



Regional vs General Anesthesia for Inguinal Hernia Repair: A Systematic Review of Postoperative Pain and Complications

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ABSTRACT

Introduction: The choice between regional and general anesthesia for inguinal hernia repair is of significant clinical importance, as it directly impacts postoperative pain, complication rates, recovery trajectories, and long-term patient outcomes. With increasing emphasis on individualized care and enhanced recovery protocols, determining the most effective anesthetic approach is essential to optimizing surgical results, minimizing adverse effects, and improving patient satisfaction, particularly in high-volume procedures with substantial global health implications.

Material and methods: This systematic review assessed the impact of regional versus general anesthesia on postoperative pain and complications following inguinal hernia repair. Using predefined criteria, relevant studies were identified through comprehensive database searches. Data were extracted on pain scores, complications, and recovery outcomes. Risk of bias was evaluated with validated tools, and meta-analyses with subgroup analyses addressed heterogeneity.

Results: This systematic review analyzed five studies comparing regional and general anesthesia in inguinal hernia repair. Regional anesthesia, particularly spinal, was associated with significantly lower postoperative pain scores and shorter hospital stays. While general anesthesia showed higher rates of nausea and vomiting, regional techniques were linked to a greater incidence of urinary retention.

Conclusion: Regional anesthesia for inguinal hernia repair provides superior postoperative pain control and reduces nausea and vomiting compared to general anesthesia. Although urinary retention is more frequent with regional techniques, overall complication rates remain low.

Introduction

Inguinal hernia repair remains one of the most frequently performed surgical procedures worldwide, with millions of cases addressed annually across diverse healthcare systems. Despite the routine nature of this operation, optimizing perioperative management to improve patient outcomes continues to be an area of significant clinical interest. Among the many variables that can influence surgical outcomes, the choice of anesthetic technique plays a crucial role.

Both regional anesthesia (RA), encompassing spinal, epidural, and peripheral nerve blocks, and general anesthesia (GA) are commonly employed modalities for inguinal hernia repair. However, the comparative advantages and disadvantages of these techniques remain a topic of active research, particularly concerning postoperative pain control and the incidence of perioperative complications (1). The primary goal of anesthesia is to provide adequate analgesia and muscle relaxation to facilitate surgical intervention while minimizing

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physiological disruption and ensuring patient safety and comfort.

While general anesthesia induces a reversible loss of consciousness and is often preferred for its predictability and ease of administration, regional anesthesia provides targeted neural blockade that can offer profound intraoperative analgesia and reduced systemic side effects. In recent years, with the increasing emphasis on enhanced recovery protocols and value-based care, interest in regional techniques has resurged due to their potential benefits in postoperative pain control, reduced opioid consumption, shorter hospital stays, and decreased incidence of complications such as postoperative nausea and vomiting (PONV), respiratory depression, and thromboembolic events (2,3).

Inguinal hernia repair, whether performed via open or laparoscopic approaches, involves manipulation of the inguinal canal and associated structures, which are richly innervated and thus capable of producing significant postoperative discomfort. The management of postoperative pain in this context is critical not only for immediate patient comfort but also for minimizing the risk of chronic postoperative inguinal pain (CPIP), a recognized complication that can significantly impair quality of life. Chronic pain following hernia surgery is thought to result from a combination of nerve injury, inflammation, and individual pain sensitivity. The type of anesthesia may influence the incidence and severity of CPIP through its effects on acute pain control, nerve integrity, and systemic inflammatory responses. Therefore, a nuanced comparison of RA and GA in terms of both acute and long-term pain outcomes is warranted (4,5).

In addition to pain control, the selection of anesthetic modality may influence other perioperative outcomes, such as cardiovascular and respiratory stability, surgical field exposure, recovery profiles, and complication rates. For instance, regional anesthesia may provide more hemodynamic stability in certain populations and avoid airway instrumentation, making it potentially advantageous in patients with comorbidities affecting the pulmonary or cardiovascular systems. On the other hand, GA allows for better control of ventilation and may be preferable in procedures requiring pneumoperitoneum, such as laparoscopic hernia repairs. Moreover, the logistical considerations of anesthesia administration, such as the time required for induction and recovery, the availability of skilled personnel, and institutional preferences, may also affect the choice of technique (6,7).

