

Original research article

An Outcome Assessment of Onlay and Sublay Mesh Repair in Incisional Hernias: a Comparative Study

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Abstract

Background: Incisional hernia accounts for 15-20 percent of all abdominal hernias. The two operative techniques most frequently used in case of incisional hernia are the onlay and sublay repair. However, it remains unclear which technique is superior.

Aim: To compare onlay versus sublay technique in treatment of incisional hernia in term of outcome.

Materials and Methods: The present descriptive observational study was carried out in patients admitted in surgical wards who are clinically diagnosed to have incisional hernia. The study was carried out for 10 months and follow up continued after that till date. Follow-up was done after every three months. 35 patients were managed by onlay (Group A) mesh repair and 35 patients were managed by sublay (Group B) mesh repair. Data collected in both groups was made in regards to operation time, placement and duration needed for drain removal, wound infection, and recurrence rate.

Results: Wound infection was found in one patient (1.66%) in sublay group while 6 (10%) in onlay group. In onlay group recurrence was found in 4 patients (6.66%) while there is no recurrence in the sublay group. In sublay group seroma formation was found in two patients (3.33%) while 12 (20%) in onlay group.

Conclusion: In our study, sublay mesh repair was found better alternative for surgical treatment of incisional hernia as compared to onlay mesh repair due to less post-operative complications.

Keywords: sublay, onlay, mesh repair, hernia

Introduction

An incisional hernia is a protrusion of tissue that forms at the site of a healing surgical scar. This type of hernia accounts for 15-20 percent of all abdominal hernias. Incisional hernias are unique in that they are the only abdominal wall hernias that are considered to be iatrogenic. It is one of the more common complications of abdominal surgical procedures and is a significant source of morbidity and loss of time from productive employment.

Several procedures have been described for hernia repair and hernioplasty, with tension free mesh placement being vastly practiced in surgery [1]. Ventral hernia repair is among the most frequently performed surgical operation globally and the two operative techniques most frequently used in cases of ventral hernia are the onlay and sublay repair [2]. Although, it remains uncertain as to which repair technique has shown to be more successful [3]. Successful repair of abdominal hernias involves detailed understanding of anatomy regarding the anterior abdominal wall and all its involved layers [4].

There are numerous options for mesh placement in ventral hernias out of which sublay and onlay are most preferred. Onlay (Overlay) repair places the mesh on the anterior fascia, which

typically involves dissection of flaps and primary closure of the fascia below the mesh. Sublay repair refers to retro-rectus or pre-peritoneal mesh placement. It is also commonly referred to as a Rives Stoppa or retro-muscular repair. This study was conducted in our hospital to evaluate applicability of sublay mesh repair and their outcome in comparison to traditional onlay mesh repair in patient with incisional hernia.

Methodology:

The present descriptive observational study was carried out in patients admitted in Department of General Surgery, Anugrah Narayan Magadh Medical College, Gaya, Bihar (India) who is clinically diagnosed to have incisional hernia. The study was carried out for 10 months and follow up continued after that till date. Follow-up was done after every three months.

Inclusion criteria:

- Patients who had age between 18-60 years.
- Patients willing to participate after informed consent.

Exclusion criteria:

- All patients below the age of 18 years and above the age of 60 years.
- Those not willing to participate in the study.
- Patients with co-morbidities like diabetes mellitus, hypertension, COPD, end stage liver cirrhosis.
- Patients presented as emergency like strangulated hernia with sign of obstruction (abdominal distension, vomiting and absolute constipation) and those lack of follow up.
- Pre-existing skin infection at the site of hernia with local sign of inflammation (redness, hotness and tenderness).

All the demographic details, past medical history, past surgical history, smoking status and other deleterious habits were recorded. Factors related to the operation including the surgical technique and the presence or absence of haematoma dehiscence and infection will be analysed. Hb%, BT, CT, DC, blood urea, serum creatinine, RBS/PPBS, FBS, ECG in all leads, chest screening, urine (albumin, sugar, microscopy) was carried out preoperatively.

Results:

Group A: Out of 35 patients from onlay group, majority were from 41-50 years age group. i.e., 13 (37.14%) Proportion of males and females were 45.71% and 54.29% respectively in onlay group.

Group B: Out of 35 patients from sublay group, majority were from 41-50 years age group. i.e., 12 (34.29%) Proportion of males and females were 40.00% and 60.00% respectively in sublay group.

Seroma formation was noticed in 3 patients (8.57%) in sublay group While 8 patients (22.86%) of onlay group had same complication. Wound infection was seen in 2 patients (5.71%) in sublay technique group while 4 patients (11.43%) in onlay group.

Regarding recurrence in one year duration follow up in the sublay group, there was no recurrence (0%) while in onlay group, recurrence rate was 2 patients (5.71%).

		Group A (Onlay)		Group B (Sublay)		Total
		No.	%	No.	%	

Age (in years)	18-30	10		9		19
	31-40	8		11		19
	41-50	13		12		25
	51-60	4		3		7
Gender	Male	16		14		30
	Female	19		21		30
Total						70

Post-operative complication	Onlay group (n=35)	Sublay group (n=35)
Seroma	8 (22.86%)	3 (8.57%)
Wound infection	4 (11.43%)	2 (5.71%)
Recurrence	2 (5.71%)	0 (0.00%)

Discussion:

Surgery is necessary to push the protruding tissue back in place, remove any scar tissue, and adhere a surgical mesh on the hernia's opening to prevent recurrence. Common practiced techniques for hernia repair use mesh, which is placed either in a sublay or onlay position [5]. Some studies suggest that the use of the sublay technique as a treatment option for ventral hernias appears to be less complicated than the onlay technique [6, 7, 8].

The most common complication observed in our study was seroma 2(3.33%) & 12(20%) in sublay and onlay respectively. This complication was managed with seroma drainage (repeated aspiration) and by tube drain in some cases. Onlay technique had more of seroma formation, due to the fact that onlay techniques require significant subcutaneous dissection to place the mesh, which can lead to devitalized tissue with seroma formation or infection so we use in our study only subcutaneous drain and don't need to insert retro-muscular drain because there was less dead space, little fat high lymphatic which decrease incidence of seroma formation although some studies used subcutaneous and retro-muscular drains. The superficial location of the mesh also puts it in danger of becoming infected if there is a superficial wound infection. Furat Shani found seroma 12% & 1% in onlay and sublay respectively, Aly Saber found seroma 6% & 2% in onlay and sublay respectively and Kharde K et al in his study found seroma 16% & 12% in onlay and sublay respectively [6, 7, 8].

No recurrence of hernia was noticed in sublay mesh repair in our study where as in the onlay group recurrence occurred in 2 (5.71%) cases. Aly Saber found a recurrence rate to be 8% in onlay and 3% in sublay mesh repair. Furat Shani found a recurrence rate to be 1% in onlay and no recurrence in sublay mesh repairs and Kharde K et al in his study found recurrence rate to be 4% in onlay and no recurrence in sublay mesh repair.

Wound infection was 2 (5.71%) & 4(11.43%) in sublay and onlay respectively. These patients were treated with appropriate antibiotics and regular dressing.

Conclusion:

Sublay mesh repair has a lower rate of post-operative complications than onlay mesh repair. Sublay mesh hernioplasty is a better alternative to onlay mesh hernioplasty for incisional hernias. Further more studies should be done on a large scale for further analysis.

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