

## A COMPARATIVE STUDY TO EVALUATE THE INCIDENCE OF EARLY COMPLICATIONS AND OUTCOME IN ONLAY VERSUS SUBLAY MESHPLASTY FOR VENTRAL HERNIAS

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### ABSTRACT

**Objective:** To evaluate sublay vs onlay meshplasty in ventral hernias and to compare postoperative complications and recurrences. **Patients and Methods:** A cross sectional study was done in year 2019 -2020, 60 Patients diagnosed as ventral hernias in Department of General Surgery, Govt. Medical College, Thrissur were included in the study. Full history, clinical examination was done for the patients. Group A Onlay and Group B Sublay - 30 each meshplasty was done. **Results:** We studied 60 patients, out of which 29 males and 31 females from various age group between 20 to 90. Out of which 29 belongs between 50 to 70 age group. Here the most common ventral hernia was incisional hernia 23 in number and least was epigastric 6 in number. In our study group 30 cases underwent sublay and 30 cases underwent onlay meshplasty. Wound infection was found in 12 cases. Out of these, 9(30%) were in a onlay group and 3(10%) were in sublay group. These patients were treated with appropriate antibiotics and regular dressing. The most common complication observed was seroma more than 30ml after 7 days in patients. Out of patients, 3(10%) were in onlay and 1 (3%) in sublay mesh repair group. Recurrence was the most common and important late complication after hernia repair. **Conclusion:** Sublay mesh repair is a good alternative to onlay mesh repair. that may be applicable to all forms of ventral hernia as the mesh related overall complications are less compared to onlay meshplasty.

**KEYWORDS:** Meshplasty, Onlay, Sublay, Ventral Hernia.

### INTRODUCTION

Hernia derived from the Latin word, is a protrusion of a viscus or part of a viscus through an abnormal opening in the wall of its containing cavity. Ventral abdominal hernia includes all the hernias occurring through the anterior abdominal wall excluding groin hernias (incisional hernias, epigastric, para umbilical hernias).<sup>[1]</sup> Patient may feel absolutely no symptoms, or could experience discomfort or severe pain in the area of their hernia, which might grow worse when patient try to stand or lift heavy objects. Patient may see or feel a bulging or growth in the area that feels tender to the touch. In relation to umbilicus, there can be epigastric and hypogastric hernias at linea alba. Without treatment, ventral hernias can enlarge and worsen with time. Untreated hernias can become difficult to repair eventually and can lead to serious complications, such as obstruction, strangulation. The goal of ventral hernia surgery is to repair the hole/defect in the abdominal wall so that the intestine and other abdominal tissue cannot bulge through the wall again.<sup>[6]</sup> The surgery aims to restores the tone and contour of the abdominal wall by

repairing the defect and repositioning the muscles to their normal position. Operative hernia repair includes meshplasty, three 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 between the rectus abdominis muscle and posterior rectus sheath which is known as the sublay mesh repair. The purpose of this study is to compare onlay versus sublay repair regarding early complications (superficial infections and seroma collection) and outcome.

### MATERIALS AND METHODS

#### 1) STUDY SETTING

Department of General Surgery Govt. Medical College, Thrissur.

#### 2) STUDY DESIGN

Comparative study  
Single Centre Prospective Study

**3) STUDY POPULATION**

Patients admitted in post operative ward of the Department of General Surgery, surgery done for ventral hernia- mesh repair

**4) INCLUSION CRITERIA**

All patients who have given informed written consent to take part in the study, admitted in post operative ward- Department of General Surgery, Govt. Medical College, Thrissur, for ventral hernia mesh repair. These include

- Primary hernia(umbilical, paraumbilical, epigastric)
- All incisional hernias

**5) METHODOLOGY**

Written informed consent obtained from all study subjects before enrolment in the study. All subjects undergoing onlay and sublay mesh repair for ventral hernias will be evaluated intraoperatively for duration of surgery and postoperatively for complications like surgical site infections, seroma formation, and outcome like duration of hospital stay, recurrence.

**6) DATA ANALYSIS**

Observations are tabulated according to the pre-designed proforma. The collected data will be analyzed with IBM. SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis will be used for categorical variables and the mean & S.D will be used for continuous variables. The Shapiro Wilk's test for normality will be

done. If data is found to be skewed non parametric will be done. if its found to be normally distributed then parametric tests will be used.

**RESULTS**

Incisional hernia is the most common type of ventral hernias.

No gender predominance for ventral hernias.

Early wound infection was more in onlay (30%) than sublay (10%). p value is 0.053 (>0.05), so statistically it is not significant.

Seroma collection more in onlay (10%) than sublay (3%) p value 0.612 (>0.05). so statistically it is not significant.

Recurrence after 1 year more common in onlay (3%) than sublay (0%) p value is 1.00 (>0.05).so statistically it is not significant.

