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ORIGINAL ARTICLE

A PROSPECTIVE COMPARATIVE STUDY OF LOCAL ANESTHESIA VERSUS SPINAL ANESTHESIA FOR HERNIOPLASTY: A HOSPITAL BASED STUDY

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ABSTRACT:
Introduction: Hernia is a protusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity. Hernia repair is one of the most common procedure which is done by General Surgeon worldwide. **Materials & Methods:** Comparative study of total 100 patients (50 patients under local anesthesia and 50 patients under spinal anesthesia) upto a period of 60 days. All patients were male, age ranges from 18 to 80 years. The present study included male patients of uncomplicated inguinal hernia with American society of anesthesiologist (ASA) grade 1 to 3. **Results & Conclusion:** Patients operated under local anesthesia had less postoperative pain on day -0 (64%-P1, 38%-P2) compared to spinal anesthesia group (22%-P1, 72%-P2, 6%-P3). This difference was also significant on 1st post-operative day. (Local 92%-P1 and 38%-P2 compare to spinal 66%-P1 and 34%-P2). Hernioplasty under local anesthesia was an acceptable alternative to spinal anesthesia for hernioplasty especially with regard to operative condition, patient's surgeon's satisfaction, post-operative pain relief, complications and cost effectiveness.
Keywords: Local, Spinal, Anesthesia, Herioplasty

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INTRODUCTION:

Hernia is a common surgical problem which requires good surgical skill as well as good knowledge about anatomy and various repair of hernia. Hernia is a protrusion of a viscous of part of viscous through a normal or abnormal opening in the wall of its containing cavity Hernia word derived from Greek meaning an offshoot, a budding, or bulge.[1] The Latin word hernia means a rupture or tear. The external abdominal hernia is the most common form; the most frequent verities being the inguinal, femoral and the umbilical, accounting for 75 % of cases. The rarer form constitutes 1.5%, excluding incisional hernia.[2]

Inguinal hernia is one of important surgeries in worldwide operation rooms. The goal of all these surgeries is reducing recurrence, postoperative pain, and cost and find out the most reliable and valuable methods.[3] There are different types of anesthesia including local, spinal, and general anesthesia. However, there is no common consensus among surgeons regarding the best choice of anaesthesia. Several retrospective and randomised controlled trials have shown that local anaesthesia provides the best clinical and economic benefits to patients. In spite of this, the use of local anaesthesia for inguinal hernia repair in the UK is not a common practice.[4]

Inguinal hernia repairs consume an important part of health care resources because of the high incidence of the problem. It is estimated that 20 millions of inguinal hernia repairs are performed globally every year.[5] Every recurrence after a primary repair will add an extra cost to health care economics. Moreover, secondary or tertiary operations after previous repairs carry higher risk of re-recurrence and specific complications like testicular atrophy.[5]

The choice of anaesthesia and advantages of any one technique over another have been a subject of debate. Patient safety and the provision of optimum operating conditions for the surgeon are two main

criteria for choice of anaesthetic technique for inguinal hernia repair.[6] General and regional anaesthesia both have been reported to cause haemodynamic changes during induction and maintenance. Local anaesthesia has been found to be the best anaesthesia for inguinal hernia repair.[7]

However, general or spinal anaesthesia are still the most common types of anaesthesia being used in India and other developing countries.[8] Studies comparing the recovery profiles of local, general and regional anaestheisia show that local anesthesia is ideal for day care surgery. Local anaesthesia provides increased safety for patients, better postoperative pain control, shorter recovery period with reduced duration of hospital stay and reduced cost, hence local anaesthesia is acceptable and safe technique for inguinal hernia surgery. The aim of this prospective study was to compare the safety, effectiveness, post-operative complications and hospital stay in hernia surgery done under local anaesthesia versus spinal anaesthesia.

