

## Original Article

## OUTCOMES OF INGUINAL HERNIA REPAIR UNDER LOCAL ANESTHESIA

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**Objective:** To evaluate the outcomes of inguinal hernia repair under local anesthesia in terms of post-operative wound pain and post-operative hospital stay.

**Methods:** This study included all 140 consecutive adult patients who were fulfilling the inclusion criteria and treated with surgery for an inguinal hernia under local anesthesia by using the Lichtenstein open mesh hernioplasty technique between 24 December 2014 to 24 June 2015. The primary endpoint was the early post-operative pain and the objectivity of pain was assessed by visual analogue scale (VAS) 6 hours post-operatively and the secondary endpoint was the hospitals stay measured in hours.

**Results:** There were no post-operative deaths and no major systemic complications. In our study, out of 140 Patients, all were male (100%) with their mean age of 41.44, SD  $\pm$ 12.75 years. 80 patients (57.2%) were having right sided unilateral inguinal hernias while 60 patients (42.8%) having left sided unilateral inguinal hernias while 30 patients (21.42%) were diagnosed as having direct inguinal hernias while 110 patients (78.58%) were having indirect inguinal hernias, Mean VAS score at 6 hours post-operatively was noted as 2.36, SD  $\pm$ 1.04 with maximum VAS pain score 5 and minimum score was 1, after 6 hrs of surgery, while the mean hospital stay in all the patients post-operatively was found to be as 6.36 hours, SD  $\pm$ 0.59 hours.

**Conclusions:** Lichtenstein open tension free mesh hernioplasty under local anesthesia is safe, feasible and effective technique. With this approach, there is reduced early post-operative pain and the hospital stay.

**Keywords:** lichen steins, open, tension free, mesh plasty (mesh hernioplasty).

### Introduction

An Inguinal hernia is protrusion of abdominal cavity contents through the inguinal canal. Inguinal hernia is a common surgical problem and is one of the most common surgical procedures performed worldwide. It can be repaired by several methods but LICHENSTEIN open tension free mesh hernioplasty is the most frequently used technique and is considered to be Gold standard by American College of Surgeons.<sup>1</sup> Hernia repair by general surgery accounts for the 10-15% of all surgical procedures because of its high incidence worldwide.<sup>2</sup> High-quality surgical procedures, with least postoperative pain early discharge from hospital with reliable long term results and early return to occupation are the parameters that should be considered for inguinal hernia repair.

Anesthetic techniques recommended for inguinal hernia repair are general, regional (epidural or spinal) paravertebral block and local anesthesia. Open repair like Lichenstein repair under local anesthesia is safe, cost effective and results in good success rates.<sup>3-5</sup> Local anesthesia is gaining importance with its associated low peri-operative and post-operative risks like reducing post-

operative nausea and pain and early return to normal social activities.<sup>6-8</sup> Local anesthesia is generally preferred because of its quick and safe induction with excellent outcomes and reduction in intervals between operations in operating theater.<sup>9</sup> Many patients specifically request local anesthesia due to short hospital stay. Benefits of local anesthesia are that test to repair can be performed by communicating with the patient. Patient remains ambulant throughout the procedure which may increase morale of the patient and subsequently his/her short hospital stay.

Local anesthesia is gaining ground and due to its safer induction, excellent outcomes, reduced risk of cardiopulmonary complications. It may become the anesthesia of the choice with growing awareness and advantages that it offers.<sup>9</sup> So there is a need to emphasis on the role and possible benefits and drawbacks of local anesthesia for inguinal hernia.

During literature review there was a great variability of results. According to one study conducted in 2012, it was observed that 28.70% patient developed wound pain and post-operative hospital stay was 27.27 $\pm$ 9.91 hours (about 1 day) after hernia repair under local anesthesia. But in another study conducted in 2014,

inguinal hernia repair under local anesthesia was performed on 25 patients, they observed 92% patients experiencing wound pain and mean hospital stay was  $1.76 \pm 1.2$  days (>24 hours).

The rationale of study was to evaluate the outcomes of Inguinal hernia repair under local anesthesia in terms of post-operative pain and hospital stay in our local population as better outcome may help us to adopt local anesthesia for inguinal hernia repair over general anesthesia as General Anaesthesia is associated with risk in patients with comorbidities, and spinal anesthesia is mostly refused by patients due to post-operative backache and headache complications.

