
ORIGINAL ARTICLE

Comparison of Inguinal Hernia Repair Performed under Local and Spinal Anesthesia as A Day-Case Surgery

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ABSTRACT

Objectives: The objective of this study is to compare the frequency of inguinal hernia repair performed under local and spinal anesthesia as a day-case surgery.

Study Design: Randomized Controlled Trial

Setting: Surgical Unit-II, Sir Ganga Ram Hospital, Lahore

Subject and Methods: Hundred patients fulfilling the inclusion criteria were selected for study; they were divided into two groups by random number table. In group A hernia repair was done under spinal anesthesia and in group B repair was done under local anesthesia. Spinal anesthesia was given by anesthetist and local anesthesia was given by same team of surgeons. Mesh hernioplasty was performed in all the 100 patients. Patients were discharged when they were pain free {(Visual Analogue Scale (VAS<3))} and passed urine. Total time period from operation till the time of discharge was noted.

Results: In this study rate of day cases in inguinal hernia repair done under local anesthesia was 84 % (42 /50 patients discharged as day cases), while in spinal anesthesia was 68 % (34/50 discharged as day cases).

Conclusion: Inguinal hernia repair under local anesthesia is safe and feasible. It has shorter duration of hospital stay, lesser urinary complications and more post-operative analgesia resulting in elective inguinal hernia surgery as a day-case.

Key Words: Inguinal hernia, Anesthesia, Day-cases

INTRODUCTION

Surgery of inguinal hernias was mentioned in the literature of antiquity by Celcus during the first century AD. However, operation on an anatomic basis could be performed only after modern anatomy had been established during the 16th century. Open surgery for groin hernia has gone through many stages of development, including the ancient era (ancient times to the fifteenth century), the era of the start of herniology (fifteenth to seventeenth centuries), the anatomic era (seventeenth to nineteenth centuries), the era of repair under tension (nineteenth to mid-twentieth century), and the era of tensionless repair (mid-twentieth century to the present).¹

Five principles of modern hernia repair developed through these periods of development: antiseptic/aseptic hernia operation, high ligation of the sac, tightening of the internal ring, reconstruction of the posterior inguinal floor, and tensionless repair.²

Recently there has been revival in the use of local anesthesia technique for herniorrhaphy. Initially, field block was the mean of achieving local anesthesia; during last few years a simple infiltration technique has been used. The field block was more time consuming and required larger volumes of local anesthetic solution.³

Specialist hernia center and public hospitals with a dedicated hernia service (Plymouth hernia service) have achieved remarkable hernia results with use of local anesthesia and set standards for groin hernia surgery.

The Royal College of England guidelines on inguinal hernia repair in 1993 suggested that at least 30% of inguinal hernia repair should be performed as day-case procedure.⁴

Local anesthesia is the best to facilitate early recovery and discharge of the patient with an improved early pain relief, significantly reduced cost and preserved patient satisfaction.

Several retrospective and randomized controlled trials have shown that local anesthesia

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provides the best clinical and economic benefits to patients.⁵

Ambulatory surgery is one of the main procedures taken to contain costs of hospital stay. By the beginning of the twenty first century, more than 70% of all elective procedures in the United States are being performed on ambulatory basis. As post-operative pain is one of the main barriers for increasing the range of ambulatory procedures, its control is of prime importance. With loco-regional anesthesia, it is possible to treat any type of inguinal-femoral hernia, reducing the risks related to total anesthesia and the complications arising from bedrid.⁶ Excellent results were achieved especially in the elderly and high-risk patients like cardiopathic or those affected by respiratory and hepatorenal insufficiency with complete absence of mortality and morbidity. It was also found that local anesthesia is less detrimental to pulmonary function in hernia operations than spinal or general anesthesia.⁷

The objective of this prospective randomized study was to compare the frequency of inguinal hernia repair performed under local and spinal anesthesia as a day-case study.

MATERIAL AND METHODS

It was a randomized controlled trial. Research was conducted at Surgical Unit II, Sir Ganga Ram Hospital, Lahore. Sample size of hundred cases (50 each group) was calculated with 80% power of test, 1% margin of error and taking expected percentage of day-case rate, i.e. 82.6% vs. 42.6% under local and spinal anesthesia respectively for inguinal hernia repair. Patients were selected by Convenience, Non probability Sampling. The diagnosis was clinical. Inguinal swellings with positive cough impulse, clinically consistent with indirect inguinal hernia were included. Patients with swelling in inguinoscrotal region with positive

cough impulse; age eighteen years & above; male gender; direct and indirect inguinal hernia confirmed clinically; complete/incomplete inguinal hernias; unilateral inguinal hernia; patients with co-morbid conditions were included. Patients with strangulated hernia, recurrent hernia and those with bilateral inguinal hernia were excluded from study. Patients fulfilling the inclusion criteria were executed from out patient department. They were randomly allocated to two equal groups: A and B by using random number table. All cases included in the study were requested to sign an informed consent. For group: A, mesh hernioplasty was performed under spinal anesthesia. Spinal anesthesia was given by anesthetist. In group: B, mesh hernioplasty was performed under local anesthesia by same team of surgeons, using 2% lignocain solution. Patients were weighed preoperatively and maximum permissible volume of local anesthetic calculated. Resuscitation equipment was kept ready in case the patient develops a reaction to local anesthetic and a cannula was inserted into vein. It was explained to the patients that since the operation would be carried out under local anesthesia they would not feel pain but some sensation of touch and perhaps pulling would remain.

Patients were observed throughout the procedure by trained attendant. Pulse oximeter was attached. All patient were kept in ward and then discharged when they were pain free (VAS<3) and passed urine. Total time period from operation till the time of discharge was noted. All information was recorded in pre-designed proforma attached.

