



TO COMPARE BETWEEN EXTENDED TOTALLY EXTRAPERITONAL REPAIR VERSUS TRANSABDOMINAL PREPERITONEAL REPAIR IN A TERTIARY RURAL CENTRE.

General Surgery

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ABSTRACT

Aim & Objective: - To compare outcome, duration of surgery, post op complications, cost effectiveness and recurrences between eTEP Versus TAPP of Inguinal Hernias in our hospital **Method:** - A short study of forty patients was conducted where 20 patients were assigned eTEP and 20 patients were assigned TAPP and follow up conduction for 1 week, 1 month, 3 months and 6 months was done. **Result:** The results showed that the mean operating time for eTEP repair is lesser as compared to that of TAPP. It was also observed that there was minimal pain, early recovery and lesser duration of hospital stay in patients who got operated by eTEP Repair approach rather than TAPP approach. **Conclusion:** - A laparoscopic inguinal hernia surgical repair can be done by many methods, but following study including eTEP repair vs TAPP repair conducted concluded that it was noted that eTEP Repair and TAPP repair both had negligible recurrence rates. It was also noted that eTEP Repair has less operating time, patients experienced lesser pain and lesser duration of stay in the hospital.

KEYWORDS

INTRODUCTION

Hernia is an area of weakness or complete disruption of the fibromuscular tissues of the body wall.

- Inguinal hernia is the most common type of hernia found in patients.
- Surgical repair of Inguinal hernia is the most common procedure among general surgery performed as of now.
- There are two basic types that are fundamentally different in anatomy and causation.
- DIRECT INGUINAL HERNIA & INDIRECT INGUINAL HERNIA
- Direct inguinal hernias are found medial to the inferior epigastric artery and vein, and within Hesselbach's triangle.
- The indirect inguinal hernia develops at the site of the internal ring.
- Despite the high incidence, the technical aspects of hernia repair continue to evolve
- Laparoscopic inguinal hernia repair surgery has revolutionised inguinal hernia repair by minimally invasive surgery, less duration of stay in hospital, decreased pain, lesser scar marks as compared to open hernia surgery.
- Laparoscopic inguinal hernia repair surgery can be done in many ways such as totally extraperitoneal (TEP), transabdominal preperitoneal (TAPP), including recent modifications such as Extended totally extraperitoneal repair (eTEP).
- Duration of surgery, post operative pain, duration of stay in hospital, recurrence are mostly observed in patient.
- Multiple factors noted are tackers used, creating of plane, mesh insertion.

TAPP: - The transabdominal preperitoneal (TAPP) (fig1.0) repair involves standard laparoscopy with access into the peritoneal cavity and placement of a large mesh along the anterior abdominal wall, thereby repairing the hernia posterior to the defect.

- This technique was the first laparoscopic hernia repair to be performed.
- Ports are generally placed through the umbilicus and then laterally on either side of the rectus muscle.



Figure 1.0 TAPP Group B

E-TEP: - Most recent modification seen in laparoscopic minimally invasive surgery in inguinal hernia repair.

- "E" preceding the acronym TEP meaning extended/ enhanced view (fig 2.0)
- This technique shares the same basis as TEP in which entrance in peritoneal cavity is avoided. The main difference lies in the positioning of camera ports, located in a more cephalad position and lateral to midline.
- This modification helps in a larger workspace and more flexible location of working ports for the surgeon.



Figure 2.0 e-TEP Group A

METHODOLOGY

A prospective randomised study was conducted involving the patients who presented with unilateral inguinal hernia at KMMCH. A total of 20 patients were operated in our unit in a duration of 6 months between December 2023 to May 2024.

Inclusion Criteria

- Age > 30 years
- Reducible hernia
- Both direct and indirect hernias
- Uncomplicated

Exclusion Criteria

- Complicated hernia
- Recurrent hernia
- Unfit for general anaesthesia
- Previous abdominal surgeries.

