Section: General Surgery

Original Research Article

COMPARATIVE STUDY OF UNCOMPLICATED INGUINAL HERNIA REPAIR UNDER LOCAL ANESTHESIA AND SPINAL ANESTHESIA

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ABSTRACT

Background: Advancements in techniques of anesthesia and operative technique have made inguinal hernia surgery an outpatient ambulatory operation with low recurrence rates and morbidity. Focus has shifted to other factors like, short term postoperative events, early ambulation, duration of hospital stay, early return to work and cost of the treatment. Apart from the surgical technique the type of anesthesia also has an impact on these parameters. Local anaesthesia has emerged as better alternative to spinal anaesthesia. The ease of using local anaesthesia tends to impart a faster learning curve for resident surgeons, reducing the dependence on a trained anesthetist, if proper patient selection is considered. **Materials and Methods:** This was a prospective study of 50 cases of unilateral inguinal hernioplasty. Patients were divided into 2 groups. Patients in group A were subjected to inguinal hernia mesh (lichtenstein) repair under local anaesthesia and Patients in group B were subjected to inguinal hernia mesh (lichtenstein) repair under spinal anaesthesia. After surgery comparative analysis of various relevant factors like average duration of surgical procedure, pain experienced during and in post operative period, post operative analgesic required, incidence of spinal headache and urinary retention, and number of admission Days was done. **Results:** The incidence of pain during surgery, in the immediate and late postoperative period was lower in the local anaesthesia group, with lesser need for analgesics. Absence of common complications after spinal anaesthesia viz post spinal headache and urinary retention facilitated decreased need of antibiotics, improved patient comfort and enabled early discharge. **Conclusion:** Local anaesthesia facilitates patient comfort favoring early ambulation and lesser postoperative complications, thereby decreasing the requirement of antibiotics and analgesics. Decreased drug use and shortened hospital stay enables early discharge, increasing productivity of patients and reduction in economic burden to patients or state medical services.

INTRODUCTION

Advancements in techniques of anesthesia and operative technique have made inguinal hernia surgery an outpatient ambulatory operation with low recurrence rates and morbidity. Given this success, quality of life and the avoidance of chronic pain have become the most important considerations in hernia repair.[1]

There is morphologic and biochemical evidence that adult male inguinal hernias are associated with altered collagen type I-to-type III ratio, Causing weakening of the fibro connective tissue of the groin. Thus, the need for prosthetic reinforcement of weakened abdominal wall tissue was recognized for inguinal hernia repair.[2]

Open tension free Lichtenstein hernioplasty is suitable for all adult patients of inguinal hernia irrespective of age, weight, general health, and the presence of concomitant medical problems, it carries fewer complications and has become the gold standard in open tension-free hernioplasties.[3]

Since introduction of tension free Lichtenstein hernioplasty recurrence (less than 1%) was not a problem in hernia surgery. Focus then shifted to other factors like, short term postoperative events, early ambulation, duration of hospital stay, early return to work and cost of the treatment. Apart from the

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surgical technique the type of anesthesia also has an impact on these parameters.

Open inguinal Lichtenstein hernioplasty can be performed under local, regional or general anesthesia. The aims of this study are to provide the data of a comparative study between inguinal hernioplasties done under local versus spinal anaesthesia.[4,5]

Like in any surgical procedure performed under spinal anaesthesia when hernioplasty is carried out under spinal anesthesia, some complications are expected. Common complications which follow the administration of spinal anaesthesia in immediate and post-operative periods are hypotension, nausea, vomiting, post dural puncture headache, and urinary retention.[6]

However, the incidence of complications is lower in case of local anaesthesia. Although a lot of literature and resources are available on different types of Hernia repair including use of different anesthesia, there is a lack of comparative study with regards to spinal anesthesia versus local anesthesia.[7,8]

This study aims to compare these two anesthetic modalities for use in Hernia Repair. Local anaesthesia use for inguinal hernia repair seems to be an understudied topic. The ease of using local anaesthesia tends to impart a faster learning curve for resident surgeons, reducing their dependence on a trained anesthetist, if proper patient selection is considered.

The open tension-free mesh hernioplasty, performed under local anesthesia, is a simple technique to learn and trained surgical residents are able to perform it without compromising the long-term outcome. The procedure is time tested, safe, economical, as well as quick and easy to perform. The procedure is suitable for smaller community-based, regional, and teaching hospitals, and it offers good immediate and long-term results.[9,10]

Present study was conducted to compare uncomplicated inguinal hernia repair under local anesthesia and spinal anesthesia.

MATERIALS AND METHODS

This was a prospective study of 50 cases of unilateral inguinal hernia, subjected to hernioplasty. Time frame to address the study was from December 2020 to June 2021. The study protocol was comprehensively communicated to each of the participant, and they were given autonomy to discontinue participation in the study at any juncture as per their preference. Patients meeting all the inclusion criteria were enrolled in the study. 50 patients were divided into 2 groups. Cases and controls were enrolled after applying inclusion and exclusion criteria. Patients were divided randomly into two groups of 25 each named Group A and Group B. Patients in group A were subjected to inguinal hernia mesh (lichtenstein's) repair under local anaesthesia and Patients in group B were subjected to inguinal hernia mesh (lichtenstein's) repair under spinal anaesthesia. A thorough clinical history was obtained, and a detailed clinical evaluation was carried out as per the standard proforma. The cases were evaluated through proper history taking, clinical examination, operative procedure and post operative follow ups.

Inclusion Criteria: Patients appraised within a hospital setting, presenting with unilateral inguinal hernia, and age 18 years or more with informed written consent participated in the study.

