



LAPAROSCOPIC TAPP FOR VENTRAL HERNIA– ECONOMIC AND VIABLE OPTION OVER IPOM REPAIR

General Surgery

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ABSTRACT

A prospective study of laparoscopic trans-abdominal pre peritoneal (TAPP) repair of Ventral Hernia is presented. A synthetic polypropylene mesh was placed in retro peritoneal and retro-rectus space based on Rives-Stoppa technique. Besides drastic reduction in cost, it avoids visceral complications related to IPOM and tackers. Sublay mesh needed minimum or no fixation by tackers or sutures.

25 patients of ventral hernia underwent TAPP during 4years period from 2017 to 2019. Results were retrospectively analyzed. Male: Female ratio was 1:1.5. There were 15 cases of primary midline and 10 cases of incisional hernia. Average size of defect was 4.5 cm, maximum being 8.0 cm. Synthetic polypropylene mesh was placed in preperitoneal space. Mean operating time was 100 minutes. Average hospital stay was 4 days. Technical difficulty in raising composite flaps of peritoneum with posterior rectus sheath and its closure was experienced. Primary defect was closed in 15 patients by intra corporeal continuous barbed or transfascial prolene suture by shoe-lacing technique. Postoperative seroma occurred in 8% patients, which resolved spontaneously in 2 weeks time. 1 old female patient had recurrence, she had thin pendulous abdomen.

KEYWORDS

Laparoscopic Ventral Hernia, preperitoneal repair, Incisional hernia, polypropylene mesh, TAPP.

INTRODUCTION:

Ventral hernia is a common problem and it is believed that half of the population will be born with or will acquire it in lifetime. Increasing number of laparotomies has resulted in an average incidence of 10% incisional hernia¹. Open surgical approaches for ventral hernia have given higher recurrence rates. Open anatomic repair recurrence 24%-54%; tensionless mesh hernioplasty recurrence 10%-24%²⁻⁴. Laparoscopic surgery, a gold standard for cholecystectomy, is now being increasingly accepted for repair of groin and ventral hernia. LeBlanc and Booth¹⁰ first reported laparoscopic intra-peritoneal on lay mesh repair for ventral Hernia with lower recurrence rate of 2-5% in selected cases, this technique however needs expensive meshes and fixation devices. Laparoscopic sublay placement of inexpensive synthetic mesh in pre-peritoneal (TAPP) or retro-rectus space, has drastically reduced the cost and visceral complications related to IPOM and tackers. The primary facial defect can also be closed, with reduction in rate of seroma, and better coverage of the hernia defect by mesh. Added advantage of TAPP is detection and repair of occult hernia of pre-peritoneal fat missed on IPOM repairs. A prospective study of 25 cases of Ventral hernias repaired by laparoscopic TAPP technique is presented. Average follow up of patients was 18 months.

MATERIAL AND METHODS:

25 patients of ventral hernia (15 primary and 10 incisional) were included in this study from 2017 to 2019. Defect size ranged from 2.0 cm to 8.0 cm. After routine investigations, abdominal USG and CECT abdomen (some cases) were done for detailed evaluation of size and contents of hernia.

Following patients were excluded from this study: Hernia defects more than 10 cm, obstructed hernia, patients of ASA grade 4, lumbar hernia, Spigelian hernia and multiple scars of previous abdominal surgeries.

Technique of Laparoscopic (TAPP) surgery: General anesthesia was given to all cases. The Surgeon stood on the left side of the patient with the monitor on right side. Pneumo-peritoneum was created by Veres's needle at palmer's point, at least 10 cm from defect. One 10 mm camera port and two to three 5 mm ports were placed in left flank according to site of hernia. Adhesiolysis was done with help of scissors (with minimum use of electro cautery) or harmonic shears. Flap of peritoneum and posterior rectus sheath was raised by sharp and blunt dissection from 5cm away from the defect margin. Dissection of the composite flap was continued to edge of the defect and later to opposite side for at least another 5-7cm all around the defect. In supra pubic hernia, the dissection was continued to expose both ileopectineal lines for secure fixation of the mesh. The hernia sac was