MATERIALS & METHODS

We have done comparative study of total 100 patients (50 patients under local anesthesia and 50 patients under spinal anesthesia) upto a period of 60 days. All patients were male, age ranges from 18 to 80 years. The present study included male patients of uncomplicated inguinal hernia with americal society of anesthesiologist (ASA) grade 1 to 3. Patient were selected without bias of type and extend. All patients were admitted for planned surgery; they were investigated and preanesthetic done. All patients were explained about the methods of anesthesia for hernioplasty and where divided into two groups as mentioned above. They were operated by various procedures according to indications.

Our inclusive criteria consisted of all patients ranged in age from 18-80 years old that experienced inguinal hernia and agreed to participate in this study. Exclusion criteria included: patient with ASA grade 4 or more, Pediatric age group, irreducible hernia, strangulated hernia, incarcerated hernia, recurrent hernia.

Spinal anesthesia was by 3 ml of 0.5% bupivacaine heavy using a 23 gauge spinal needle through the L3-L4 intervertebral space in the lateral decubitus position while the patient was lying on the same side as the hernia. Local anesthesia before giving the local anesthesia each patient was explained regarding the procedure and asked so say any time during procedure if he finds discomfort. In all patients, local anesthesia was given by surgeons. Anesthetic was kept stand by.

We collected the patients´ preoperative and postoperative data including age, gender, site of hernia, body mass index (BMI), surgery time, patients´ pain intensity at the 3, 6, 12, and 24 hour periods after surgery by a visual analogue pain score (VAS), dose of analgesic, any early complications such as urinary retention, hematoma, infection and hospitalization time. To assess pain severity, we asked patients to rate their pain from 1 to 100 and the results were recorded as VAS values. 0 – no pain, 1-3: mild pain, 4-6: moderate pain, 7-10: severe pain.

RESULTS:

We have the study of total 100 hernioplasty, 50 under spinal anesthesia and 50 under local anesthesia and obtained following results. In this study, we did operated 10 cases of bilateral hernia under spinal anesthesia and 15 cases of bilateral hernia under local anesthesia. We have considered all these patients as single patients and complain on either side considered as positive findings. Patients characteristics were as per in table 1.

In all the patients operated under spinal anesthesia we didn't find any per operative difficulty regarding anesthesia. In local anesthesia group, 10 (20%) patients had intraoperative discomfort in form of pain as per table - 2. These patients were managed according to our protocols those mention previously.Per operative discomfort was more in age group 20-39, compare to 40-80 age groups (22.7% in 20-49 and 10.7% in 50-89). Patients operated under local anesthesia had less post-operative pain compare to spinal group. 64% of patients of local had mild pain and 38% had moderate pain. None of the patients belonged to serve pain group. In spinal anesthesia 6% of patient had serve pain, 22% patients had mild pain and 72% patients had moderate degree of pain as per table -3.

Patients operated under local anesthesia were mobilized immediately. Three patients of spinal anesthesia group had retention of urine, simple red rubber catheterization done and bladder empties, later they can pass urine themselves as per Table – 4.

Local anesthesia is associated with less post-operative complications; in our study no patient developed complication like nausea, vomiting, urinary retention, or head ache. Patients operated

under local anesthesia had less postoperative pain on day -0 (64%-P1, 38%-P2) compared to spinal anesthesia group (22%-P1, 72%-P2, 6%-P3). This difference was also significant on 1st post-operative day. (Local 92%-P1 and 38%-P2 compare to spinal 66%-P1 and 34%-P2) as per Table-5. On day 15th, 30th, 60th there was no significant difference in pain score in both the group of the patients. Local anesthesia was cost effective than spinal anesthesia.

Table 1: Patients' Characteristics

Characteristics	LA (n=50)	SA (n=50)
Mean age (years)	45	60
Mean body weight (kg)	65	70
ASA Grade	24 (54%)	39 (78%)
I	18 (38%)	10 (20%)
II	8 (6%)	1 (2%)
III		

Table-2: Operative condition, intra-operative discomfort and satisfaction with anesthesia.

