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Original Research Article

Comparison of Spinal Anesthesia Versus Ilioinguinal-Iliohypogastric Nerve Block Applied for Single-Sided Inguinal Hernia

Muhammad Mashkat Junaid*, Abeera Zareen, Huma Naz

Department of Anesthesia and ICU, Benazir Bhutto Hospital, Rawalpindi, Pakistan
**Corresponding author`s email address:* mishkatjunaid1@gmail.com

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Abstract: *Inguinal hernia repair is commonly performed under spinal anesthesia; however, spinal anesthesia may be associated with delayed ambulation, urinary retention, and prolonged discharge readiness. Ilioinguinal–iliohypogastric nerve block may provide effective regional anesthesia with faster postoperative recovery.* ***Objective:*** *To compare spinal anesthesia with ilioinguinal–iliohypogastric nerve block in patients undergoing elective single-sided inguinal hernia repair.* ***Methods:*** *This randomized controlled trial was conducted in the Department of Anaesthesia, and ICU, Benazir Bhutto Hospital, Rawalpindi, from September 2023 to August 2024. A total of 70 adult patients undergoing elective unilateral open inguinal hernia repair were equally allocated into two groups. Group A received spinal anesthesia, while Group B received ilioinguinal–iliohypogastric nerve block with local anesthetic infiltration. Postoperative pain was assessed using the visual analogue scale at different time intervals. Secondary outcomes included rescue analgesic requirement, time to ambulation, oral intake, discharge readiness, same-day discharge, patient satisfaction, and postoperative complications.* ***Results:*** *Baseline demographic and clinical characteristics were comparable between the two groups. Ilioinguinal–iliohypogastric nerve block required longer preparation and sensory onset time than spinal anesthesia. However, postoperative pain scores were significantly lower in the nerve block group at 2, 4, 6, and 12 hours after surgery. Rescue analgesia was required less frequently in the nerve block group compared with the spinal anesthesia group (40.0% vs. 68.6%, p=0.031), and the time to first rescue analgesia was significantly longer (289 ± 92 vs. 178 ± 73 minutes, p<0.001). Patients in the nerve block group had earlier ambulation, earlier oral intake, shorter discharge readiness time, higher same-day discharge rate, and better satisfaction scores. Urinary retention was significantly more common after spinal anesthesia (17.1% vs. 0.0%, p=0.025). No major anesthesia-related complication, local anesthetic toxicity, reoperation, or mortality was observed.* ***Conclusion:*** *Ilioinguinal–iliohypogastric nerve block provided better early postoperative analgesia, reduced rescue analgesic requirement, improved recovery profile, and lowered urinary retention compared with spinal anesthesia in patients undergoing unilateral inguinal hernia repair. It may be considered a safe and effective alternative to spinal anesthesia, particularly in day-care and resource-limited surgical settings.*

Keywords: Inguinal Hernia; Herniorrhaphy; Spinal Anesthesia; Nerve Block; Ilioinguinal Nerve; Iliohypogastric Nerve

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Introduction

Inguinal hernia repair is one of the most frequently performed general surgical procedures worldwide and remains a major component of elective surgical workload in both high-income and low- and middle-income countries. The updated HerniaSurge guidelines emphasize that groin hernia surgery should be planned with attention to safety, recurrence prevention, postoperative pain, early recovery, and patient-centered decision-making (1). Because many inguinal hernia repairs are suitable for ambulatory or short-stay surgery, the choice of anesthetic technique has become central to perioperative efficiency, postoperative comfort, discharge readiness, and health-system resource utilization (2).

Anesthesia for open unilateral inguinal hernia repair may include general anesthesia, spinal anesthesia, local infiltration anesthesia, field block, or ultrasound-guided regional nerve blocks. In many surgical centers, spinal anesthesia is commonly used because it provides reliable intraoperative anesthesia, good muscle relaxation, and predictable operating conditions. However, spinal anesthesia may be associated with hypotension, bradycardia, urinary retention, delayed ambulation, delayed oral intake, post-dural puncture headache, and prolonged recovery room stay, especially when longer-acting local anesthetic agents are used (3). These effects are clinically relevant in day-care surgery, where early mobilization, adequate pain control, and same-day discharge are desirable outcomes.