Demographic factors such as age, sex, comorbid conditions, and baseline functional status further complicate the decision-making process. For example, elderly patients undergoing inguinal hernia repair may benefit from RA due to lower risks

of postoperative cognitive dysfunction and fewer cardiopulmonary complications. However, spinal or epidural anesthesia is not without its risks, including hypotension, urinary retention, and rare but serious neurological complications. Thus, individualized risk-benefit analyses are essential, and robust comparative data are needed to guide clinicians in choosing the most appropriate anesthetic strategy for each patient (8).

Numerous randomized controlled trials (RCTs), observational studies, and meta-analyses have attempted to compare the outcomes of RA and GA in inguinal hernia surgery, with varying and sometimes conflicting results. While some studies have demonstrated superior pain control and fewer systemic complications with RA, others have highlighted the logistical ease and patient satisfaction associated with GA. These discrepancies may stem from differences in study design, patient populations, surgical techniques, definitions of outcomes, and perioperative management protocols. As such, there is a clear need for a systematic and rigorous synthesis of the available evidence to elucidate the comparative effectiveness of these anesthesia techniques, particularly in terms of postoperative pain and complications (9,10).

The surgical community's growing commitment to evidence-based practice and patient-centered care underscores the importance of clarifying this issue. Pain, both acute and chronic, remains one of the most dreaded complications of any surgical intervention, and optimizing its management is a cornerstone of perioperative medicine. Furthermore, complications related to anesthesia ranging from minor issues such as nausea to serious events like cardiovascular instability or nerve damage can significantly affect recovery trajectories and healthcare costs. Understanding how the choice between RA and GA influences these outcomes in inguinal hernia repair will not only enhance perioperative planning but may also inform policy decisions and resource allocation in surgical services (11).

Another critical consideration in this context is the variability in anesthesia practice across geographic regions and healthcare systems. In some settings, RA may be the preferred or even default modality due to economic considerations, while in others, GA may dominate due to clinician training patterns or institutional infrastructure. This variation presents both a challenge and an opportunity for systematic review: a challenge because it complicates cross-study comparisons, and an opportunity because it allows for a more nuanced understanding of how context influences outcomes. Moreover, as global surgery initiatives aim to expand access to safe and effective surgical care in low- and middle-income countries, the anesthetic implications for high-

volume procedures like inguinal hernia repair become even more salient (12).

From a methodological standpoint, a comprehensive systematic review on this topic must consider multiple dimensions of outcome assessment. Postoperative pain should be evaluated both in the immediate postoperative period and in the longer term, using validated scales such as the Visual Analog Scale (VAS) or Numeric Rating Scale (NRS), as well as functional outcomes and quality-of-life measures. Complications should be categorized into minor and major events, and attention should be paid to anesthesia-specific risks as well as surgical complications that might be influenced by the anesthetic technique. Furthermore, subgroup analyses by patient age, comorbidity burden, and surgical approach (open vs laparoscopic) could provide valuable insights into which populations might benefit most from one technique over the other (13).

In recent years, the trend toward multimodal analgesia and opioid-sparing protocols has further highlighted the need to critically appraise the role of the primary anesthetic technique in postoperative pain control. While peripheral nerve blocks and local infiltration analgesia are increasingly used as adjuncts to either GA or RA, their integration into perioperative care complicates the attribution of outcomes to the primary anesthetic modality. Therefore, a systematic review must carefully delineate the components of anesthesia and analgesia protocols used in each study to draw meaningful conclusions (14).

In conclusion, the comparative effectiveness of regional versus general anesthesia for inguinal hernia repair remains a clinically relevant and complex question. The potential implications for postoperative pain management, complication rates, and overall patient satisfaction are significant, particularly in the context of increasing attention to patient-centered outcomes and healthcare efficiency. By systematically reviewing and synthesizing the available evidence, this study aims to provide a clearer understanding of how anesthetic choice affects key surgical outcomes in inguinal hernia repair. Such insights are essential not only for guiding clinical practice but also for informing training, policy, and future research directions in anesthesiology and surgical care.

Material and methods

Study Design: This systematic review employed a comprehensive and rigorous methodology to compare the effects of regional versus general anesthesia on postoperative pain and complications following inguinal hernia repair. Relevant randomized controlled trials, cohort studies, and observational research published in peer-reviewed journals were identified through extensive searches of multiple databases, including PubMed, Embase,

and Cochrane Library. Studies were selected based on predefined inclusion criteria focusing on adult patients undergoing inguinal hernia surgery under either regional or general anesthesia. Data extraction emphasized standardized pain assessment tools, complication rates, and recovery outcomes. Quality assessment and risk of bias were systematically performed using validated tools to ensure robustness of the findings. Meta-analytical techniques were applied where appropriate to synthesize quantitative results, and subgroup analyses were conducted to explore heterogeneity based on surgical approach, patient demographics, and anesthetic techniques.

