

Comparative Study Onlay Vs Preperitoneal Meshplasty

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Abstract

Introduction: Incisional hernia have been reported in 2-11% of patients undergoing laparotomy. Incisional hernia is due to biologic problem of stable scar tissue formation. In this prospective study we compared the results of the preperitoneal verses onlay meshplasty in influencing the final outcome in incisional hernia management with regards to duration of surgery, technical difficulties, hospital stay, post operative analgesia requirement, wound complication and return to normal activity.

Material and Methods. In present series 50 cases of Incisional Hernia studied in department of surgery in M.P. Shah Medical College Jamnagar. In this Group consisted of 14 Male and 36 Female patients. 25 Patients had onlay meshplasty and 25 had preperitoneal meshplasty by open techniques. All patients were preoperatively evaluated by thorough clinical examination and ultrasound.

Result: 4 out of 25 cases of preperitoneal meshplasty had seroma formation which resolved spontaneously. 6 out of 25 cases of onlay technique had seroma formation out of which 3 resolved spontaneously and 3 required needle aspiration. Major wound infection was noted in 4 patients undergoing onlay meshplasty.

Conclusion: Whereas preperitoneal meshplasty is ideal decrease the severity of wound infection without significant problems like bowel injury. Onlay meshplasty is more chance of mesh involvement in postoperative infection which leads to prolonged hospital stay, more antibiotics need.

Key Word: Incisional Hernia, preperitoneal(sublay), onlay, meshplasty.

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I. Introduction

Incisional hernia have been reported in 2-11% of patients undergoing laparotomy. It is a problem of immense magnitude to the surgeon, the patient and the healthcare socio-economics. Incisional hernia is due to biologic problem of stable scar tissue formation. As the approximated fascial tissue separates; the bowel and omentum herniates through the opening covered by peritoneal sac. These hernias if left untreated can increase to enormous size containing significant amount of large and small bowel.

Although Incisional hernias become clinically manifest between 2 to 5 years after surgery, the process starts within the first postoperative month. These defects remain small and quiescent for years, progressively gaining size allowing for the protrusion of abdominal contents and visible bulging and complaints.

Factor associated with formation of incisional hernias are grouped into those that impair wound healing such as wound infection, diabetes, corticosteroids use, smoking, connective tissue disorders, malignancies, radiotherapy, multiple surgeries and advanced age; conditions that increase intra abdominal pressure like obstructive airways disease, constipation, lower urinary tract obstruction, pregnancy and ileus; and surgical factors such as type of incision, suture type and technique.

Though today mesh techniques are method of choice for hernia repair, the ideal site for mesh placement is still debated. The prosthetic mesh can be placed between subcutaneous tissue of anterior abdominal wall and anterior rectus sheath (Onlay mesh repair). As well as in preperitoneal plane create between posterior rectal sheath and peritoneum. The preperitoneal mesh hernia repair was first described by Rene Stoppa, Jean Rives and George Wantz. Preperitoneal meshplasty technique are based on the fundamental principle of the preperitoneal repair described by Stoppa and Rives. The placement of large mesh in the preperitoneal location allows for an even distribution of forces along the surface area of mesh, which may account for the strength of repair and decrease recurrence associated with it. The repair capitalizes on the physics of Pascal's principle of hydrostatics by using the forces that create the hernia defect to hold the mesh in place. This technique is considered by many surgeons to be the gold standard for the open repair of abdominal incisional hernia. The later technique has several other advantages one of being not transmitting the infection from subcutaneous tissues down to the mesh as it lies quite deep in the preperitoneal plane. Moreover the mesh implanted in the preperitoneal plane moreover the mesh implanted in the preperitoneal space unites and consolidates the anterior abdominal wall. The mesh also adheres to the posterior rectus sheath and renders it inextensible allowing no further herniation.

In this prospective study we compared the results of the preperitoneal verses onlay meshplasty in influencing the final outcome in incisional hernia management with regards to duration of surgery, technical difficulties, hospital stay, post operative analgesia requirement, wound complication and return to normal activity.

II. Aims And Objectives:

To compare the result of preperitoneal and onlay meshplasty in Incisional Hernia.

