



## LAPAROSCOPIC TEP VS. MODIFIED LICHTENSTEIN FOR BILATERAL INGUINAL HERNIA REPAIR- A COMPARATIVE STUDY

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### ABSTRACT

**Background:** Lichtensteins mesh hernioplasty continues to be the common modality for management of bilateral inguinal hernia even after the advent of lap surgery. This study compares the clinical outcomes of laparoscopic total extra peritoneal hernioplasty (Lap TEP) and sequential bilateral modified Lichtenstein's repair in the same setting for management of bilateral inguinal hernias.

**Methods:** Sixty patients each, who underwent Lap TEP or simultaneous bilateral modified Lichtenstein's repair at a tertiary care teaching hospital, were assessed and systematically followed up at regular intervals up to one year and compared in the terms of time taken for surgery and post op morbidities & complications including early recurrence if any.

**Results:** Data analysis in both the groups with comparable age, showed a lesser operating time, blood loss and more surface area of the posterior wall reinforcement with prosthesis for Lap TEP repair. Postoperative morbidity in terms of requirement of more post-operative analgesia, increased postoperative VAS score, delay in ambulation and increased duration of hospital stay was seen in the modified Lichtenstein's repair group.

**Conclusion:** The present study reveals that Lap TEP is superior to sequential modified bilateral mesh hernioplasty done on the same setting in terms of early postoperative outcomes.

**KEYWORDS :** Inguinal hernia, Mesh repair, Lap TEP, Lichtenstein's, Recurrence.

### Introduction

For more than a hundred years, since the introduction of modern hernia repair by Bassini, the treatment of bilateral inguinal hernia has remained controversial. Although many studies have shown a comparable recurrence rate between laparoscopic total extra peritoneal hernioplasty (TEP) and conventional mesh hernioplasties, laparoscopic hernia repair is now one of the recommended methods for treatment of bilateral and recurrent inguinal hernias.(1,2)

Before the advent of laparoscopy, bilateral inguinal hernia surgery was confined to sequential unilateral repair, either in the same or different settings or by Stoppa's single stage repair through a lower midline incision. Concern regarding the simultaneous repair in adults was mainly based on issues like increased tension in the suture-line, preclusion of an effective relaxing incision, and a higher recurrence rate. We have carried out a prospective observational study in a tertiary care teaching hospital over a period of Aug 2014 to Aug 2016 with one year follow up on sixty patients of bilateral inguinal hernia half of whom underwent Bilateral Lap TEP, and the other half who underwent sequential modified Lichtenstein's repair in the same setting.

The study compared the effectiveness and outcome parameters of the above two groups in management of bilateral Inguinal hernias in terms of duration of surgery (from skin incision to placement of last suture) ; requirement of post op analgesia ; early and late complications or morbidity including recurrence if any. The early complications were compared in terms of post-operative pain scores (sequentially at 06 hrs, 24hrs and at 1 week), local wound complications and post op morbidity (in form of requirement of drain, time for ambulation, average duration of hospital stay and local wound complications), and the late complications were studied in the form of post-operative pain and recurrence at 1,6 and 12 months each if any.

### Materials and Methods

This is an observational study carried out in a tertiary care teaching centre, from Aug 2014 to Dec 2016. Data was collated from all patients presenting with bilateral inguinal hernias and underwent either bilateral Lap TEP or simultaneous modified bilateral Lichtenstein's repair and were followed up till a post-operative

period of one year. All patients who undergo inguinal hernia repair were assessed pre operatively, intra-operatively and post-operatively till 48 hrs as a part of institutional criteria. Further follow up was carried out during periodic reviews. The modality of surgery used was purely based on the clientele choice and expertise of the surgeons.

The demographic profile, clinical data and intra operative findings of all patients who underwent bilateral Lap TEP (Group 1) and Bilateral modified Lichtenstein's tension free mesh hernioplasty (Group 2) were collected from the OT lists, case files and operative notes and post-operative follow up was done at 6 hrs, 24hrs, 1 week, 1 month, 6 months and 1 year.