Local and regional anesthetic approaches have gained increasing importance in inguinal hernia repair because they may reduce systemic opioid requirement, preserve hemodynamic stability, and support enhanced recovery pathways. Balentine et al. reported that local anesthesia for inguinal hernia repair was associated with fewer complications in older patients, suggesting that avoidance of neuraxial or general anesthesia may be beneficial in selected populations (4). Similarly, Koyama et al. described a structured tumescent local anesthesia technique for inguinal hernia repair and highlighted its role in improving procedural comfort while maintaining perioperative safety (5). These findings support the broader movement toward targeted regional anesthesia for suitable hernia patients.

The ilioinguinal and iliohypogastric nerves arise from the L1 spinal nerve root and provide sensory innervation to the inguinal region, lower abdominal wall, upper medial thigh, scrotum or labia majora, and adjacent operative field. Blocking these nerves can provide effective analgesia for open inguinal hernia repair and may reduce postoperative pain during the early hours after surgery. Mao et al., in a meta-analysis of randomized controlled trials, found that local anesthesia for open inguinal hernia repair was associated with lower headache, urinary retention, and 12-hour pain scores compared with spinal anesthesia, while also showing better patient satisfaction and anesthesia efficacy in several included trials (6). This suggests that regional or local anesthetic techniques may offer meaningful recovery advantages over traditional spinal anesthesia.

However, findings are not entirely uniform. Costa et al. reported that selective unilateral spinal anesthesia with hyperbaric prilocaine provided excellent intraoperative pain control and did not prolong discharge time compared with local anesthesia in ambulatory inguinal hernia repair (7).

This indicates that outcomes may depend on the specific spinal drug, dose, patient positioning, block selectivity, and institutional workflow. Therefore, direct comparisons between spinal anesthesia and ilioinguinal–iliohypogastric nerve block remain clinically relevant, particularly in settings where bupivacaine-based spinal anesthesia is frequently used.

Postoperative urinary retention is another important consideration after inguinal hernia surgery. The RETAINER I study identified urinary retention as a clinically significant complication after elective inguinal hernia repair and reported associations with older age, male sex, benign prostatic hyperplasia, constipation, temporary intraoperative urethral catheterization, and increasing operative duration (8). Since urinary retention can delay discharge and increase patient discomfort, anesthetic strategies that reduce neuraxial sympathetic blockade may be useful in ambulatory hernia surgery.

Recent regional anesthesia studies have further strengthened the role of ultrasound-guided fascial plane and peripheral nerve blocks. Sahoo et al. reported that ultrasound-guided ilioinguinal–iliohypogastric nerve block reduced chronic postsurgical pain after open inguinal hernia repair (9). Singh et al. also showed that ultrasound-guided triple nerve block for inguinal hernia surgery reduced postoperative pain scores, opioid rescue requirement, urinary retention, and delayed mobilization compared with subarachnoid block (10). These findings are particularly relevant for resource-limited surgical systems, where shorter recovery time and reduced postoperative complications can improve patient turnover and reduce admission burden.

In Pakistan, inguinal hernia repair is commonly performed in public-sector and tertiary-care hospitals where operating lists are crowded, bed availability is limited, and many patients prefer early discharge because of financial and travel constraints. Spinal anesthesia remains widely practiced because it is familiar, economical, and reliable, but postoperative urinary retention, delayed ambulation, and prolonged observation can increase the burden on recovery areas and surgical wards. There is limited local evidence comparing spinal anesthesia with ilioinguinal–iliohypogastric nerve block for unilateral inguinal hernia repair. Therefore, the present study was designed to compare intraoperative stability, postoperative pain, analgesic requirement, recovery profile, discharge readiness, patient satisfaction, and early complications between spinal anesthesia and ilioinguinal–iliohypogastric nerve block in patients undergoing single-sided inguinal hernia repair in a Pakistani clinical setting.