- GROUP A: - E-TEP INGUINAL HERNIA SURGERY (fig 2.0)
- GROUP B: - TAPP INGUINAL HERNIA SURGERY (fig 1.0)
- BOTH GROUP PATIENTS UNDERWENT GA WITH SAME ANTIBIOTIC PROPHYLAXIS, SUTURES AND POST OP ANALGESIA.

Procedure

Postoperative surgical site pain, was assessed with a visual analog scale (VAS) ranging from 0 to 10.

- Patients were educated about the use of VAS preoperatively (in the ward before surgery).
- Pain was assessed in every patient at surgical sites at 6, 12, 24, and 36 hours postoperatively.
- Postoperative analgesia in the form of intravenous paracetamol 15 mg/kg given s.o.s was given in both groups.

The outcomes assessed were: -

- Time taken for surgery
- Wound infection
- Postoperative pain
- Cost effectiveness
- Any complications
- Any recurrences

RESULTS

- A total of 56 patients were assessed for eligibility, out of which 40 were enrolled and underwent laparoscopic inguinal hernia repair. The rest 16 patients were not enrolled as 10 didn't give consent and 6 did not meet eligibility criteria.
- The enrolled patients were divided into group A (e-TEP) and group B (TAPP) and were followed up.
- All patients in both the groups were male.
- Table 1 presents the demographic distribution of the studied population, categorising individuals into group A (e-TEP) and group B (TAPP) based on specific parameters.
- Both groups were found to have a comparable age (p -value=0.241) on doing a sample t-test.

Demographic parameters	type of surgery		Sig. (2-tailed)
	Group A (e-TEP)	Group B (TAPP)	
Age Group			
45-50	5 (50%)	4 (40%)	0.241
51-55	3 (30%)	3 (30%)	
56-60	2 (20%)	3 (30%)	
Type of hernia			0.398
Direct	4 (40%)	6 (60%)	
Indirect	6 (60%)	4 (40%)	

- Analysing the type of hernia, the distribution differs with 40% having a direct hernia and 60% having an indirect hernia in group A. In contrast, group B shows an inverse pattern with 60% direct hernia and 40% having indirect hernia. (Fig 3.0 & 4.0)



Fig 3.0



Fig 4.0

Time taken for surgery (in min)	Group A		Group B		Sig. (2-tailed)
	Direct hernia	Indirect hernia	Direct hernia	Indirect hernia	
40-50	0	0	0	0	0.001
51-60	3 (30%)	0	0	0	
61-70	1 (10%)	4 (40%)	0	0	
71-80	0	2 (20%)	4 (40%)	0	
81-90	0	0	2 (20%)	3 (30%)	
91-100	0	0	0	1 (10%)	
Average time	58.75	69.87	65.4±6.44	77	

- Table 2 provides a detailed breakdown of the time taken for surgery for patients in Group A (e-TEP) and Group B (TAPP), further categorized by the type of hernia, including Direct and Indirect hernias. Independent sample t-test was performed to evaluate the significant differences between both the groups.
- In Group A, for direct hernia repair, the majority of surgeries (30%) were completed within the time range of 51-60 minutes, followed by 10% in the 61-70 minutes range. No surgeries took longer than 70 minutes in this category.
- On the other hand, for indirect hernia repair in Group A, the time distribution was more varied, with 40% of surgeries falling into both the 61-70 minutes and 20% of them took 71-80 minutes.
- In Group B, 40 % of direct hernias fell in time ranges of 71-80 mins and 20 % in 81-90 mins range. However, for indirect hernia repair, the time distribution is broader, with 30% of surgeries falling in the 81-90 minutes range and 10% in the 91-100 minutes range.
- Statistical analysis reveals a highly significant difference ($p < 0.001$) between the time taken for surgery in both groups, suggesting that the observed variations are unlikely to occur by chance.

