

Complications of Total Extraperitoneal (TEP) Repair for Adult Inguinal Hernia

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ABSTRACT

Objectives: To evaluate results of laparoscopic total extra peritoneal repair for inguinal hernia in terms of complications. **Setting:** Surgical Unit 3, Allied Hospital, Faisalabad. **Period:** From March 2013 to February 2016. **Study Design:** Simple Descriptive Study. **Patients & Methods:** 114 patients over the age of 30 years underwent TEP repair for unilateral reducible inguinal hernia. Complications assessed included pain score assessment, analgesia requirement, time taken to return to normal activity and complications like intraperitoneal injury, conversion to open procedure, seroma & hematoma formation and surgical site infection. **Results:** Out of the 114 patients, 6 (5.26%) needed TEP converted to open and none suffered from serious complication during the procedure. 8 (7.01%) developed postoperative hematoma, 7 (6.14%) developed seroma and 5 (4.38%) developed surgical site infection. Postoperative pain assessment at 8 hours after surgery showed 42(36.8%) patients required extra analgesia while 13(11.4%) patients required extra analgesia 24 hours after surgery.

Keywords: Inguinal hernia, TEP, Complications.

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INTRODUCTION

Groin hernias are found in 3%–8% of the general population, and the treatment is essentially surgical.¹ Inguinal hernia repair is one of the most common operation performed, both open and laparoscopic techniques are used.^{13,15,16} Laparoscopic surgery has become increasingly popular because patients and the surgeons want surgery that is minimally invasive. Hence, it is gradually gaining acceptance as the treatment of choice for inguinal hernia. The main advantage of laparoscopic surgery for the treatment of adult inguinal hernia lies in the reduction of both the size of the wound and postoperative pain, thereby improving postoperative recovery, early return to work.^{2,3} Its importance goes beyond the individual care, since it has an economic impact on the patient's healthcare.³ Laparoscopic repair of the inguinal hernia is becoming an increasingly popular method of herniorrhaphy, with a range of 16.8–41.0% of such operations in the United States (varying with the region and the characteristics of the hernias).⁸

Five comparative studies showed that the laparoscopic technique for repair of recurrent inguinal hernia was associated with less wound

infection and a faster recovery to normal activity, whereas other complication rates, including the recurrence rate, were comparable between the open and the endoscopic approach.⁵

Endoscopic inguinal hernia repair had a reduced risk of chronic pain and numbness compared with open inguinal hernia repair.⁹ Complications were observed more commonly for larger hernia defects and a scrotal hernia.¹⁰ An anterior approach, not touching the preperitoneal space, as in the Lichtenstein operation, should be chosen in the event of a recurrence following previous endoscopic surgical techniques (TEP, TAPP).¹¹

The debate between open vs. TEP repair for inguinal hernia centers on costs, the steep learning curve, possible major complications and the need for general anesthesia.⁷

METHODOLOGY

Inclusion Criteria:

Patients age 30 years and above, suffering from unilateral reducible inguinal hernia, presenting to OPD from March 2013 to February 2016 were

selected for TEP repair provided there was no contraindication to TEP repair listed below.

Exclusion Criteria:

1. Irreducible hernia
2. Previous lower abdominal incision like pfennensteil incision, appendectomy scar, lower midline or para median incision.
3. Coagulation disorder
4. Patient medically unfit for general anesthesia.

Surgical technique of laparoscopic TEP repair without mesh fixation: Standard procedure for TEP repair was followed but mesh fixation was not performed because of added cost of the device needed for mesh fixation. A flap door as shown in the diagram below was created and mesh stabilization was achieved by placing the mesh between spermatic cord and the abdominal wall with flap door covering the spermatic cord.



Figure 1: Trimming the mesh for flap door



Figure 2: Flap door completed

A 15x15 cm polypropylene mesh trimmed in to 13x15cm by cutting a 3cm wide sleeve along its one border, making the mesh 15cm wide (medial to lateral) and 12cm in height (cranio-caudal). A vertical slit was cut in the middle of mesh beginning from its superior edge towards inferior edge ending at a distance 5cm from the inferior edge. Mesh finally placed in a way that the structures of spermatic cord would pass through this slit behind the flap door before entering the internal ring. Moreover, a 7.5cm long piece of the 3cm wide sleeve initially cut from the edge of mesh is stitched, utilizing 2/0 polypropylene suture, to one side of vertical slit in mesh to cover the defect created by vertical slitting of the mesh as shown in figure 1 and 2.

Postoperative Care: Postoperative pain was controlled by intramuscular diclofenac sodium 12 hourly for the first 24 hours after operation, followed by diclofenac orally twice a day. If further analgesia was required nalbuphine was given and record was made of no. of extra doses given to the patients. All patients received I/V cefuroxime 750 mg preoperatively, followed by 3 postoperative doses. Further antibiotic was administered if there was evidence of infection such as fever, wound redness or discharge.

Post-Operative Parameters: Pain was assessed according to a scale shown¹³ in table 1. Pain score was recorded at 8 hours and 24 hours after surgery.

