

Incisional Hernia Repair by Preperitoneal (Sublay) Mesh Implantation

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ABSTRACT

Incisional Hernia is a common surgical condition with a reported incidence of 2-11% following all laparatomies. Results of tissue repair have been disappointing. The optimal approach for abdominal incisional hernias is still under discussion.

Aims: To evaluate the technique of preperitoneal (sublay) mesh repair of incisional hernias.

Material and Methods: This retrospective study of consecutive 50 cases was done from January .2004 to January 2006 using a computerized database. Preperitoneal (sublay) mesh implantation was done in all the 50 cases. Follow up of 12-24 months was carried in the OPD and on telephone with regards to postoperative complications, hospital stay and recurrences if any.

Results: In our study of fifty patients, eighty percent of females (n= 40) outnumbered twenty percent males (n=10). The female to male ratio was 4: 1 and the highest incidence was in the 5th decade of life. The main presenting feature was swelling

of the abdomen in all the fifty patients (100%) in the vicinity of the previous operative scar. In sixty percent of patients (n=30), the most common incision leading to incisional hernia was the midline incision of abdomen followed by Pfannensteil's incision in fourteen percent (n=7) and paramedian incision in twelve (n=6). Major wound infection occurred in two patients (4%) only but without the removal of mesh. Forty patients (80%) attended for follow up ranging from 12 months to 24 months. Twenty seven patients (67.5%) attended OPD for follow up and thirteen patients (32.5%) replied the questions on phone. No recurrence was noted in follow up group.

Conclusion: Based on this study, we conclude that preperitoneal (sublay) mesh repair is the ideal technique for incisional hernia. Though still there are few publications regarding this technique of repair.

Keywords: Incisional hernia, preperitoneal (sublay), mesh repair.

INTRODUCTION

Incisional hernia is defined as a defect occurring through the operative scar. It is the only hernia considered to be truly iatrogenic. It occurs due to the failure of the lines of closure of abdominal wall following laparotomy [1,2]. An incisional hernia occurs when all the layers except the skin fail to heal. It is one of the most common conditions requiring major surgery despite advances in surgical techniques and suture material. The incidence of incisional hernia in literature is 2- 11% following all laparotomies [3] and it is a source of morbidity and requires high health care costs. As a result of high recurrence rate in the repair of incisional hernia, various types of repairs have been used both anatomical and prosthetic. But the results have been disappointing with a high incidence of recurrence of about 30-50% after anatomical repair

[4] and 1.5-10% following prosthetic mesh repairs [5]. The introduction of prosthetics has revolutionized hernia surgery with the concept of tension free repair. Although a wide variety of surgical procedures have been adopted for the repair of incisional hernia, but the implantation of prosthetic mesh remains the most efficient method of dealing with incisional hernia [6]. The prosthetic mesh can be placed between the subcutaneous tissues of the abdominal wall and the anterior rectus sheath (onlay mesh repair) as well as in the preperitoneal plane created between the rectus muscle and posterior rectus sheath (sublay mesh repair). The later technique has several advantages one of being not transmitting the infection from subcutaneous tissues down to the mesh as it lies quite deep in the preperitoneal plane [7].

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.

The preperitoneal (sublay) mesh hernia repair was first described by Renestopa [8] Jean Rives [9] and George Wantz [10]. This technique is considered by many surgeons to be the gold standard for the open repair of abdominal incisional hernia [11,12,13,14]. The present study was undertaken to evaluate the technique of preperitoneal (sublay) mesh repair of incisional hernias with regards to post operative complications, hospital stay and recurrences, if any.