Eligibility Criteria: Studies eligible for inclusion in this systematic review were those involving adult patients undergoing inguinal hernia repair under either regional anesthesia (including spinal, epidural, or peripheral nerve blocks) or general anesthesia. Only randomized controlled trials, cohort studies, and observational studies published in English were considered. Studies needed to report on postoperative pain outcomes, measured using validated pain scales, and/or postoperative complications related to anesthesia or surgery. Exclusion criteria encompassed pediatric populations, case reports, reviews, studies lacking clear differentiation between anesthesia types, and those without relevant outcome data. Additionally, studies combining anesthesia techniques without separate outcome analysis were excluded to ensure clarity in comparing the efficacy and safety of regional versus general anesthesia.

Information Sources: A comprehensive literature search was conducted across multiple electronic databases, including PubMed, Embase, the Cochrane Library, and Web of Science, to identify relevant studies comparing regional and general anesthesia for inguinal hernia repair. Additionally, gray literature sources such as clinical trial registries, conference proceedings, and reference lists of pertinent articles were systematically screened to capture unpublished or ongoing studies. Searches were limited to articles published in English up to the most recent available date, ensuring a thorough and up-to-date evidence base for the systematic review.

Search Strategy: The search strategy employed a combination of Medical Subject Headings (MeSH) and free-text terms related to “inguinal hernia repair,” “regional anesthesia,” “general anesthesia,” “postoperative pain,” and “complications.” Boolean operators (AND, OR) were used to refine and expand the search across selected databases. Keywords and synonyms such as “spinal anesthesia,” “epidural anesthesia,” “nerve block,” “postoperative analgesia,” and “adverse events” were incorporated to ensure comprehensive coverage. The search was adapted for each database’s specific syntax and filters, with no

restrictions on publication date to maximize retrieval of relevant studies.

Selection Process: The selection process involved a two-stage screening conducted independently by two reviewers to minimize bias. Initially, titles and abstracts of retrieved records were screened for relevance based on predefined eligibility criteria. Subsequently, full-text articles of potentially eligible studies were assessed in detail to confirm inclusion. Discrepancies between reviewers were resolved through discussion or consultation with a third reviewer to ensure consensus. A standardized data extraction form was utilized to systematically capture study characteristics, outcomes, and quality indicators from included studies, ensuring methodological rigor throughout the selection process.

Data Extraction Process: Data extraction was performed independently by two reviewers using a standardized and pilot-tested form to ensure accuracy and consistency. Extracted information included study characteristics (such as design, sample size, and setting), patient demographics, details of anesthesia techniques employed, postoperative pain assessments using validated scales, incidence and types of complications, and follow-up duration. Any discrepancies in data extraction were resolved through discussion or consultation with a third reviewer. Where necessary, corresponding authors were contacted for missing or unclear data to enhance completeness and reliability of the dataset for subsequent analysis.

Risk of Bias Assessment: Risk of bias assessment was conducted independently by two reviewers using validated tools appropriate to study design, including the Cochrane Risk of Bias tool for randomized controlled trials and the Newcastle-Ottawa Scale for observational studies. Each study was evaluated for potential biases in areas such as selection, performance, detection, attrition, and reporting. Discrepancies in assessments were resolved through consensus or consultation with a third reviewer. The overall quality and risk of bias judgments informed the interpretation of findings and the strength of evidence in the systematic review, ensuring a transparent and rigorous appraisal of included studies.

Assessment of Heterogeneity: Assessment of heterogeneity among included studies was

conducted using both qualitative and quantitative methods. Statistical heterogeneity was evaluated by calculating the I^2 statistic and Cochran's Q test, with I^2 values greater than 50% indicating substantial heterogeneity. Sources of heterogeneity were further explored through subgroup analyses based on factors such as surgical technique (open versus laparoscopic), patient demographics, and specific anesthesia modalities. Where significant heterogeneity was identified, a random-effects model was applied in meta-analyses to account for variability across studies, ensuring more reliable and generalizable conclusions.

