fisher's exact test, as appropriate. 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 prospective comparative study included 120 patients undergoing inguinal hernia repair, equally divided into two groups: 60 patients received local anaesthesia and 60 patients received spinal anaesthesia. The demographic characteristics, intraoperative parameters, postoperative pain scores, recovery characteristics, complications, and satisfaction levels were compared between the two groups.The demographic and baseline clinical characteristics of the study participants are presented in Table 1. The majority of patients belonged to the age group of 41–50 years in both the local anaesthesia (28.33%) and spinal anaesthesia (30.00%) groups, followed by the 31–40 years age group (25.00% and 26.67%, respectively). Male patients predominated in both groups, accounting for 93.33% in the local anaesthesia group and 91.67% in the spinal anaesthesia group. Indirect inguinal hernia was more common than direct hernia in both groups, representing 63.33% and 60.00% of cases, respectively. Regarding ASA physical status, most patients belonged to ASA I or ASA II, while ASA III patients constituted 10.00% in each group. Overall, the demographic and baseline clinical characteristics were comparable between the two groups.The intraoperative parameters are summarised in Table 2. The mean duration of surgery was slightly longer in the local anaesthesia group (48.60 ± 9.25 minutes) compared with the spinal anaesthesia group (46.80 ± 8.75 minutes). The mean intraoperative heart rate was 79.40 ± 8.20 beats/minute in the local anaesthesia group and 76.30 ± 9.15 beats/minute in the spinal anaesthesia group. Mean systolic and diastolic blood pressures were higher in the local anaesthesia group (124.50 ± 10.60 mmHg and 78.60 ± 7.80 mmHg, respectively) than in the spinal anaesthesia group (112.80 ± 12.40 mmHg and 71.40 ± 8.90 mmHg, respectively). Intraoperative discomfort was reported by 15.00% of patients receiving local anaesthesia compared with 5.00% receiving spinal anaesthesia. Supplemental analgesia was required in 13.33% and 3.33% of patients, respectively. Conversion to another anaesthetic technique was required in only one patient (1.67%) in the local anaesthesia group, whereas no conversions were reported in the spinal anaesthesia group.The comparison of postoperative pain scores at different time

