

Comparison of Laparoscopic Total Extraperitoneal Repair With Lichtenstein Repair In Inguinal Hernia

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ABSTRACT

Objective To compare the laparoscopic inguinal hernia repair with Lichtenstein repair in terms of hospital stay and postoperative pain.

Study design Randomized clinical trial.

Place & Duration of study Department of Surgery Services Hospital Lahore, from September 2013 to May 2014

Methodology Inguinal hernia patients were admitted electively. They were randomly assigned into groups A and B. The group A patients were treated with laparoscopic total extraperitoneal repair (TEP) and group B patients underwent Lichtenstein's repair. Patients were evaluated for 24 hours discharge rate and postoperative pain.

Results A total of 100 patients were included with 50 patients in each group. Group A patients had short hospital stay (discharged within 24 hours - 68.08%) as compared to group B (31.91% - $p < 0.001$). From 2nd to 6th postoperative week group A patients had significantly less postoperative pain as compared to group B ($p < 0.05$).

Conclusion Laparoscopic TEP repair was safe with early hospital discharge and less postoperative pain.

Key words Laparoscopic totally extra-peritoneal repair, Lichtenstein's repair, Inguinal hernia.

INTRODUCTION:

Inguinal hernia is one of the most common surgical problems and is a leading cause of work loss and disability.¹ Open surgery for inguinal hernia has gone through many stages of development. Understanding of the hernia anatomy was appreciated and understood in the mid 1700's by means of dissection of cadavers. Two advancements which enabled the development of hernia surgery greatly were the aseptic technique and improvement in of anesthesia.

Edoardo Bassini was an Italian surgeon who described a durable inguinal hernia repair based on an understanding of inguinal (groin) anatomy. Shouldice developed an anatomic based surgical

technique which produced a very low recurrence rate. From the 1940s various forms of synthetic polymers were used in inguinal hernia repair. Lichtenstein published the results of 6,321 patients followed for 2-14 years after inguinal hernias repair with polypropylene mesh in 1987. This approach revolutionized hernia repair.² Today tension free mesh repair is regarded as gold standard.³ This technique is simple, safe and effective, with relapse rate of 0.7%.⁴

Laparoscopic approach has markedly improved recovery time that prompted surgeons to attempt laparoscopic approach in hernia repair.⁵ Ger was the first surgeon to attempt the laparoscopic hernia repair.⁶ The open surgery techniques are gradually being replaced by the trans-abdominal preperitoneal repair (TAPP) and total extraperitoneal repair (TEP).⁷ Better postoperative outcomes has been reported with regards to reduced postoperative pain and early return to daily activity.⁸ Recurrence rate of 0.4% has

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been reported with TEP.⁹ The rationale of the index study was to compare the laparoscopic repair with Lichtenstein repair in terms of 24 hours discharge rate and postoperative pain.

METHODOLOGY:

A randomized clinical trial was conducted at the Department of Surgery Unit II, Services Hospital Lahore from September 2013 to May 2014. A total of 100 patients of inguinal hernia were included through non probability purposive sampling with 95% power of test, 5% margin of error. All males above 25 year of age presenting with primary unilateral reducible direct /indirect inguinal hernia, were included. Patients with co-morbid conditions were excluded. All patients were evaluated by history and clinical examination. They were randomly allocated into two groups A and B by using random numbers table method after matching the confounding variables. After informed consent all patients were operated under general or spinal anesthesia.

For group A laparoscopic repair was performed with total extraperitoneal approach. A 10 cm x 15 cm polypropylene mesh (Prolene-Ethicon®) was placed in the preperitoneal pocket and fixed with tackers (Protack 5mm fixation device- Covidien). For group B Lichtenstein repair was performed through supra-inguinal incision. The posterior wall was strengthened with the 10 cm x 15 cm polypropylene mesh (Prolene-Ethicon®) fixed with polypropylene suture (Prolene-Ethicon®).

Patients were monitored for severity of postoperative pain on 2nd, 4th, 6th, 8th, 10th and 12th weeks and 24 hours discharge rate was also noted in both the groups. Pain was divided into four grades depending upon severity. Patient was noted to have "No pain" if there was no discomfort, "Mild" when patient had discomfort but it was bearable and didn't require medication. Pain was rated as "Moderate" if pain was relieved by paracetamol or required NSAIDS such as diclofenac or ibuprofen. Pain was categorized as "Severe" if it required the use of opioids such as tramadol.

Frequency and percentages were calculated for categorical variables; 24 hours discharge rate and postoperative pain. Mean and standard deviation were calculated for numerical variables like age. For comparison of group A and group B Chi square test or Fisher's Exact test was applied. A p value of 0.05 or less was taken as significant.

RESULTS:

A total of 100 patients were operated; 50 in each

group. The mean age of all the patients was 42.25±25 year with the maximum age 75 year and minimum age 25 year. The mean age in group A was 41.98±14.73 year and in group B 42.53±16.18 year. In group A out of the total 32 (68.08%) patients were discharged in 24 hours while in group B, 15 (31.91%) were discharged in 24 hours. Group A showed significant result in terms of 24 hour discharge rate as compared with group B (p <0.001).