Methodology

This randomized controlled trial was conducted in the Department of Anaesthesia and ICU, Benazir Bhutto Hospital, Rawalpindi, from September 2023 to August 2024. Adult patients scheduled for elective unilateral open inguinal hernia repair were enrolled after approval from the institutional ethical review committee. Written informed consent was obtained from all participants before enrolment. The study was conducted according to standard clinical research principles, with predefined eligibility criteria, standardized anesthetic protocols, uniform surgical technique, and prospective recording of perioperative and postoperative outcomes.

A total of 70 patients were included and divided into two equal groups of 35 patients each. The sample size was based on previously published comparable studies evaluating postoperative pain scores after spinal anesthesia and ilioinguinal/iliohypogastric nerve block for inguinal hernia repair, with allowance for possible block failure or incomplete follow-up. Patients were allocated to either group using a lottery method or sequentially numbered sealed opaque envelopes. Group A received spinal anesthesia, while Group B received ilioinguinal–iliohypogastric nerve block with local anesthetic infiltration.

Patients aged 18 to 75 years, of either gender, with American Society of Anesthesiologists physical status I to III and diagnosed with primary unilateral reducible inguinal hernia were included. Patients with bilateral, recurrent, obstructed, strangulated, irreducible, or complicated hernia were excluded. Patients were also excluded if they had bleeding diathesis, local infection at the injection site, allergy to local anesthetic drugs, severe cardiopulmonary instability, chronic opioid use, neurological disease affecting pain assessment, inability to understand the visual analogue scale, or refusal to participate.

Before surgery, demographic and clinical details were recorded, including age, gender, body mass index, ASA class, comorbidities, hernia side, hernia type, previous surgical history, and baseline hemodynamic parameters. All patients underwent routine pre-anesthetic assessment. Standard fasting protocols were followed. In the operating room, intravenous access was secured and standard monitoring was applied, including non-invasive blood pressure, electrocardiography, heart rate, respiratory rate, and pulse oximetry. Baseline mean arterial pressure, heart rate, and oxygen saturation were documented before administration of anesthesia.

In Group A, spinal anesthesia was administered under strict aseptic precautions with the patient in the sitting or lateral position. A 25G or 26G spinal needle was inserted at the L3–L4 or L4–L5 intervertebral space using the midline approach. After free flow of cerebrospinal fluid was confirmed, 0.5% hyperbaric bupivacaine 15 mg was injected intrathecally, as used in a Pakistani inguinal hernia anesthesia study. The patient was then placed supine, and sensory block was assessed by loss of pinprick sensation. Surgery was started only after an adequate sensory level for inguinal hernia repair was achieved.

In Group B, ilioinguinal–iliohypogastric nerve block with local anesthetic infiltration was performed under aseptic precautions before surgical incision. The anterior superior iliac spine, inguinal ligament, pubic tubercle, and planned incision line were identified. The local anesthetic was deposited approximately 2 cm above and medial to the anterior superior iliac spine in the plane between the internal oblique and transversus abdominis muscles to block the ilioinguinal and iliohypogastric nerves. Additional local anesthetic infiltration was given along the planned incision line and operative field. The local anesthetic regimen was based on published Pakistani practice for inguinal field block, using a mixture of 20 mL of 0.5% bupivacaine, 20 mL of 2% lignocaine with adrenaline, 20 mL normal saline, and 3 mL sodium bicarbonate, with the final dose adjusted according to patient weight and maximum safe dose limits. Where ultrasound was available, the block was performed under ultrasound guidance; otherwise, a landmark-based technique was used.

The adequacy of the nerve block was assessed 15–20 minutes after injection by checking loss of pinprick sensation over the lower abdomen, inguinal region, upper medial thigh, and operative field. If the patient had significant pain during incision or surgical manipulation despite supplementary local infiltration, the block was labelled as failed. Such patients were converted to spinal or general anesthesia according to clinical need, but the failure was recorded as an outcome and analyzed in the originally allocated group.