intervals is presented in Table 3 and Figure 1. At 2 hours postoperatively, the mean VAS score was higher in the local anaesthesia group (2.10 ± 0.85) compared with the spinal anaesthesia group (1.45 ± 0.70), indicating better immediate postoperative analgesia with spinal anaesthesia. However, at 4 hours, the mean VAS score increased to 3.20 ± 1.05 in the spinal anaesthesia group compared with 2.45 ± 0.90 in the local anaesthesia group. A similar trend was observed at 6 hours, when the spinal anaesthesia group recorded the highest mean VAS score of 3.85 ± 1.15 compared with 2.80 ± 1.10 in the local anaesthesia group. At 12 hours, the mean VAS scores were 2.35 ± 0.95 and 3.10 ± 1.00, respectively, while at 24 hours they decreased to 1.65 ± 0.75 and 2.20 ± 0.85. These findings demonstrated that although spinal anaesthesia provided better pain control during the immediate postoperative period, local anaesthesia was associated with lower pain scores from 4 to 24 hours postoperatively.The postoperative analgesic requirements and recovery characteristics are presented in Table 4. The mean time to first rescue analgesia was longer in the local anaesthesia group (5.80 ± 1.65 hours) compared with the spinal anaesthesia group (3.90 ± 1.40 hours). Rescue analgesia was required by 40.00% of patients receiving local anaesthesia compared with 65.00% receiving spinal anaesthesia. Patients in the local anaesthesia group achieved earlier mobilisation (3.20 ± 1.10 hours) than those in the spinal anaesthesia group (6.40 ± 1.85 hours). Similarly, the mean time to oral intake was shorter in the local anaesthesia group (2.80 ± 0.90 hours) compared with the spinal anaesthesia group (4.20 ± 1.25 hours). The mean duration of hospital stay was 18.50 ± 5.60 hours in the local anaesthesia group and 27.80 ± 7.40 hours in the spinal anaesthesia group. Furthermore, 80.00% of patients receiving local anaesthesia were discharged within 24 hours compared with 53.33% of patients receiving spinal anaesthesia. These findings indicated faster postoperative recovery and earlier hospital discharge among patients undergoing inguinal hernia repair under local anaesthesia.The distribution of anaesthesia-related and postoperative complications is presented in Table 5 and Figure 2. Hypotension was observed in 3.33% of patients in the local anaesthesia group compared with 20.00% in the spinal anaesthesia group. Bradycardia occurred in 1.67% and 11.67% of patients, respectively. Postoperative nausea and vomiting were reported in 5.00% of patients receiving local anaesthesia and 13.33% receiving spinal anaesthesia. Urinary retention was more frequent in the spinal anaesthesia group (15.00%) compared with the local anaesthesia group (1.67%). Post-dural puncture headache occurred in 8.33% of patients receiving spinal anaesthesia, whereas no cases were reported in the local anaesthesia group. A local anaesthetic-related adverse reaction was observed in one patient (1.67%) receiving local anaesthesia. Wound-related complications were reported in 3.33% and 5.00% of patients in the local and spinal anaesthesia groups, respectively. Overall, the observed frequencies of most anaesthesia-related complications were lower in the local anaesthesia group.The comparison of patient and surgeon satisfaction between the two groups is presented in Table 6 and Figure 3. Regarding patient satisfaction, 58.33% of patients in the local anaesthesia group were highly satisfied compared with 41.67% in the spinal anaesthesia group. The proportion of satisfied patients was 33.33% and 41.67%, respectively, whereas dissatisfaction was reported by 8.33% of patients receiving local anaesthesia and 16.67% receiving spinal anaesthesia. Regarding surgeon satisfaction, 50.00% of surgeons' assessments in the local anaesthesia group indicated high satisfaction compared with 58.33% in the spinal anaesthesia group. Satisfaction was reported in 41.67% and 36.67% of cases, respectively, while dissatisfaction was observed in 8.33% and 5.00%. Furthermore, 88.33% of patients in the local anaesthesia group expressed willingness to undergo the same anaesthetic technique again compared with 76.67% in the spinal anaesthesia group. These findings suggested greater patient satisfaction and willingness to repeat local anaesthesia, while surgeon satisfaction was favourable with both techniques.

Table 1. Comparison of Demographic and Baseline Clinical Characteristics between the two Groups (N = 120)

Characteristics	Local Anaesthesia (n = 60)	Spinal Anaesthesia (n = 60)
Age group (years), n (%)		
18–30	10 (16.67)	9 (15.00)

31–40	15 (25.00)	16 (26.67)
41–50	17 (28.33)	18 (30.00)
51–60	12 (20.00)	11 (18.33)
>60	6 (10.00)	6 (10.00)
Sex, n (%)		
Male	56 (93.33)	55 (91.67)
Female	4 (6.67)	5 (8.33)
Type of hernia, n (%)		
Direct	22 (36.67)	24 (40.00)
Indirect	38 (63.33)	36 (60.00)
ASA physical status, n (%)		
ASA I	30 (50.00)	28 (46.67)
ASA II	24 (40.00)	26 (43.33)
ASA III	6 (10.00)	6 (10.00)

Table 2. Comparison of Intraoperative Parameters between the two Groups (N = 120)

Parameters	Local Anaesthesia (n = 60)	Spinal Anaesthesia (n = 60)
Mean duration of surgery (minutes)	48.60 ± 9.25	46.80 ± 8.75
Mean heart rate (beats/minute)	79.40 ± 8.20	76.30 ± 9.15
Mean systolic BP (mmHg)	124.50 ± 10.60	112.80 ± 12.40
Mean diastolic BP (mmHg)	78.60 ± 7.80	71.40 ± 8.90
Intraoperative discomfort, n (%)	9 (15.00)	3 (5.00)
Supplemental analgesia required, n (%)	8 (13.33)	2 (3.33)
Conversion to another anaesthetic technique, n (%)	1 (1.67)	0 (0.00)