Exclusion Criteria: The various criteria for exclusion encompassed: 1. Bilateral Inguinal hernia, 2. Strangulated/ Incarcerated/ obstructed Inguinal Hernia, 3. Less than 18 years of age, 4. Patients with psychiatric illness.

Statistical Analysis: The gathered data was incorporated into an MS Excel spreadsheet and subsequently subjected to analysis through Student t-test and Chi- square test employing SPSS software.

RESULTS

Table 1: Average Duration of Surgery

Group A	Group B
30 to 75 minutes	45 to 90 minutes

p value < 0.05)

Table 2: Pain Experienced During Surgery

Pain scale	Group a	Group b
Negligible	8(32%)	7 (28%)
Mild	9(36%)	9(36%)
Moderate	7(28%)	8(32%)
Severe	1(4%)	1(4%)

p value < 0.05)

Table 3: Incidence of Spinal Headache and Urinary Retention After Surgery

	Group a	Group b
+	0	4 (16%)
Urine retention	0	5 (20%)

p value < 0.05)

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Table 4: Postoperative Analgesic Requirement

	Group a	Group b
2 doses after surgery	0	10 (40%)
3 doses after surgery	7 (28%)	11 (44%)
4 doses after surgery	5 (20%)	8 (32%)
5 doses after surgery	3 (12%)	6 (24%)
mean	3.04+/-1.03	3.8+/-0.8

p value < 0.05)

Table 5: Number of Admission Days

	Group a	Group b
1	8 (32%)	
2	15 (60%)	
3	2 (8%)	8 (32%)
4		13 (52%)
5		4 (16%)
mean	1.76+/-0.59	3.84+/-0.67

p value < 0.05)

DISCUSSION

The mean age was 62.88+/- 8.56 in group A: The youngest patient in group A was 48 years of age and the oldest was 76 years of age. In group B, the youngest patient was 52 years age, and the oldest patient was 80 years age, bringing the mean age to 65.32 +/- 7.71 in group B.

In group A, 13 (52%) patients had indirect inguinal hernia, and 12 (48%) patients had direct hernia. In group B, 16 (64%) patients had indirect inguinal hernia, and 9 patient (36%) had direct inguinal hernia. Incidence of right sided inguinal hernia was 12(48%) patients in group A and 14(56%) patients in group B. Around 13(52%) patients had left sided inguinal hernia in group A and 11(44%) patients in group B.

Duration of Operative Procedure: The time taken to complete the operative procedure, under local anaesthesia was from 30 minutes to 75 minutes while 45 to 90 minutes were required to complete the operative procedure, under spinal anaesthesia. The time required for the spinal anaesthesia was significantly higher. Local anaesthesia was a better choice (p value < 0.05) when the time taken for surgery is considered. The results of this study are very similar to other studies conducted by Saxena P, Saxena S,[3] when mean operative time was considered. Factors responsible for difference in operative time may be easy and fast administration of Local anaesthesia, while the procedure of administration of spinal anesthesia is longer.

Pain During Surgery: After the operative procedure was completed, and the patient was comfortable enough to respond, he was asked to grade the pain experienced during operation on numerical scale ranging from 1 to 10. Mild pain ranging from 1 to 3 on pain scale, moderate pain was 4 to 6 on pain scale while severe pain ranged from 7 to 10 on pain scale. The difference in pain experienced by patients perioperative as reported in numerical pain scale was insignificant in either group. Similar to our study Bharadwaj et al,[9] also did not find the intra-operative pain to be significantly different to spinal anaesthesia group.

Postoperative Analgesic Use: Mean analgesic dose received was statistically significantly less in group A patients- (3.04+/-1.03) as compared to group B patients (3.8+/-0.8) (P value < 0.05). Group A patients received less no of analgesic doses compared to group B patients. The post operative analgesic dose required was less because the local anaesthesia given during the surgery had long postoperative analgesic effect enabling early ambulation and prolonged painless post operative period. This also facilitated minimal physical and mental stress thereby reducing negative Neuro hormonal response. A study by Kark AE, Kurzer M, Waters KJ,[4] compared levels of proinflammatory markers in post-operative period and found the levels to be less when local anaesthesia is used as compared to spinal anaesthesia.

Postoperative Complications: Spinal headache and catheterization consequent to urinary retention after surgery (owing to autonomic blockade) after spinal anaesthesia, particularly in elderly patients significantly added to post operative discomfort. In addition to, catheterization discomfort also increases the likelihood of urethritis, and upper urinary tract infection which increases the need for preventive antibiotics prescription after surgery and which increases hospital stay, delays recovery and return to normal activities. Patients who received local anaesthesia had much less complications compared to spinal anaesthesia. Post op complications were significantly less in group A compared to group B. (p value < 0.05). These findings were consistent with works of Saxena P, Saxena S and Kark AE et al.[4,10]

Duration of Hospital Stay: Most patients in group A were discharged on the 2ndpost operative day (Mean-1.76 +/-0.59) whereas most patients in group B were discharged on the 4th post-operative day (3.84+/-0.67). The number of days of hospital stay was significantly less in group A when compared to group B. (p value < 0.05). The results of our study are very similar to other studies conducted by Saxena P et al and Besra S etal,[3,10] Side effects attributable to

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spinal anesthesia, like spinal headache and urinary retention in group B prolonged the hospital stay.

CONCLUSION

Taking into consideration the various merits of local anaesthesia over spinal anaesthesia for uncomplicated inguinal hernioplasty, use of local anaesthesia can be safely recommended as a viable and better alternative to spinal anaesthesia. Local anaesthesia facilitates patient comfort, favoring early ambulation and lesser postoperative complications, thereby decreasing the requirement of antibiotics and analgesics. Decreased drug use and shortened hospital stay enables early discharge, increasing productivity of patients and reduction in economic burden to patients or state medical services.

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