Despite various studies published in foreign literature, in Pakistan for multiple reasons, there was still a lack of significant data to support local anesthesia. The aim was to assess outcomes of inguinal hernia repair under local anesthesia in our population to avoid harmful effects of general anesthesia and spinal anesthesia in our population and providing cost effective means of surgery to non-affording patients. It will also be beneficial for patients not fit for general and spinal anesthesia, and for generating base line data to encourage further studies in the field of inguinal hernia repair.

### Methods

This Quasi experimental trial was conducted at Department of Surgery, Services hospital, Lahore for 6 Months i.e. from 25th December 2014 to 24th June 2015. Sample size of 140 cases is calculated with 95% confidence level, 7.5% margin of error and tasking expected percentage of wound pain i.e. 28.70% in patients underwent inguinal hernia repair under local anesthesia. Non-probability, consecutive sampling was used in recruit the patients. Males of age between 18 to 60 years with Unilateral, Direct or Indirect, reducible inguinal hernia (assessed on clinical examinations and ultrasound) were included who underwent elective surgery.

General contraindications to surgery e.g. coagulopathy (PT>20sec, aPTT>30sec), and ascites, diabetic (BSR>186mg/dl), hypertensive (Bp $\geq$ 140/90mmHg) mental disturbance, obstructed, Incarcerated or Irreducible inguinal hernia, conversion to any other form of anesthesia due to failure of local anesthesia were excluded from the study. Informed consent was taken. A demographic data like name, age, gender and contact were recorded. Then patients underwent inguinal hernia repair under local anesthesia. (Inj

Xylocain & Inj. Bupicane) Intramuscular injections of Diclofenac Sodium BID was used as a routine analgesia. A single surgical team operated all the patients to control bias. Patients were shifted to ward and were followed-up there. Outcomes were defined as post-operative pain and post-operative hospital stay. Post-Operative pain using visual analogue scale was assessed.

If patient complaint of pain on surgical site, then post-operative wound pain was labeled (assessed by Visual analogue scale (VAS) ranging from 0-10 score with 0 suggestive of no pain and 10 suggestive of severe pain after 6 hours of surgery.) Patient was discharged after he returned to daily routine activities. Duration of hospital stay was noted (considered in hours from time after operation till discharge from hospital, on oral medications).

Data was collected on Performa. The collected data was entered and analyzed accordingly using SPSS 17.0. The mean and standard deviation was calculated for age, pain score and hospital stay. Frequency and percentage were calculated for post-operative wound pain.

### Results

A sample of 140 consecutive patients with mean age of  $42.99 \pm 15.32$ . Out of 140 patients, 80 patients (57.2%) had right sided unilateral inguinal hernias while 60 patients (42.8%) had left sided unilateral inguinal hernias.

There were 30 patients (21.42%) with direct inguinal hernias while 110 patients (78.58%) had indirect inguinal hernias. **(Table-1)**

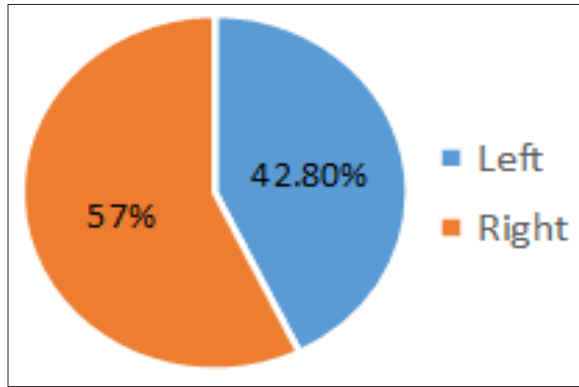
The mean pain score of patients was  $2.36 \pm 1.05$  and 25 (17.9%) patients had pain  $\geq 4$ . The mean hospital stay was  $6.36 \pm 0.59$  hours. **(Table-2)**

**Table-1:** Baseline characteristics of patients.

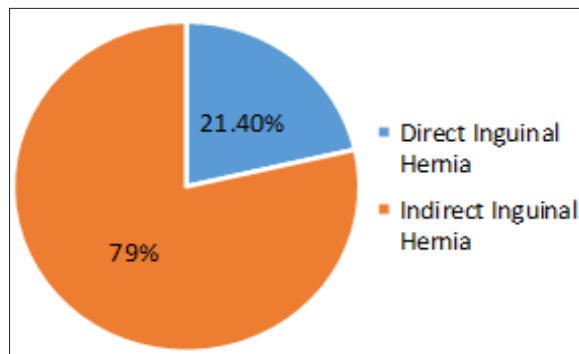
Baseline characteristics of patients	41.44±12.75
<b>Laterality</b>	
Left	60 (42.8%)
Right	80 (57.2%)
Obesity	21 (17.2%)
<b>Type of inguinal hernias</b>	
Direct inguinal hernia	30 (21.4%)
Indirect inguinal hernia	110 (78.6%)

