ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 04 | April - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

"COMPARATIVE STUDY BETWEEN PREPERITONEAL AND INTRAPERITONEAL ONLAY MESH REPAIR OF VENTRAL HERNIA"

Surgery

Megha Shahi DNB, General Surgery, VIMS, Kolkata.

Sanjoy Mohan Bhattacharjee HOD, Department Of General Surgery, VIMS, Kolkata.

ABSTRACT

In this study we compare the results between Preperitoneal and Intraperitoneal Onlay Mesh Repair of Ventral Hernia. It is a Prospective Randomized Controlled study conducted in a tertiary care centre in Eastern India between September 2018 and March 2020.In this study 78 patients were enrolled. They are randomized into two groups. About 65% of patients who enrolled for the study are females. 12% patients had Umbilical hernia, 55% had Paraumbilical hernia and 24% had Epigastric hernias. Patients with Incisional Hernia were not included.
The mean duration of surgery, hospital stay and pain score (as per the visual analog scale) was significantly less in IPOM compared to PPOM. There was no Haematoma formation in either of the groups. Return to normal work was significantly earlier in the group undergoing IPOM over those undergoing PPOM. Patients undergoing IPOM were more satisfied with the cosmetic appearance in the post-operative period as compared to those undergoing PPOM however the incidence of seroma formation was more in the former.

KEYWORDS

Intraperitoneal Onlay Mesh Repair, Preperitoneal Onlay Mesh Repair

A hernia is a protrusion of a viscus or part of a viscus through an abnormal or normal opening in the walls of its containing cavity [1]. Ventral Hernia is a protrusion of an abdominal viscus or a part of the viscus through the anterior abdominal wall occurring at any site other than the groin.

Ventral hernia formation rates have increased with advancement in surgery and this has required the development of new techniques and new materials for ventral hernia management. It is important to ensure biocompatibility of prosthetic materials during mesh development.

The incidence of ventral hernia may decrease with the advent of new techniques in the abdominal wall closure in the near future.

MATERIALS AND METHODS

Study Design- Prospective Randomized Controlled Study

Study Duration- September 2018 to March 2020

Here Continuous variables are expressed as Mean, Median and Standard Deviation and compared across the groups using Mann-Whitney U test.

Categorical variables are expressed as number of patients and percentage of patients and compared across the groups using Pearson's Chi Square test for Independence of Attributes/ Fisher's Exact Test as appropriate.

The statistical software SPSS version 20 has been used for the analysis

Inclusion Criteria

1) Patients presenting with Umbilical, Paraumbilical or Epigastric Hernia to the OPD and being planned for Elective repair of Ventral Hernia
2) Age Group-20- 60 years
3) Patients giving consent willingly to be a part of the research

Procedure For Preperitoneal Mesh Repair Of Ventral Hernia

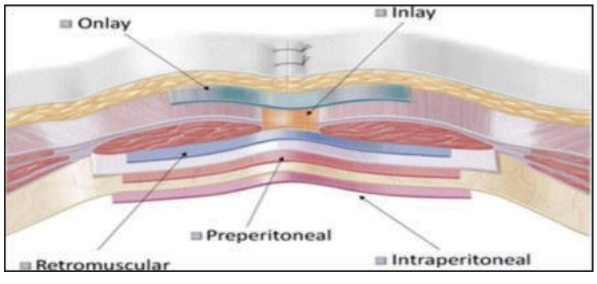

Figure 1- Different Planes For Mesh Placement

The patient is given spinal or general anaesthesia depending on the site of the hernia. The patient is placed in supine position. Antiseptic painting and draping is done.

For an Umbilical hernia or Paraumbilical hernia, a curvilinear incision is given in the navel groove above or below the hernia, if necessary the incision can be extended transversely outwards on each side for 1-2cm.

The incision is then deepened to identify the aponeurosis or rectus sheath and expose it around the adjacent half of the circumference of the hernia. If the hernia is small the umbilical skin may be preserved by dissecting it off the hernia as a flap. If the hernia is large, a spindle shaped incision is made to include the umbilicus and excising the stretched skin in order to prevent flap necrosis later on and to provide better cosmesis. 2cm of the aponeurosis is exposed around the hernia defect. The sac is seperated from the edge of the aponeurosis to expose the peritoneum and gradually the peritoneum is separated from the sheath atleast 5cm around the defect.

