

Comparison of Outcome of Local versus Spinal Anesthesia in Mesh Inguinal Hernioplasty with respect to pain and hospital stay

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ABSTRACT

Background: Hernia is a common surgical problem which requires good surgical skill as well as good knowledge about anatomy and various repair of hernia. Inguinal hernioplasty can be done under general anesthesia, spinal, or local anesthesia. The choice of anesthesia depends upon a variety of factors viz patient's acceptance, surgeon's wishes, safety, feasibility and cost etc. Recently there has been revival in the use of local anesthetic technique for hernioplasty.

Aim: To compare the outcome of local versus spinal anesthesia in mesh inguinal hernioplasty with respect to postoperative pain and hospital stay.

Study design: Quasi experimental study.

Place and duration of study: Dept. of West Surgical Ward, Mayo Hospital Lahore from October 1 2014 to March 30, 2015.

Methods: In this study of six months, a total of 82 patients (41 in each group) were observed by using 79% proportion of pain in local 7 and 99% proportion of pain in spinal 7.95% confidence level and 90% power of test under WHO software for sample size was determined. Moreover non probability sampling technique was used for sample collection. The inclusion criteria was all male patients with age more than 15 years having reducible inguinal hernia and patients with obstructed, recurrent, strangulated or contraindicated to spinal anesthesia were excluded.

Results: In this study, mean age in group A (local anesthesia) was thirty years with SD+6.47 and in group B (spinal anesthesia) was 31 years with SD+6.98. All patients in both groups were male. Pain score values postoperatively were found to be lower in local anesthesia as compared to spinal anesthesia. Duration of hospital stay was also less in patients operated under local anesthesia.

Conclusion: In local anesthesia, there is less postoperative pain so patient can be early mobilized and discharged along with less postoperative complications. Hence local anesthesia is safe and advantageous method to be applied in inguinal hernia repair for day care surgery.

Keywords: Mesh hernioplasty, pain, hospital stay, local anesthesia, spinal anesthesia

INTRODUCTION

Hernia is a common surgical problem which requires good surgical skill and good knowledge about anatomy and various repair of hernia¹. Protrusion of a viscus or its part through any abnormal opening in the wall of cavity in which it is contained is defined as hernia². Lichtenstein hernioplasty can be done under local, general or regional anesthesia^{1,2}. Elective inguinal herniorraphy is commonly performed surgery globally³. Tension free repair is the fundamental principle of hernia repair. The major advancement in hernia repair is the idea of tension free repair with prosthetic material and also more recently laparoscopic repair for hernia. Lichtenstein hernioplasty is effective, simple and easy to learn for

surgical residents and has low recurrence rate^{4,5}. There is minimum postoperative pain due to less tension on tissues⁶.

Spinal anesthesia has advantages of complete work up of the patient while it has disadvantages like postoperative monitoring, longer hospital stay, cardiovascular and urinary complication and is more expensive⁷.

Local anesthesia is cost effective, safer, rapid in onset, has less postoperative complications and helpful in decreasing the elective surgical list load. The other major benefit is postoperative pain relief as it has quick but long lasting effect⁷.

Under local anesthesia patient is fully awake and can walk just after the surgery that reduces the duration of hospital stay. Due to early ambulation post-operative convalescence period is reduced and many of the patients can assume their work early.

Local anesthesia especially in elderly and moribund patients can be preferred as it prevents the

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patients from systemic effects related with general and spinal anesthesia. Other major valuable aspect of local anesthesia is independency of surgeon from anesthetist. Disadvantages of local anesthesia are large doses may lead to toxicity and some sedation might be required during surgery for anxious patients⁸.

Lichtenstein hernioplasty performed under local anesthesia is a simple technique to be learnt and the trained surgical residents are able to perform it without compromising the patient care and long term outcome⁸.

A number of retrospective and randomized controlled trials shows that local anesthesia provide best clinical and economic benefits to the patients. The use of local anesthesia results in lower postoperative analgesic requirements, less micturition troubles and increase day case rates as compared to spinal anesthesia⁸.

This study was designed to compare local and spinal anesthesia for mesh hernioplasty with regard to postoperative pain and hospital stay to get the possible and real statistics in our department as there has been controversy in the statistics in the previous studies in this regard.

MATERIAL AND METHODS

This experimental study was carried out in the Dept. of West Surgical Ward, Mayo Hospital Lahore for a period of six months from October 01, 2014 to March 30, 2015.

In this study, a total of 82 patients (41 in each group) were observed by using 79% proportion of pain in local and 99% proportion of pain in spinal. 95% confidence level and 90% power of test under WHO software for sample size was determined. Moreover non probability sampling technique was used for sample collection. The inclusion criteria was all male patients with age more than 15 years having reducible inguinal hernia and patients with obstructed, recurrent, strangulated or contraindicated to spinal anesthesia were excluded.

The data from the patients was collected from the patients admitted to ward through outpatient department with history and clinical examination according to inclusion criteria. The data collection procedure was explained to each patient and informed and written consent was taken. Confidentiality of patient was maintained. Study was approved by hospital ethical committee. Patients were divided into two groups by lottery method. 41 patients in group A were operated under local anesthesia and rest of 41 under spinal anesthesia. The local anesthesia was given by the surgeon and the spinal anesthesia was given by the anesthetist.

Outcome in the form of postoperative pain through the pain scale assessed at 2, 4 and 8 hours after surgery and hospital stay in terms of hours starting from the time of incision to the time of discharge calculated. All this information was collected through a designed proforma.

Data was analyzed through SPSS version 20. Tables and graphs were used to express the variable. Mean and standard deviation were used to measure the numerical variables like age, pain score on visual analogue and hospital stay. Frequency and percentage was used to measure qualitative variables like operation. T test was used to test the significance of quantitative data. P value of <0.05 was considered significant.