Table 3. Comparison of Postoperative Pain Scores Between the two Groups (N = 120)

Postoperative interval	Local Anaesthesia (n = 60), VAS score	Spinal Anaesthesia (n = 60), VAS score
2 hours	2.10 ± 0.85	1.45 ± 0.70
4 hours	2.45 ± 0.90	3.20 ± 1.05
6 hours	2.80 ± 1.10	3.85 ± 1.15
12 hours	2.35 ± 0.95	3.10 ± 1.00
24 hours	1.65 ± 0.75	2.20 ± 0.85

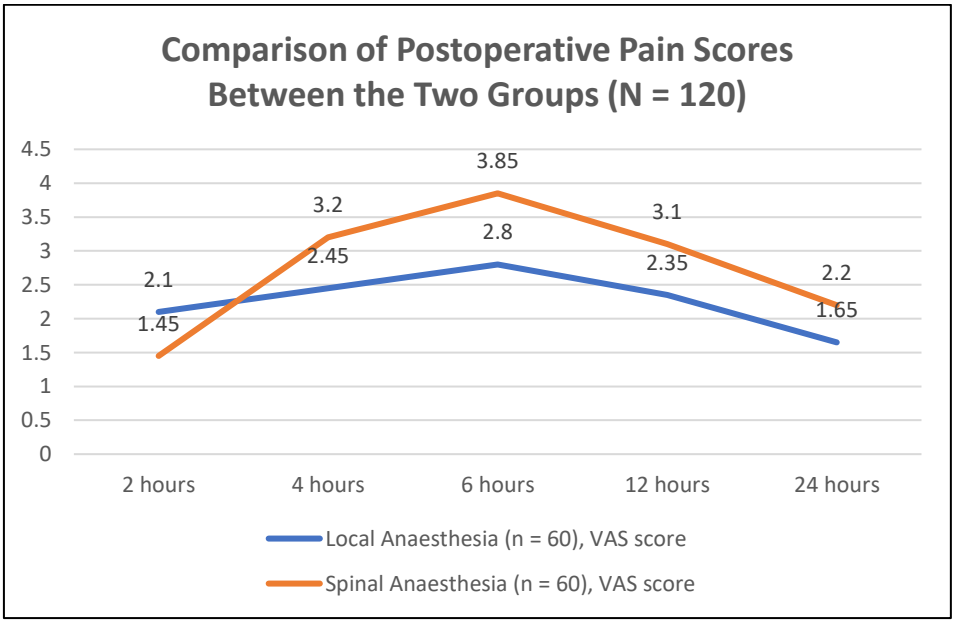


Figure 1 Comparison of Postoperative Pain Scores between the two Groups (N = 120)

Table 4. Comparison of Postoperative Analgesic Requirements and Recovery Characteristics (N = 120)

Parameters	Local Anaesthesia (n = 60)	Spinal Anaesthesia (n = 60)
Time to first rescue analgesia (hours)	5.80 ± 1.65	3.90 ± 1.40
Patients requiring rescue analgesia, n (%)	24 (40.00)	39 (65.00)
Time to first mobilisation (hours)	3.20 ± 1.10	6.40 ± 1.85
Time to oral intake (hours)	2.80 ± 0.90	4.20 ± 1.25
Duration of hospital stay (hours)	18.50 ± 5.60	27.80 ± 7.40
Discharged within 24 hours, n (%)	48 (80.00)	32 (53.33)

Table 5. Comparison of Anaesthesia-Related and Postoperative Complications (N = 120)