All patients underwent standard open mesh hernioplasty using a uniform operative protocol. Intraoperative variables included anesthesia preparation time, time to sensory onset, operative duration, mean arterial pressure, heart rate, oxygen saturation, intraoperative discomfort, need for supplementary analgesia or infiltration, conversion of anesthesia, and surgeon satisfaction. Surgeon satisfaction was graded as satisfactory or unsatisfactory based on operative conditions, patient comfort, and need for additional anesthesia.

Postoperative pain was assessed using a 10-point visual analogue scale, where 0 indicated no pain and 10 indicated the worst imaginable pain. Pain scores were recorded at recovery, 2, 4, 6, 12, and 24 hours after surgery, both at rest and during movement or coughing where possible. The primary outcome was postoperative VAS pain score during the first 24 hours, especially at 6 hours after surgery. Secondary outcomes included time to first rescue analgesia, total analgesic requirement in the first 24 hours, time to ambulation, time to oral intake, time to first

micturition, discharge readiness, same-day discharge, patient satisfaction, and postoperative complications.

All patients received postoperative analgesia according to institutional protocol. Rescue analgesia was administered when the VAS score was 4 or higher, or earlier if requested by the patient. The time to first rescue analgesia and the total analgesic requirement within 24 hours were recorded. Patient satisfaction was assessed before discharge using a simple three-point scale as satisfied, neutral, or dissatisfied.

Postoperative complications were recorded during hospital stay and follow-up. Early complications included hypotension, bradycardia, nausea, vomiting, urinary retention, post-dural puncture headache, local anesthetic toxicity, wound hematoma, scrotal swelling, and need for unplanned admission. Urinary retention was defined as inability to pass urine within 6 hours after surgery requiring catheterization. Wound-related complications, including seroma and wound infection, were assessed during follow-up at 7 days and 30 days after surgery.

Data were entered and analyzed using SPSS. Continuous variables were expressed as mean ± standard deviation for normally distributed data and median with interquartile range for non-normally distributed data. Categorical variables were presented as frequency and percentage. Normality of quantitative data was assessed using the Shapiro–Wilk test. The independent-sample t-test was used for normally distributed continuous variables, while the Mann–Whitney U test was used for non-normally distributed variables. The chi-square test or Fisher's exact test was used for categorical variables. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 70 patients undergoing elective single-sided inguinal hernia repair were included and equally allocated into two groups: spinal anesthesia group, n=35, and ilioinguinal–iliohypogastric nerve block group, n=35. The mean age of the study population was 44.9 ± 11.8 years. Most patients were male, 64/70, 91.4%, which is consistent with the usual demographic pattern of inguinal hernia presentation in adult surgical practice. Right-sided hernia was observed in 39 patients, 55.7%, while indirect inguinal hernia was the most common operative finding, 43 patients, 61.4%. Baseline demographic and clinical characteristics were comparable between the two groups, indicating adequate group balance before outcome comparison (Table 1).

Table 1. Baseline demographic and clinical characteristics of patients undergoing single-sided inguinal hernia repair

Variable	Total, n=70	Spinal anesthesia, n=35	Ilioinguinal–iliohypogastric block, n=35	p-value
Age, years	44.9 ± 11.8	45.8 ± 12.2	44.1 ± 11.6	0.552
BMI, kg/m²	26.1 ± 3.3	26.3 ± 3.4	25.9 ± 3.2	0.614
Male gender	64 (91.4%)	32 (91.4%)	32 (91.4%)	1.000
Female gender	6 (8.6%)	3 (8.6%)	3 (8.6%)	1.000
ASA-I	25 (35.7%)	12 (34.3%)	13 (37.1%)	0.968
ASA-II	39 (55.7%)	20 (57.1%)	19 (54.3%)	0.968
ASA-III	6 (8.6%)	3 (8.6%)	3 (8.6%)	0.968
Right-sided hernia	39 (55.7%)	20 (57.1%)	19 (54.3%)	1.000
Left-sided hernia	31 (44.3%)	15 (42.9%)	16 (45.7%)	1.000
Indirect hernia	43 (61.4%)	22 (62.9%)	21 (60.0%)	0.965
Direct hernia	21 (30.0%)	10 (28.6%)	11 (31.4%)	0.965
Pantaloon hernia	6 (8.6%)	3 (8.6%)	3 (8.6%)	0.965
Hypertension	15 (21.4%)	8 (22.9%)	7 (20.0%)	1.000
Diabetes mellitus	11 (15.7%)	6 (17.1%)	5 (14.3%)	1.000
Current smoker	19 (27.1%)	10 (28.6%)	9 (25.7%)	1.000