III. Material And Methods:

In present series 100 cases of Incisional Hernia studied in department of surgery in M.P. Shah Medical College Jamnagar. The Group consisted of 18 Male and 32 Female patients. 25 Patients had onlay meshplasty and 25 had preperitoneal meshplasty by open technique from august 2018 to July 2019. All patients were preoperatively evaluated by thorough clinical examination and ultrasound.

Inclusion criteria

It included Incisional Hernia resulting from pfannensteil , upper and lower midline incisions of abdomen

Exclusion criteria

Patients with general poor condition like chronic obstructive pulmonary disease(COPD). Abdominal malignancy & Cirrhosis of liver were excluded, also Patients presented with obstructed and strangulated incisional hernias were excluded from the study.

The clinical features and their duration, time of initial operation and interval between first surgery and appearance of Incisional hernia were asked from patients and recorded in the data. The known suspected risk factors like obesity , diabetes, history of wound infection, Type of incision made were noted and recorded in data . All the details were entered in the database and result were statistically analyzed.

The signs and symptoms of a Ventral Hernia are due to congestion and stretching of the viscera in the sac, intermittent bowel obstruction, ischemia of overlying skin and eventual loss of domain of contents of the hernia. Reducibility, size of defect , Proportion of abdominal contents involved and underlying skin changes are important factors noted in local examination.

The Hernia sac was dissected free from the fascial defect and subcutaneous tissue. The hernia sac was left intact and was allowed to reduce to abdomen .In case of large hernia where peritoneum was thinned out or in some cases where peritoneum was opened , it was closed with absorbable sutures .

Polypropylene mesh was placed between peritoneum and posterior rectus sheath in case of preperitoneal meshplasty while over anterior rectus sheath in onlay meshplasty extending circumferentially at least 5cm from the edge of defect .Mesh was secured to sheath at 2cm from edge by nonabsorbable sutures .The mesh size used in our cases ranges from 15-30 cm thus indicating most of the cases in our series were large midline hernias. During the Dissection care was taken to keep redundant sac and sheath till the end dissection for prevention of shortage of tissue for closure and resulting tension.

Negative suction drain was kept in all cases .All patients received preoperative broad spectrum antibiotics and further continued for two days intravenously in all patients and switched over to oral antibiotics as per case needed. Early ambulation advised. Postoperative wound seen on 7th & 10th day. The main post operative complications documented included peritoneal injury , hematoma and post operative bleeding , urinary retention, Prolonged Ileus , wound and mesh infection , Prolonged pain and Seroma formation.

Follow up every 3 monthly was taken for 12 months, Conclusion were drawn regarding above mention criterias.

IV. Results:

In present series 50 cases of Incisional Hernia studied in department of surgery in M.P. Shah Medical College Jamnagar from august 2018 to July 2019.

