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## A retrospective study of short term outcomes of ventral abdominal wall hernia patients operated by extended total extraperitoneal mesh repair at a tertiary care centre

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### Abstract

**Background:** Laparoscopic repair of various abdominal wall hernias are well accepted procedure due to its low post-operative complications, recurrence and long term results. Various procedures have been described like IPOM, MILOS, E-MILOS, SCOLA, TES and E-TEP. Here we present short term outcome of ventral abdominal wall hernia patients operated by extended total extra peritoneal (E-TEP) repair at a tertiary care hospital over a period of two years.

**Aims and Objectives:** To assess the initial outcomes of patients of ventral abdominal hernias operated by extended total extra peritoneal mesh repair (E-Tep). The study was done to find out the effectiveness of E-Tep repair in surgical treatment of ventral abdominal wall hernia patients.

**Methods:** All the patients operated electively for uncomplicated ventral hernias from November 2020 till December 2021 were selected for the study and followed up for one year till December 2022.

**Results:** In our study 35 patients, were operated by E-Tep for ventral hernia repair. There was no incidence of postoperative complications in terms of, haemorrhage, surgical site infection, chronic pain and recurrence. There was 10.5% incidence of seroma in postoperative period which was managed conservatively.

**Conclusion:** In our experience, E-Tep repair is found to be effective as it allows flexibility in placement of ports for better suturing and deployment of an adequate size of polypropylene mesh in a retro muscular space.

**Keywords:** Retro muscular space, ventral abdominal wall hernia, enhanced view totally extra peritoneal repair, transverses abdominis release, diastasis of rectus abdominis muscle

### Introduction

A modification of the classical TEP approach which overcomes the major limitation of TEP in which there is limited space provided for dissection, was first described by Jorge Daes <sup>[1]</sup> in 2012 for groin hernia repair. Since the last few years this technique has been applied for the repair of laparoscopic ventral and incisional hernias. The repair of incisional and ventral hernias continues to be a surgical challenge. Reports published in the medical literature indicate 3 to 13 percent of laparotomy patients develop incisional hernias <sup>[2]</sup>. Moreover, clinical studies indicate that the traditional, or open, technique to repair large abdominal wall defects is associated with recurrence rates ranging from 25 to 49 percent. Amongst the non-iatrogenic ventral hernias, divarication of rectus abdominis, umbilical, para-umbilical, spigelian and epigastric are more common <sup>[3]</sup>. The laparoscopic technique for ventral hernia repair involves the placement of a tension free prosthetic bridge across the musculofacial defect rather than attempting to approximate the edge of defect.

In the current era of minimally invasive surgery, E-tep has emerged as an effective and novel technique for the repair of ventral hernias.

### Material and Methodology

This retrospective study was designed for recognition, effectiveness and replication of E-TEP repair for the surgery of abdominal wall hernias.

We have reviewed data of 35 patients of abdominal wall hernias operated by E-TEP repair without transverses abdominis muscle release (TAR) and without diastasis of rectus abdominis muscle (DRAM) from November 2020 till December 2022 at our institute. Their demographic data, intra-operative details, post-operative complications and follow up data for a period of one year were noted.

The surgical procedure was performed under general anesthesia. A 10 mm optical trocar was placed at left hypochondriac region and left retro muscular space was created by balloon technique. Additional two 5 mm trocars were placed at left side for dissection. Midline cross over was done and one 5 mm trocar which was placed in the right hypochondriac region. Right retro muscular space was dissected, following which the hernial sac was dissected. The contents were reduced and retro pubic dissection was completed. Closure was done by suturing peritoneum and posterior rectus sheath, closure of hernia defect and placement of adequate size of polypropylene mesh.



Fig 1: Port Placement for E-Tep operated for ventral hernia.

**Results**

Table 1: Patients Characteristics

Gender	
Male	15 (42.85%)
Female	20 (57.15%)
Age in years	
Mean	56.25
SD	12.39
BMI (kg/m <sup>2</sup> )	
Mean	27.54
SD	3.61
Medical History	
Hypertension	5 (14.29%)
T2DM	1 (2.86%)
CAD	1 (2.86%)
TB	0
COPD / Asthma	0
Recurrent Hernia	2 (5.71%)

Amongst the 35 operated cases by ETep for ventral hernia 20 patients were female and 15 were male with a mean age of 56.25 years and mean BMI of 27.54 kg/m<sup>2</sup>. One patient was diabetic, five were hypertension and one had CAD. Amongst 35 patients 22 patients had a primary hernia, 11 had an incisional hernia and 2 had recurrent hernia.

Table 2: Perioperative Details

Operative Time	
Mean	134.58 min
SD	20.25 min
Size of Defect (Width)	
Mean	4.2 cm
SD	1.8 cm
Defect area(cm <sup>2</sup> )	
Mean	40.5
SD	10.2
Mesh Size(cm <sup>2</sup> )	
Mean	460
SD	145.25
Post Op Stay(Days)	
Mean	2.14
SD	0.25
Post Op Pain (VAS) Day 1	
Mean	3.14
SD	0.68
Post Op Pain (VAS) Day 3	
Mean	1.28
SD	0.15
Post Op Pain (VAS) Day 7	
Mean	0
SD	0
Complication	
Seroma	3 (10.50%)
Hemorrhage	0 (0.00%)
Surgical Site Infection	0 (0.00%)
Recurrence	0 (0.00%)

The mean operating time in our study was 134.58 minutes. and ranged from 121 to 180 minutes. The Mean defect width was 4.2 cm .The mean mesh size was 460 cm<sup>2</sup>. There was no drain placement done in any of the operated cases. The mean duration of postoperative stay was 2.14days. The postoperative pain was assessed on day 1, day 3, day 7. Majority of the patients were pain free (31/35) on post-operative day 3, while no patient had complaints of pain on POD7. There was 10.5% incidence of seroma in postoperative period. This was managed conservatively and resolved in 3-5 weeks on follow up without any surgical intervention. There was no incidence of postoperative complications in terms of haemorrhage, surgical site infection and recurrence.

**Discussion**

In the era of minimally invasive surgery, the eTEP technique for the repair of ventral abdominal wall hernias has recently gained popularity as this technique offers the use of retromuscular space and allows for complete exclusion of mesh from the peritoneal cavity, thus avoiding direct contact between mesh and visceral contents [4]. Post-operative morbidity is a major drawback seen with traditional open hernia repair [4]. A recent meta-analysis of 51 articles showed that retromuscular mesh repair is associated with a lower recurrence rate [5].

Our study supports the protective role of the minimally invasive techniques as compared to open hernia repair.

In our study, there was 3 cases of post operative seroma formation. These seroma resolved by conservative management by 3-5 weeks and did not require any surgical intervention. There was no hemorrhage, surgical site infection or recurrence observed in our study during the follow up period. There was no incidence of postoperative chronic pain on long term follow up.

In our experience, e-Tep repair is found to be effective as it allows flexibility in placement of ports for better suturing and

deployment of an adequate size of polypropylene mesh in a retro muscular space. This repair can be adapted by surgeons with advanced laparoscopic skills with careful selection of patients.

### Conclusion

From our study we conclude that with well-trained surgeons, eTEP is a novel, safe and feasible technique for the repair of ventral abdominal wall hernia. However long term results along with multicentric studies need to be assessed for wider acceptance.

### Conflict of Interest

Not available

### Financial Support

Not available

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