The sac is opened and contents of the sac are reduced, if a mass of fibrous omentum or necrotic tissue is present, omentectomy is carefully done maintaining hemostasis. Peritoneum is closed. In case of buttonhole tears, it can be managed by uniting the smaller defects and then repairing the larger defect.

Close the peritoneal neck of the sac with a 2/0 synthetic polypropylene interrupted suture, producing a transverse linear suture line with knots inside.

Preperitoneal space is created and a polypropylene mesh is incorporated over the defect such that 4cm of the mesh extends beyond the margin of the defect on either side. Although the nomenclature, Preperitoneal Onlay Mesh Repair of Ventral Hernia is commonly used, this is a **Sublay** method of mesh placement.

The mesh is drawn into the space deep to the abdominal wall by four interrupted 'U' sutures of 2/0 polypropylene at the corners to the posterior rectus sheath.Interuupted suture wth Then suture the margin of the defect to the surface of the mesh with a continuous over and over suture. Suction drain is placed above the sheath. Skin is sutured with a subcutaneous or mattress suture.

Figure 2-

Procedure For Intraperitoneal Onlay Mesh Repair Of Ventral Hernia

The patient is given spinal or general anaesthesia depending on the site of the hernia. The patient is placed in supine position. Antiseptic painting and draping is done.

Access is gained to the abdominal cavity as far laterally from the

midline as possible in order to avoid injury to the bowel or omentum that may be adhered at a previous midline incision site or at the site of hernia that we are going to repair. Pneumoperitoneum is made using either an open (Hasson's) technique or a closed technique using the Veress needle. The left subcostal area is often suitable for insufflation with a Veress needle.

Insert a 10mm trocar and cannula through the initial incision as described, far back laterally on the abdomen. Use a "Visi" port if possible as entry can be watched. Remove the trocar and introduce a laparoscope through the cannula into the abdomen.

Assess the abdomen and select a suitable position to insert a 5 mm trocar and cannula to the left of the laparoscope and another 5mm trocar and cannula further left to the laparoscope, both under direct vision. If adhesions obscure the view of the hernia, they are to be carefully divided using scissors or diathermy.

Margin of the hernia defect is defined and any adhesion is cleared for at least 5cm from the edge of the hernia defect. Content of the hernia sac is reduced using graspers and diathermy scissors. Peritoneal sac is left in situ. Assess the size of the mesh required to give a minimum of 4cm overlap of the hernia defect on all sides. Centre of the mesh is marked with a marker pen to aid orientation inside the abdomen and ensure proper placement of the mesh over the defect. The mesh is inserted through a 12mm cannula and unfolded within the abdomen using two graspers such that it is placed centrally and has equal coverage on all sides. This is sometimes helped by passing a suture from the centre of the mesh through the umbilicus which is removed later on. The mesh is made to lie flat over the abdominal wall and stapled into position by using absorbable or non-absorbable tacks. Hemostasis is ensured, insufflation equipment is disconnected and the cannulas are removed under direct vision after the abdomen deflates. The 12mm port is closed with port vicryl. Skin is closed with Polyethylene 2/0 sutures.

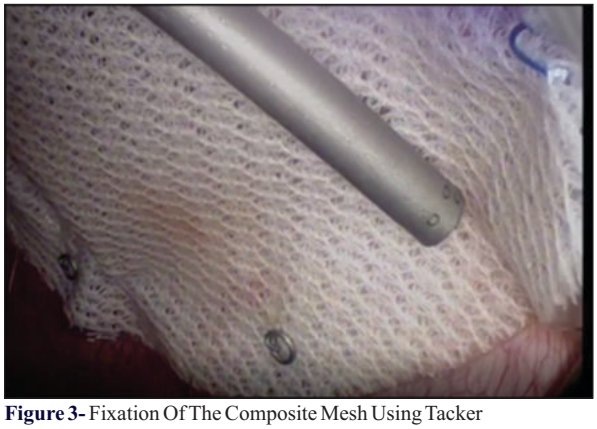

Figure 3- Fixation Of The Composite Mesh Using Tacker

Procedure	Duration of Surgery(in minutes)	
PPOM	Mean	98.95
	Median	98.00
	Std. Deviation	4.51
IPOM	Mean	76.55
	Median	76.00
	Std. Deviation	7.71
	p Value	<0.001
	Significance	Significant

