

Original Article

TOTAL EXTRA-PERITONEAL REPAIR OF INGUINAL HERNIA IN ADULTS: OUR EXPERIENCE FROM PAKISTAN

Farooq Butt, Ayesha Farooq Butt and Salman Imran Butt

Objective: To determine the outcome of TEP technique among our patients being operated in our setup for IH.

Methods: After approval from ethical review board of our hospital, this retrospective study was started. This study was conducted at Allama Iqbal Memorial Trust hospital, Gujranwala, Medcare International Hospital, Gujranwala and Services Institute of Medical Sciences, Lahore over a period of 2 months from January, 2017 to March, 2017. All the patients of both genders, who had been operated by TEP technique, were included in the study. All the demographic details of these patients were obtained. Also preoperative and post-operative outcome was noted including post-operative complications. All the data were entered on a pre-designed proforma and was analysed using SPSS version 20.0.

Results: A total of 124 patients were operated for TEP in this duration. The mean age of patients was found to be 43.44 ± 14.73 years. Most of the patients in this study were male. The most common side for IH was right side (61.2%). Most of the patients were undergoing for primary surgery for IH and only 7.2% were operated for recurrence. Regarding the per-operative course, the mean operative time for surgery was found to be 57.7 ± 18.58 minutes. None of our patients had received any intra-operative complication. Most common post-operative complication was found to be spinal headache in 8.8%, followed by urinary retention and seroma formation. Also 4 patients developed wound infection. Of 80 patients, whose long-term follow up was available, only 2 patients reported recurrence.

Conclusions: On the basis of this study, we conclude that TEP is a safe technique for IHR having many advantages of lesser scar formation and low complication rate, particularly in experienced hands. Therefore it may be used routinely and all patients with IH can be operated safely with this technique.

Keywords: Laparoscopy; Inguinal Hernia; TEP; TAPP; Minimally Invasive Surgery

Introduction

Inguinal hernia (IH) is one of the most commonly encountered surgical disease in surgery outdoor and inguinal hernia repair (IHR) is also one the most commonly performed surgical procedures. According to an estimate, globally >20 million IHR are performed annually.^{1,2} Regarding IHR, many surgical techniques are available. The most commonly used technique worldwide is open technique which is a conventional method of IHR. Laparoscopically IHR can be performed either as transabdominal preperitoneal (TAPP) repair or as total extraperitoneal (TEP) repair. Both of these techniques are considered having their own advantages and disadvantage. European Hernia Society (EHS) has recommended TEP approach for laparoscopic IHR than TAPP as in TEP technique, peritoneum is not breeched and all the dissection is done extra-peritoneally, hence the

complications including trauma to intra-peritoneal organs, post-operative ileus and port-site hernia are minimal in this technique.³ But at the same time, TEP is a relatively difficult procedure to learn as intra-peritoneal entrance and the plane is a known passage to any laparoscopic surgeon but extra-peritoneal planes are not a routine subway for anyone, therefore the learning curve for this technique is longer.⁴ In a meta-analysis, TEP was found no better than TAPP in terms of post-operative outcome, however, authors admitted that TEP a relatively difficult but safe procedure, particularly in expert hands, but not for novice laparoscopic surgeons.⁵ There are some studies available comparing laparoscopic IHR with each other and with the open techniques.⁶ However, from our country, minimal data is available over the topic. So we planned this study with the objective to determine the outcome of TEP technique among our patients being operated in our setup for IH.

Methods

After approval from ethical review board of our hospital, we planned this retrospective study. This study was conducted at Allama Iqbal Memorial Trust Hospital, Gujranwala, Medcare International Hospital, Gujranwala and Services Institute of Medical sciences, Lahore over a period of 2 months from January, 2017 to March, 2017. All the patients of both genders, who had undergone IHR by TEP technique, with the age of 18-60 years were included in the study. We excluded those patients whose files were incomplete and complete data was not available. A total of 124 patients were included in the study. Of these, 38 patients were from Allama Iqbal Memorial Trust Hospital, Gujranwala, 29 patients were operated at Medcare International Hospital, Gujranwala and remaining 57 patients were operated at Services Institute of Medical sciences, Lahore. All the procedures were done by authors of this study. All surgeons were fully trained consultant surgeons with more than 10 years experience in laparoscopy. All the demographic details of these patients were obtained. Also preoperative and post-operative outcome was noted including post-operative complications. Our routine protocol of these centres is to follow patients at 1 week and 3 week. And of recovery is uneventful, no further follow up is recommended. So all patients were contacted via phone also to know about the current status and condition. All the data were entered on a pre-designed proforma and was analysed using SPSS version 20.0.