1) The Group consisted of 18 Male and 32 Female patients

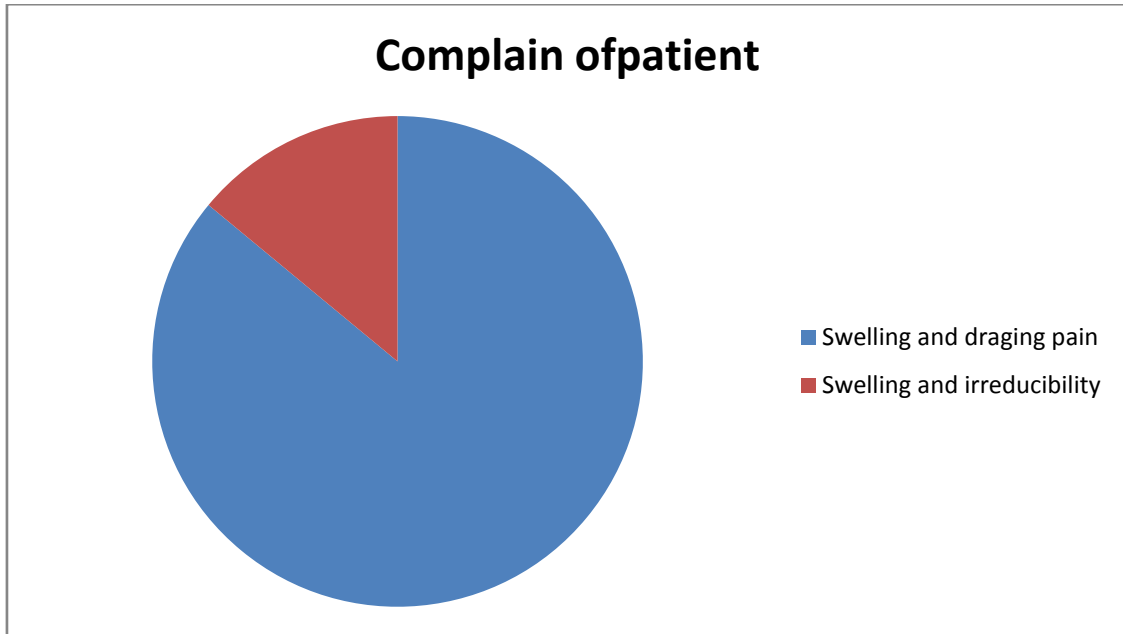
2) Type of mesh repair

Type of mesh repair	Number of patients	Percentage
Preperitoneal	25	50%
Onlay	25	50%

25 Patients had onlay meshplasty and 25 had preperitoneal meshplasty by open techniques.

3) Complain of patient

Complain of patient	Number of patient	Percentage
Swelling and dragging pain	43	86%
Swelling and irreducibility	07	14%



The main presenting complaint in all patients was swelling at local site. This was followed by dragging pain at site of hernia in 43 Patients and Irreducibility in 07 patients.

