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PATIENT SATISFACTION IN LICHTENSTEIN REPAIR UNDER LOCAL ANESTHESIA VS SPINAL ANESTHESIA: COMPARATIVE STUDY

General Surgery

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ABSTRACT

Background: Hernias are among the oldest known afflictions of human kind and elective inguinal hernia repair is commonly performed operation in general surgery. Lichtenstein mesh repair technique is widely used throughout the world. Hernioplasty done under spinal, general and local anesthesia, local anesthesia has some benefits like post operative pain relief,early ambulation, less urinary retention, shorter hospital stays and lesser costs. The condition of patient, surgeon's experience and technical factor also play a role in our Studies. Comparing the recovery profiles of local anaesthesia and spinal/general anesthesia show that local anaesthesia is alternative of spinal or general anaesthesia for day care surgery or medical unfit patient for general/spinal anesthesia. **Aims and objectives:** To assess and compare the intraoperative complication of inguinal Hernia repair like bradycardia, hypotension, and pain during surgery, nausea, vomiting and duration of surgery and to evaluate the post-operative complication like urinary retention, headache, seroma, hematoma, scrotaloedema, recurrences and operative time, intra and post operative pain in both groups. **Material and methods:** The current study designed a randomized clinical trial study based on our inclusion and exclusion criteria, 50 patients were randomly selected and were put into 2 equal groups (LA and SA groups). All hernia repairs were performed by Lichtenstein technique. The intra-operative complication, early postoperative complications, surgery time, hospitalization time and pain score (by Visual Analogue Scale (VAS)) were evaluated. **Results:** Intra-operative pain was higher in LA group than SA group whereas bradycardia and hypotension was higher in SA group. There was no difference in post-operative complication like seroma, scrotal oedema, haematoma, wound infection ($p>0.05$). Post-operative complications like urinary retention, headache was common in SA group **Conclusion:** It can be reliably concluded that local anaesthesia is a alternative effective method for inguinal hernia repair in adults comparable to spinal anaesthesia as far as patient satisfaction in terms of intra operative complications related to spinal anaesthesia ,post operative pain recovery from anaesthesia (early post operative ambulation), length of hospital stay are concerned , some drawbacks were also observed in local anaesthesia, which wasnot evident in spinal anaesthesia such as intra operative difficulties like, cauterization difficulty and increased muscletone.

KEYWORDS

Hernia, lichtenstein repair, Post-operative pain

INTRODUCTION

Inguinal hernias are one of the most common problems encountered by the surgeon accounting for about 10 – 12 % of all patients. Inguinal hernias out-number other varieties of hernia accounting for almost 78% of all hernias. Almost 90% are seen in male patients with rising incidence observed with advancing age. Studies suggest incidence of 11/10,000 in the age 16-24 years while 200/10,000 in older age group (75 years and above) causing morbidity in patients. [1,2]Anaesthetic procedures commonly performed world-wide, can be spinal/ epidural anesthesia and local anesthesia, depending upon the varieties of factors viz,patients' acceptance, safety, feasibility, surgeons wish and cost.[3,4] But patients' safety should be the paramount importance in choosing type of anaesthesia.

Lichtenstein mesh repair for inguinal hernias can be done as a day-case surgery under local anaesthesia, which is ideal for the elderly and medically fragile who is not fit for spinal or general anaesthesia. There is a low risk of morbidity and recurrence with this technique.[5] It reduces post-operative pain, facilitates early mobilization and early discharge, and reduces the risk of complications.[6] The choice of aesthetic approach for inguinal hernia repair is arbitrary because there is presently no consensus on the best surgical aesthetic strategy for ambulatory inguinal hernia repair. The use of a local aesthetic has boosted interests in inguinal hernia repair, allowing it to be performed as a day-case surgery. However, there is a dilemma regarding choice for better feasible anaesthetic technique (local anaesthesia versus spinal anaesthesia) for a setup where number of patients; outnumber availability of expertise and resources.

Spinal anaesthesia 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 expensive. Local anaesthesia is cost effective, safer, rapid in onset, has lesspostoperative complications and helpful in decreasing the elective surgical list load.