Complications	Local Anaesthesia (n = 60), n (%)	Spinal Anaesthesia (n = 60), n (%)
Hypotension	2 (3.33)	12 (20.00)
Bradycardia	1 (1.67)	7 (11.67)
Nausea and vomiting	3 (5.00)	8 (13.33)
Urinary retention	1 (1.67)	9 (15.00)
Post-dural puncture headache	0 (0.00)	5 (8.33)
Local anaesthetic-related adverse reaction	1 (1.67)	0 (0.00)
Wound-related complications	2 (3.33)	3 (5.00)

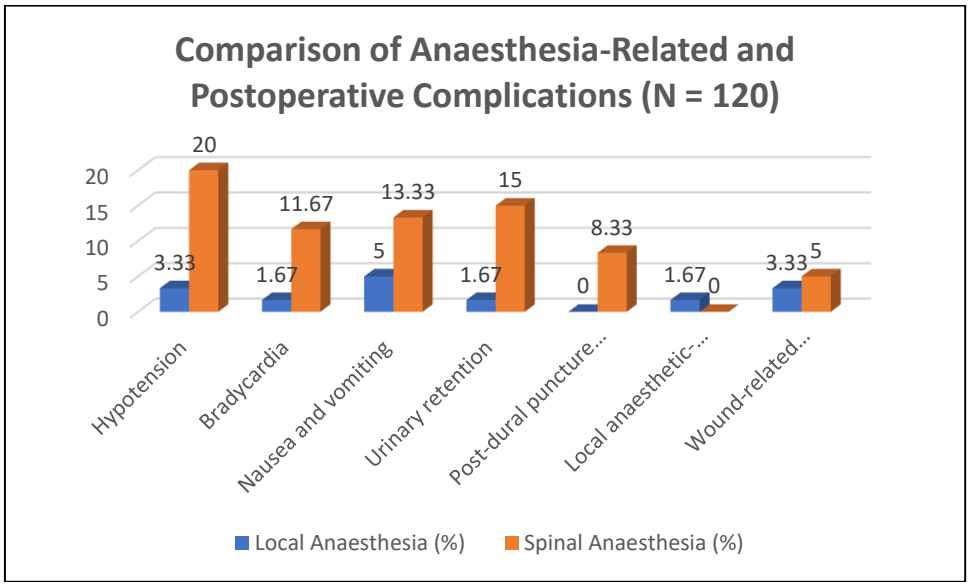


Figure 2 Comparison of Anaesthesia-Related and Postoperative Complications (N = 120)

Table 6. Comparison of Patient and Surgeon Satisfaction Between the two Groups (N = 120)

Satisfaction parameters	Local Anaesthesia (n = 60), n (%)	Spinal Anaesthesia (n = 60), n (%)
Patient satisfaction		
Highly satisfied	35 (58.33)	25 (41.67)
Satisfied	20 (33.33)	25 (41.67)
Dissatisfied	5 (8.33)	10 (16.67)
Surgeon satisfaction		
Highly satisfied	30 (50.00)	35 (58.33)
Satisfied	25 (41.67)	22 (36.67)
Dissatisfied	5 (8.33)	3 (5.00)
Willingness to undergo the same anaesthesia again		

Yes	53 (88.33)	46 (76.67)
No	7 (11.67)	14 (23.33)

