

A Comparative Study of Outcomes of Sublay Versus Onlay Mesh Repair at PMCH Nawabshah

Outcomes of Sublay Versus Onlay Mesh Repair

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ABSTRACT

Objective: To evaluate the outcomes of the Sublay and Onlay mesh repair techniques in ventral hernias.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Surgical Department of PMC Hospital Nawabshah from March 2016 to February 2018.

Materials and Methods: This is a study of 200 patients included both gender male and female (140 female and 60 male) of incisional hernia, Paraumbilical hernia and epigastric hernia. Operative time and complications of surgical techniques like seroma formation, wound infection, mesh removal and recurrence were noted separately and compared between Sublay and Onlay mesh repair techniques.

Results: Common complication observed is the seroma formation 14%, while other complications were as wound infection 10%, mesh removal 2% and recurrence 2%.

Conclusion: In our study, the more beneficial surgical procedure with lesser complications patients suffering from ventral abdominal wall hernias is Sublay mesh repair.

Key Words: Ventral hernia, Mesh repair, Sublay, Onlay

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INTRODUCTION

Ventral hernias are commonly encountered in our surgical practice after inguinal hernias. These arise from the anterior abdominal wall and repaired through multiple methods which require thorough knowledge of anatomy of anterior abdominal wall. Of all abdominal hernias, the common is incisional hernia. The incidence of incisional hernia is 2-20%. The various factors causing this hernia are improper abdominal wound closer, wound infection and wound dehiscence. No evidence is related to etiology of incisional hernia regarding the abdominal wound closer with synthetic monofilament biodegradable sutures versus closer with non absorbable esutures. Transverse/oblique incisions have shown lower rate of incisional hernias as compared vertical incisions.¹

The ventral hernia is repaired by three methods vizonlay, sublay and inlay.

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These methods use the implantation of prosthetic mesh in different layers of anterior abdominal wall.²

The prosthetic mesh can be placed between the subcutaneous tissues of the abdominal wall and anterior rectus sheath (Onlay mesh repair) as well as in the preperitoneal plane created between the rectus sheath (Sublay mesh repair). But the best position for the inserting the mesh has not been conclusively established till date as per literature.³

Repair of hernia defects by mesh was introduced in the late 1980. The preperitoneal (Sublay) mesh was first described by Renestope, Jean Rives and George Wantz. This technique is considered to be the best one for the open repair of the abdominal ventral hernias.^{4,5,6}

The Onlay is sutured over the primary repair to the anterior rectus sheath as reinforcement but this repair suture line under tension and the mesh increases the infection rate. The Sublay mesh repair is the most preferred method by the surgeons in the world now a days because of its least infection rate and can be performed by open and laparoscopic methods.^{7,8} Inlay mesh repair is difficult to perform laparoscopically so it is mostly done by open approach. More over mesh is in direct contact with intestine so it can produce fatal complication like fecal fistula.^{9,10}

The rationale of our study is to find out the better method of open ventral hernia mesh repair by comparing the results of Sublay versus Onlay techniques for the benefit of the patients in our community.

MATERIALS AND METHODS

The prospective study was carried out in 200 patients. This study was conducted in surgical department, People’s University of Medical and Health Sciences Hospital Nawabshah from March 2016 to February 2018. All the patients were admitted from Surgical outpatient department (OPD). They were investigated biochemically. Imaging was done. Cardiac and anesthesia fitness was obtained and patients were shifted to Operation Theater on elective list.

Patients were categorized as sublay mesh repair and Onlay mesh repair. Surgical procedures of Sublay and Onlay mesh repair were done under general anesthesia. All aseptic measures were done during surgery. Broad spectrum antibiotic was injected during the induction of anesthesia.

In Sublay mesh repair surgery was started by removing the old surgical scar in cases of incisional hernias but in Para umbilical hernias, transverse incision was made, while in epigastric hernias vertical incision was made. Meticulous dissection was done to expose the defect. Hernia sac was exposed. Underlying visceral injury was avoided by careful dissection. Around the defect the bed for mesh was formed about at least 4-5 cm. Polypropylene mesh was placed under the defect in retro muscular layer. The mesh anchored to the peritoneum by multiple stitches.

Suction drains were placed for incisional hernia and large Paraumbilical hernia >4 cm only for 3-4 days.

In Onlay mesh repair surgery was started as same as Sublay mesh repair. The edges of the defect were approximated by polypropylene suture material than mesh was placed over the sheath of muscle and anchored. Redivac drains were placed. Wound was closed and dressed.