MATERIAL AND METHODS

This retrospective study of incisional hernia repair by preperitoneal mesh implantation was carried out on 50 cases collected consecutively at Divisional Headquarters Hospital Punjab Medical College Faisalabad over a period of two years from January.2004 to January.2006. The age of the patients included in the study varies from 15 years to 60 years. Regarding the sex wise distribution, eighty percent patients were females (n= 40) and twenty percent were male (n=10). All patients were admitted through outpatient department (OPD). The epidemiological data i.e. the name, age, sex, medical record number, postal address and phone number was noted at the time of admission. The clinical features and their duration, time of initial operation and the interval between the first surgery and appearance of incisional hernia were asked from patients and recorded in the data. The known suspected risk factors like obesity, diabetes and history of wound infection, type of incision made were noted and recorded in the data. All the details were entered in the database and results were statistically analyzed by Statistical Package for Social Sciences (SPSS). The follow up of the patients every three months for two years was carried out in the OPD to see the complications like wound infection and recurrences if any.

Inclusion Criteria:

1. All the patients with incisional hernia between 15 and 60 years without sex discrimination.
2. Incisional hernias located in the upper and lower midline incisions of the abdomen.
3. Incisional hernias resulting from the pfannensteil's incision

Exclusion Criteria:

1. All the patients with chronic obstructive pulmonary Disease (COPD) like asthma.
2. Patients with abdominal malignancy & cirrhosis with endstage liver disease.
3. Patients with previous loss of the abdominal wall & large scarred area of the abdominal skin.
4. Patients with age less than 15 years & more than 65 years.
5. Patients with size of hernia larger than 15 cm in its largest dimension.

Operative Technique: The principles of the preperitoneal or sublay mesh repair include. Mesh placement deep to the recti muscles, peripheral suture fixation, mesh extension well beyond the hernia defect and closure of the fascia over the mesh.

Fibrous tissue in growth in the porous mesh consolidates the abdominal wall and widely disperses intra abdominal pressure to prevent recurrence.

Our technique involves the placement of prosthetic mesh (Polypropylene) in a preperitoneal plane. After incising the subcutaneous tissue, the sac is dissected and delineated. The defect is opened. A plane is created between the posterior rectus

sheath and the rectus muscle for the placement of the mesh. The posterior rectus sheath alongwith the peritoneum is closed with 2/0 prolene suture. A prolene mesh tailored to the size is placed in the plane created behind the recti. The mesh is secured with few interrupted 2/0 polypropylene sutures. A suction drain is placed over the mesh. The anterior rectus sheath is closed with continuous 1/0 polypropylene sutures. Another drain is placed in the subcutaneous plane and the skin closed. Drains were removed when drainage was less than 20ml in 24 hours. All the patients were given 1gm 3rd generation cephalosporin antibiotic preoperatively at the time of induction and continued till the 5th postoperative day twice daily. The hospital stay of the patients was also recorded down.

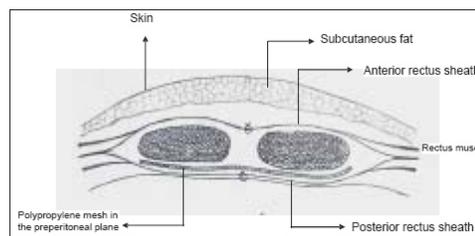


Figure 1: Cross section to demonstrate polypropylene mesh in the preperitoneal plane

RESULTS

Age & Sex Wise Distribution: Fifty patients underwent preperitoneal (sublay) mesh repair of incisional hernia during two year study from January 2004 to January 2006. The youngest patient was 29 year old and the oldest was 60 years old. Eighty percent patients (n=40) were females which outnumbered the twenty percent (n=10) male patients. The female to male ratio was 4: 1 showing that incidence of incisional hernia is higher in females. The highest incidence (50%) of incisional hernia amongst them was in the 5th decade of life. In all the fifty patients, hernia appeared during the first year after surgery.

Table-1
Age & Sex wise Distribution of Patients with Incisional Hernia

Age in year	Male	Female	Total	Percentage
15 – 30	2	8	10	20
31- 50	3	12	15	30
51- 60	5	20	25	50

Symptomatology: The main presenting complaint in all the fifty patients (100%) was swelling of abdomen in the vicinity of the previous operative scar. This was followed by dragging pain at the site of hernia in thirty six percent of patients (n=18) and irreducibility in fourteen percent of patients (n=7).