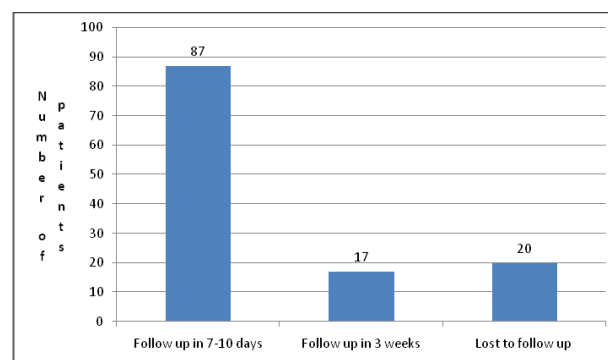
Results

A total of 124 patients were operated for TEP in this duration. All the file charts of these patients were included and analyzed. The mean age of patients was found to be 43.44 ± 14.73 years. Most of the patients in this study were male. The most common side for IH was right side (61.2%). Most of the patients were undergoing for primary surgery for IH and only 7.2% were operated for recurrence. Also most of IH were of direct type (52.4%). The basic demographic details of the patients are given in **table 1**. All of these patients underwent IHR by TEP technique and no patient needed to be converted to TAPP or open surgery. Among 124 patients operated, 87 patients came for follow up visit in 7-10 days and 17 patients came for visit within 3 weeks of the surgery. It is summarized in figure 1. Regarding the per-operative course, the mean operative time for surgery was found to be

57.7 ± 18.58 minutes. None of our patients had received any intra-operative complication. Regarding post-operative complications, most common was found to be spinal headache in 8.8%, followed by urinary retention and seroma formation. Also 4 patients developed wound infection; however it was only limited to subcutaneous plane in 3 of these cases. One patient had developed deeper infection, which also involved mesh and ultimately caused its infection. This patient was operated at 24th post-operative day for removal of mesh and posterior wall reconstruction by open method. He responded to this management and had uneventful recovery. All data are given in **table 2**. The follow up of our patients ranged from 2 months to 5 years.

Table-1:Demographic and general details of patients.

Age	43.44±14.73 years
Gender	
Male	107 (86.2%)
Female	17 (13.7%)
Side	
Right	76 (61.2%)
Left	36 (29%)
Bilateral	12 (9.6%)
Indication of Surgery	
Primary	115 (92.7%)
Recurrent	9 (7.2%)
Type of IH	
Direct	65 (52.4%)
Indirect	36 (29%)
Both (Pataloon Hernia)	23 (18.5%)



The long term follow up of 80 patients was available and remaining patients were not approachable of these 80 patients only 2 patients reported recurrence.

Table-2:Frequency of complications observed.

Complications	n (%)
Intra-operative complications	0
Post-opraive complications	
Seroma formation	5 (4.0%)
Spinal headache	11 (8.8%)
Urinary retention	6 (4.4%)
Wound infectin	4 (3.2%)
Mesh Infection	1 (0.9%)
Testicular swelling	4 (3.2%)
Recurrence	2 (1.6%)

Discussion

The objective of this study was to determine the outcome of patients undergoing TEP for IH in our setup. We have been performing laparoscopic surgery for IHR from more than a decade at our setup in Pakistan and all the surgeons who performed procedures in this study were well trained laparoscopic surgeons. We had operated 124 patients with TEP for IHR in 5 years duration. In our study, no patient had to be converted to TAPP or open surgery. Also the recurrence occurred in only 2 patients in this series. Our recurrence rate is lower than the other studies reported in the literature.⁷ In a large study with long follow-up of 5 years by Eklund et al, the recurrence rate of IH after TEP was found to be 3.5%. In our study, recurrence rate was 1.6% and follow up in our study also ranged upto 5 years.

Understanding the anatomy and structures during TEP surgery, are somewhat new and difficult for new and young surgeons. Therefore many authors have emphasized the need for proper training and initial procedures to be done under supervision by trainees. Also some have emphasized over the specific curriculum for TEP surgery as well as the usage of simulation techniques for its learning.^{8,9} Another advantage of laparoscopic IHR and TEP is that both direct and indirect components can be dealt at the same time. Also pantaloon hernia may be dealt with minimal scar formation as compared to open procedure for such cases. In this study, we had operated 12 bilateral (9.6%) and 23 patients

(18.5%) with pantaloon hernia.

In our study, most common post-operative complication observed was spinal headache (8.8%), followed by seroma formation (4.0%) and wound infection (3.2%). In another study by Toma H, seroma formation occurred in 1.3% of patients.¹⁰ In the same study, authors found that the co-morbidity of the patient had no significant impact over the post-operative complications. However, the open technique is definitely inferior to TEP in terms of post-operative complications as has been observed in many studies.^{11,12} Although in this study, we have not observed pain among patients undergoing TEP, but TEP has been proved to be superior than open surgery in terms of post-operative pain because of lesser size of the wound and lesser damage to the tissue around hernia sac.¹³ In a large study comprising 4565 patients with TEP surgery, most common intra-operative complications observed was bladder injury (0.04%) and intestinal perforation (0.09%).¹⁴ However, we had found no such complication in our serious, probably because all of the surgeries done in this series were by consultant laparoscopic surgeons. Also we always use three trocars, which are placed under vision and after proper insufflation, probably this is the reason for no such complication in our study. On the basis of this study, we conclude that TEP is a safe technique for IHR having many advantages of lesser scar formation and low complication rate, particularly in experienced hands. Therefore it may be used routinely and al patients with IH can be operated safely with this technique.