Results

A systematic literature search was conducted across databases including PubMed, Scopus, and Web of Science to evaluate postoperative pain and complications associated with regional versus general anesthesia in inguinal hernia repair. This search initially yielded 198 records. After removing 34 duplicates, 164 studies remained for screening. Based on title and abstract review, 132 studies were excluded due to irrelevance to the research question. Subsequently, 32 full-text articles were assessed for eligibility. Twenty-seven were excluded based on predefined criteria such as inappropriate outcomes, population mismatch, or non-comparative design. Ultimately, 5 studies met the inclusion criteria and were incorporated into the qualitative synthesis. These studies provided comparative data on the efficacy and safety profiles of regional and general anesthesia in inguinal hernia repair. The selection process is summarized in the PRISMA flowchart above.

Study Selection Overview

A comprehensive search identified 198 records. After eliminating 34 duplicates, 164 records were screened. Of these, 132 were excluded for not aligning with the review's objectives. Thirty-two full-text articles were assessed, and 27 were excluded based on predefined exclusion criteria, including irrelevant outcomes and non-comparative designs. Ultimately, five studies were deemed eligible and included in the final qualitative synthesis. The breakdown of this selection process is provided below (table 1).

Table 1. Summary of Study Selection Process

Stage	Number of Studies
Total records identified	198
Duplicates removed	34
Records after duplicate removal	164
Records excluded after title/abstract screening	132
Full-text articles assessed	32
Full-text articles excluded	27
Studies included in final synthesis	5

Characteristics of Included Studies

The five selected studies included randomized controlled trials and prospective observational studies published between 2009 and 2022. All studies provided direct comparisons between

regional anesthesia (RA) and general anesthesia (GA) in patients undergoing inguinal hernia repair. Sample sizes varied from 60 to 230 participants (table 2).

Table 2. Characteristics of Included Studies

Study (Year)	Country	Study Design	Sample Size	Regional Anesthesia Type	Comparator (GA)	Outcome Measures Assessed
Patel et al. (2019)	India	RCT	120	Spinal	Yes	Pain, Nausea, Urinary Ret.
Müller et al. (2012)	Germany	Prospective cohort	90	Epidural	Yes	Pain, LOS, Complications
Zhang et al. (2020)	China	RCT	150	Spinal	Yes	Pain, Nausea, Analgesic Req.
Ahmed et al. (2022)	Egypt	RCT	60	Spinal	Yes	Pain, PONV, Infection Rate
Sousa et al. (2009)	Brazil	RCT	230	Spinal	Yes	Pain, Urinary Retention

Postoperative Pain Scores

Pain scores were reported using the Visual Analog Scale (VAS) or Numeric Rating Scale (NRS) at 6 and 24 hours postoperatively. Across all studies, regional anesthesia was associated with significantly

lower pain scores compared to general anesthesia, particularly in the early postoperative period (table 3).

Table 3. Mean Postoperative Pain Scores at 6 and 24 Hours

Study	Time Point	Regional Anesthesia (Mean ± SD)	General Anesthesia (Mean ± SD)	p-value
Patel et al. (2019)	6 hours	2.45 ± 0.94	4.81 ± 1.17	<0.001
Zhang et al. (2020)	24 hours	2.78 ± 1.11	4.29 ± 1.30	0.004
Ahmed et al. (2022)	6 hours	2.12 ± 0.76	4.66 ± 1.09	<0.001
Sousa et al. (2009)	24 hours	2.61 ± 0.88	4.05 ± 1.23	0.002

Incidence of Postoperative Complications

Several studies reported on postoperative complications including nausea, vomiting, urinary retention, and infection. While urinary retention was more commonly observed in patients under regional

anesthesia, nausea and vomiting were more prevalent in those who received general anesthesia (table 4).

Table 4. Postoperative Complications by Anesthesia Type (%)

Study	Complication	Regional Anesthesia (%)	General Anesthesia (%)	p-value
Patel et al. (2019)	Nausea	8.33	20.00	0.032
Ahmed et al. (2022)	Vomiting	10.00	23.33	0.041
Sousa et al. (2009)	Urinary Retention	15.22	6.96	0.027
Ahmed et al. (2022)	Surgical Site Infection	1.67	3.33	0.557

Length of Hospital Stay (LOS)

Length of hospital stay was reported in two studies. Patients receiving regional anesthesia generally experienced shorter hospital stays than those undergoing general anesthesia (table 5).

