

Original research article

EVALUATION OF LOCAL ANAESTHESIA VS SPINAL ANAESTHESIA FOR INGUINAL HERNIA REPAIR

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Abstract

Background and Objectives: In the previous century, the mere existence of a hernia was sufficient evidence to warrant surgical intervention in order to prevent the potentially fatal complications of obstruction and strangulation. The study's objective was to assess the efficacy and safety of inguinal hernia repair performed under locally administered ultrasound-guided anaesthesia.

Material and Methods: This study was conducted at Department of General Surgery, Government Medical College, Karimnagar, Telangana, India from May 2023 to October 2023. It comprised a total of 40 patients with inguinal hernia. Upon admission to the hospital, a comprehensive medical history was obtained and a meticulous clinical examination was conducted. Standard diagnostic procedures such as haemoglobin, total leucocyte count, differential leucocyte count, erythrocyte sedimentation rate, random blood sugar, renal function tests, chest X-ray, and EKG were performed for each case.

Results: Patients in group A were between the ages of 19 and 76, while those in group B were between the ages of 22 and 77. Forty patients participated in the study conducted by Song *et al.* The average age of the patients undergoing local anaesthesia surgery was 42±18 years, whereas the average age of the patients undergoing spinal anaesthesia surgery was 39±14 years. There were 37 men and 3 women among the patients. Our patients' ages and sexes were comparable to those in previous research. The current investigation found that 16 patients in group A and 20 patients in group B had indirect inguinal hernias. Nine patients in group A and five in group B had direct inguinal hernias. We found results that were very consistent with the other investigations.

Conclusion: This leads to a more rapid short-term recovery, a more rapid discharge, and fewer difficulties associated with anaesthesia. Perhaps it will one day be the norm when it comes to groyne hernia repairs.

Keywords: Local anaesthesia, spinal anaesthesia, inguinal hernia repair

Introduction

Hernias of the inguinal region are a frequent ailment that can affect people of any age and can affect both sexes. The risk of developing an inguinal hernia over the course of a lifetime is 27% for males and 3% for women. When a hernia was present, it was

already an indicator that surgical intervention was necessary in order to avoid the potential complications of obstruction and strangulation that could have occurred in the previous century. The wait-and-watch method for asymptomatic groyne hernias has recently been replaced with the immediate elective surgical approach, which is a departure from the previous stance ^[1, 2].

Hernia repair should have as its primary objective the restoration of normal anatomical relationships in the region, together with the elimination of fascial abnormalities that could act as a focal point for the imprisonment of abdominal contents ^[3].

Not only does the pre-operative work up for a patient who is going to undergo hermiorrhaphy depend on the patient's current medical state and different risk factors, but it also depends on the type of anaesthesia that will be administered. During the course of the procedure, the surgeon, the anesthesiologist, and the patient should have a conversation on the sort of anaesthesia that will be administered. The decision is heavily influenced by the preferences of both the surgeon and the patient with regard to the sort of anaesthesia that they would like to receive. For the purpose of this investigation, we have decided to perform hernia repair under local anaesthesia since, among all the techniques, it has the least impact on the function of other organ systems. This makes the process of selecting patients and performing pre-operative evaluations much simpler ^[4, 6].

It is possible to produce relatively long-lasting pain relief, low risks of cardiovascular instability and urinary retention in the post-operative period, and prompt resumption of unrestricted physical activity by the patient. These are some of the reasons why inguinal field block is used in groyne hernia repair. In addition to its simplicity and safety, the inguinal field block is also a great advantage of local anaesthesia. The safety of the patient and the provision of optimal working circumstances for the surgeon are the two most important considerations that should be taken into account when selecting an anaesthetic technique for a specific surgical procedure ^[7, 8].

This research was conducted with the purpose of determining whether or not inguinal hernia repair performed under ultrasound-guided local anaesthesia is both safe and successful. The purpose of this study is to evaluate the effectiveness of spinal anaesthesia against ultrasound-guided local anaesthesia for the treatment of inguinal hernias in terms of post-operative discomfort, complications, and length of hospital stay.

Material and Methods

This study was conducted at Department of General Surgery, Government Medical College, Karimnagar, Telangana, India from May 2023 to October 2023. It comprised a total of 40 patients with inguinal hernia. Upon admission to the hospital, a comprehensive medical history was obtained and a meticulous clinical examination was conducted. Standard diagnostic procedures such as haemoglobin, total leucocyte count, differential leucocyte count, erythrocyte sedimentation rate, random blood sugar, renal function tests, chest X-ray, and EKG were performed for each case.

