International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 12, December 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.12.2024.97

Original Research

A Comparative Evaluation of TEP (Standard Totally Extraperitoneal) and e TEP (Extended Totally Extraperitoneal) repair of inguinal hernias in tertiary care center of Central India

[1]Dr. Suchitra Biswas, [2]Dr. Navneet Mishra, [3]Dr. Rishabh Soni

[1,3]Resident, [2]Professor, Department of General Surgery, J K Hospital and LN Medical College, Bhopal, India

Corresponding Author
Dr. Suchitra Biswas
Resident, Department of General Surgery, J K Hospital and LN Medical College, Bhopal, India

Received Date: 18 November, 2024 Accepted Date: 16 December, 2024

Abstract

Background: Minimally invasive technique for inguinal hernia repair has been gaining popularity in the modern era. This study discusses our experience with the extended view totally extraperitoneal repair (eTEP)and its advantages which significantly expands the dissection plan over standard total extraperitoneal repair (TEP) of inguinal hernias.

Materials & methods: A prospective study was carried out for 60 patientsof more than 18 years of age, diagnosed with unilateral or bilateral inguinal hernias, medically fit to undergo the procedure were included into the study,one year from may 2022 to may 2023 by a single surgeon and his team. 30 patients underwent standard TEPand rest 30 underwent extended TEP.Patients were randomly assigned to each group. Based on ease of surgeon to perform the procedure,intraoperative and postoperative data from each one of the procedures was obtained and analysed.All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results: We performed TEPusing three midline ports and eTEP frommay 2022 to may 2023. Out of them, 73.3% were unilateral inguinal hernia and 26.6% were bilateral inguinal herniaThe mean operative time in TEP repair using three midline ports was 45 minutes and 68 minutes for unilateral and bilateral inguinal hernias respectively and that in eTEP repair was 60 minutes and 84 minutes respectively for unilateral and bilateral($P = 0.4321$). Conversion to TAPP was seen in 4 patients in TEP group. There was no significant difference between the two procedures in post operative parameters such as seroma/ hematoma formation , port site SSI, Mesh infection or post operative pain score. However in eTEP there is relatively easy creation of a large preperitoneal space which results in more ergonomic instrument manipulation.

Conclusion: Comparision of both the techniques showed extended TEP as a better alternative to standard TEP in terms of technical ease to the surgeon. In experienced hands both TEP and eTEP provides similar results but due to better ergonomics of eTEP it is better adapted by the surgeons as a procedure of choice for inguinal hernia repair.

Key words: TEP, eTEP, inguinal hernia repair

Introduction

Inguinal hernia repair has been one of most commonly performed surgeries with numerous approaches over time.With the present-day emphasis on enhanced recovery after surgery (ERAS) protocols, there is an increasing shift in the choice of operation, from open repairs to laparoscopic inguinal hernia repairs. Initial description of laparoscopic Totally Extraperitoneal (TEP) inguinal hernia repair by Ferzli [1992] and McKernan [1993].[2]

Extended Totally Extraperitoneal repair(eTEP) is a novel technique first introduced by Jorge Daes in 2012, to address difficult inguinal hernias.[3]Despite the benefits of minimally invasive techniques, a debate continues regarding the superiority of TEP versus eTEP. Both techniques are designed to reduce the risk of

DOI: 10.69605/ijlbpr_13.12.2024.97

transabdominal complications, but eTEP is said to offer enhanced ergonomics and easier access.

Materials & methods

The present comparative and observational study was conducted at the Department of General Surgery LNMC, Bhopal. A total of 60 patients of more than 18 years of age, diagnosed with unilateral or bilateral inguinal hernias, medically fit to undergo the procedure were included into the study. Written informed consent was obtained from the subjects prior to enrollment into the study. 30 subjects were treated with laparoscopic TEP mesh repair (group A) and 30 subjects were treated with eTEP mesh repair (Group B) for Inguinal Hernia Repair. Exclusion criteria for the present study included

- Patients < 18 years of age
- Patients with decompensated cardiac or airway diseases, or American Society of Anesthesiologists (ASA) Classification grade 3 or 4.

All patients were operated under general anaesthesia by the same surgeon and his surgical team.

Data was collected to compare and contrast eTEP repair with TEP repairs for inguinal hernias. The end

Points of study were:

1. Operating time
2. Conversions
3. Complications
4. Postoperative pain based on visual analogue scale (VAS)
5. Length of stay in hospital or time to discharge (TTD).