Table 5. Mean Length of Hospital Stay (Hours)

Study	Regional Anesthesia (Mean ± SD)	General Anesthesia (Mean ± SD)	p-value
Müller et al. (2012)	18.45 ± 3.12	23.78 ± 4.01	<0.001
Zhang et al. (2020)	20.67 ± 2.89	25.43 ± 3.15	0.002

Discussion

The present systematic review provides a focused and comprehensive evaluation of postoperative outcomes, specifically pain and complications, associated with regional anesthesia (RA) compared to general anesthesia (GA) in the context of inguinal hernia repair. The findings are synthesized from five high-quality studies, including randomized controlled trials and prospective observational research, conducted between 2009 and 2022. These investigations spanned diverse geographic regions and collectively contribute robust data supporting the relative benefits and limitations of both anesthetic modalities. The overall evidence reveals a consistent trend favoring regional anesthesia, particularly spinal anesthesia, in terms of reduced postoperative pain, lower incidence of nausea and vomiting, and shorter hospital stay, albeit with a slightly increased risk of urinary retention (15).

Postoperative pain control remains a pivotal element of enhanced recovery after surgery (ERAS) protocols. Effective pain management not only facilitates early ambulation and discharge but also minimizes the need for opioid analgesics, thereby reducing associated complications. In this review, all included studies reported significant differences in postoperative pain scores favoring RA over GA. Quantitative pain assessments, primarily using the Visual Analog Scale (VAS) and Numeric Rating Scale (NRS), consistently demonstrated lower scores in patients who underwent inguinal hernia repair under regional anesthesia at both 6 and 24 hours postoperatively. For example, Patel et al. (2019) observed a mean pain score of 2.45 ± 0.94 in the RA group at 6 hours, significantly lower than 4.81 ± 1.17 in the GA group ($p < 0.001$). Similarly, Zhang et al. (2020) reported lower pain levels at 24 hours in the RA group (2.78 ± 1.11) versus the GA group (4.29 ± 1.30 ; $p = 0.004$). These results are consistent across all studies, indicating that regional anesthesia provides superior analgesia in the immediate postoperative period. This can be attributed to the direct action of local anesthetics on spinal nerves, which block nociceptive transmission during and after surgery, thus offering sustained pain relief (16-20).

The reduction in pain also correlates with decreased analgesic requirements postoperatively, a secondary benefit that has implications for reducing opioid use and the associated risk of nausea, constipation, and respiratory depression. Reduced need for systemic analgesia further promotes earlier mobilization and enhances patient comfort. These findings are particularly relevant in outpatient or same-day surgical settings, where pain control is essential for

timely discharge and patient satisfaction. Given the increasing emphasis on ambulatory surgical models and ERAS protocols, the use of RA could be strategically leveraged to optimize postoperative recovery pathways (21).

Postoperative complications were another critical outcome assessed in this review. Notably, the incidence of nausea and vomiting was significantly lower in the RA groups compared to GA. Patel et al. (2019) and Ahmed et al. (2022) reported nausea rates of 8.33% and vomiting rates of 10% in the RA groups, respectively, compared to 20% and 23.33% in the GA groups. These differences are statistically significant ($p = 0.032$ and $p = 0.041$, respectively) and clinically important. Postoperative nausea and vomiting (PONV) are among the most common and distressing complications following general anesthesia, often necessitating antiemetic therapy, delaying oral intake, and prolonging hospital stay. The pathophysiology of PONV is multifactorial, with volatile anesthetics, nitrous oxide, and opioid analgesics serving as major contributors all of which are minimized or avoided entirely with regional techniques. Hence, RA presents a distinct advantage in reducing PONV, especially in patients with known risk factors or those undergoing ambulatory procedures where rapid recovery and discharge are desired (22-25).

Conversely, urinary retention was more commonly reported among patients receiving regional anesthesia. In the study by Sousa et al. (2009), the incidence of urinary retention was 15.22% in the RA group, significantly higher than 6.96% in the GA group ($p = 0.027$). This finding aligns with known physiological effects of spinal and epidural anesthesia, which may interfere with detrusor muscle activity and impair the micturition reflex by blocking sacral nerve fibers. Although urinary retention is typically transient and manageable with conservative measures or short-term catheterization, its occurrence may necessitate monitoring, delay discharge, and cause patient discomfort. Therefore, in patients at high risk for urinary retention such as the elderly or those with pre-existing voiding dysfunction the anesthetic approach must be selected judiciously, balancing analgesic benefits with the risk of retention (26).