The intraoperative comparison showed that the ilioinguinal–iliohypogastric nerve block required a longer preparation time than spinal anesthesia, 11.4 ± 3.2 minutes versus 7.8 ± 2.1 minutes, p<0.001. However, operative duration, intraoperative oxygen saturation, and heart rate were comparable between groups. Mean arterial pressure was more stable in the nerve block group, while clinically significant hypotension was more frequent after spinal anesthesia, although the difference approached but did not reach statistical significance. Three patients, 8.6%, in the nerve block group required supplementary local infiltration or conversion to spinal anesthesia because of inadequate block density (Table 2).

Table 2. Intraoperative anesthesia and surgical outcomes

Variable	Spinal anesthesia, n=35	Ilioinguinal–iliohypogastric block, n=35	p-value
Anesthesia preparation time, minutes	7.8 ± 2.1	11.4 ± 3.2	<0.001
Sensory onset time, minutes	5.4 ± 1.8	9.8 ± 2.7	<0.001
Operative duration, minutes	43.8 ± 8.9	46.2 ± 9.5	0.279
Mean intraoperative MAP, mmHg	83.2 ± 9.4	88.1 ± 8.6	0.026
Mean intraoperative heart rate, beats/min	78.6 ± 10.3	80.1 ± 9.7	0.532
Mean SpO_2, %	98.2 ± 1.1	98.4 ± 1.0	0.430
Need for supplementary analgesia/infiltration	0 (0.0%)	3 (8.6%)	0.239
Intraoperative patient discomfort	1 (2.9%)	4 (11.4%)	0.356
Surgeon satisfaction score, 0–10	8.6 ± 1.0	8.4 ± 1.2	0.451

Postoperative pain scores were significantly lower in the ilioinguinal–iliohypogastric nerve block group at 2, 4, 6, and 12 hours after surgery. Pain scores at immediate recovery and 24 hours were lower in the nerve block group but did not reach statistical significance. These findings suggest better early postoperative analgesic coverage with ilioinguinal–iliohypogastric nerve block, particularly during the period when spinal anesthesia begins to regress (Table 3). Comparable Pakistani tertiary-care data have also evaluated ilioinguinal/iliohypogastric block for open inguinal hernia repair and used VAS pain scores, opioid consumption, and patient satisfaction as key outcomes.

Table 3. Postoperative pain scores using visual analogue scale

Time after surgery	Spinal anesthesia, n=35	Ilioinguinal–iliohypogastric block, n=35	p-value
Recovery room	0.8 ± 0.9	1.2 ± 1.0	0.083
2 hours	2.7 ± 1.2	1.8 ± 1.1	0.002
4 hours	3.8 ± 1.5	2.5 ± 1.2	<0.001
6 hours	3.5 ± 1.4	2.3 ± 1.1	<0.001
12 hours	2.9 ± 1.2	2.1 ± 1.0	0.003
24 hours	2.1 ± 1.0	1.7 ± 0.9	0.083

The need for rescue analgesia within the first 24 hours was significantly higher in the spinal anesthesia group compared with the nerve block group, 68.6% versus 40.0%, p=0.031. The mean time to first rescue analgesic was also significantly longer in the nerve block group, 289 ± 92 minutes versus 178 ± 73 minutes, p<0.001. Patients receiving ilioinguinal–iliohypogastric nerve block had earlier ambulation, earlier oral intake, and shorter time to discharge readiness than those receiving spinal anesthesia. Same-day discharge was achieved in 91.4% of patients in the nerve block group compared with 62.9% in the spinal anesthesia group, p=0.009 (Table 4).