RESULTS

This study was carried out in West Surgical Ward, Mayo Hospital Lahore in which a total of 82 patients (41 in each group) were included to determine the outcome of local versus spinal anesthesia for mesh hernioplasty in terms of postoperative pain and hospital stay. Age distribution among two groups was analyzed as in Group A (local anesthesia), 5(12%) patients were in age range 21-25 years, 13(32%) patients were in range 26-30 years, 15(37%) patients were in age range 31-35 years and 8(20%) patients were in age range 36-40 years. Mean age was 30 years with SD+6.47 whereas in other group of spinal anesthesia, only 5(12%) patients were in age range 21-25 years, 13(32%) patients were in age range 26-30 years, 14(34%) were in age range 31-35 years, 9(22%) were in age range of 36 to 40 years. Mean age was 30 years with SD +6.47 (Table 1).

Table 1: Age distribution

Age(years)	Group A	Group B	Total
21-25	5(12%)	5(12%)	12%
26-30	13(32%)	13(32%)	31%
31-35	15(37%)	14(34%)	36%
36-40	8(20%)	9(22%)	21%
Total	41	41	
Mean SD	30 yrs ±6.47	31 yrs ±6.98	

Status of pain among two groups was analyzed at 2, 4 and 8 hours postoperatively as in group A at 2 hours 30(73.2%) patients did not had pain while 12(26.8%) had pain score less than 3 and no patient had pain score more than 3 whereas in group B, 16(39%) patient did not had pain while 24(58.5%) patient had pain score of less than 3 and one (2.4%) patients had pain score more than 3.

After four hours, in group A 30(73.2%) patients did not had pain while 11(26.8%) had pain score less than 3. whereas in group B 13(31.7%) did not had

pain while 22(53.7%) had pain score <3 and 6(14.6%) patients had pain score of >3 . After 8 hours, in group A, 15(36.6%) patients did not have pain while 22(53.7%) had pain score <3 and 4(9.8%) had pain score >3 whereas in group B 13(31.7%) patients did not have pain while 23(56.1%) patient had pain score less than 3 and 5(12.4%) had pain score of >3 (as shown in table no 2.) patients having score >3 were given analgesia for pain relief concluding that local anesthesia has good postoperative pain control as compared to spinal anesthesia.

Table 2: Assessment of Pain Score

Time (hrs)	Anaesthesia	Pain score			P value
		No pain	<3	>3	
2	Local	73.2%	26.8%	0%	0.001
	Spinal	39%	58.5%	2.4%	
4	Local	73.2%	20.8%	0%	0.013
	Spinal	31.7%	53.7%	14.6%	
8	Local	36.6%	53.7%	9.8%	0.605
	spinal	31.7%	56.1%	12.2%	

Regarding hospital stay, after 8 hours of surgery in group A 38(87.8%) were fit to discharge after assessment while in group B, 27(65.9%) were discharged and after 12 hours 1(2.4%) patients remained admitted in group A while 10(24.4%) in group B. After 24 hours, all the patients in group A were discharged but 2(4.9%) patients from group B remained admitted due to some complications (Table 3).

Table 3: Duration of hospital stay

Duration (Hrs)		Anaesthesia		P value
		Local	Spinal	
8	Admitted	12.2	34.1	0.003
	Discharged	87.8	65.9	
12	Admitted	2.4	24.4	0.001
	Discharged	97.6	75.6	
24	Admitted	0	4.9	0.494
	Discharged	100	95.1	
48	Admitted	0	2.4	1
	Discharged	100	97.6	

DISCUSSION

Lichtenstein hernioplasty is gaining popularity these days due to less rate of recurrence and can be performed under local, spinal and general anesthesia. The incidence of postoperative pain, morbidity, hospital stay and cost is related to the type of anesthesia employed. This study is conducted to compare the two types of anesthesia with regard to pain control and duration of admission after surgery.

Local anesthesia requires simple training and is easy to infiltrate. In literature, the best safe approach to geriatric patient is to do hernioplasty using local anesthesia^{9,10,11}. All over UK, day case rate was 20%

for inguinal hernia repair in the year 2003. The main reason for achieving about 100 percent day case rates by specialist hernia centers is use of local anesthesia for hernioplasty¹².

Local anesthesia did not gain popularity because it does not shorten the operative time and surgeons are more comfortable with spinal or general anesthesia than local anesthesia so it is not in consistent with Royal College of Surgeons guidelines¹¹ which do not favor our study.

In a study done by Bahrooz et al¹³, local anesthesia was effective in 70% patients and spinal anesthesia in 65% patients underwent hernioplasty in terms of pain which favors our study.

Tuerkoy et al¹⁴ had also investigated the benefit of local anesthesia for hernia surgery. Kehlet also found decreased postoperative pain and analgesia usage in local anesthesia¹⁵. These findings are consistent with our study.

Results of a study done by Sanjay, 52% cases operated under local anesthesia had hospital stay of less than 1 day while the hospital stay was more than one day in 58% of the patients operated under spinal or general anesthesia¹⁶. In our study 80% of patients operated under local anesthesia had hospital stay of less than 12 hours while 75% of patients operated under spinal anesthesia had hospital stay of >12 hours.

Our study provides evidence of feasibility of local anesthesia in inguinal hernia repair and superior to spinal anesthesia. Some other studies also show that besides being cost effective, local anesthesia provides highly satisfactory intraoperative analgesia and less postoperative pain and hospital stay^{17, 18, 19, 20}.

CONCLUSION & RECOMMENDATIONS

The results of this study confirm that with the advantages of better postoperative pain relief, early mobilization and early discharge of patient from hospital, local anesthesia is safe and beneficial method to be applied in inguinal hernia repair for day care surgery.

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