In group A, 33 patients complaint of postoperative pain after 2 weeks (19 had mild pain, 13 moderate pain and one had severe pain) while in group B, 44 patients suffered from postoperative pain after 2 weeks (17 mild pain, 17 moderate pain and 10 severe pain). This was also significant (p = 0.037). Postoperative pain comparison at different postoperative weeks in both the groups is given in table I.

DISCUSSION:

Inguinal and femoral hernias are the most common conditions for which primary care physicians refer patients for surgical management. Hernia repair under tension is the prime cause of postoperative pain and recurrence.¹⁰ This led to evolvement of tension-free hernioplasty. Presently tension-free hernioplasty with mesh has become a gold standard procedure.³ Laparoscopic repair of inguinal hernias has gained remarkable popularity in recent years. The advantages of laparoscopic surgery favour its application to various surgical procedures. Better patient comfort, allowing tension free repair with better exposure to groin anatomy, less postoperative pain, shorter hospital stay and early return to daily activity are some of the advantages of this technique. However, laparoscopic hernioplasty requires lengthy learning curve and it is more costly mainly due to the use of disposables during surgery. Furthermore, with the use of laparoscopic technique the assessment of both groins, particularly incidental defects, is easier and both defects can be repaired at the same operation without the need of further surgical incision, with very little dissection and minimal additional postoperative discomfort. Therefore, bilateral inguinal hernia is an ideal indication for laparoscopic repair.¹¹

Memon and colleagues reviewed the data from 29 published randomized clinical trials and concluded that patients who underwent laparoscopic repair of an inguinal hernia were discharged earlier and were able to return to their usual activities more quickly than patients who underwent open repair.¹² McCormack et al found that laparoscopic hernioplasty required longer operative times than

Table I: Comparison of Laparoscopic Total Extraperitoneal Repair and Lichtenstein Repair

Variables	Group A (n=50)				Group B (n=50)				p Value
Mean Age	41.98±14.73				42.53±16.18				
24 hours Discharge Rate	Yes		No		Yes		No		<0.001
	32 (68.08%)		18 (33.96%)		15 (31.91%)		35 (66.03%)		
Postoperative Pain	No	Mild	Moderate	Severe	No	Mild	Moderate	Severe	
At 2 Weeks	17 34%	19 38%	13 26%	1 2%	6 12%	17 34%	17 34%	10 20%	0.037
At 4 Weeks	25 50%	19 38%	6 12%	0 0%	10 20%	18 36%	16 32%	6 12%	0.023
At 6 Weeks	35 70%	15 30%	0 0%	0 0%	16 32%	23 46%	11 22%	0 0%	0.011
At 8 Weeks	44 88%	6 12%	0 0%	0 0%	28 56%	18 36%	4 8%	0 0%	0.549
At 10 Weeks	46 92%	4 8%	0 0%	0 0%	36 72%	13 26%	1 2%	0 0%	0.582
At 12 Weeks	46 92%	4 8%	0 0%	0 0%	41 82%	9 18%	0 0%	0 0%	0.234

the open-repair procedure and that patients who underwent laparoscopic procedure appeared to have less discomfort and return to their usual activities more rapidly and recurrence rates were similar with the two approaches.¹³

Today, most laparoscopic hernioplasties are performed using either trans-abdominal preperitoneal (TAPP) or total extraperitoneal (TEP) approach. The TEP technique is little difficult to learn and master. It has a lengthy learning curve but does not suffer the same risk of vascular and visceral injury as in the TAPP procedure. McCormack et al described that although operative complications were infrequent in hernia repair, visceral and vascular injuries appeared to occur more often among the patients who underwent laparoscopic repair.¹³ In our study, no major intraoperative complication occurred in both the groups. There were no cardio-pulmonary, cerebro-vascular or thrombotic complications in both the groups. Same was concluded in a study by Picazo.¹⁴

Patients who had laparoscopic hernioplasty experienced significantly less pain and higher levels of satisfaction than those who had open repair.^{15,16} In current study comparable results regarding the postoperative pain outcome at 2, 4 and 6 weeks were noted. These were statistically significant. However after 8 weeks the difference in pain

outcomes between the two groups didn't show significant difference. This significant reduction in the early postoperative pain has helped the patients by requiring less analgesia, early mobilization and quick recovery. Neumayer et al reported less pain in the laparoscopic hernia repair group.¹⁵

Regarding the postoperative hospital stay it is generally accepted that laparoscopic group will be discharged earlier. Anadol ZA et al reported mean hospital stay in laparoscopic group as 1.52 + 0.51 day and in open group as 2.24+ 0.97 days.¹⁶ Moreno-Egea in a study of 300 patients of laparoscopic surgery for abdominal wall hernias reported that 100% patients of laparoscopic total extraperitoneal repair required no hospitalization.¹⁷ Similar results were published by Lau.¹⁸ Wittenbecher reported similar results with TAPP.¹⁹ In our study all patients, in both the groups were admitted after surgery. However, patients who underwent laparoscopic hernioplasty were discharged earlier than the patients who had open mesh hernioplasty. We compared the 24 hour discharge rate between the open and the laparoscopic group and found statistically significant difference. Our study has few limitations namely small number of patients and short follow up period of 3 months only.

CONCLUSION:

Laparoscopic total extraperitoneal repair was found superior to open mesh repair in terms of lower

postoperative pain and earlier hospital discharge.

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