either reduced or peritoneum was cut all around its neck. Any occult hernia of pre-peritoneal fat was reduced. Hernia defect size was measured on 8 mm pressure. Primary defect was closed in 15 patients by intra corporeal continuous barbed (10) or trans-fascial polypropylene suture (5) by shoe-lacing technique. 15x15 cm polypropylene mesh was tailored according to the defect and introduced through 10 mm port. It was centered over and extended 3-5 cm beyond the defect. It was fixed to the rectus muscle by few tackers. Tears in peritoneum were repaired by Vicryl 2/0 suture and flap was closed by barbed/Vicryl 2/0 suture or tackers. Compression dressing was applied over the defect site to reduce postoperative seroma. Postoperatively, the patients were kept on i.v. fluids, antibiotic and analgesic injections for 24-48 hours. The patients were ambulated within 6 to 12 hours. After discharge, patients were followed every month for 6 months and then every 6 months.

Patients were evaluated for duration of surgery, technical difficulties, peritoneal tears, postoperative pain, hospital stay, seroma, wound infection, skin necrosis, ileus, time taken to return to work, recurrence and cosmetic appearance.

RESULTS:

The study included a total of 25 patients of ventral hernia. Primary midline hernia included 10 epigastric and 5 paraumbilical hernia. Amongst Incisional hernia there were 2 right subcostal and 8 supra pubic hernia following midline laparotomy and caesarian section by pfannenstiel incision. 9 patients were male, 16 patients were female with M: F ratio of 1:1.5. Age ranged from 28 years to 78 years with mean age of about 53 years. Average size of the hernia defect was 4.5 cm. 15 X15 size Synthetic polypropylene mesh was tailored cut according to size of defect. It was centered over and extended 3-5cm beyond edge of defect. Buttonholing occurred in 45% cases. It was repaired by Vicryl sutures. The mean operating time was 100 minutes. In 6 cases (24%), postoperative pain was 5 on a visual pain scale which required i.v. diclofenac and opioid analgesics. 4 patients (12%) had postoperative ileus which was resolved over 48 hours. Most patients were mobilized within 24 hours of surgery. Oral intake was started by evening. None of the patients developed hematoma or skin necrosis after surgery, however, seroma formation was seen in 2 cases (8%), which resolved spontaneously in 3-4 weeks. 1 old female patient of large paraumbilical hernia had recurrence after 6 months. she had thin pendulous abdomen. Open onlay polypropylene mesh repair was done removing the previous mesh.

DISCUSSION:

Stoppa⁷ had suggested that a polypropylene mesh placed in the pre peritoneal space, acts as non-absorbable endo-abdominal fascia, strengthening the abdominal wall preventing a recurrence.

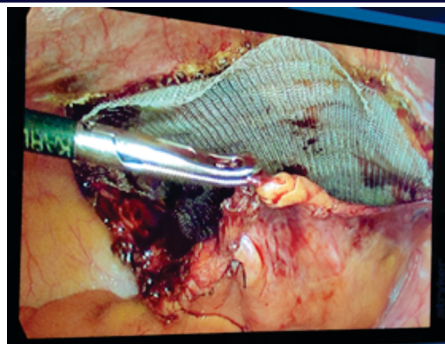


Fig.1 – Polypropylene mesh placed in preperitoneal space.

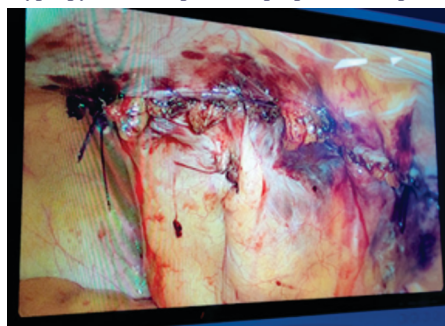


Fig.2 – Peritoneal flap closed by absorbable suture over mesh placement.