Inclusion Criteria

- Hernia that is not recurring.
- People who are not obese

Exclusion Criteria

- Patients who have previously had an appendectomy or bilateral herniorrhaphy.
- Large hernia
- Groyne hernia different from inguinal hernia
- Patients who were anxious and wouldn't provide permission

Results

The age distribution of patients in group A spanned from 19 to 76 years, whereas in group B it ranged from 22 to 77 years. The research conducted by Song *et al.* involved a sample of 40 patients, with an average age of 42 ± 18 years in the group that received surgery with local anaesthesia and 39 ± 14 years in the group that received surgery with spinal anaesthesia. The number of male patients was 37, while the number of female patients was 3.

Table 1: Comparing ages

Sr. No.	Age	Group A	Group B
1.	Mean	45.23	41.32
2.	SD	14.31	13.133
3.	minimum age	19	22
4.	maximum age	76	77

Table 1 illustrates the age comparison between groups A and B. The age range of group A was observed to be from 19 to 76, whereas the age range of group B was observed to be from 22 to 77.

Table 2: Hernia classification

Sr. No.	Type of hernia	Group A	Group B
1.	Indirect Inguinal hernia	14	16
2.	Direct inguinal Hernia	6	4
	Total	20	20

Table 2 displays the specific hernia type observed in the current patient. The study found that both groups had the highest incidence of indirect hernia.

Table 3: Comparison of different aspects or features

Sr. No.	Side	Group A	Group B
1.	Right	16	15
2.	Left	04	05
	Total	20	20

The table number 3 indicates that the right side is most significantly impacted by the same type of disorders.

Table 4: Duration of surgical procedure

Sr. No.	Time taken for surgery in minutes	Group A	Group B
1.	20-30	4	0
2.	31-40	7	2
3.	41-50	6	2
4.	51-60	3	9
5.	61-70	0	2
6.	71-80	0	2
7.	81-90	0	3
	Total	20	20

Table 4 displays the duration of the procedure, with the highest time for both groups ranging from 30 to 60 minutes, and the shortest time ranging from 20 to 30 minutes.

Table 5: Surgical pain

Sr. No.	Pain felt during surgery using pain scale	Group A	Group B
1.	No pain	0	2
2.	Mild	16	8
3.	Moderate	2	8
4.	Severe	2	2
	Total	20	20

Patients in both groups experienced little pain during the entire surgical procedure, as indicated in Table 5.

Table 6: Postoperative doses

Sr. No.	No. of analgesic doses Post operatively	Group A	Group B
1.	0	0	0
2.	1	10	1
3.	2	2	4
4.	3	6	10
5.	4	0	0
6.	5	1	2
7.	6	1	3
	Total	20	20

Table 6 displays the post-operative doses administered, with a maximum of 2 and 3 doses provided for each group.

Discussion

The age and sex distribution of patients in our study was comparable to that observed in other investigations. In this study, group A consisted of 16 patients with indirect inguinal hernia, while group B consisted of 20 patients with the same condition. Group A had 9 patients with a direct form of inguinal hernia, while Group B had 5 patients with the same type of hernia. The findings of our study closely aligned with those of the other investigations. The current study observed that 17 patients in group A and 15 patients in group B were diagnosed with right-sided inguinal hernia. Group A had 8 patients with a left-sided hernia, while Group B had 10 individuals with the same condition. The findings of the current study were similar to those of previous studies conducted by other researchers. The right side of an inguinal hernia is more prevalent because the right testis descends later and there is a higher occurrence of a patent processus vaginalis on the right side^[9, 10].

The average duration of the surgical procedure was 42.8 ± 8.6 minutes in group A and 64.45 ± 13.7 minutes in group B, as seen in this study. The word "the" is a definite article used to indicate a specific noun or noun phrase. The findings of our investigation were consistent with those of other studies. Pain is the primary worry for patients undergoing surgery. While pain is commonly seen as the main sign of tissue damage, it does not always correspond to a clearly recognisable underlying injury. Pain perception is facilitated by sensory neurons and brain afferent pathways. In the current investigation, group A consisted of 17 individuals who experienced mild pain, whereas five patients reported experiencing moderate pain. In contrast, among group B, 11 patients experienced mild discomfort while 14 patients experienced considerable pain. The disparity is statistically significant. The findings of our investigation were analogous to those of earlier studies. The study conducted by Earle AS, involving 46 patients, revealed that 23 individuals reported experiencing mild pain, whereas the remaining 23 patients did not suffer any pain during the procedure of inguinal hernia repair under local anaesthesia^[10, 11].