All cases of laparoscopic TEP was done under general anesthesia using standard three port technique (a 10mm port paraumbilical for the camera, a suprapubic 5mm port, and a 5mm port between these two ports in the midline). Exclusive laparoscopic extra peritoneal dissection is done first in midline tunnel and then laterally for creating space. The hernia sac is dissected free from the inguinal canal and off the abdominal wall after parietalization of the spermatic cord. An appropriately sized polypropylene mesh was then used to reinforce the deep inguinal ring and posterior wall of the inguinal canal.

The tension free bilateral prosthetic repair was done following established methods under subarachnoid block. The size of the regular weight polypropylene mesh used was 7.5 cm x 15 cm in all cases.

Visual Analogue Pain Scale (VAS) was used to evaluate post operative pain at 6 hrs and on the first, seventh and thirtieth postoperative days. The patients were again evaluated at end of six months and one year after surgery where each patient was asked to quantify his pain using the verbal rating scale (0- no pain to 10- excruciating) and was marked. All patients received a routine intravenous dose of dose of 100 mg paracetamol on the evening of the operation day. Thereafter, patients were instructed to take analgesics as needed and total analgesic requirement was noted and graded in 3 groups according to the WHO pain ladder(3). There was no restriction on the physical activity or dietary intake as long as patient could tolerate the same. Outpatient physical examinations

were performed on the 7th and 30th days postoperatively. Patients were later either examined at 6 months and 1 year or requested to answer a questionnaire. The duration of operation, postoperative complications, and length of hospital stay were recorded in each patient and they were systematically followed up at regular intervals up to one year to see for complications, if any. Statistical evaluation of the differences between the study groups was performed using the SPSS version 22.0 and level of significance was set at 5%.

**Results**

A total of sixty patients underwent inguinal hernia repairs half of whom by Lap TEP and the rest by a modified Lichtenstein's tension free mesh herioplasty were studied. All patients in the study were male and none of them were lost to follow up to one year, Out of the 30 cases each that underwent laparoscopic TEP and modified Lichtenstein's tension free there were 04 patients who had presented with recurrent hernias following anterior approach surgery in Group1 and none in group 2. The patient characteristics studied are summarized in table 1. The mean age of the patients in both groups were 53.73 and 56.37 respectively.

The average operating time (mean-73.83 min) and average blood loss (15 ml) was significantly lesser in Group 1 compared to 105 mins and 35 ml respectively in Group 2. The other intraoperative parameters studied are summarized in Table 2. The surface area covered by mesh used in laparoscopic TEP repair was significantly more than that covered by the lichtenstiens repair, and hence there is statistically lesser probability of recurrence. Patients operated by bilateral Lichtenstein's repair required a significantly higher amount of injectable Grade 1 and Grade 2 analgesics (Table 3) and had higher pain score during the initial two post-operative days (Table-4). However, no significant complaints of pain were present later on in the postoperative periods in either groups. None of the patients required placement of an intraoperative drain, and 2 patients in each group were catheterized postoperatively due to urinary retention and catheter was removed after 12 hrs.

All patients who underwent bilateral lap TEP were ambulated on the post-op evening and had a significantly lesser duration of hospital stay (mean-1.46) compared to the a mean duration of hospital stay of 3.83 days in Group 2. Early postoperative complications studied are summarized in Table -5. There were no recurrences reported in any of the patients till one year of follow up and none of the patients in their respective stages of follow-up have reported chronic groin pain, testicular atrophy or incisional hernias.