Mesh placed in retro rectus space has a lesser chance of slipping or migration. Covering a polypropylene mesh with peritoneum appears to prevent bowel herniation and adhesion formations and subsequent obstruction or fistulization.

Laparoscopic preperitoneal mesh repair of majority of primary and acquired ventral hernias is becoming increasingly popular among surgeons. It is highly economical and affordable mode of surgery for selected cases in comparison to IPOM.

PK Chowbey et al⁶, published initial experience of laparoscopic TAPP repair in 34 patients of ventral hernia. The series included patients with small or medium size defect. Peritoneal tears occurred in 20 patients. Median operating time was 110 minutes. There was median follow up for 16.5 months. 7 patients developed seroma, which resolved over 3 months. There was 2.9% early recurrence. In one patient infected mesh had to be extracted. We had similar results.

P. Prasad et al⁸ presented a study 68 cases of ventral hernia who underwent laparoscopic repair with pre peritoneal mesh. Defect size ranged from 4-144cm². Operating time varied from 70 to 150 minutes. Patients were followed for 6 to 48 months. 19 patients (27.9%) had postoperative complications. 4 patients developed seroma while recurrence occurred in 2 cases (2.9%).

Jeremy Warren et al⁹ in his robotic assisted TAPP has overcome most of the technical difficulties of laparoscopic TAPP, particularly in raising composite flaps of peritoneum and posterior rectus sheath. Use of fixation devices is avoided because of ease in intracorporeal suturing in robotic surgery⁹.

CONCLUSION:

Laparoscopic repair of Ventral hernia with primary closure of fascial defect is increasingly been accepted for defect size less than 8 cm. IPOM repair of ventral hernia needs expensive mesh and fixation device, which have significant incidence of postoperative pain, visceral complications e.g. adhesions, obstruction and entero-cutaneous fistula.

Laparoscopic sub lay placement of mesh in pre-peritoneal/retro-rectus space for ventral hernia is viable alternative procedure, drastically reducing the cost, postoperative pain, visceral complications and tackles occult hernias. The challenges of a laparoscopic TAPP however are: increased operative time due to technical difficulty in raising flaps and its closure, button holing of peritoneum. If defect size is over 10

cm, TAR may be needed for adequate coverage of defect by mesh. There is need for improved angled instruments and more prospective randomized studies with long term follow up. Robotic TAPP repair of ventral hernia has however overcome technical difficulties of laparoscopic TAPP and TAR in larger hernia defects⁹, but it is very expensive.

Table – 1 Outcomes of our study

S. No.	Parameter	No. of Cases (%)
1.	Study Period	2017 – 2019
2.	Total Number of Cases	25
	A. Upper abdominal	10 (40%)
	B. Lower abdominal	05 (20%)
	C. Umbilical & Paraumbilical	10 (40%)
3.	Primary/Aquired	15/10 (60/40%), 1.5:1
4.	Average Size of defect	4.5 cm
5.	Sex Ratio (M:F)	1:1.5
6.	Type of Mesh for TAPP	Polypropylene
7.	Size of Mesh	16 cases (64%)
	A. 15x15 cm	09 cases (36%)
	B. 7.6x15 cm	
8.	Average Operating Time	100 min
9.	Average Hospital Stay	4 Days
10.	Postop Complications:	2 (8%)
	A. Seroma	0
	B. Hematoma	1 (4%)
	C. Recurrence	0
	D. Skin Necrosis	6 (24%)
	E. Pain (Score >5)	4 (16%)
	F. Ileus	
11.	Duration of Follow up	18 months
12.	Advantage of TAPP over IPOM	TAPP is cost-effective & affordable
13.	Buttonholing of Peritoneum	11 cases (44%)
14.	Primary Defect Closure	09 cases (36%)
	A. Barbed suture	13 cases (52%)
	B. Shoelacing	03 cases (12%)
	C. Not Done	

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