Table 4. Postoperative analgesic requirement and recovery profile

Variable	Spinal anesthesia, n=35	Ilioinguinal–iliohypogastric block, n=35	p-value
Rescue analgesia required within 24 hours	24 (68.6%)	14 (40.0%)	0.031
Time to first rescue analgesia, minutes	178 ± 73	289 ± 92	<0.001
Mean diclofenac doses in first 24 hours	1.7 ± 0.7	1.1 ± 0.6	<0.001
Need for opioid rescue	6 (17.1%)	2 (5.7%)	0.259
Time to first ambulation, minutes	225 ± 54	91 ± 32	<0.001
Time to oral intake, minutes	172 ± 47	95 ± 28	<0.001
Time to discharge readiness, minutes	421 ± 86	246 ± 58	<0.001
Same-day discharge	22 (62.9%)	32 (91.4%)	0.009
Patient satisfaction score, 0–10	7.8 ± 1.4	8.7 ± 1.0	0.003

Postoperative complications were generally mild and manageable in both groups. Urinary retention was significantly more frequent in the spinal anesthesia group, 17.1% versus 0.0%, p=0.025. Hypotension, bradycardia, nausea/vomiting, and wound-related complications were numerically higher in the spinal anesthesia group but did not show statistically significant differences. No case of respiratory depression, local anesthetic systemic toxicity, reoperation, mesh infection, or mortality was observed during the early postoperative period (Table 5).

Table 5. Postoperative complications and safety outcomes

Complication	Spinal anesthesia, n=35	Ilioinguinal–iliohypogastric block, n=35	p-value
Hypotension	7 (20.0%)	1 (2.9%)	0.055
Bradycardia	5 (14.3%)	1 (2.9%)	0.198
Nausea/vomiting	4 (11.4%)	1 (2.9%)	0.356
Urinary retention	6 (17.1%)	0 (0.0%)	0.025
Post-dural puncture headache	2 (5.7%)	0 (0.0%)	0.493
Wound hematoma/seroma	2 (5.7%)	1 (2.9%)	1.000
Wound infection	1 (2.9%)	1 (2.9%)	1.000
Local anesthetic toxicity	0 (0.0%)	0 (0.0%)	—
Reoperation	0 (0.0%)	0 (0.0%)	—

Discussion

The present study found that ilioinguinal–iliohypogastric nerve block provided better early postoperative analgesia, reduced rescue analgesic requirement, improved recovery milestones, and lowered urinary retention compared with spinal anesthesia in unilateral inguinal hernia repair. Although block preparation and sensory onset were longer in the nerve block group, operative duration, oxygen saturation, heart rate, intraoperative discomfort, and surgeon satisfaction were comparable. This suggests that the additional preparation time did not compromise surgical feasibility. The nerve block group also had more stable mean arterial pressure, supporting its physiological advantage over neuraxial blockade in selected patients.

Our findings are consistent with Kaçmaz et al., who compared spinal anesthesia with ilioinguinal–iliohypogastric nerve block with tumescent anesthesia for single-sided inguinal hernia and reported that regional/local anesthesia was a feasible alternative to spinal anesthesia (11). Similarly, Singh et al. found that ultrasound-guided triple nerve block produced lower postoperative VAS scores at 1, 2, 4, and 6 hours and supported earlier micturition, walking, recovery room discharge, and hospital discharge compared with subarachnoid block (10). These findings closely match the present results, where pain scores were significantly lower at 2, 4, 6, and 12 hours, and time to ambulation, oral intake, and discharge readiness were significantly shorter in the nerve block group.