RESULTS

The demographic data of the two groups were very much similar. Most of the patients of both groups

Table 1: Age distribution in two groups

Age (Years)	Spinal Anesthesia (n = 50)		Local Anesthesia (n = 50)	
	Frequency	%	Frequency	%
< 20	3	6	4	8
20 – 30	18	36	19	38
31 – 40	14	28	14	28
41 – 50	12	24	9	18
51 – 60	3	6	3	6
> 60	0	0	1	2

Mean and Standard deviation

In group A (Spinal anesthesia) = 33.94 ± 10.43

In group B (Local anesthesia) = 34.36 ± 8.77

Table 2: Frequency of day-cases

Day cases	Local anesthesia (n=50)		Spinal Anesthesia (n=50)	
	Frequency	%	Frequency	%
Yes	42	84	34	68
No	8	16	16	32

were between 20 – 30 years of age. Mean age of Group: A was 33.94 and for Group: B was 34.36 as shown in table 1. There is no significant difference between two groups (p-value > 0.05)

In group A, inguinal hernia repair was performed under spinal anesthesia and number of day cases was 34(68%).In group B, inguinal hernia repair was performed under local anesthesia and number of day cases was 42(84%). There is significant difference in two groups (P-value<0.05). Results are shown in table 2.

DISCUSSION

Elective Inguinal hernia repair is one of the most common surgical procedures. The Lichtenstein's repair is most commonly used procedure mainly owing to ease of operation and because it provides a tension free reinforcement of the posterior abdominal wall of inguinal canal. The fundamental defect in inguinal hernias is in the posterior abdominal wall e.g. deficiency in transversals fascia. All repairs include strengthening of this layer. However the final outcome of inguinal hernia repair depends on the type of repair, experiences and skills of the surgeons and type of anesthesia used⁸.

This prospective study was conducted to compare the rate of day- cases for inguinal hernia repair in local and spinal anesthesia.

Inguinal hernias are also encountered in female, but in our inclusion criteria all the 100 patients were male. All patients in our study were 18 years and above. Mesh repair was done for repair of all the inguinal hernias in both groups.

Inguinal hernia repair can be performed under any form of anesthesia known in medicine. Patients with symptomatic hernias should be offered elective surgical repairs under local anesthetic infiltration, although general, local or epidural anesthesia can all be safely used. Current evidence supports the use of local infiltration anesthesia as it has shorter intra hospital recovery and less urinary morbidity. The shorter operating, convalescing and ambulating times, as well as early discharge make local anesthesia ideal anesthesia for day case surgery and also this is

the reason that more elderly and moribund patients can safely undergo repairs. It has also been shown to have considerable cost advantages over regional and general anesthesia⁹.

A recent systematic review argues that use of local anesthesia avoids the complications of general anesthesia and spinal anesthesia and enables more patients to go home on day of operation. Local anesthetic repairs are quicker, have fewer adverse affects on respiratory functions and cardiovascular system than both general and regional anesthesia, so can be safely used in patient with co-morbid condition. However local anesthetic repair is technically more demanding.

The increasing use of day-case surgery is in line with guidelines of the Royal College of Surgeons of England, which state that at least 30% of all hernia repairs should be performed as day case⁴. The UK wide day case rate was for inguinal hernia repairs in 2003 were around 20% .One reason for near to 100% day-case rates achieved by specialist hernia centre is employment of local anesthesia. Previous studies revealed that, in the UK, only 5 to 10 % of inguinal hernia undergoes surgery under local anesthesia with majority of cases being repaired under general anesthesia (60% to 70%) and regional anesthesia (10-20%). In this series, 64% of the hernias underwent surgery using local anesthesia and day cases of rate around 83 % was achieved while general anesthesia repairs resulted in 46% day case rate¹⁰.

In our study, rate of day-cases in local anesthesia was 84% (42 out of 50) and in spinal anesthesia was 68% (34 out of 50). In a study by Van Veen RN et al the need for overnight hospitalization (p=0.004) was less with local anesthesia as compare to spinal anesthesia¹¹. In a study by Yalcin S et al 113 out of 115 patient (98.26%) were discharged at postoperative 8th hour as day-cases¹².

In a study by Sanjy P et al in 2007 the day-case rates were significantly higher under local anesthesia (82.6%) compared to general anesthesia (42.6%)(P <0.05)¹³. In another study by Sanjy P et al in 2008 day cases were higher in

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local anesthesia group 69% than in spinal anesthesia 26%¹⁴. In another study by Sanjy P et al day cases achieved with consultant were 84% while with trainee were 69%¹⁵.

In a study by Khuram Niaz et al, rate of day cases in local anesthesia was 98% (1 out of 50 patients required over night stay) and in spinal anesthesia was 76% (12 out of 50 patients required hospitalization)¹⁶. In a study by Ainul Hadi et al 114 out of 135 patients were discharged on same day i.e rate of day cases was 85 %¹⁷.

We did not encounter any major intra-operative or post-operative complication. There was no cardiopulmonary cerebrovascular or thrombotic complication in both groups. Main limitation of this study was to convince the patient for surgery under local anesthesia as many patients were afraid of being operated when they are awake.

Results of our study are comparable with local and international studies. This is evident from our experience and these studies that the majority of inguinal hernia repairs can be done safely as day-cases under local anesthesia with good results.

CONCLUSION

Open repair of reducible inguinal hernia can be satisfactorily carried out under local anesthesia. It has obvious benefit in terms of costs, shorter duration of admission and reduced voiding difficulties. This procedure is feasible and safe and causes no post operative significant pain. It allows shorter duration of hospitalization and faster access to treatment so we advise younger doctors to perform inguinal hernia repair under local anesthesia so that burden on elective list could be lessen and more patient could get treatment.

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