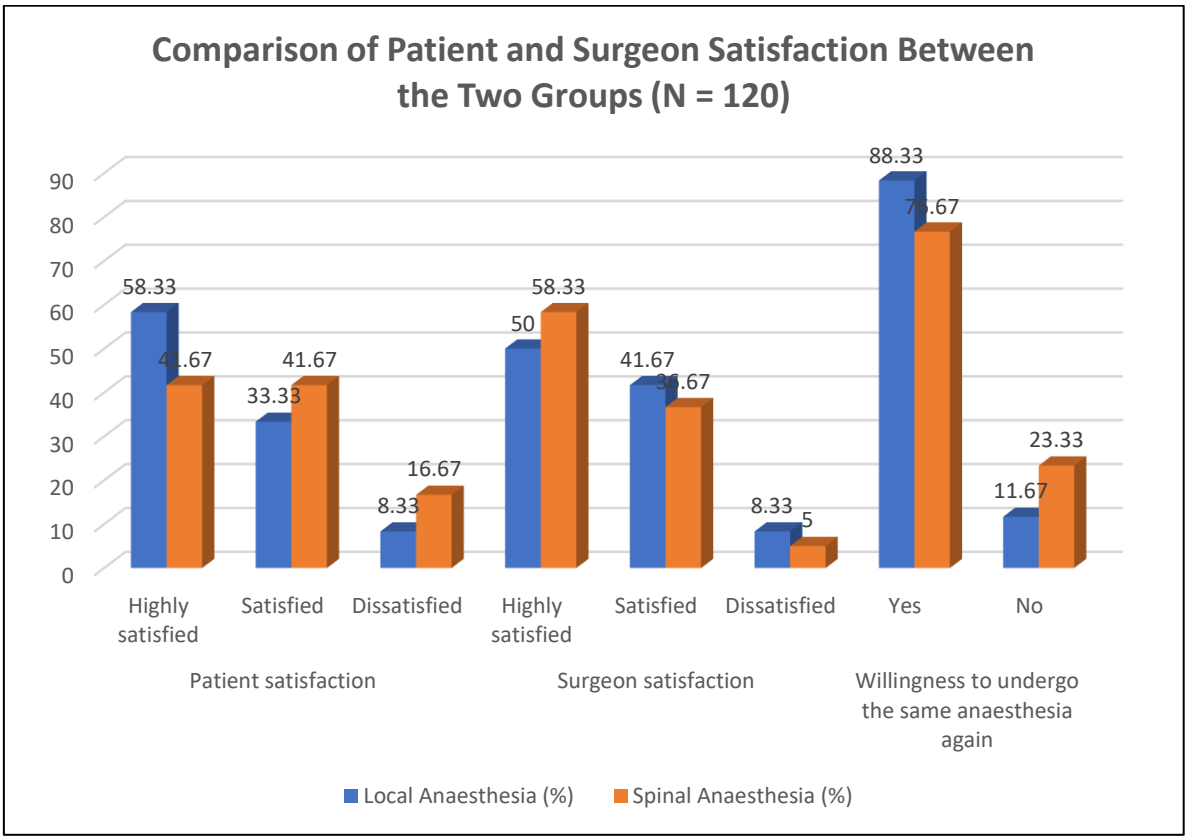


Figure 3 Comparison of Patient and Surgeon Satisfaction between the two Groups (N = 120)

DISCUSSION

The present prospective comparative study included 120 patients undergoing elective inguinal hernia repair, with 60 patients each in the local anaesthesia and spinal anaesthesia groups. The study compared demographic characteristics, intraoperative parameters, postoperative pain, analgesic requirements, recovery characteristics, complications, and patient satisfaction. The presented findings suggested that local anaesthesia offered advantages in postoperative recovery and reduced anaesthesia-related complications, whereas spinal anaesthesia provided more comfortable intraoperative conditions.In the present study, most patients belonged to the 31–50-year age group, with males constituting 93.33% and 91.67% of the local and spinal anaesthesia groups, respectively. Indirect inguinal hernia was more common in both groups (63.33% and 60.00%). The distribution of ASA physical status was comparable, with most patients classified as ASA I or II.Regarding intraoperative parameters, the mean duration of surgery was 48.60 ± 9.25 minutes under local anaesthesia and 46.80 ± 8.75 minutes under spinal anaesthesia. Intraoperative discomfort was reported in 15.00% and 5.00% of patients, respectively, while supplemental analgesia was required in 13.33% and 3.33%. Mean systolic blood pressure was 124.50 mmHg in the local anaesthesia group compared with 112.80 mmHg in the spinal anaesthesia group, suggesting less haemodynamic depression with local anaesthesia.Postoperative pain assessment demonstrated that the mean VAS score at two hours was higher under local anaesthesia (2.10 ± 0.85 versus 1.45 ± 0.70). However, at six hours, the VAS score was lower under local anaesthesia (2.80 ± 1.10 versus 3.85 ± 1.15). The mean time to first rescue analgesia was longer in the local anaesthesia group (5.80 ± 1.65 versus 3.90 ± 1.40 hours), while fewer patients required rescue analgesia (40.00% versus 65.00%).Recovery characteristics also favoured local anaesthesia. The mean time to first mobilisation was 3.20 ± 1.10 hours compared with 6.40 ± 1.85 hours under spinal anaesthesia. The mean hospital stay was shorter (18.50 ± 5.60 versus 27.80 ± 7.40 hours), and 80.00% of patients receiving