**Table-2:** Outcome of treatment.

Outecome	Mean±SD
VAS Score	2.36±1.05
Pain (VAS=4)	25 (17.9%)
Hospital stay (hours)	6.36±0.59



**Fig-1:** Laterality.



**Fig-2:** Type of inguinal hernia.

### Discussion

Since Bassini's (1844-1924) period various methods of inguinal hernia repair have been discussed for better results. The ideal method of hernia repair is one that cause minimal discomfort to the patient during and after the surgery. It should be technically simple, and would have a low rate of complications and recurrence.<sup>10</sup> The Shouldice method remained acceptable for several years with a recurrence rate of 01 to 06 %. Inguinal hernia repair performed by suturing and displacement of anatomical structures may lead to excessive tension on the suture line and surrounding tissues, resulting in recurrence. The use of prosthetic mesh allows tension free repair of inguinal hernia with better results.<sup>11</sup>

The prevalence of inguinal hernia is high in old and middle age.<sup>12</sup> Most of the elderly patients having inguinal hernia also have some concomitant disease (cardiac, pulmonary and diabetes) that increases the surgical risk.<sup>13</sup> Cardiovascular, pulmonary and urinary complications can occur after inguinal hernioplasty, especially when the procedure is performed under general or spinal anaesthesia. On the other hand, patients operated under local anaesthesia do not generally have serious peri or post-operative complications. Several retrospective

and randomised control trials have shown that L/A provide the best clinical and economical benefits to patients<sup>14-16</sup>. In spite of all these benefits, the use of local anaesthesia in inguinal hernia surgery has not been established among surgeons on a wide scale. In this study, we aimed at assessing the safety and benefits of local anaesthesia in mesh hernioplasty for inguinal hernia in terms of post operative wound pain and hospital stay. In our study, 20 (14.28%) patients had minor problems during the procedure and no patient developed anaphylaxis. A study done by Davis L et al in 2003, showed the anaphylaxis rate of about 1% to local anaesthesia.<sup>17</sup>

Pain is the main factor in post-operative morbidity. In this study 3 patients complained of severe pain (VAS 5) six hours post-operatively, and 22 patients had moderate pain (VAS 4) after six hours. Most of the patients remained pain-free within the six-hour post-surgery period with 27 patients having of VAS 3, 59 patients experiencing VAS 2 and 29 patients having VAS score of 1. VanVeen and colleagues<sup>18</sup> between August 2004 and June 2006 noticed in their study that inguinal hernia repair under L/A had significantly less pain. Local anaesthesia is highly effective in alleviating post-operative pain when using both peripheral nerve blocking technique, and local wound infiltration at fascial level.<sup>19</sup> In Young's study,<sup>14</sup> patients operated (inguinal herniorrhaphy) under L/A had lesser need for post-operative analgesia because most patients felt that the subsequent pain was more tolerable as it comes gradually, compared with those who had their surgery performed under general or spinal anaesthesia.

The incidence of post-operative nausea, vomiting and hypotension was negligible in our study and this is in line with other studies.<sup>20</sup> We also noted post-operative urinary retention in some patients because most of the patients were in the age of having enlarged prostate. Jenson et al<sup>21</sup> showed that urinary retention is definitely a problem after inguinal hernia repair when the procedure is done under spinal anaesthesia, but not when it is done under L/A. This is a very important observation and sheds light on a common old-age problem. Early post-operative mobilisation results in lesser morbidity and, hence, early discharge from hospital. Patients operated under L/A start physical activity earlier after surgery. Callese<sup>22</sup> also proves in his study that L/A facilitates the faster mobilisation and early discharge from hospital than the other anaesthetic techniques. Also in our study all patients tolerated local anaesthesia well and there was no need of conversion to any other form of spinal or general anaesthesia.

## Conclusion

The open tension free mesh hernia repair offers many advantages. It is inexpensive and allows the surgeon to cover all potential defects with one piece of mesh. Lichtenstein open tension free mesh hernioplasty under local anesthesia is feasible and effective technique. With this approach, there is

reduced early post-operative pain and the hospital stay. For surgeons performing the Lichtenstein repair under general or spinal anesthesia, procedure under local anesthesia is a feasible and effective alternative.

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