

Open Lichtenstein Repair Versus Laparoscopic Transabdominal Preperitoneal Repair For Inguinal Hernia

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ABSTRACT

Objective To compare open Lichtenstein with laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair.

Study design Randomized controlled trial.

Place & Duration of study Surgical Ward Jinnah Postgraduate Medical Center Karachi, from October 2012 to March 2013.

Methodology This study was carried out on eighty patients, divided into 2 equal groups of 40 patients each. Group I, was offered Lichtenstein hernia repair and in group II, laparoscopic transabdominal preperitoneal approach was performed. Mean operative time, duration of hospital stay, pain score and infection rate were compared between two groups.

Results All the patients included in this study were males. The mean age of the patients was 44.9 ± 18.02 year in group I and 38.9 ± 18.21 year in group II. Operative time and hospital stay were statistically insignificant but pain and wound infection had significant differences. The mean VAS score was found higher in group I than group II (p value 0.0048). It was 6 ± 1.89 in group I and 3.6 ± 1.35 in group II. There were three cases (7.5%) of wound infection in group I whereas in group II there were no case of wound infection ($p=0.0405$).

Conclusions The laparoscopic hernia repair is a preferable procedure. It has less postoperative pain and less wound infection.

Key words Inguinal hernia, Lichtenstein repair, Transabdominal preperitoneal (TAPP) repair.

INTRODUCTION:

The surgical history of inguinal hernias dates back to ancient Egypt. There are three important landmarks in the history of hernia management; tissue repair by Bassini 1888, Lichenstein mesh repair 1984 and laparoscopic mesh repair by Ger 1990.¹ In the late 20th century the tension free repair, introduced by Irving Lichtenstein, caused a dramatic drop in recurrence rates and became the procedure of choice. However, the introduction of a laparoscopic technique by Ralf Ger in the early 1990's sparked a new debate

over the best method of inguinal hernia repair.²

Seventy five percent of all abdominal wall hernias are inguinal herinas, and with a lifetime risk of 27% in men and 3% in women, inguinal hernia repair is one of the most commonly performed surgeries in the world.³ Most randomized studies comparing laparoscopy to open repair have mentioned the advantages (reduced postoperative pain, earlier return to work) and disadvantages (increased cost, lengthier operation, steeper learning curve, higher recurrence and complication rates early in a surgeon's experience).^{4,5}

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The most commonly performed laparoscopic techniques are the total extraperitoneal (TEP) and transabdominal preperitoneal (TAPP) repairs.⁴⁻⁶ Some reports have listed specific indications for laparoscopy

over open repair, including recurrent hernias, bilateral hernias, and the need for earlier return to full activities. A large randomized controlled trial comparing laparoscopic to open repair found that, with adequate training, laparoscopic repair produced equivalent recurrence rates but reduced postoperative pain and allowed earlier return to work.⁷⁻¹⁰

The objective of this study was to compare the Lichtenstein hernia repair with transabdominal preperitoneal approach at our department.

METHODOLOGY:

This study was conducted in Surgical Ward Jinnah Postgraduate Medical Center Karachi, from October 2012 to March 2013. This was a randomized controlled trial. Eighty patients of inguinal hernia were included in this study. Patient with lower midline incision, previous preperitoneal surgery (e.g prostatectomy), irreducible or strangulated hernia were excluded. Patients were informed about open/laparoscopic technique and written informed consent was obtained. Data were collected on the pre designed proforma. Means with standard deviations were obtained for numerical variables. Comparison was made using student t test.

Patients were divided into two groups randomized alternatively. Patients in a group I (n=40) were treated by Lichtenstein repair and patients of group II (n=40) were treated by laparoscopic TAPP approach. Patients were evaluated for mean operative time, duration of hospital stay, pain score, and infection. Pain was measured as continuous variable using VAS scale (0-10 cm scale).

In group I, the incision was made just above and parallel to inguinal ligament on medial two third of inguinal canal. Standard steps of Lichtenstein hernia repair were followed. A non-absorbable polypropylene (Prolene) mesh was placed in front of fascia transversalis and fixed by polypropylene suture. After securing the hemostasis, wound closure was done.