All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

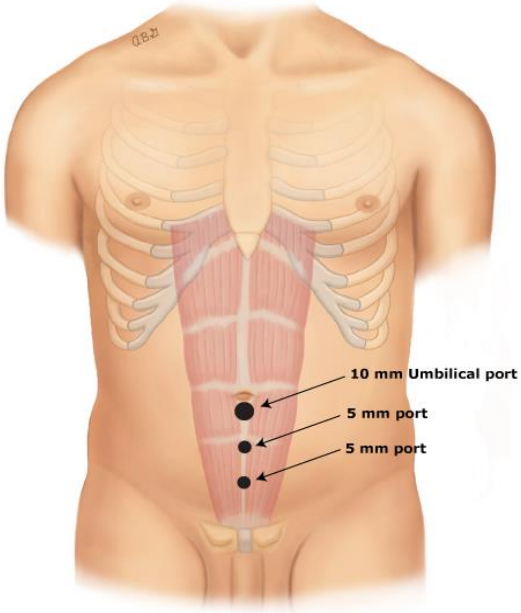

Figure: 1 TEP – Port placement

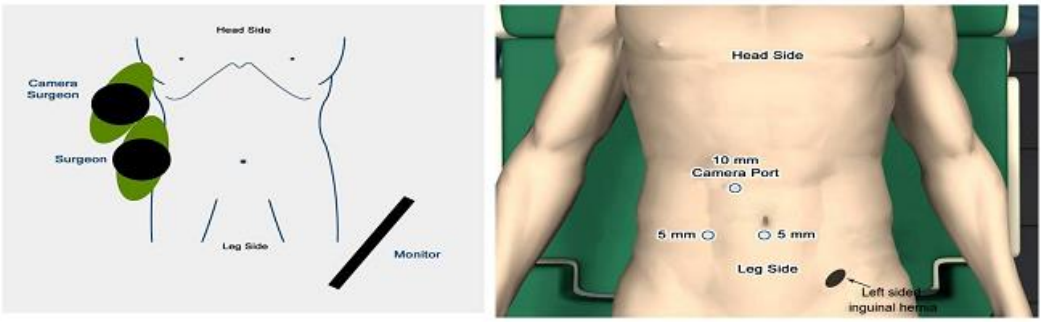

Figure 2: ETEP – Port & Surgeon Position for Left Side

DOI: 10.69605/ijlbpr_13.12.2024.97

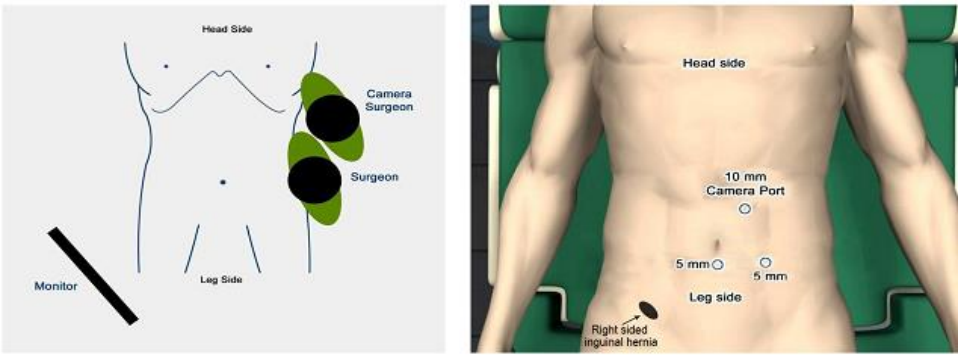

Figure 3: ETEP – Port & Surgeon Position for Right Side

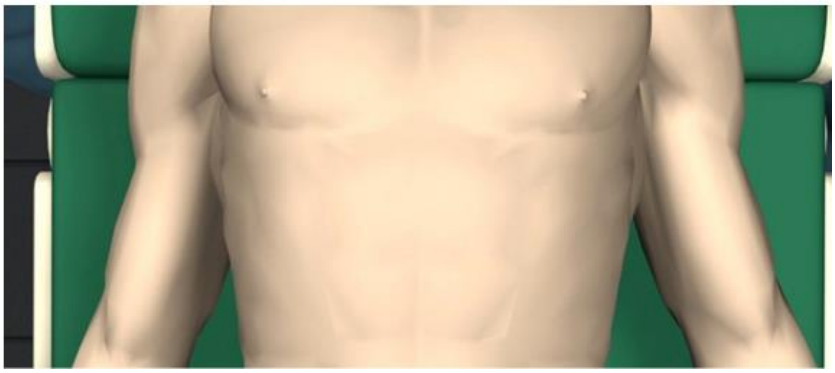

Figure 4: Port placement for bilateral hernia

Results

Among Group A, 20 patients had unilateral involvement while remaining 10 patients had bilateral involvement. Among Group B, 24 patients had unilateral involvement while remaining 6 patients had bilateral involvement. Mean operative time among unilateral patients of group A and group B was 45 mins and 60 mins respectively. Mean operative time among bilateral patients of group A and group B was 68 mins and 84 mins respectively. Conversion rate to TAPP among patients of group A was 13.33 percent. Mean hospital stay among patients of group A and group B was 5 days and 3.5 days respectively.

Table 1: Demographic and clinical variables

Variable	Group A	Group B
Mean age (years)	40.8	38.4
Unilateral cases	20	24
Bilateral cases	10	6
Operative time (mins)- unilateral cases	45	60
Operative time (mins)- bilateral cases	68	84

Table 2: Postoperative variables

Variable	Group A	Group B	p-value
Seroma/hematoma	2 (6.67 %)	3 (10 %)	0.12
Post site infection/Surgical site infection	0	0	-
Mesh infection	0	0	-
Mean VAS (Postoperative pain)	3.5	3	0.35

Discussion

Lap. TEP

Advantages

1. Extraperitoneal approach
2. Less Visceral and vascular injuries
3. No suturing of peritoneal flap as in TAPP

Disadvantages

1. Limited space for dissection and mesh placement
2. Restricted port placement

DOI: 10.69605/ijlbpr_13.12.2024.97

3. No Triangulation
4. Not reproducible in every case and thus
5. Difficulty in teaching and learning the technique
6. Poor tolerance to pneumoperitoneum

Lap. e TEP - Principle

• The preperitoneal space can be reached from virtually anywhere in the anterior abdominal wall.
• Preperitoneal space in lower abdomen is continous with the retrorectus space beyond the arcuate line.

Salient features of eTEP technique

1. Fast and easy creation of the extraperitoneal space.
2. A large surgical field.