MATERIALAND METHODS

The current study is a prospective comparative study. Duration of the study was carried out between November 2021 to October 2022 (approximate 01 year). An informed written consent was obtained from all the subjects.This research was carried out at the Department of General Surgery,Sardar Patel Medical College, and Bikaner.50 patients (with >18 years of age) were included in study, who presented to surgical outdoor with clinical presentation of unilateral uncomplicated inguinal hernia. Patients were divided into two groups A and B randomly through lottery method. Patient in group A were operated under local anaesthesia and group B under spinal anaesthesia. Patient in group A were given mixture of 2 % lignocaine (15 ml) + 0.5% bupivacaine (15 ml) + distilled water (30ml). Intra-operative observation like bradycardia, hypotension, pain, nausea, vomiting and duration of surgery were assessed. Post operative parameters like urinary retention and pain at operative site were assessed.

InclusionCriteria

1. Allprimaryuncomplicatedinguinalherniapatients.
2. Age=/>18yearsirrespectiveofgender.

ExclusionCriteria

1. Irreducible/obstructedorstrangulatedinguinalhernias
2. Age<18 yearsof age.

3. Bilateralinguinalhernia.
4. Recurrentinguinalhernia
5. Patientwithpre-operativechronicpaincondition
6. Patientwithpsychiatriccondition.

Statistical Analysis

Detailed data of all subjects of case and control group were collected. After complete evaluation all findings were expressed in terms of Mean ± SD. Comparison between case group and control group was done using paired "t" test. All statistical analysis was done using SPSS software version 20.

RESULTS

It is observed that the two groups Group A (Local) and Group B (Spinal) were compared for the following hemodynamic parameters intra operatively.

Table 1 shows the oncomparingtheintra operative hemodynamic parameters, inthestudy2 (8%)patientsinGroupAand3 (12%) patients in Group B developedbradycardia. (p – value =0.637) In Group A, 1(4%) patient and 6 (24%) patients in Group B, developedhypotension. (p – value = 0.042) that is development of hypotension was seenmore in patients operated under spinal anaesthesia in our study. The pain feltduring surgery in this study was graded as no pain, mild, moderate, and severepain. InGroupA, 6(24%)patientswhereas0(0%) patientsin GroupB developed pain at operation site. The difference was statistically significant (p –value = 0.009) that is perception of pain during the surgery was seen more inpatientsoperatedunder localanaesthesiainourstudy.InthestudybyAnuragJain et al (2019) [7], they reported that Pain needing sedation (subjective),Hypotension and bradycardia was seen in 7.14%,1.43%and1.43%in LA group whereas 5.71%, 2.86% and 1.43% in SA group respectively. They did notfind significant difference in development of hypotension and bradycardia, butpain was more in LA group as compared to SA group and the difference wasstatisticallysignificant. TheresultsofAnurag Jainetal(2019)areinconcordancewithourstudy. [7] Regarding theintra operativecomplicationsresultsof our study were also comparable to other similar studies.[8] Similarly, Kehlet et al. [9] and Besra S et al (2019) [10].also found decreased post operative pain and analgesia usage in patients who underwent hernioplasty under spinal anaesthesia. These findings were consistent with our study. In the present study 3(12%) patients in GroupA patients who were operated under local anaesthesia, whereas 5 (20%) patientsin Group B who were operated under spinal anaesthesia developed nausea andvomiting. The difference was not statistically significant (p – value = 0.44) that is development of nausea and vomiting did not depend on the type of anaesthesia in our study. Anurag Jain et al (2019) and Besra S et al (2019) nausea and vomiting were comparable in both groups, which is consistent with our study.

Table 2observed in study the mean duration of surgery in Group A patientswho were operated under local anaesthesia was 62.80±10.71 minutes whereas the mean duration of surgery in Group B patients who were operated underspinal anaesthesia was 64.20±11.9 minutes. The difference was not foundstatistically significant (p – value = 0.665). We did not find any significantdifference between the duration of performing the surgery in local and spinalanaesthesiagroup. Besra Setal(2019). in their study reportedthatduration of operation for those put under local anaesthesia, i.e., the L groupwas62.5 (±17.8) minutes. While those in the Sgroupi.e.,givenspinalanaesthesia had a mean (±SD) duration of 51.1 (±21.5) mins and they found no statistically significant difference with p-value=0.212.This is in agreement with our study. Similar results were observed in study of AnuragJain et al (2019) who reported Median time taken to finish hernioplasty under local anaesthesia was 70.26 minutes (range 40-90 minutes) and mediantime taken to finish under spinal anaesthesia was 72.46 minutes ranging from46to94minutesdifference was not statistically significant (p-value>0.05).