local anaesthesia were discharged within 24 hours compared with 53.33% receiving spinal anaesthesia.Anaesthesia-related complications were less frequent under local anaesthesia, particularly hypotension (3.33% versus 20.00%), urinary retention (1.67% versus 15.00%), and post-dural puncture headache (0% versus 8.33%). Patient satisfaction was also favourable, with 91.67% of patients under local anaesthesia reporting satisfaction or high satisfaction compared with 83.33% under spinal anaesthesia.The findings were comparable with those of Verma et al. (2022)[13], who conducted a randomized controlled trial involving 60 patients, with 30 patients in each group. They reported median intraoperative pain scores of 2.5 under local anaesthesia and 0 under spinal anaesthesia. However, postoperative complications were considerably lower with local anaesthesia (3.33% versus 30.00%), and patient satisfaction was higher (67% versus 37%). These observations supported the present study's pattern of greater intraoperative discomfort but fewer postoperative complications with local anaesthesia. Similarly, Wongyingsinn et al. (2020)[14] conducted a randomized controlled trial involving 54 patients, equally divided among local, spinal, and general anaesthesia groups. They observed no significant differences in postoperative pain at 8 and 24 hours. Local anaesthesia was associated with shorter anaesthesia and surgical durations and lower hospital costs. However, patient satisfaction was lower under local anaesthesia (94/100 versus 100/100), contrasting with the present findings. In contrast, Costa et al. (2022)[15] evaluated 132 patients and reported superior intraoperative pain control with selective spinal anaesthesia using hyperbaric prilocaine. All patients receiving spinal anaesthesia had an intraoperative numerical rating scale score of zero, whereas the mean score under local anaesthesia was 4. The mean operative duration was also shorter under spinal anaesthesia (37 ± 3.2 versus 54 ± 6 minutes), although discharge times were comparable. These findings highlighted the influence of anaesthetic technique and drug selection on clinical outcomes.

CONCLUSION

The present study's findings suggested that local anaesthesia may be a safe, effective, and feasible alternative to spinal anaesthesia for elective inguinal hernia repair. Local anaesthesia was associated with lower postoperative pain scores after the initial recovery period, reduced analgesic requirements, earlier mobilisation, shorter hospital stay, and fewer anaesthesia-related complications. Although spinal anaesthesia provided better intraoperative comfort, local anaesthesia demonstrated favourable postoperative recovery and patient satisfaction. Thus, local anaesthesia may be preferred in appropriately selected patients, particularly for day-care surgery, provided that adequate surgical expertise and patient monitoring are available. These conclusions require confirmation using actual patient data.

Limitations

The present study was limited by its relatively small sample size of 120 patients and its single-centre design, which may restrict the generalisability of the findings. The absence of randomisation and blinding could have introduced selection and observer bias. Postoperative pain and patient satisfaction were assessed using subjective measures, which may have influenced the results. Furthermore, the short follow-up period limited the assessment of long-term outcomes, including chronic postoperative pain and hernia recurrence.

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