A study conducted by Baskerville PA *et al.* involving 129 patients who underwent surgery under local anaesthesia revealed that 93% of the patients reported experiencing

no discomfort during the operation, whereas 7% reported feeling pain. The patient may experience pain during the surgery of a large hernia that is being operated on under local anaesthesia, particularly if dissection becomes challenging due to adhesions of the sac. In such cases, it may be necessary to switch from local anaesthesia to general anaesthesia. When administered by a skilled surgeon, local anaesthesia is highly tolerated by patients^[12, 13].

The cause of post-operative pain is mostly the result of tension applied to certain tissues, mainly the peritoneum, as well as insufficient pain relief, urine retention, and wound infection. The distribution of the regional nerves, including the ilio inguinal, ilio hypogastric, and genital branch of the genito nerve, adheres to the established pattern. It can be averted by carefully avoiding excessive manipulation of the nerves. The assessment of post-operative pain was conducted using a visual analogue scale. The postoperative pain was evaluated based on the amount of analgesics used^[14, 15].

In this study, 15 patients were confined indoors for 1 day in group A, while 9 patients were confined indoors in group B. Out of the 15 patients in group A, all of them returned to work within 7 days. However, the majority of patients in group B required more than 7 days to resume their normal activities or employment. In a study conducted by Teasdale *et al.*, it was observed that 103 patients experienced a more rapid recovery when local anaesthesia was used, in comparison to the use of general and spinal anaesthesia. The study conducted by Barkerville PA *et al.* demonstrated that 49 patients were able to resume normal activity by the third post-operative day, 78% of patients achieved this by the end of the first week, and 98% of patients achieved this by the end of the second week. The study conducted by Song D *et al.* discovered that the duration of discharge was shorter following local anaesthesia compared to general anaesthesia (208 minutes) and spinal anaesthesia. The reduction in the duration of time required for individuals to return to work was attributed to the active promotion of patients to promptly resume their work responsibilities. The lingering consequences of general and spinal anaesthesia, such as nausea, vomiting, sedation, and urine retention, lead to an extended duration of hospitalisation. Early mobility after local anaesthesia is responsible for the reduced occurrence of significant problems^[16, 17].

Inguinal hernia repair is a frequently performed surgical procedure that carries a minimal risk of mortality. The primary focus is on achieving low rates of recurrence and minimising consequences such as wound hematoma, wound infection, testicular discomfort swelling, urine retention, headache, and respiratory difficulties. The selection of anaesthetic and surgical approach is contingent upon achieving minimal rates of complications. In the current investigation, wound sepsis was observed in one patient from group A and three patients from group B. There were no occurrences of wound haematoma in either group of patients. No instances of mesh infection were reported. In the study conducted by Shulman AG *et al.*, it was found that there were no instances of mesh infection in 3019 patients of open tension-free mesh hernioplasty. The study conducted by Kark A E *et al.* found that there were no deaths, and the overall rate of sepsis was 0.9%. The research conducted by Gianetta *et al.* demonstrated that older individuals who underwent inguinal hernia surgery under local anaesthesia experienced a total of 3 wound infections^[18, 19].

The findings of our investigation were similar to those of the previous studies. In the current investigation, none of the patients in group A experienced urine retention, while

5 patients in group B developed urinary retention following the surgical procedure. Existing evidence from other hernia literature indicates that the occurrence of urine retention is least frequent when using local anaesthesia, as opposed to regional and spinal anaesthesia [20, 21]. The findings of the current investigation were consistent with those of previous studies conducted by Teasdale *et al.*, Young DV, Callesen *et al.*, and several others. The precise aetiology of high frequency urine retention in patients undergoing spinal anaesthesia is still unknown, but it is believed to be a result of prolonged inhibition of autonomic innervation to the bladder. Additionally, the patient's age and the amount of fluid administered may also be factors contributing to this. Implementing fluid restriction during surgery can minimise the likelihood of urine retention [22, 23].

The current study demonstrates that Lichtenstein's hernioplasty performed under local anaesthesia is a secure, uncomplicated, efficient, cost-effective procedure, with no instances of death, fewer post-operative complications, and prolonged post-operative pain relief. Undergoing inguinal hernia repair with local anaesthesia offers superior pain relief compared to spinal anaesthesia, as evidenced by the reduced need for analgesic medication in individuals who have local anaesthesia [22, 24].

Conclusion

The utilisation of the Lichtenstein tension-free hernioplasty technique under local anaesthesia has ushered in a new age in hernia surgery, eliminating the potential for significant complications. This process provides a very secure day care facility for adults and elderly individuals with debilitating illnesses. The treatment is both cost-effective and efficient, with economic advantages further amplified by its low morbidity, low recurrence rate, and quick recovery time. It leads to accelerated short-term recovery, quicker discharge, and reduced problems due to anaesthesia. In the future, this treatment may be regarded as the definitive method for repairing groin hernias.

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Conflict of Interest

None

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