In table 3, discusses thestudy 23 (92%) patients in Group A, whereas 0 (0%) patients in Group B who were operatedunder spinal anesthesia were able to ambulate at 1 hour post operatively. Thedifference was statistically significant(p–value=0.001)thatispatientsoperated under local anesthesia were ambulated early than patients operated underspinal. Inourstudy 3(12%) patientsin Group A, whereas 6(24%) patients in Group B who were complaint of having pain at the site of surgery at 2 hourspost operatively. The difference was not statistically significant (p – value =0.268) that is complaint of operation site pain did not depend on type of anesthesia in our study. In the present study 1 (4%) patients in Group A, whereas 6 (24%) patients in Group B who were developed headache in post operative period. The differencewas statistically significant (p–value =0.042) that is patients operated underspinalanesthesiagetheadachesmorefrequentlyascomparedtopatientsoperated under localanesthesia.

Table No. 4 observed that complication which were observedduring this studywasofmicturitiondifficulties,2 (8%) patients in Group A and 9 (32%) patientsin Group Bcomplaints of retention of urine in post operative period. The difference was statistically significant (p–value=0.017) that is patients operated under spinal anesthesia complaint more frequently about retention of urine as compared to patients operated under local anesthesia. Anurag Jain et al (2019), reported urinary problems in31 patients in thespinal anesthesia group compared to 2 in the local anesthesia group (p<0.05).Similar reports of high incidence of urinary retention after spinal anesthesiawere observed by some other authors. It is thought to be secondary to prolonged block of bladder Autonomicinnervations. It may be also related to age of the patient and volume of fluid received.

In table no. 5, showed that postoperativesurgical Complications were assessedby comparingdevelopment of seroma, scrotal edema, hematoma and wound infections in bothGroup A and Group B. We did not find any significant difference between the two groups. Similar results were also reported by other authors like Anurag Jainet al (2019)and BesraSetal(2019).

OBSERVATION TABLES

Table-1 Comparision Of Intra Operative Parameters Between Two Groups

Post Anesthesia parameters	Anesthesia				P – value
	Group A (Local)		Group B (Spinal)		
	No. of Patients	Percent	No. of Patients	Percent	
Bradycardia	2	8%	3	12%	0.637 (NS)
Hypotension	1	4%	6	24%	0.042 (S)
Pain	6	24%	0	0%	0.009 (S)
Nausea and Vomiting	3	12%	5	20%	0.44 (NS)

Table-2 Comparisionofdurationofsurgery Between Two Groups

Type ofAnesthesia	N	Mean (minutes)	Std. Deviation	Std.Error Mean	t - value	p - value
GroupA (Local)	25	62.80	10.712	2.142	0.436	0.665
GroupB (Spinal)	25	64.20	11.962	2.392		

Table-3 Comparision Of Parameters In Post operative period between Twogroups

	GroupA(Local)		GroupB(Spinal)		p -value
	No. of Patients	Percent	No. ofPatients	Percent	
Ambulation at 1hour	23	92%	0	0.0%	<0.001(HS)
Painat 2hr	3	12%	6	24%	0.268(NS)
Pain at 12hr	20	80%	22	88%	0.985 (NS)
Pain at 24hr	24	96%	24	96%	0.840 (NS)
Headache	1	4%	6	24%	0.042(S)

Table-4 Comparision Of Post Operative Retention Of Urine

	GroupA(Local)		GroupB(Spinal)		Significance
Retention ofUrine	No. ofCases	Percent	No. ofCases	Percent	Chi-square= 5.711, df = 1, p-value =.017
No	23	92%	16	68%	
Yes	2	8%	9	32%	

Table-5comparision Of Post Operative Complications Between Two Groups

	GroupA(Local)		GroupB(Spinal)		P-value
	Count	Percentage	Count	Percentage	
Seroma	3	12%	5	20%	0.440