The lower rescue analgesic requirement in the ilioinguinal–iliohypogastric block group is also supported by regional anesthesia trials. Yadav et al. compared ultrasound-guided quadratus lumborum block with ilioinguinal–iliohypogastric block plus wound infiltration and demonstrated that targeted regional analgesia can reduce postoperative pain after unilateral inguinal surgery (12). Çelik et al. compared transversalis fascia plane block and erector spinae plane block in patients undergoing open inguinal hernia repair under spinal anesthesia and reported that regional blocks can improve postoperative analgesic profiles (13). These studies support the concept that peripheral nerve and fascial plane blocks are valuable components of multimodal analgesia for inguinal surgery.

In contrast, Costa et al. reported better perioperative pain control with selective unilateral spinal anesthesia using hyperbaric prilocaine compared with local anesthesia, without prolonging discharge time (7). This difference may reflect the use of short-acting prilocaine and selective

unilateral spinal technique, while many centers, including Pakistani hospitals, commonly use longer-acting spinal agents such as bupivacaine. Therefore, the comparison is not simply between spinal and local techniques, but between specific protocols, drug choices, and recovery systems. Kaçmaz et al. also compared spinal anesthesia with erector spinae plane block in unilateral inguinal hernia repair, indicating that modern regional techniques continue to be evaluated as alternatives to neuraxial anesthesia (14). Sakae et al. similarly reported favorable analgesic outcomes with ultrasound-guided erector spinae plane block for open inguinal hernia repair (15).

A key safety finding in the present study was the significantly higher urinary retention rate after spinal anesthesia, 17.1% versus 0.0%. This is clinically meaningful because urinary retention can delay discharge and increase patient dissatisfaction. The RETAINER I cohort identified urinary retention as an important complication after inguinal hernia repair, particularly among older males and those with predisposing urinary symptoms (8). Fafaj et al. evaluated urinary catheter use in laparoscopic inguinal hernia repair and highlighted the ongoing concern regarding postoperative urinary retention in hernia surgery (16). Broderick et al. showed that ERAS-based protocols can reduce urinary retention after ambulatory minimally invasive inguinal hernia repair (17), while Caparelli et al. and Koukoulis et al. studied alpha-blocker prophylaxis to reduce this complication (18,19). These studies support our observation that avoidance of neuraxial sympathetic blockade may be one practical way to reduce urinary retention and improve discharge readiness.

Di Natale et al. and Kim et al. further identified patient and operative factors associated with urinary retention and chronic pain after hernia repair (20,21). Aleman et al. examined whether TAP block increased urinary retention risk and contributed to the safety discussion around abdominal wall blocks (22). In the present study, no local anesthetic systemic toxicity, respiratory depression, mesh infection, reoperation, or mortality was observed, supporting the short-term safety of ilioinguinal–iliohypogastric nerve block when properly performed. However, three patients required supplementary infiltration or conversion, showing that nerve block success depends on technical accuracy and experience. Overall, these findings suggest that ilioinguinal–iliohypogastric nerve block may be a useful alternative to spinal anesthesia for unilateral inguinal hernia repair in Pakistani tertiary-care settings, particularly where same-day discharge, early mobilization, and reduced ward burden are important clinical priorities.

Conclusion

Ilioinguinal–iliohypogastric nerve block was associated with lower early postoperative pain scores, reduced analgesic requirement, faster ambulation, earlier discharge readiness, higher same-day discharge, and fewer urinary retention events compared with spinal anesthesia. Although the nerve block required slightly longer preparation time and had a small risk of incomplete block, it remained clinically effective and safe. Therefore, ilioinguinal–iliohypogastric nerve block may be a practical alternative to spinal anesthesia for elective unilateral inguinal hernia repair, especially in settings where early recovery and same-day discharge are desired.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-BBH-22d-23)

Consent for publication
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

MMJ (PGR)
Manuscript drafting, Study Design,
AZ (Supervisor)
Review of Literature, Data entry, Data analysis, and drafting articles.
HN
Conception of Study, Development of Research Methodology Design,

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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