

Outcome of Totally Extraperitoneal (TEP) Inguinal Hernia Repair; an experience of 40 cases at Services Hospital, Lahore

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ABSTRACT

Aim: To describe our initial experience of laparoscopic TEP hernia repair in term of operative time, operative difficulties, complications, hospital stay and return to normal activities.

Study design: Case series.

Place and duration of study: Services Hospital, Lahore from April 2011 to November 2013.

Methods: Forty consecutive male patients with inguinal hernia were included. A structured training of TEP hernia repair was imparted to the operating surgeons. TEP hernia repair was performed in all these patients. Demographic data, operative time, operative difficulties, complications and return to daily activities were recorded and analysed using SPSS version 16.

Results: The mean age of patients was 36.63±12.00 years (range 18–66 years). Thirty (75%) patients had unilateral hernias, 7(17.5%) had bilateral and 3(7.5%) had recurrent hernias. The mean operative time for unilateral hernia was 96.57 + 5.08 minutes (range), for bilateral hernias was 103.20 +9.82 minutes and for recurrent hernia was 117.67±9.82 minutes). The most common operative difficulty was accidental pneumoperitoneum, occurred in 10(25%) cases. Operative complications included troublesome bleeding in 1(2.5%) cases, clipping of epigastric vessel in 1(2.5%) cases. None of the patients had conversion to open repair. Postoperatively, seroma in 2(5%) patients, chronic pain in 1 (2.5%) cases, majority of patients 38(95%) resumed their routine life activities in 07 days. There was no recurrence or mortality seen in the series.

Conclusion: TEP hernia repair is an acceptable and feasible surgical option for the management of inguinal hernias and its learning curve can be shortened by structured training.

Keywords: TEP, Laparoscopic hernia repair, inguinal hernia

INTRODUCTION

Surgery for groin hernia has gone through evolutionary processes from simple repairs to this modern era of laparoscopic surgery³. During the last decade minimally invasive hernioplasties have been developed using laparoscopic technique^{4,5}. Debate continues as to whether laparoscopic repair has any advantage for primary groin hernia; Meta analysis of randomized trials has shown comparable recurrence rate^{6,7}.

Laparoscopic surgeons described different forms of laparoscopic inguinal hernia repairs, the most widely accepted of them nowadays are the total extra peritoneal repair (TEP) and the transabdominal preperitoneal repair (TAPP)⁸. The main advantages of laparoscopic hernia repair are less postoperative pain and quicker convalescence when compared with conventional open hernia repair¹⁰⁻¹³. The most serious drawbacks of the laparoscopic hernioplasty are the long learning curve (>250 patients), visceral injuries (1 in 1000 operations) and vascular injury (1 in 500 patients). Although such injuries should be

less frequent with total extraperitoneal (TEP) approach (which is completely a parietal approach), they do occur and are related to the expertise of surgeons^{14,15}.

TEP repair for inguinal hernia is not routinely done in every setup. This requires knowledge of extraperitoneal inguinal anatomy and advance laparoscopic skills. Most of all, many surgeons are not familiar with this technique owing to technical demands and its long learning curve¹⁵.

In this study, we describe our initial experience of laparoscopic TEP repair for the management of primary inguinal hernia after adopting a structured training program.

METHODOLOGY

The study was conducted in department of surgery, Services Hospital, Lahore from a period of April 2011 to November 2013. Study was conducted after approval from institutional ethical committee. Forty consecutive patients with reducible inguinal hernia were included from outpatient clinic. Procedure was explained by the operating surgeons and informed consent was obtained. Only Patients with ASA I & II willing to undergo the procedure under general

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anesthesia were included. Patients with previous history of laparotomy, coagulopathy, ASA III&IV and those who opted for open surgical repair were excluded from the study. All the procedures were done by the two senior consultants who were performing laparoscopic cholecystectomies and appendicectomies for more than years. Both the surgeons performed

Three open Stoppa's repairs for bilateral inguinal hernia to get well familiar with anatomy of extraperitoneal hernia repair. Over a period of three months both the surgeons attended three live workshops on TAPP &TEP repair and assisted master trainer few TEP hernia repairs. First two procedures were done under supervision of an expert in TEP procedure.