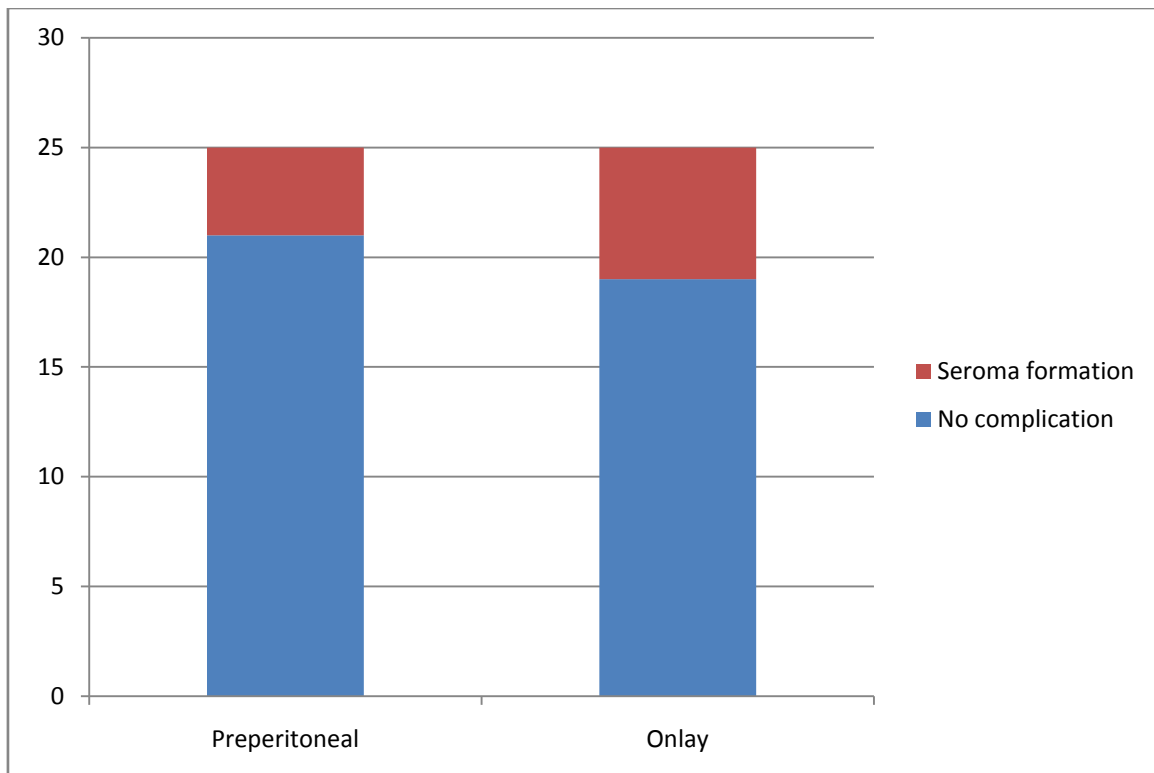
4) Duration of surgery

Surgery type	Duration of surgery
Preperitoneal meshplast	80to 120mins
Onlay meshplasty	60 to 90 mins

Mean total duration for surgery in preperitoneal group was 92 minutes (80 min.to 120 min) compared to 70 min. (60min-90min) in onlay group

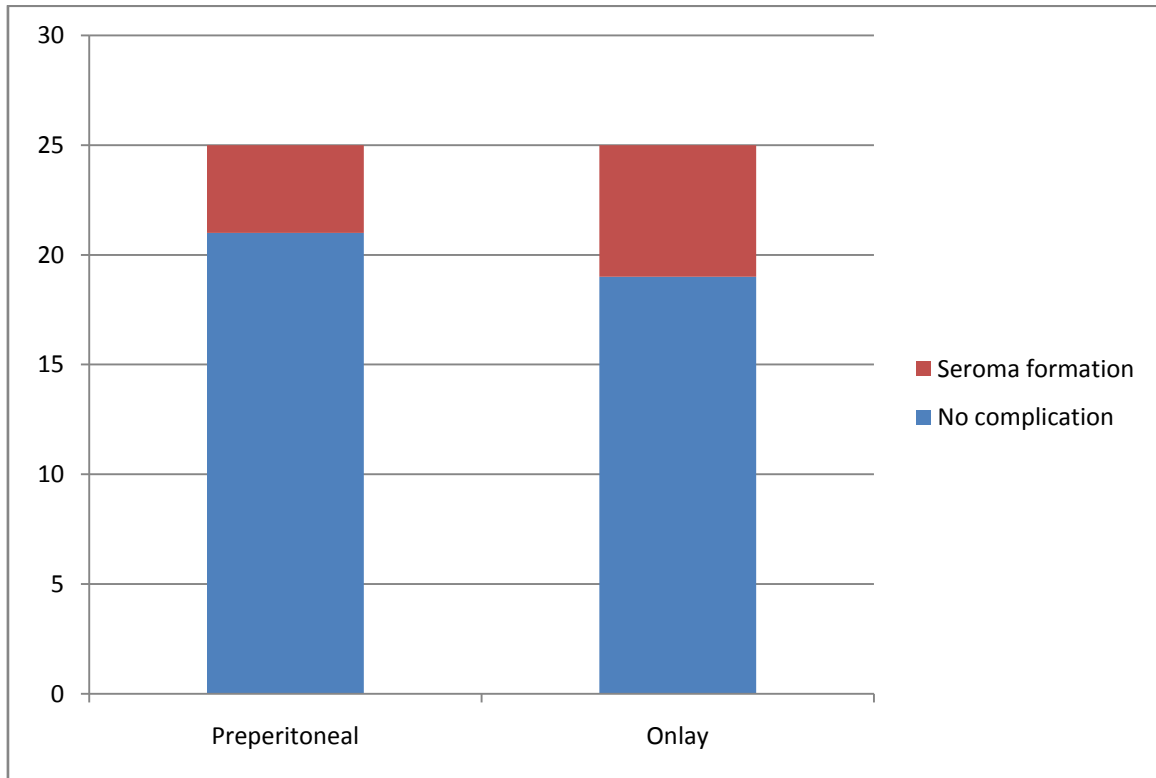
5) Complication of surgery

Surgery type	Seroma formation	Percentage
Preperitoneal meshplasty	4 /25	16%
Onlay meshplasty	6/25	24%