Table 1: Pain assessment scale

Pain assessment	Score
Patient denies pain at rest	0
Mild pain but does not want analgesia*	1
Moderate pain wants analgesia*	2
Severe pain desperate for analgesia*	3
Almost in tears, repents to have undergone surgery	4
*Analgesia in addition to regular administration of diclofenac	

Need for conversion of the procedure to open repair, intraperitoneal injury, wound infection, seroma and hematoma formation were recorded.

RESULTS

TEP was performed for adult unilateral reducible inguinal hernia in 114 patients. The mean operation time was 90 minutes (range 60-120 minutes). Out of the 114 patients, 6(5.26%) needed TEP converted to open and none 0(0%) suffered from intraperitoneal

injury during the procedure. 8(7.01%) developed postoperative hematoma, 7(6.14%) developed seroma and 5(4.38%) developed surgical site infection. Postoperative pain assessment at 8 hours after surgery showed 42(36.8%) patients required extra analgesia while 13(11.4%) patients required extra analgesia 24 hours after surgery. The mean duration of hospitalization was 1.5±0.5 days.

Table 2: Results of assessment of post-operative pain (n=114)

Score	No. of patients having pain at 8 hours	No. of patients having pain at 24 hours
0	12 (27.9%)	8 (61.5%)
1	14 (32.5%)	3 (23.07%)
2	13 (30.2%)	2 (15.38%)
3	2 (6.97%)	-
4	1 (2.32%)	-

Assessment of pain at 8 hours after surgery showed 42(36.8%) patients required extra analgesia while 24 hours after only 13(11.4%) patients required extra analgesia.

Table 3: Intraoperative and postoperative complications (n=114)

Visceral or iliac vessel injury (n)	0
Conversion to open procedures (n)	6 (5.26%)
Hematoma(n)	8(7.01%)
Seroma(n)	7(6.14%)
Surgical site infection (n)	5(4.38%)
Post-operative pain after 8 hours(n)	42(36.8%)
Post-operative pain after 24 hours(n)	13(11.4%)

Hematomas were of small size and treated conservatively, did not need surgical evacuation. Out of 7 seromas, 2 needed aspiration twice, 3 needed aspiration once and remaining 2 resolved without aspiration. Five patients suffered from superficial infection of sub umbilical wound, which settled down after removal of stitches along with oral antibiotics. There was no early acute recurrence. Incidence of late recurrence could not be commented upon.

DISCUSSION

The repair of inguinal hernias still represents a major health issue. The multitude of techniques described confirms the instability of inguinal area and

complexity of the repair of this anatomic area. The objective of these techniques is to offer the most secure possible repair of these parietal defects. Endoscopic techniques are the only ones that offer these solutions without affecting the integrity of the abdominal wall.⁴

Laparoscopic inguinal hernia repair is a relatively new technique. Compared to open hernia repair, laparoscopic repair resulted in less wound complications, less postoperative pain, reduced analgesic requirements, faster resumption of normal activities.¹⁴

The average duration of hospitalization after carrying out TEP repair was 1.5±0.5 days which is comparable to local study conducted by Shaikh AG et al in which it was 1.4±0.6 days.¹⁴ It was much less as compared to global average of hospitalization of 6.79 days.⁴

In our series of 114 patients, there were 6(5.26%) conversions to open surgery and surgical site infection developed in 5(4.38%) patients. Although the figure is a bit higher as compared to those mentioned in international study conducted by Toma H et.al who reported 0%,² but comparable to local study conducted by Avais S et al who reported 4(3.96%).¹³ In our setup, we attribute this difference to lack of steep learning curve which is the pivot of TEP repair.⁷ Yet this conversion was not a failure. Surgical site infection in our study occurred in 5(4.38%) patients, is comparable to the local study conducted by Avais S et al which occurred in 3(2.9%) patients.¹³

If we compare rest of the results, they are at par with international studies in certain parameters like visceral injury (0%) vs. (0%)² and even better for need for analgesia 13(11.4%) vs. 6(20%).¹ While they were higher in our study for seroma (6.14% Vs. 0.5%)⁶ & hematoma formation (7.01% vs.2.6%)² as compared to international studies which may be due to extensive dissection of extra peritoneal space in our technique of TEP repair.

Overall the results however are encouraging and comparable to other local studies on TEP repair without marked differences.^{13, 14, 15, 16}

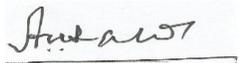
CONCLUSION

On the basis of our 3 year experience of performing TEP repair for inguinal hernia, we conclude that although the procedure is not entirely complication free yet TEP repair is a safe and promising treatment for adult inguinal hernia.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Name of Author	Contribution to the paper	Author's Signatures
Dr. Ata Ul Lateef	Main author, Conducted the original research, Revised the Manuscript	
Dr. Asrar Ahmad Khan	Analyze the Data	
Dr. Sultan Mehmood Khan	Assisted the collection of data	
Dr. Muneeza Zubair	Help in writing the Manuscript	