In group II, patient was placed supine in a 10-20° Trendelenburg position. This helped with the reduction of hernias and allowed the intestines to gravitate into the upper abdomen. An open technique was used to create a pneumoperitoneum. Three trocars placed; port 1: 10mm infraumbilical port for camera, port 2 and 3 which were of 5mm size at right and left midclavicular lines at the level of umbilicus. The preperitoneal space was entered by incising the peritoneum transversely from the region

of anterior superior iliac spine to midline. After dissecting in preperitoneal space, sac was identified and retracted back into the abdominal cavity. Direct sacs and small indirect sacs were fully reduced. Larger sacs were partly dissected and having freed from the cord structures tied with 2-0 polyglycolic (Vicryl) and incised. The distal part of a large sac was left in situ. Medially the dissection was carried to the symphysis pubis. A 15 x 10 cm mesh was then fashioned and inserted. The medial border of the mesh was adjacent to the symphysis pubis and the lateral border up to the anterior superior iliac spine. When the mesh was satisfactorily placed, it was stapled in place by pro tack fixation device. Staples were applied to the pubic bone and muscle laterally. The peritoneum was repositioned by stapling and the operation completed by closing the hernia port sites. In bilateral hernias, the same procedure was performed on the contra-lateral side.

RESULTS:

All the patients included in this study were males. The mean age of the patients was 44.9±18.02 year in group I and 38.9±18.21 year in group II. Postoperative pain and wound infection were statistically significant in favor of group-II while operative time and mean hospital stay were statistically insignificant as shown in table-I. In TAPP repair two inguinal hernias were found on the contralateral side and repaired in same sitting.

DISCUSSION:

From Bassini's heralding of the modern era to today's mesh-based open and laparoscopic repairs, this history parallels closely the evolution in anatomical understanding and development of the techniques of general surgery.^{11,12} In this study operative time was 45.2±17.64 minutes and 37.4±13.10 minutes in group I and II respectively. There was statistically insignificant difference between two groups. Duration of operation was longer in the laparoscopic groups as reported by Cochrane database.⁵

In laparoscopic hernia repair as described by Ger a simple mesh is plugged in the defect.¹³ Two laparoscopic inguinal hernia repairs commonly performed include tranabdominal preperitoneal repair and total extraperitoneal repair (TEP). We preferred TAPP as it is easier to perform and anatomy is more familiar. This can be performed by instruments usually available in the surgical units where laparoscopy is performed. TAPP was used more frequently than TEP, and even those surgeons who are expert in TEP preferred to perform a TAPP in difficult hernias, such as in obese patients and large scrotal hernias.¹⁴

Table I: Outcome of Open Versus TAPP Repair (n=80)

Variables	Group I (n=40)	Group II (n=40)	p-value
Operative Time (Minutes)	45.2±17.64	37.4±13.10	0.0908
Postoperative Pain	6±1.89	3.6±1.35	0.0048
Wound Infection (n)	3	0	0.0405
Hospital Stay (Days)	1.7±0.64	2 ±0.77	0.096

The mean VAS score was found higher in group I than group II (p value 0.0048). Similar results were found in 2003 Cochrane Database Systematic Review that found less persisting pain (overall 290/2101 versus 459/2399, $p < 0.0001$), and less persisting numbness (overall 102/1419 versus 217/1624, $p < 0.0001$) in the laparoscopic groups.⁵ Similarly, another meta-analysis from the EU Hernia Trialists Collaboration, reported decreased post-operative pain with the employment of laparoscopic methods.¹ Paganini et al concluded that TAPP was associated with less postoperative pain.¹

A major advantage of the laparoscopic approach is the ability to detect and repair a contralateral defect at the same operation with only a moderate increase in operating time.¹⁷ In this small study of 40 laparoscopic TAPP repair two (5%) hernia were found on the opposite side. These were repaired in the same sitting. Length of hospital stay did not differ between groups as reported by Cochrane database which is almost same in this study.⁵ Return to the daily life activities was earlier in TAPP group as compared to open group which is supported by various studies that counter balance the costly laparoscopic repair.

Complications with experience and technical improvements are now minimal in the laparoscopic repair and studies indicate similar complication rates between open and laparoscopic repairs.^{18,19} Another meta-analysis examining this issue included 29 prospective randomized trials with 5588 patients.⁴ Some 3017 hernias were repaired laparoscopically and 2972 were repaired using an open method. Six outcome variables were analyzed including operating time, time to discharge from hospital, return to normal activity and return to work, postoperative complications, and recurrence rate. The analysis favored laparoscopic over open inguinal hernia repair. In this study we compared the four parameters including operative time, postoperative pain, infection and hospital stay and results were in favor of laparoscopic repair.

CONCLUSIONS:

Laparoscopic TAPP approach had less postoperative pain, less wound infection and speedy repair. In addition, it helped in identifying the contralateral hernia.

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