Complication of surgery

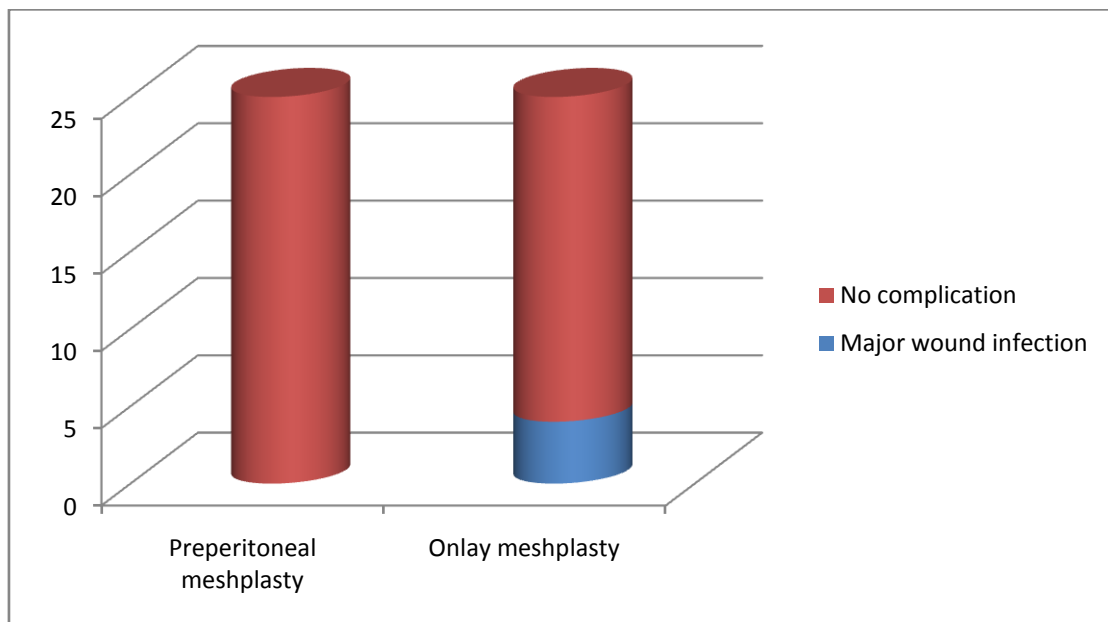
Surgery type	Seroma formation	Percentage
Preperitoneal meshplasty	4 /25	16%
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4 cases of preperitoneal meshplasty had seroma formation which resolved spontaneously. 6 out of 30 cases of onlay technique had seroma formation out of which 3 resolved spontaneously and 3 required needle aspiration.

6) Complication of surgery

Surgery type	Major wound infection	Percentage
Preperitoneal meshplasty	0 /25	0%
Onlay meshplasty	4/25	16%



Major wound infection was noted in 4 patients undergoing onlay meshplasty, mesh was exposed and daily dressing done until granulation tissue covered mesh under coverage. Secondary closure was done in both cases after partial excision of mesh not covered with granulation tissue.

7) Out of 50, 40(80%) patients had midline incision followed by 7(14%) Pfannenstiel incision and 3 (6%) paramedian incisions

8) In all patients hernia appeared during 1st year after previous surgery.

9) Average Hospital stay in both groups was 6-7 days.

10) Drain was removed in both groups average 3rd day except in 20 cases of onlay meshplasty where drain was kept till 5th day due to persistent discharge.

11) Patients within both groups were able to do their household work within 15 days from surgery and heavy jobs within 3 months of surgery in both groups.

12) No evidence of persistent pain beyond 3 months noted in any group.

13) No evidence of any early recurrence and enterocutaneous fistula noted in both groups.

V. Conclusion:

Whereas preperitoneal meshplasty is an ideal technique, expertise and meticulous dissection is mandatory.

It decreases the severity of wound infection without significant problems like bowel injury.

Onlay meshplasty is easy to do, has comparable success with preperitoneal meshplasty with respect to recurrence, return to normal activity and analgesic requirement however is associated with more chance of mesh involvement in postoperative infection which leads to prolonged hospital stay, more antibiotics need.

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