**Table-1- Patient Characteristics and follow up time**

Patient Characteristic	Group 1 (n=30)	Group 2 (n=30)	P Value
Mean Age (yrs)	53.73	56.37	NS
Sex	30 Males	30 Males	-
Smokers	22	19	NS
Prostatomegaly	3	2	NS
COPD/Chronic cough	2	2	NS
Constipation	-	1	-
Other Comorbidities	12	13	NS
Follow up (months)	12	12	-

**Table-2- List of operative parameters studied**

Parameter studied	Group 1 (n=30)	Group 2 (n=30)	P Value
Duration of surgery (mins)	73.83	105.07	<0.05
Anaesthesia Used	All GA	All SAB	-
Mesh Used	Polypropylene normal weight	Polypropylene normal weight	-
Total Avg Surface area of mesh used	143 cm <sup>2</sup> on each side	112.5 cm <sup>2</sup> on each side	<0.05
Avg blood loss	15 ml	35 ml	<0.05

**Table-3- Post operative Injectable Analgesia Used**

Post op injectable analgesia used	Group 1 (n=30)	Group 2 (n=30)	P Value
Grade-1(WHO) (mean)	2.50	8	<0.05
Grade-2(WHO) (mean)	0.3	1.2	<0.05
Grade-3(WHO) (mean)	0	0	-

**Table-4- Post operative Pain Scores**

VAS(1-10) (post surgery)	Group 1 (n=30)	Group 2 (n=30)	P Value
6 hrs	2.3	3.9	<0.05
24 hrs	1.5	2.3	<0.05
1 week	1.43	1.46	NS
1 month	0	0.5	<0.05
6 months	0	0.06	NS
1 year	0	0	-

**Table-5-Early post-operative Complications**

Patient Characteristic	Group 1 (n=30)	Group 2 (n=30)
Delayed Wound-healing	Nil	Nil
Post-op wound Infections (SSI)	Nil	2
Urinary retention	2	2
Seroma	2	2
Haematoma	Nil	Nil
Ischemic orchitis	Nil	Nil
Bowel injury or obstruction/ileus	Nil	Nil

**Discussion**

Before the advent of laparoscopic hernia repair, Bilateral inguinal hernias were traditionally treated with sequential unilateral open repair, or by Stoppa's repair. Present evidence reveals that about 15% of inguinal hernias are repaired laparoscopically, more so by totally extraperitoneal fashion (TEP) in which the hernia defect is covered with a prosthetic mesh. The need for fixation of the mesh is still controversial. Overall the recurrence rates the world over have varied between 2 to 10 percent with Lichtenstein's mesh hernioplasty giving the least recurrence rates of about 2%. Lap TEP has an average recurrence rate of 3.75% in experienced hands.

The advantages of Lap TEP are that it allows laparoscopic minimal incision approach for all hernias including bilateral and recurrent and also avoids reoperation through defective, scarred and weakened tissues (especially in recurrent hernias). It is the only technique that can repair the wall without damaging it, which is an important premise of the repair of inguinal hernias. There is perhaps an added advantage of mesh covering all areas of weakness in the inguinal region; and the lower risk of postoperative chronic pain as the laparoscopic dissection is in a plane that is different from the anatomic plane of nerves (5) as long as one stays clear of the triangle of pain.

Although the benefits of laparoscopy compared with the open approach are numerous, the surgery is considered difficult with a long learning curve, limited working space in an unfamiliar anatomical view and hence the results not easily reproducible. Laparoscopic repair in the inguinal region allows an anatomic reinforcing of the myopectineal orifice, first described by Fruchaud (4), posteriorly.

Patients undergoing laparoscopic surgeries had significantly reduced need for analgesia and these results were consistent with previous studies(6). Quality of life measured in terms of quick return to normal activity and post-operative pain was also found to be significantly better in TEP repair in comparison to open mesh repair –consistent with some previous studies (7)

**Conclusion**

We found significantly less duration of surgery, average blood loss and duration of hospital stay in patients who underwent bilateral

Lap TEP. Postoperative morbidity in terms of requirement of more post op analgesia, late ambulation and increased duration of hospital stay was seen in the bilateral Lichtenstein's group, which also had higher pain scores in the early postoperative period. We conclude that Lap TEP repair is superior to sequential modified Lichtenstein's repair for bilateral inguinal hernias in terms of early-post operative outcomes. There were no recurrences at the end of one year in either groups in this study.

#### **Conflict of interest**

None identified

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