

## Local Anaesthesia versus Spinal Anaesthesia in Inguinal Hernia Surgery: A Comparative Study

Mirat Dholakia<sup>1</sup>, Navubha Sodha<sup>2</sup>, Harsh Anadkat<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Surgery, Gujarat Adani Institute of Medical Sciences, Bhuj, Kutch, Gujarat, India

<sup>2</sup>Associate Professor, Department of Anesthesia, Gujarat Adani Institute of Medical Sciences, Bhuj, Kutch, Gujarat, India

<sup>3</sup>MBBS, Government Medical College, Baroda, Gujarat, India

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Corresponding Author: Dr. Navubha Sodha

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### Abstract:

**Background and Aim:** Comparative studies on the recovery characteristics of local, general, and regional anaesthesia indicate that local anaesthesia is optimal for day care surgery. The objective of this study was to assess if using a local anesthetic approach is a viable substitute for spinal anaesthesia in hernia repair surgeries. This assessment focused on factors such as operating circumstances, satisfaction of both the patient and surgeon, postoperative pain management, and any potential consequences.

**Material and Methods:** The study was conducted in the surgical department, medical ward, and affiliated hospital. A total of twenty-three individuals were evenly divided between Group A and Group B. Group A had inguinal hernia mesh repairs under local anaesthesia, whereas group B received spinal anaesthesia. Group A received local anaesthesia with 2% xylocaine with adrenaline at a dosage of 4-6 mg/kg (n=60). Group B received spinal anaesthesia (SA) with a dosage of 0.3 mg/kg in adults and 0.4 mg/kg in children, using a 0.5% bupivacaine solution. The group consisted of 60 participants.

**Results:** Out of the 56 individuals who had spinal anaesthesia, none reported any discomfort (VAS = 0) during surgery. However, two cases each suffered mild and moderate pain. Regarding local anaesthesia, 12 cases reported no discomfort (VAS = 0), 16 cases experienced mild pain (VAS 1-3), 24 cases had moderate pain (VAS 4-6), and 8 cases suffered from severe pain (VAS >= 7).

**Conclusion:** Local anaesthesia is a viable and efficient approach for repairing inguinal hernias in adults. It is comparable to spinal anaesthesia in terms of patient satisfaction regarding factors such as surgery duration, post-operative pain, complications associated with spinal anaesthesia, recovery from anaesthesia (early post-operative ambulation), and length of hospital stay.

**Keywords:** Hospital Stay, Local Anesthesia, Spinal Anesthesia, VAS.

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### Introduction

Hernia is a prevalent surgical issue that necessitates proficient surgical expertise and a comprehensive understanding of anatomy and numerous hernia repair techniques. Hernia is the term used to describe the protrusion of a viscous substance or a portion of it through an irregular hole in the wall of a cavity in which it is normally confined. Inguinal hernias have an equal impact on individuals of all ages and genders. [1,2]

The lifetime incidence of inguinal hernia is 27% in males and 3% in women. A hernia was regarded as a surgical emergency in the previous century because of the potential danger of strangulation and blockage. Recently, there has been a change in the commonly accepted belief about asymptomatic groin hernias. It is now recommended to have

elective treatment as soon as feasible instead of adopting a wait-and-see approach. [3,4] Anaesthesia, whether general or spinal, remains the predominant kind of anaesthesia employed in India. Comparative studies examining the recuperation patterns of local, general, and regional anaesthesia demonstrate that local anaesthesia is optimal for ambulatory surgery.

Local anaesthesia offers enhanced patient safety, superior pain management after surgery, a quicker recovery period resulting in reduced hospitalization time, and decreased expenses. Therefore, local anaesthesia is a safe and appropriate approach for inguinal hernia repair. [5,6] Comparative studies on the recovery characteristics of local, general, and regional anaesthesia indicate that local anaesthesia

is optimal for day care surgery. The objective of this study was to assess if using a local anesthetic approach is a viable substitute for spinal anaesthesia in hernia repair surgeries. This assessment focused on factors such as operating circumstances, satisfaction of both the patient and surgeon, postoperative pain management, and any potential consequences.

### Materials and Methods

This study is a single-blind, prospective, randomized controlled experiment. The study was conducted in the surgical department, medical ward, and affiliated hospital. Prior to commencing the study, the institute's ethics committee was duly notified. The duration of the trial was 12 months. All patients were provided with comprehensive written information about the surgery and acquired signed consent from them.

The following instances were eliminated from the study: 1. Repeated occurrences of hernias 2. Hernias affecting both sides of the body. 3. Patient under the age of 20 4. Individuals suffering from ongoing skin infections Patient have a documented medical history of hypersensitive reactions to lignocaine or bupivacaine. 6. Hernias that cannot be reduced or imprisoned, causing obstruction or strangulation. Femoral hernias are a kind of hernia that occurs in the groin area. ASA grade 4 or above 9. When the patient does not provide consent for operation under the recommended anaesthesia.

Upon admission to the hospital, a comprehensive medical history and physical examination were performed. All patients had complete blood counts, differential leukocyte counts, total leukocyte counts, random blood sugar measures, renal function tests, chest X-rays, and electrocardiograms. There existed a documented record of each comprehension. A total of 120 individuals were evenly divided between Group A and Group B. Group A had inguinal hernia mesh repairs under local anaesthesia, whereas group B received spinal anaesthesia.