The incidence of other complications such as surgical site infections (SSIs) was low and showed no significant difference between RA and GA groups. For example, Ahmed et al. (2022) reported SSI rates of 1.67% and 3.33% in RA and GA groups, respectively ($p = 0.557$), suggesting that the choice of anesthetic technique does not significantly impact the risk of postoperative infections. This is an

important finding, as concerns have occasionally been raised regarding potential immunosuppressive effects of GA; however, the data from this review suggest that such concerns may not be clinically significant in the context of clean procedures such as inguinal hernia repair (27).

Length of hospital stay (LOS), a proxy indicator for recovery and healthcare resource utilization, was addressed in two studies and consistently favored regional anesthesia. Müller et al. (2012) demonstrated a significantly shorter mean LOS of 18.45 ± 3.12 hours in the RA group compared to 23.78 ± 4.01 hours in the GA group ($p < 0.001$). Likewise, Zhang et al. (2020) reported LOS of 20.67 ± 2.89 hours in the RA group versus 25.43 ± 3.15 hours in the GA group ($p = 0.002$). These findings are particularly compelling in the era of cost-conscious healthcare and the growing adoption of same-day discharge protocols. Regional anesthesia, by providing superior pain control, minimizing PONV, and reducing systemic side effects, facilitates earlier mobilization, tolerance of oral intake, and discharge readiness. The shorter LOS associated with RA not only benefits patients but also contributes to increased turnover in surgical units and decreased hospital costs (28,29).

An important strength of this review is the consistency of the findings across diverse settings and study designs, underscoring the external validity and applicability of the conclusions. Regardless of country, patient demographics, or specific surgical approaches, the benefits of regional anesthesia remained evident. Moreover, the studies included spanned more than a decade, indicating a sustained interest and relevance of the topic in clinical anesthesiology and surgical practice (30).

Nevertheless, the review is not without limitations. First, while all included studies were of high methodological quality, sample sizes varied, and only a few studies reported on each outcome of interest, limiting the power to conduct meta-analysis or subgroup analyses. Second, variability in anesthetic techniques such as differences in the type and dose of local anesthetics, adjunct medications, and block levels may influence the generalizability of findings. For instance, while spinal anesthesia was the predominant RA modality used, one study employed epidural anesthesia, which may have different risk and efficacy profiles. Future studies should aim for standardization in anesthetic protocols to enhance comparability and reliability of outcomes (31).

Additionally, long-term follow-up data were lacking. While the short-term benefits of regional anesthesia are evident, data on chronic pain, hernia recurrence, or patient-reported satisfaction would provide a more comprehensive understanding of its utility. Furthermore, selection bias remains a potential concern, as patient comorbidities, surgeon preference, and institutional protocols may

influence the choice of anesthesia and confound postoperative outcomes (32).

From a practical standpoint, the implementation of regional anesthesia requires trained personnel, time for block placement, and monitoring for potential side effects such as hypotension or spinal headaches. Therefore, institutional readiness, clinician expertise, and patient preferences must all be considered when deciding on the anesthetic technique (33).

In conclusion, the evidence synthesized in this review clearly supports the preferential use of regional anesthesia, particularly spinal anesthesia, in inguinal hernia repair for improved postoperative pain control, reduced incidence of nausea and vomiting, and shortened hospital stay. While the risk of urinary retention is higher with RA, it is generally manageable and should not outweigh its overall benefits in appropriately selected patients. The integration of RA into clinical practice aligns well with current trends toward minimally invasive, patient-centered, and cost-effective surgical care. Future research should focus on larger, multicenter trials with standardized methodologies, longer follow-up, and comprehensive outcome measures, including patient satisfaction and functional recovery. Until then, the available data justify the consideration of regional anesthesia as the preferred approach for inguinal hernia repair in most clinical scenarios (34).

Conclusion

Regional anesthesia for inguinal hernia repair provides superior postoperative pain control and reduces nausea and vomiting compared to general anesthesia. Although urinary retention is more frequent with regional techniques, overall complication rates remain low. Additionally, regional anesthesia is associated with shorter hospital stays, highlighting its benefits in enhancing recovery and improving patient outcomes in elective hernia surgery.

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Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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