Procedure	Hospital Stay (in days)	
PPOM	Mean	5.16
	Median	5.00
	Std. Deviation	0.89
IPOM	Mean	2.97
	Median	3.00
	Std. Deviation	1.10
	p Value	<0.001
	Significance	Significant

Procedure	Return to Normal Work (in days)	
PPOM	Mean	19.05
	Median	19.00
	Std. Deviation	1.72
IPOM	Mean	13.87
	Median	13.00
	Std. Deviation	2.76
	p Value	<0.001
	Significance	Significant

DISCUSSION

In the above conducted study to compare Preperitoneal and Intraperitoneal Onlay Mesh Repair of Ventral Hernia, it was found that majority of the patients who enrolled for the study were females. The number of patients in different age groups i.e. 21-30 years, 31-40 years and so on was comparable between the two groups of our study with a clinically insignificant p value of 0.154 due to Random Allocation Rule that was used in our study. We had included patients with Primary Ventral Hernia of Umbilical, Paraumbilical and Epigastric type and not included patients with Incisional Hernia.

The mean duration of surgery was significantly shorter in IPOM compared to PPOM owing to the need for component separation in the latter and also depends on the expertise of the operating surgeon.

Pain score (as per the visual analog scale) was significantly lower at 24 hours, 3 weeks and 3 months after the surgery in patients undergoing IPOM as it has lesser dissection, minimal skin incision(only for port insertion). Few patients did complain of chronic pain after IPOM at the site of transfascial sutures and probably due to the application of tacks, but the proportion of such patients were low.

Seroma formation was more in patients undergoing IPOM than those undergoing PPOM, however the result was statistically insignificant.

There was no Haematoma formation in either of the groups.

Skin necrosis was seen in 2 patients of PPOM and none of the patients undergoing IPOM, however it was statistically insignificant.

Wound Infection was seen in 3 cases of PPOM and 1 case of IPOM indicating that the incidence was higher in PPOM but was statistically insignificant.

Mean Hospital Stay was significantly lower in the patients undergoing IPOM over those undergoing PPOM.

Return to normal work was significantly earlier in the group undergoing IPOM over those undergoing PPOM.

Patients undergoing IPOM were more satisfied with the cosmetic appearance in the post-operative period as compared to those undergoing PPOM as PPOM required larger incision than IPOM and sacrifice of the umbilicus in a few patients with Umbilical and Paraumbilical hernia.

Thus it was concluded that IPOM was better than PPOM since it had lesser duration of surgery, less post-operative pain, better cosmesis and early return to normal work. The post-operative complications between the two groups were comparable with statistically insignificant difference.

Limitations Of This Study

Intraperitoneal Onlay Mesh repair of Ventral Hernia is associated with long term complications like adhesions, fistula of the bowel and bowel obstruction even after the use of Composite Mesh. Preperitoneal Mesh repair of Ventral hernia has lesser incidence of the above. Also the cost of the Composite mesh used in IPOM is much higher in comparison to the Polypropylene mesh used in PPOM. Therefore Preperitoneal mesh repair was opted in order to reduce the cost of surgery and also the incidence of long term post-operative complications.

However the long term post-operative complications like adhesions, fistula formation, obstruction, recurrence and hospital readmission could not be assessed in this study as the follow up period of each patient was 3 months owing to the short duration of the study.

In our study it was seen that the duration of surgery was longer for PPOM in comparison to IPOM whereas in many studies conducted previously the opposite was seen. This may have occurred since the surgery was conducted by different surgeons having different levels of expertise.

We had included only Primary Ventral Hernia patients in our study and

had not included patients with Secondary Ventral Hernia i.e. patients with Incisional Hernia in our study.

Matched comparison group design could not be done as we had not done match pairing of the age group of the patients due to randomization of the patient selection for each group of the study.

The Sample size of the study was less.

REFERENCES

1. Bailey BL. Love's short practice of surgery. Bailey and Love's Short practice of Surgery. 2013.