ScrotalEdema	3	12%	4	16%	0.684
Haematoma	4	16%	2	8%	0.384
WoundInfection	2	8%	3	12%	0.637

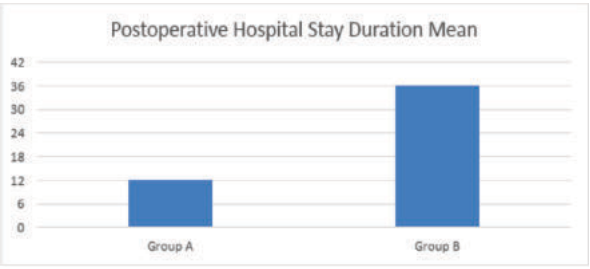

Chart 1:-comparision Of Post Operative Hospitalstay between two groups

DISCUSSION

This is a tertiary care teaching hospital based prospective study. We include total of 50 cases of Inguinal hernia out of which 25 patients were operatedunderLocal Anesthesia and25underSpinal Anesthesia. Inthe present study age of the patientranged from18 to 80yearswithmean age of 50.14±19.84 years.

Results of present study are more or less same regarding age, sex, type and side of inguinal hernia with the available literature [11]

We on the basis of our observations, support interpretation drawn by O'DwyerPJ et al., Kark AE et al., and Bernia R et al., regarding economic benefits which are enhanced by low morbidity, minimal need for catheter and lesser duration of recovery room and postoperative ward stay under local anaesthesia. [12,13,14]

Regarding duration of surgery and intra-operative complications results of our study were comparable to other studies.[15] However, relaxation at operative site is more in spinal anaesthesia, but time spent in the procedure of spinal anaesthesia have resulted in increased duration of operative room stay as compared to local anaesthesia; which is administered concomitantly along with the procedure.

In our study, the recovery from anaesthesia, in terms of ambulation after surgery, was significantly faster ($p < 0.05$) for the patients in the local anaesthesia group than those in the spinal anaesthesia group; however return to usual social and physical activities were similar in both groups after 24 hours. Our results are in accordance to conclusions drawn by Van Veen RN et al. and O Dwyer PJet al.[11,12] Similar reports of high incidence of urinary retention after spinal anaesthesia were observed by some other authors.[11] It is thought to be secondary to prolonged block of bladder autonomic innervations. It may be also related to age of the patient and volume of fluid received. Kark AE et al., in their study of 3175 primary inguinal hernia repairs using local anaesthesia, observed that there were no postoperative cases of urinary retention.[13]

In present study, mean postoperative hospital stay was less in local anaesthesia group (chart-I) which is in accordance to results obtained by Subramaniam P et al., Nordin P et al., and Goel A et al. [4,16,17]

Additional benefit in local anaesthesia is, as the abdominal muscles are not paralysed, the patient can be asked to cough intraoperatively which can help surgeon to identify a thin sac or a sliding hernia. Although pain sensation is blocked by the local anaesthesia, traction on peritoneum may be uncomfortable to patient. Large incarcerated hernias may prove unsuitable for local anesthesia.[12]

CONCLUSIONS

It can be reliably concluded that local anaesthesia is an alternative effective method for inguinal hernia repair in adults/high risk patient for general orspinal anaesthesia comparable to spinal anaesthesia as far as patient satisfaction in terms of intra operative complications related to spinal anaesthesia,postoperative pain,urinary retention, headache, recovery from anaesthesia (early postoperative ambulation), length of hospital stay are concerned, some drawbacks were also observed in local anaesthesia, which wasnot evident in spinal anaesthesia such as intra operative pain and difficulties like unclear anatomy, cauterization difficulty and increased muscle tone Therefore, local anaesthesia can be another good alternative for inguinal hernia repair as day care surgery especially for individual who cannot tolerate spinal anaesthesia, but it can't be confirmed that local anaesthesia is better than spinal anaesthesia.

Disclosure Statement

This study is investigator initiated. The authors declare that they have no competing/conflict of interests in relation to this article.

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Consent For Publication

- Not applicable.
- Ethics approval and consent to participate.
- The study protocol was approved by the medical ethics committee of the S.P. Medical College, Bikaner, Rajasthan(State), India.

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