RESULTS

In our study, of total 200 patients there were 140 females and 60 male. The female and male patient’s ratio was 2.33:1. Patients included was between 30 and 60 years old. Mean age was 45 years. Patients having primary incisional hernia were 138. Patients of Paraumbilical hernia were 44 while 18 of epigastric hernia.

In cases of incisional hernias the previous surgeries were as bowel related 60, gynecological related 70, biliary related 30, appendectomy related 20 and renal related surgeries 20. In our study it was noticed that wound infection was frequent and most common cause of incisional hernia formation. In 120 cases of the incisional hernia, the 80 cases have defect 8-10 cm, 30 cases 5-8 while 10 cases have less than 5cm.

Regarding the post operative complications, the seroma formation was the most common. 24 cases in Onlay mesh repair and 4 cases in Sublay mesh repair developed seroma formation. 18 cases in Onlay mesh

repair and 2 cases in Sublay mesh repair developed wound infection. Mesh removal was done in 2 cases in Onlay mesh repair while none was in Sublay mesh repair. Recurrence was 2 cases in Onlay mesh repair while none was in Sublay mesh repair. Flap necrosis was 2 cases in Onlay mesh repair while none was in Sublay mesh repair.

Table No. 1: Age and sex distribution

Age (years)	Male	Female	Total	Percent
30-40	12	30	42	21%
41-50	30	70	100	50%
51-60	18	40	58	29%

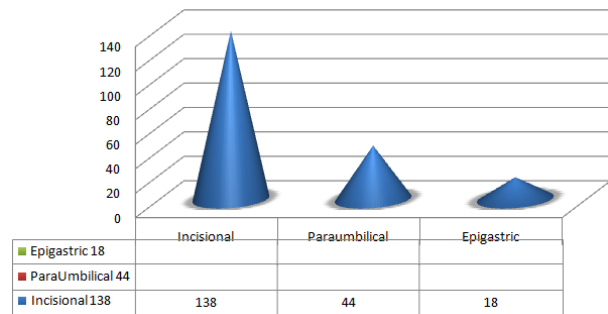


Table No. 2: Previous operations for patients with incisional hernia

Type of surgery	Number	Percent
Bowel related	60	30%
Gynaecological related	70	35%
Biliary related	30	15%
Appendectomy related	20	10%
Renal related	20	10%
Total	200	100%

Table No. 4: Post operative complications

Post operative complications	Onlay mesh repair	Sublay mesh repair
Seroma	24	4
Wound infection	18	2
Mesh removal	2	0
Recurrence	2	0
Flap necrosis	2	0
Total	48 (24%)	6 (3%)

DISCUSSION

In surgical practice, the mesh repair of ventral hernias is a challengeable task. Various surgical procedures have been used to repair and strengthen the hernia defect by mesh.¹¹In our study, Sublay mesh repair has proven to be the better one as compared to Onlay. Sublay mesh repair has lowered the recurrence rate, wound infection and other complications and has given satisfactory outcome results. Recurrence, mesh removal and flap

necrosis was zero in cases of Sublay procedure. In previous studies, the operative time was more in Sublay mesh repair as compared to the Onlay mesh repair because of forming preperitoneal space but in our study it was altogether different.¹² The minimum time was gotten to perform the procedure by approaching the space through multiple ways.

Seroma formation is a common and frequent early complication in previous studies and it is less in Sublay mesh repair. In our study it is also observed that seroma formation is very low found only in 4 (2%) patients as compared with Onlay mesh repair in which it was present in 24 (12%) patients.^{13,14,15.}

Wound infection is about 6-12% in previous studies; while in our study it is 9% in Onlay and only 1% in Sublay procedure^{16, 17.} Previous studies show that placement of tension free mesh is good technique with lower the recurrence rate.^{18,19} In our study, it is also observed that tension free mesh has decreased recurrence. In Onlay it is found only in 2 (1%) patients whereas in Sublay it is 0%. In one study, it is found that flap necrosis is found following Sublay method but in our study none of the patient came with complain of flap necrosis on follow up.

In other studies, the most common patients came with incisional hernias were previously operated for major bowel surgeries^{20,21} but in our case it is different and astonishing that patients with gynecological problems were admitted and operated for incisional hernias.

The incidence of ventral hernias is commonly found in women as compared to male in our study like other studies²² and the Paraumbilical hernia is the second last in incidence after incisional hernia.

CONCLUSION

Sublay mesh repair had proved to be the better as compared to Onlay procedure in all types of ventral hernias. Comparison of the global studies with our study has demonstrated that Sublay is the better one with lowest rate of complications and rapid recovery.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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