- Comparing the average times for surgery, Group A had an average time of 58.75 minutes for direct hernia repair and 69.87 minutes for indirect hernia repair, (65.4 ± 6.44 minutes).
- In contrast, Group B had longer average times, with 77 minutes for direct hernia repair and 87 minutes for indirect hernia repair (81.4 ± 6.38 minutes).
- Group A generally showed shorter surgery times compared to Group B, and there were notable differences in the distribution of surgery times between the two groups, especially in the indirect hernia repair category. (Fig 5.0)
- The statistical significance further supports the notion that the time taken for surgery differs significantly between the two groups. (Fig 6.0)

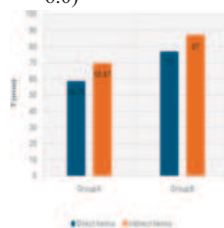


Fig 5.0

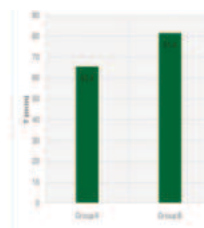


Fig 6.0

- Both groups showed seroma formation as a complication post-op in a few patients, which was comparable and not affecting the quality of life and the end results. In terms of recurrences, there are no instances reported in either Group A or Group B at the 1-month, 3-month, or 6-month follow-up periods. These findings suggest a favorable outcome in terms of complications and recurrences for both e-TEP and TAPP groups. (Fig 7.0)

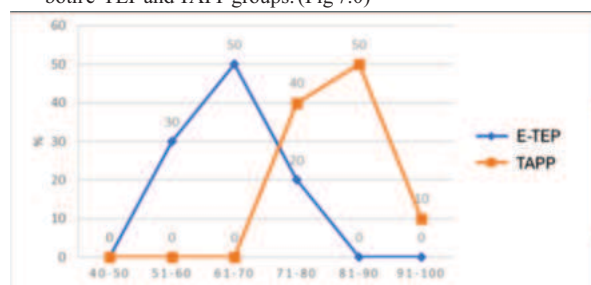


Fig 7.0

Comparison Of Vas Scores Between Both Groups At Different Postoperative Hours: - A statistical significance of the pain score differences between the two surgeries is shown by P value of 0.001, which is constant across the observed time frames. (Fig 8.0)

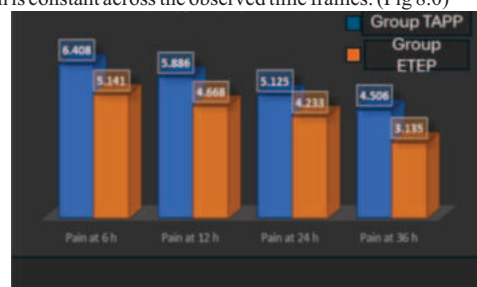


Fig 8.0

Cost Effectiveness Between Both Groups:- After analysing the cost effectiveness of both the groups, it was observed that Group B has an average of higher cost as compared to that of group A in case of intra operative expenses such as uses of tackler and use of ethylene oxide to reuse the same tackler in a different set of patient to reduce further cost. (Fig 9.0)

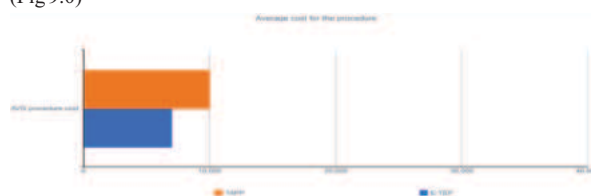


Fig 9.0

DISCUSSION

Though laparoscopic hernia repair has limitations such as long operative time, longer learning curve; it is safer with faster recovery, less post-op complications, reduced morbidity. Laparoscopic hernia surgery can be performed with many modifications for patient betterment.

- E-TEP is said to have longer learning curve than that of TAPP but shorter duration of surgery.
- In other conclusions, e-TEP also has lesser pain scale, early mobilisation, cost effectiveness as compared to that of TAPP.
- Post operative seroma formation was noted in both the groups in a few patients which are comparable and not affecting the end results.
- Recurrences rates calculated were almost negligible for both the groups.

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