3. A flexible port setup adaptable to many situations.
4. Easy parietalization of the cord structures
5. Easier management of the distal sac in cases of large inguinoscrotal hernias.
6. Improved tolerance of pneumoperitoneum

Indications of e TEP

We use eTEP technique to repair most cases of inguinal hernias; however, there are cases for which eTEP is especially useful:

1. For the new surgeon: eTEP is easier to learn & master
2. Large inguinoscrotal, sliding, or incarcerated hernias
3. Obese or post-bariatric patients
4. When distance between umbilicus and pubic tubercle is short
5. In patients with previous pelvic surgeries.

In the present study, among Group A, 20 patients had unilateral involvement while remaining 10 patients had bilateral involvement. Among Group B, 24 patients had unilateral involvement while remaining 6 patients had bilateral involvement. Mean operative time among unilateral patients of group A and group B was 45 mins and 60 mins respectively. Rashid A et al compared the “totally extra-peritoneal” repair (TEP) using three midline ports with “enhanced view totally extra-peritoneal repair” (eTEP) repair in the management of inguinal hernia. Data from 152 patients with inguinal hernias were analyzed who were operated in equal numbers, either by TEP repair or by eTEP repair. Follow-up data of 1 year were also analyzed. In the TEP group, five patients, and in the eTEP group, four patients had not completed the mandatory 1-year follow-up and as such were excluded from the final analysis. Thus, the total number of patients considered for final analysis was 143 (TEP [71], eTEP [72]). The average operative time in TEP repair using three midline ports was 68.16 minutes and that in eTEP repair was 65.12 min (P = 0.4321). No statistically significant difference was noted in the intraoperative and postoperative complication rates between these two techniques. The Surgeon’s Satisfaction Score was significantly better in the eTEP group as compared to the TEP group (P = 0.0023). The recurrence rates (P = 0.7861) and postoperative hospital stay were not different between the two techniques (P = 0.7125). In experienced hands, both TEP and eTEP provide similar results; however, eTEP provides an overall better surgeon satisfaction score.[11]