Conclusion

On the basis of this study, we conclude that TEP is a safe technique for IHR having many advantages of lesser scar formation and low complication rate, particularly in experienced hands. Therefore it may be used routinely and al patients with IH can be operated safely with this technique.

*Department of Surgery
Sialkot Medical College. Sialkot*

References

1. Tadaki C, Lomelin D, Simorov A, Jones R, Humphreys M, Choudhury S, et al. Perioperative outcomes and costs of laparoscopic versus open inguinal hernia repair. *Hernia*. 2016;20:399-404.
2. Shrestha BM. Inguinal Hernia Repair: Principles and Practice in the United Kingdom. *Pain*. 2016;4:5.
3. Simons M, Aufenacker T, Bay-Nielsen M, Bouillot J, Campanelli G, Conze J, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia*. 2009;13:343.
4. Edwards CC, Bailey RW. Laparoscopic hernia repair: the learning curve. *Surg Laparosc Endosc Percutan Tech*. 2000;10:149-53.
5. Wei FX, Zhang YC, Han W, Zhang YL, Shao Y, Ni R. Transabdominal preperitoneal (TAPP) versus totally extraperitoneal (TEP) for laparoscopic hernia repair: a meta-analysis. *Surg Laparosc Endosc Percutan Tech*. 2015;25:375-83.
6. Memon M, Cooper N, Memon B, Memon M, Abrams K. Meta analysis of randomized clinical trials comparing open and laparoscopic inguinal hernia repair. *Br J Surg*. 2003;90:1479-92.
7. Liem MS, van der Graaf Y, van Steensel CJ, Boelhouwer RU, Clevers G-J, Meijer WS, et al. Comparison of conventional anterior surgery and laparoscopic surgery for inguinal-hernia repair. *N Engl J Med*. 1997;336:1541-7.
8. Zendejas B, Cook DA, Bingener J, Huebner M, Dunn WF, Sarr MG, et al. Simulation-based mastery learning improves patient outcomes in laparoscopic inguinal hernia repair: a randomized controlled trial. *Ann Surg*. 2011;254:502-11.
9. Zendejas B, Cook DA, Hernández Irizarry R, Huebner M, Farley DR. Mastery learning simulation-based curriculum for laparoscopic TEP inguinal hernia repair. *J Surg Educ*. 2012;69:208-14.
10. Toma H, Eguchi T, Toyoda S, Okabe Y, Kobarai T, Naritomi G, et al. A 10-year experience of totally extraperitoneal endoscopic repair for adult inguinal hernia. *Surg Today*. 2015;45:1417-20.
11. Langeveld HR, van't Riet M, Weidema WF, Stassen LP, Steyerberg EW, Lange J, et al. Total extraperitoneal inguinal hernia repair compared with Lichtenstein (the LEVEL-Trial): a randomized controlled trial. *Ann Surg*. 2010;251:819-24.
12. van't Riet M, Weidema W, Steyerberg E, Lange J, Hendrik JB, Jeekel J. Total extraperitoneal inguinal hernia repair compared with Lichtenstein (the LEVEL-Trial): a randomized controlled trial. *Ann Surg*. 2014;251:819-24.
13. Bringman S, Wollert S, Österberg J, Smedberg S, Granlund H, Heikkinen TJ. Three year results of a randomized clinical trial of lightweight or standard polypropylene mesh in Lichtenstein repair of primary inguinal hernia. *Br J Surg*. 2006;93:1056-9.
14. Meyer A, Blanc P, Balique JG, Kitamura M, Juan RT, Delacoste F, et al. Laparoscopic totally extraperitoneal inguinal hernia repair: twenty-seven serious complications after 4565 consecutive operations. *Rev Col Bras Cir*.

Picture Quiz

Hereditary haemorrhagic telangiectasia

Telangiectasias of the tongue are most consistent with hereditary hemorrhagic telangiectasia. Peutz-Jeghers syndrome does not typically involve the tongue. HHT is characterised by telangiectasia (small vascular malformations) on the skin and mucosal linings, epistaxis (nosebleeds), and arteriovenous malformations (AVMs) in various internal organs. Skin and mucosa telangiectasias are most remarkable on the tongue, hands/fingers, nose, lips, mouth/throat and conjunctiva.

The internal organs that can harbor AVMs often include the lungs, GI tract, brain, liver, and spine. In the brain and lungs, bleeding can seriously endanger life. Anemia may occur due to bleeding from digestive tract AVMs. High-output heart failure may develop in the presence of marked shunting arterial blood to the venous circulation, e.g. when AVMs are present in the liver. Cerebral vascular accidents can occur from embolization from vascular malformations of the pulmonary circulation.