All the TEP repairs were done under general anesthesia. Ceftriaxone 1000mg was administered as antibiotic prophylaxis with the induction of anesthesia. For all hernias three ports were used. First 10mm port for camera was placed with open technique lateral to umbilicus on the affected side in unilateral hernia and for bilateral hernia on right side of umbilicus; two 5mm ports for working instruments. One 5mm port 5cm below umbilicus and second 5mm port lateral to rectus at the level of umbilicus on the affected side, and in bilateral hernia lateral to recti on both sides. We created initial space in the preperitoneal plan with to and fro movement of telescope along with insufflation of CO₂. Loose areolar tissue pushed upward, laterally space created 4-6 cm away from internal ring. The sac was dissected and pulled back into the abdomen in direct hernia and in cases of indirect hernia, sac was ligated with catgut 2/0 intracorporeal knot and divided.

After creation of adequate space for placement of mesh, a polypropylene mesh 12×15 cm was rolled and introduced through the camera port. Mesh was spread out into the preperitoneal space and anchored with prolene 2/0 stitch with cooper's ligament. After stabilizing the mesh CO₂ was deflated and ports were withdrawn. Anterior rectus sheath defect closed with vicryl 0 and skin wounds were closed with vicryl rapid 3/0 subcuticle stitches. Operative time, difficulties and complications were recorded in the proforma. Postoperative analgesia requirements and follow up details were also recorded in the proforma. All the patients were followed up at 2 weeks, 1, 3 and six months.

The data was analyzed using SPSS version 16. Mean and standard deviation were calculated for age, operative time, hospital stay and time for resumption to normal activity. Frequency and percentage were calculated for type of hernia, operative difficulties and complications. For understanding the impact of structured training on

learning curve, we divided the cases in two groups of 20 cases each in chronological order (i.e., first 20 cases and next 20 cases) and observed the operative time and complication rates in these groups.

RESULTS

In our study, 40 male patients of mean age (36.63±12.00 years) in a range of 18 – 66 years underwent TEP hernia repair. Right sided hernias were most commonly seen in 21(52.2%) patients. Similarly indirect inguinal hernias were the most common presentation in 22(5%) patients. (Table 1) The mean operative time for unilateral hernia was 96.57±5.08 minutes (range 89–123 minutes), for bilateral hernias was 103.20±9.82 minutes (range 88– 00 minutes) (Table 2).

Out of operative difficulties accidental Pneumoperitoneum was the most common operative difficulty occurred in 10 (25%) patients; 8(20%) in first 20 cases, and 2(5%) in next 20 cases.

Troublesome bleeding from minor vessels was another frustrating difficulty encountered in 2(5%) cases. This was also seen in only first 20 cases. (Table 2 & 3) None of the patient was converted to open repair because of dense adhesions and difficult dissection. There was no visceral injury recorded (Table 2).

Drain was placed in 5 (12.5%) cases and was removed on 2nd post-op day. Average post operative hospital stay for 37(92.5%) cases was one day, the remaining 3(7.5%) patients were discharged after two days.

Two (5%) patients presented with hematoma in the 2nd week of follow-up. All of these cases settled without any intervention. No surgical intervention was required in any case for management of hematoma/seroma.

Two (5%) patients presented in the immediate post operative period with complaints of urgency and dysuria, all settled with conservative management. None of the patients had port site infection.

Majority, 38(95%) patients returned to their routine activity of life in 07 days, 1(2.5%) patients resumed their daily life activities in 10 days and 1(2.5%) patients resumed their daily activities of life in two weeks time.

Out of total 40 patients, only 31(77.5%) patients came for follow up for a period of 06 months. No recurrence was reported on follow up for 06 months. Six (15%) patients presented with groin and thigh discomfort all were managed conservatively. One (2.5%) patients with chronic pain did not settle with conservative management and was referred to specialist pain clinic for the management of pain.

Table 1: Characteristics of patients

Type of hernia	n	%age
Unilateral	30	75
Bilateral	7	17.5
Recurrent	3	7.5
Right	21	52.5
Left	12	30
Both	7	17.5
Direct	8	20
Indirect	22	55
Both	10	25

Table 2: Description of intraoperative and postoperative complications.