Table-2
Clinical Presentation of Patients with Incisional Hernia

Sr.No.	Clinical features	No. of Patients	Percentage
1	Swelling of abdomen	50	100.0
2	Dragging pain	18	36.0
3	Irreducibility	7	14.00

Incisions: Sixty percent (n=30) patients had midlines incision causing the incisional hernia. This was followed by Pfannensteil incision in Fourteen percent (n=7) and paramedian incision in twelve percent (n=6) patients.

Postoperative complications: After sublay meshplasty, the postoperative complications are shown in Table 3. Major wound infection was encountered in

fourteen percent (n=2) patients but the mesh was not removed in any of the cases.

Table-3
Postoperative Complications of Sublay Mesh Implantation in Incisional Hernia Repair.

Complications	No. of Patients	Percentage
Major Wound Infection	2	4.00
Seroma formation	1	2.00
Recurrence of Hernia	Nil	0.00
Wound sinus	Nil	0.00

Drains: Drains were used in all the patients. The period of drainage ranged from 3-8 days with the average period being 4- 6 days.

Follow up: Forty patients (80%) attended our follow up which ranged from 12 months to 24 months. Twenty seven (67.5%) patients attended the OPD personally for follow up. Remaining thirteen (32.5%) patients were questioned over the telephone and their response recorded. The average hospital stay recorded was 5-6 days. No recurrence was encountered in the follow up group.

DISCUSSION

Incisional hernia is produced by deficient wound healing from the very beginning or by gradual yielding of an apparently soundly healed wound. It is estimated that 2- 11% of all abdominal operations result in an incisional hernia [3]. Small hernias less than 2.5cm in diameter are often successfully closed with primary tissue repairs. However larger ones have a recurrence rate upto 30-40% when tissue repair alone is performed alone [15,16,17].

Hernia recurrence is distressing to the patient and embarrassing to surgeon. Nowadays tension free repair using prosthetic mesh has decreased the recurrence to negligible. Despite excellent results, increased risk of infection with implantation of a foreign body and cost factor still exist.

However primary tissue repair is associated high unacceptable recurrence rate but nowadays tension free mesh repair is ideal hernia repair technique [18, 19]. According to literature, incisional hernia occurred more frequently in 5th and 6th decades of life and females have higher frequency than males with the

ratio of 2.4: 1 [20]. In our study, the majority of patients (80%) were in 30- 60 years age group with female to male ratio of 4:1. The difference in age group and higher female preponderance is most probably due to higher number of lower midline incisions used in females for obstetric and gynaecological operations resulting in incisional hernia. The preperitoneal plane is the ideal logical plane for the placement of prosthetic mesh [11-14]. Diabetes [20], postoperative wound infection [21], obesity [22] are the important risk factors for the development of incisional hernia in international literature. In our study, postoperative wound infection after the initial surgery has the highest incidence (80%) followed by obesity (40%) and diabetes (14%).

Majority of incisional hernias (80%) developed in the first two years as per international studies [23]. Our study indicated that 100% of incisional hernias developed within first year of initial operation. The incidence of major wound infection in this study is 4% which is quite comparable to international studies [24]. The recurrence rate of preperitoneal (Sublay) mesh repair mentioned in different series varies from 2% to less than 10% [25]. Our study indicated 0% recurrence with even better results.

CONCLUSION

Although preperitoneal implantation of mesh or sublay meshplasty is not a new method of repair but still lots of work needs to be done in future. We had a follow up of 80% of patients with no recurrence in the follow up group and less postoperative complications. Therefore our study affirms that preperitoneal mesh repair or sublay meshplasty is the ideal repair technique and highly recommended for large midline incisional hernias [5].

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