

Sandwich Repair of Incisional Hernia

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Aims and Objectives: To evaluate the sandwich technique (onlay plus sublay) mesh repair of incisional hernias.

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

1. Introduction

Incisional hernia is defined as protrusion of a viscus through the musculoaponeurotic layers of the abdominal wall at the site of surgical scar. It is the hernia considered to be truly iatrogenic. Most commonly seen in obese individuals & old age. The incidence of incisional hernia is 10- 15% following laparotomy occurring in 70 % of the abdominal surgeries in the first 5 years. Risk factors include old age, obesity, malnutrition, diabetes etc and surgical complications like vertical incision, poor surgical technique, post operative wound complications like infection and improper wound healing.

Although a wide variety of surgical procedures have been adopted for the repair of incisional hernia, the use of prosthetic mesh remains the most efficient method compared to the anatomical repair which has higher chances of recurrence.

The prosthetic mesh can be placed between the subcutaneous layer 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 mesh 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 sandwich technique of adding both preperitoneal (STOPPAS) and on lay mesh repair of incisional hernias with regards to post operative complications, hospital stay and recurrences if any.

2. Material and Methods

This retrospective study of incisional hernia repair by Sandwich mesh implantation was carried out on 50 cases done in Kamineni Institute of Medical Sciences, Narketpally over a 2 years from January 2017 to January 2019. The age of the patients included in the study varies from 25 years to 60 years. Regarding the sex wise distribution, 80% patients were females (n= 40) and 20% were male (n=10).

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 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 3 monthly 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 25 and 60 years without sex discrimination.
- 2) Incisional hernias located in the upper and lower midline incisions of the abdomen.
- 3) Patients with size of hernia larger than 6 cm in its largest dimension
- 4) Giant and recurrent hernias
- 5) Patients with Pfannensteil incision

Exclusion Criteria:

- 1) All the patients with chronic obstructive pulmonary Disease (COPD) like asthma.
- 2) Patients with abdominal malignancy & cirrhosis with end stage liver disease.
- 3) Patients with previous loss of the abdominal wall & large scarred area of the abdominal skin.
- 4) Patients with age less than 25 years & more than 65 years.

Operative Technique:

The principles of the Sandwich 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 and placing mesh in front of rectus sheath (onlay) 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 and on lay. 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 along with 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 mesh is placed in front of closed anterior rectus sheath. 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. Ceftriaxone antibiotic preoperatively at the time of induction and continued till the 5th postoperative day twice daily.

3. Results

Age & Sex Wise Distribution

Fifty patients underwent preperitoneal (sublay) mesh repair of incisional hernia during 2 year study from January 2017 to January 2019. The youngest patient was 29 year old and the oldest was 60 years old. 80% patients (n=40) were females which outnumbered the 20% (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 50 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	2	50

Symptomatology:

The main presenting complaint in all the 50 patients (100%) was swelling of abdomen in the vicinity of the previous operative scar. Followed by dragging pain at the site of hernia in 36% percent of patients (n=18) and irreducibility in 14% of patients (n=3).

Table 2: Clinical Presentation of Patients with Incisional Hernia

S. No	Clinical features	No. of Patients	Percentage
1	Swelling of abdomen	50	100
2	Irreducibility	3	6

Incisions:

60% (n=30) patients had midline incision causing the incisional hernia.

Postoperative complications: After sublay mesh plasty, 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 sandwich Mesh Implantation in Incisional Hernia Repair

S. No	Clinical features	No. of Patients	Percentage
1	Major Wound Infection	2	4
2	Seroma formation	1	2
	Recurrence	0	0

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 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.

4. 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 10-15% 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]. 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.

According to literature, incisional hernia occurred more frequently in 5th and 6th decades of life and females have higher frequency than males with a ratio of 2.4: 1. 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 gynecological operations resulting in incisional hernia.

The preperitoneal plane is the ideal plane for the placement of prosthetic mesh [11-14]. Diabetes, postoperative wound infection, obesity 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.

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.

The recurrence rate of sandwich mesh repair mentioned in different series varies from 2% to less than 10% . Our study indicated 0% recurrence with even better results.

5. Conclusion

Sandwich technique implantation of mesh on lay plus sub lay is not a new method of repair. 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 sandwich repair is the ideal repair technique and highly recommended for large midline and recurrent incisional hernia

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