In the present study, mean operative time among bilateral patients of group A and group B was 68 mins and 84 mins respectively. Conversion rate to TAPP among patients of group A was 13.33 percent. Mean hospital stay among patients of group A and group B was 5 days and 3.5 days respectively. Srivastava NK et al compared the data of eTEP repair with that of TEP and TAPP repair. Two hundred twenty patients were randomly assigned to one of three groups of eTEP (80), TEP (68), and TAPP (72) after matching for age, sex, and clinical extent of hernia. Permission of ethics committee was taken. Comparison with TEP showed, mean operating time for eTEP was significantly longer in the first 20 patients, subsequently there was no difference. Conversion rates of TEP to TAPP was significantly higher. The other peroperative and postoperative parameters did not differ. Similarly, on comparison with TAPP, there was no difference in any of the parameters. eTEP, also had shorter operating time and less incidence of pneumoperitoneum when compared to published TEP and TAPP studies. All the three laparoscopic hernia approaches had similar outcomes. eTEP cannot be advocated as a substitute for TAPP or TEP. The choice of procedure should be the surgeon's choice.

Conclusion

Our experience with the e-TEP technique has been satisfactory. We have had no conversions in spite of the difficult cases selected. There were nomajor complications, and functional results were excellent. We believe this modification has a place in the armamentarium for hernia repair. It is especially useful for repair of large inguinal hernias, inguinoscrotal hernias,

incarcerated hernias, bilateral hernias, in obese patients, and in patients with a short distance between the umbilicus and the pubic tubercle. Relatively easy creation of a large preperitoneal space which results in more ergonomic instrument manipulation. eTEP can be completed without hindrance, even after a peritoneal breach induced pneumoperitoneum, followed by its repair. Because of the large preperitoenal space both learning and teaching this procedure is much easier than TEP. The final choice should be the surgeon’s, based on their expertise.

DOI: 10.69605/ijlbpr_13.12.2024.97

References

1. Decker E, Currie A, Baig MK. Prolene hernia system versus Lichtenstein repair for inguinal hernia: a meta-analysis. Hernia. 2019 Jun;23(3):541-546.
2. McKernan JB, Laws HL. Laparoscopic repair of inguinal hernias using a totally extraperitoneal prosthetic approach. SurgEndosc. 1993;7(1):26–28.
3. Daes J. The enhanced view-totally extraperitoneal techniquefor repair of inguinal hernia. Surg Endosc. 2012;26(4):1187–1189.
4. Pollack HM, Popky GL, Blumberg ML. Hernias of the ureter.--An anatomic-roentgenographic study. Radiology. 1975 Nov;117(2):275-81.
5. Lu A, Burstein J. Paraperitoneal inguinal hernia of ureter. J Radiol Case Rep. 2012 Aug;6(8):22-6.
6. McKay JP, Organ M, Bagnell S, Gallant C, French C. Inguinoscrotal hernias involving urologic organs: A case series. Can Urol Assoc J. 2014 May;8(5-6):E429-32.
7. Gellett LR, Roobottom CA, Wells IP. Inguinal hernia--an unusual cause of bilateral renal obstruction. Clin Radiol. 2000 Dec;55(12):984-5
8. Page B, Paterson C, Young D, O'Dwyer PJ. Pain from primary inguinal hernia and the effect of repair on pain. Br J Surg 2002;89:1315-8.
9. Fitzgibbons Jr RJ, Jonasson O, Gibbs J, Dunlop DD, Henderson W, Reda D, et al. The development of a clinical trial to determine if watchful waiting is an acceptable alternative to routine herniorraphy for patients with minimal or no hernia symptoms. J Am Coll Surg 2003;196:737-42.
10. Rashid A, Bali RS, Samoon AH, Arah R, Singh S, Mir IS. Totally extraperitoneal repair using three midline ports versus enhanced view totally extraperitoneal repair in men with uncomplicated inguinal hernia. Int J Abdom Wall Hernia Surg 2023;6:222-6
11. Srivastava NK, Yadav AS, Sinha R. A Comparative Evaluation of Extended Total Extraperitoneal Repair Versus Standard Total Extraperitoneal Repair and Transabdominal Preperitoneal Repair of Inguinal Hernias. JSLS. 2023 Apr-Jun;27(2):e2023.00004. doi: 10.4293/JSLS.2023.00004. PMID: 37187806; PMCID: PMC10178627.
12. Kumar K, Shetty DC, Wadhwan V, Dhanapal R, Singh HP. Dentinoameloblastoma with ghost cells: A rare case report with emphasis on its biological behavior. Dent Res J 2013;10:103-7.
13. Singh HP, Kumar P, Goel R, Kumar A. Sex hormones in head and neck cancer: Current knowledge and perspectives. Clin Cancer Investig J 2012;1:2-5