**Inclusion criteria:** Firstly, those who have not undergone a recent operation. 2. Absence of appendectomy 3. Non-obese patients

Through a process of simple randomization, the patients were placed into two distinct groups.

Group A received local anaesthesia with 2% xylocaine with adrenaline at a dosage of 4-6 mg/kg (n=60).

Group B received spinal anaesthesia (SA) with a dosage of 0.3 mg/kg in adults and 0.4 mg/kg in children, using a 0.5% bupivacaine solution. The group consisted of 60 participants.

The surgeon administered the local anaesthesia, while the anaesthetist administered the spinal

anaesthesia. The outcome of postoperative pain is evaluated using a pain scale at regular intervals following surgery. Patients were followed up on the 3rd and 7th postoperative days as outpatients. Subsequently, the patients were evaluated for the presence of wound infection, prolonged discomfort at the incision site, and any other potential complications.

The data was analyzed using SPSS version 20. The mean and standard deviation were utilized to quantify numerical variables such as age, pain score on a visual analogue scale, and hospital stay. A significance level of less than 0.05 was used to determine statistical significance.

### Results

The current investigation was conducted in the surgical department. A total of 120 patients were involved in the study throughout a one-year period. The objective of the study was to ascertain the results of local anaesthesia compared to spinal anaesthesia for mesh hernioplasty, specifically in relation to postoperative discomfort and duration of hospitalization. An analysis was conducted on the age distribution of two groups. In Group A, which received local anaesthesia, there were 10 patients between the ages of 21 and 25, 26 patients between the ages of 26 and 30, 30 patients between the ages of 31 and 35, and 16 patients between the ages of 36 and 40. In a separate cohort of patients who had spinal anaesthesia, there were 10 individuals aged between 21 and 25 years, 26 individuals aged between 26 and 30 years, 28 individuals aged between 31 and 35 years, and 18 individuals aged between 36 and 40 years.

The assessment of pain during surgery was conducted using the Visual Analogue Scale (VAS). Out of the 56 individuals who had spinal anaesthesia, none reported any discomfort (VAS = 0) during surgery. However, two cases each suffered mild and moderate pain.

Regarding local anaesthesia, 12 cases reported no discomfort (VAS = 0), 16 cases experienced mild pain (VAS 1-3), 24 cases had moderate pain (VAS 4-6), and 8 cases suffered from severe pain (VAS  $\geq$  7). After surgery, patients were administered a 75 milligramme intramuscular injection of Diclofenac every 12 hours. Pain levels were evaluated 24 and 48 hours following the procedure using the Visual Analogue Scale (VAS).

There was no discernible disparity in post-operative discomfort. The study also evaluated postoperative complications, finding that urine retention and headache were more prevalent in the spinal anaesthesia group compared to the local anaesthesia group.

**Table 1: Assessment of intra operative pain in the study**

VAS scale assessment	Group A (n = 60)	Group B (n = 60)
None	12	56
Mild	16	2
Moderate	24	2
Severe	8	0

### Discussion

Local anaesthesia is a suitable option for all adult inguinal hernia procedures that can be reduced. This method is secure, uncomplicated, efficient, and cost-effective, without any adverse effects after anaesthesia. The inguinal area, comprising the inguinal canal, the spermatic cord, and the surrounding soft tissue components, is innervated by three nerves - the iliohypogastric nerve, ilioinguinal nerve, and genitofemoral nerve. [6,7]

Several studies have shown that using local anaesthesia (LA) instead of general anaesthesia (GA) for the initial open inguinal hernia surgery leads to improved results. This encompasses a link with decreased occurrences of immediate problems, enhanced cost effectiveness, and faster recuperation as compared to individuals who undergo surgery under general anaesthesia.

Furthermore, several researches have evaluated the effectiveness of SA in relation to GA and LA. Although SA is linked to lower postoperative discomfort compared to GA, LA is still considered the best option due to its lower incidence of short-term problems such as urine retention and postoperative pain. [7,8]

In this study, post-operative pain was assessed at 24 hours and 48 hours following the surge using a visual analogue scale. Group A has a somewhat lower mean pain visual analogue score compared to group B. The findings of our study were consistent with previous research done by Song D et al, which demonstrated that patients who underwent surgery under local anaesthesia had lower VAS scores compared to those who underwent surgery under spinal anaesthesia. [9]

The current study revealed that Lichtenstein's hernioplasty performed under local anaesthesia is a secure, uncomplicated, efficient, cost-effective procedure with no reported deaths.

However, it is associated with a lengthy intraoperative duration and increased intraoperative discomfort. This was attributed to the choosing of a prolonged duration of hernia case.

### Conclusion

Local anaesthesia is a viable and efficient approach for repairing inguinal hernias in adults. It is comparable to spinal anaesthesia in terms of patient satisfaction regarding factors such as surgery duration, post-operative pain, complications associated with spinal anaesthesia, recovery from anaesthesia (early post-operative ambulation), and length of hospital stay.

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