Variables (No. and %)	LA (n=50)	SA (n=50)
Operative condition		
Excellent/Good/Poor	45/4/1	50
Intra-operative pain	10	0
Satisfaction with anesthesia (Satisfy/Not satisfy)	40/10	50/0
Surgeon	42/8	50/0
Patients		

Table-3: Post-operative pain (1st 24 hours)

Grade	LA (N=50)	SA (N=50)
P0	**0**	**0**
P1	**30**	**12**
P2	**20**	**30**
P3	**0**	**8**

Table 4:- Activities after 6 hours of surgery

Activities	LA	SA
Ambulation	**40**	**30**
Oral Intake	**50**	**50**
Passing Urine	**50**	**47**

Table 5:- Post-operative pains in follow-up period from 0 to 60 days

Post operative day	Local (n=50)				Spinal (n=50)			
	P0	P1	P2	P3	P0	P1	P2	P3
0	**0**	**30**	**20**	**0**	**0**	**10**	**40**	**0**
1	**0**	**40**	**10**	**0**	**0**	**35**	**15**	**0**
2	**33**	**17**	**0**	**0**	**8**	**42**	**0**	**0**
7	**38**	**12**	**0**	**0**	**25**	**25**	**0**	**0**
15	**42**	**8**	**0**	**0**	**35**	**15**	**0**	**0**
30	**46**	**4**	**0**	**0**	**45**	**5**	**0**	**0**
60	**48**	**2**	**0**	**0**	**48**	**2**	**0**	**0**

DISCUSSION:

Hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity. The earliest records of inguinal hernia dates back to approximately 1500 BC. The term hernia derives from the greek word meaning an offshoot, a budding or bulge.[9] The latin word hernia means a rupture or tear. Although a hernia can occur at various sites in the body, these most commonly involve the abdominal wall, particularly the inguinal region abdominal wall hernias occur only at sites where the aponeurosis and fascia are not covered by striated muscle.[10] The concentration of lidocaine used for inguinal hernia repair usually varies between 0.5% and 2%, and may be combined with other local anaesthetics or epinephrine. High-dose lidocaine is acceptable in situations where only a small volume is required (such as dentistry) but may lead to overdose in more complex procedures such as goitre or hernia repair;[11] a problem compounded by the increased toxicity of lidocaine in the presence of other local anaesthetics (e.g. bupivacaine) or epinephrine. The current study used low concentrations of lidocaine (0.25%–0.5%) for hernia repair under local infiltration anaesthesia. All patients successfully completed surgery, with none requiring conversion, sedation or analgesia, and no cases of cardiovascular or central nervous system toxicity. Herniorrhaphy/hernioplasty under local anaesthesia has proved to be safe and easy to perform. It eliminates the common complications often encountered after general or regional (Spinal, epidural) anaesthesia, and reduces the cost to about 20 percent of that incurred by hospitalized patients who undergo the operation with general or regional (Spinal, epidural) anaesthesia.[9] In the modern era of repair various techniques are used like pure tissue repair, dam repair, mesh repair and laproscopic hernia repair. Now a days hernia repair is becoming "tensionless & sutureless" operation. Lichenstein tension free inguinal hernia repair is one of the most common procedure which is used by general surgeons for hernia repair which takes in to account to strengthen the posterior wall by mesh, without disturbing the anatomy of inguinal canal.[12]

In study of study done at Royal Collage of Surgeon of England by P Sanjay and A Woodward incidence of chronic groin pain is 27.6% the majority of the patients complained of very mild chronic groin pain (78.6%) Study by Hedef Ozgun et al., also mentioned that there was no difference in the time taken to return to normal activities, work.[2] Study of Hedef Ozgun, et al Adnan Menderes Hospital, Aydin, Turkey also shows that at 24 hours the local anesthetic group had lower pain score than the spinal group (p=0.02) and local anesthetic group had 26 Diclofenac injection and spinal anesthetic group had 35. In a study done by Uma Srivastva et al. also mention in their study majority of patients in local anesthetic group were able to walk, take oral and passed urine by 6hrs after the surgery.[2]

CONCLUSION:

Hernioplasty under local anesthesia was an acceptable alternative to spinal anesthesia for hernioplasty especially with regard to operative condition, patient's surgeon's satisfaction, post-operative pain relief, complications and cost effectiveness.

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