Mean operative time (unilateral hernia)	1 st 20 cases	21-30 cases	Total
Intraoperative complications			
Troublesome bleeding	1(2.5)	0	1(2.5)
Clipping of epigastric vessels	1(2.5)	0	1 (2.5)
Trisection of vas deference	0	0	0
	1 st 20 cases	21-40 cases	Total
Urinary symptoms	2 (5%)	0(0)	2 (5)
Hematoma/ seroma	2 (5%)	0(0)	2 (5%)
Nerve irritation	4(10%)	2(5%)	6(15%)
Hydrocele	0	0	0
Recurrence in 6 months	0	0	0
Chronic pain	1(2.5%)	0	0

Table 3: Stratification of the patients data with respect of mean operative time and accidental pneumoperitoneum

	Mean operative time	Accidental Pneumoperitoneum
First 20 cases	107.25+9.54	8 (20%)
21-40 cases	97.50+7.40	2 (5%)
p-value	0.001*	0.077**

*Student's t-test

** chi-square test

DISCUSSION

Laparoscopic hernia repair has been criticized for technical difficulties, long learning curve and its cost¹⁶. In this study learning curve does not seem to be too long; operative difficulties and complications decreased significantly after doing 20 procedures. The technical difficulties can be overcome and familiarity with the anatomy of extraperitoneal hernia can be improved by structured training.

A Cochrane review has shown that laparoscopic hernia is associated with quicker convalescence¹⁷. In our study majority of our patients 95% resumed their routine activities after 07 days.

Operative time is a crucial factor when a new technique has to be introduced for wide acceptance, especially in the presence of already existing technique. Our operative time of TEP repair was long initially but it decreased from 123 minutes to about 90

minutes after doing 30 TEP procedures, however literature found no statistically significant difference in operative time between TEP and Lichtenstein repair^{18,19}. Zendejas et al, in a recent study found that a simulation based masterly learning curriculum decreased operative time, improved trainee performance and decreased operative and postoperative complications.²⁰ Virtual simulators are very useful mean of learning and are being incorporated as essential component of structured training of surgical skills but we had no access to simulator to practice TEP repair.

Out of operative difficulties, accidental pneumoperitoneum occurred in 25% cases that was managed by deflation with Varese needle. In literature the highest reported figure of pneumoperitoneum is 16%²¹. Our higher rate of Pneumoperitoneum might be because of our learning curve, as the rate of accidental Pneumoperitoneum dropped from 20% in first 10 cases to 2.5% in the last 10 cases.

For the higher rate of complications following TEP hernia repair, surgical expertise is prerequisite for obtaining good results.²² To overcome the issue of surgical expertise, we limited the performance of TEP hernia repair by the two senior surgeons who underwent through a process of structured training before actually performing the TEP procedure independently.

International literature suggested a conversion rate of 0.16 to 4%²³. In our study no conversion took place probably because of good patient selection and vast experience of the surgeons in laparoscopic surgery.

Our data also suggests a less operative time, no accidental peritoneal breach and no complication in the last 10 cases. This suggests that we improved our techniques in quite a few cases. However, a long learning curve of more than 250 cases have been suggested in literature¹⁵.

The prevalence of chronic pain after TEP repair in the literature varies from 9 to 23% during a follow up period of 12 to 65 months^{9,18,19}. In our study a lower rate of chronic pain 2.5% was found after a mean follow up of 06 months. Our low rate of chronic pain might be because of short follow up and small sample size. There was no Recurrence reported. Swadia²⁴, in his large series of 1814 TEP hernia repair over a period of 9 years, reported a high recurrence rate of 8% in the first three years that dropped to 0.67% in the last three years.

This study had some limitations. This was an experience of single center with a limited sample size of 40 cases with a follow up of only six months for recurrence. All the procedures were performed by two senior most and expert surgeons (with an

experience of at least 10 years in laparoscopic surgery). In spite of structured training the reproducibility of this technique by the trainees is a question that needs to be answered by another study.

CONCLUSION

Laparoscopic total extraperitoneal (TEP) hernia repair is a safe and doable technique that can be adapted for management of primary inguinal hernia especially in cases where cosmesis and early return to work is required. The learning curve of the total extraperitoneal hernia repair can be shortened by structured training.

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