**Table 1: Statistical Analysis of Infections.**

**Chi-Square Tests**

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.750 <sup>a</sup>	1	.053		
Continuity Correction <sup>b</sup>	2.604	1	.107		
Likelihood Ratio	3.891	1	.049		
Fisher's Exact Test				.104	.052
Linear-by-Linear Association	3.687	1	.055		
N of Valid Cases	60				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.00.

b. Computed only for a 2x2 table

**Table 2: Statistical Analysis of Seroma Collections.**

<b>Chi-Square Tests</b>					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.071 <sup>a</sup>	1	.301		
Continuity Correction <sup>b</sup>	.268	1	.605		
Likelihood Ratio	1.118	1	.290		
Fisher's Exact Test				.612	.306
Linear-by-Linear Association	1.054	1	.305		
N of Valid Cases	60				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.00.  
 b. Computed only for a 2x2 table

**Table 3: Statistical Analysis of Recurrence.**

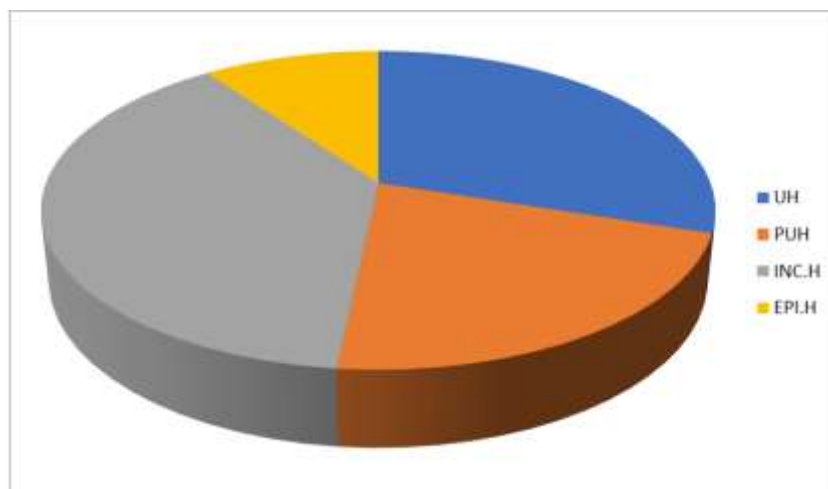
Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.017 <sup>a</sup>	1	.313		
Continuity Correction <sup>b</sup>	.000	1	1.000		
Likelihood Ratio	1.403	1	.236		
Fisher's Exact Test				1.000	.500
Linear-by-Linear Association	1.000	1	.317		
N of Valid Cases	60				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .50.  
 b. Computed only for a 2x2 table



**Figure 1: Age Distribution of Hernias.**

Age	Umbilical Hernia	Paraumbilical hernia	Incisional hernia	Epigastric hernia	Total
20-30	1	2	0	0	3
31-40	2	1	2	1	6
41-50	4	5	3	1	13
51-60	5	3	7	0	15
61-70	4	2	6	2	14
71-80	2	0	3	2	7
81-90	0	0	2	0	2
Total	18	13	23	6	60



**Figure 2: Type of Hernia.**

TYPE	UH	PUH	INC.H	EPL.H
NUMBER	18	13	23	6



Figure 3: Gender Distribution.

Male	29
Female	31

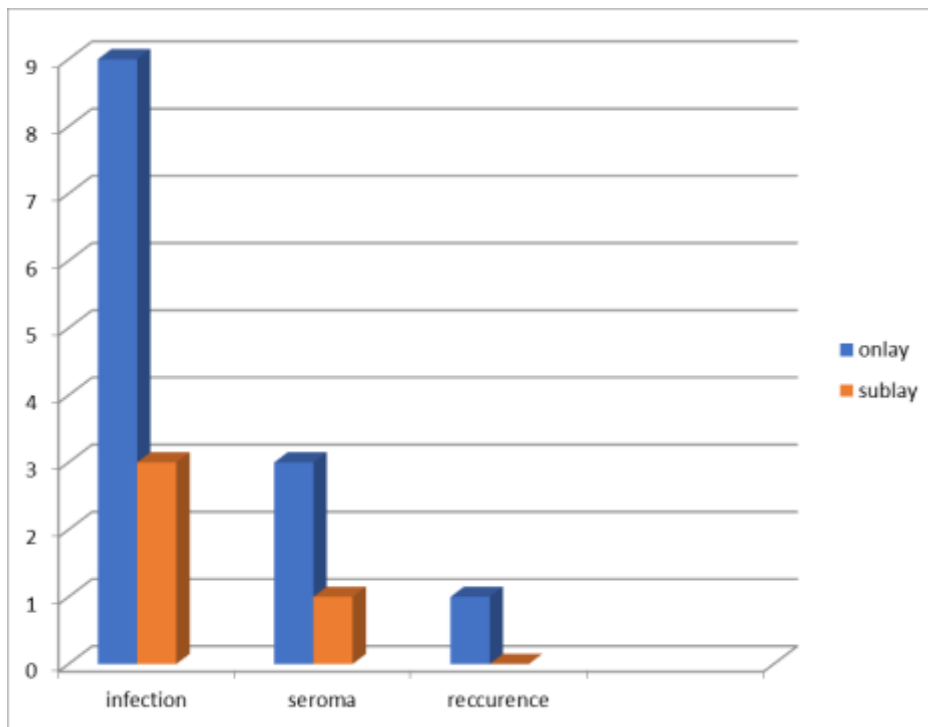


Figure 4: Post op Complications and Outcome.

Complications	GrpA (ONLAY)	Grp B (SUBLAY)
Suture site infection	9(30%)	3(10%)
Seroma > 30ml (1 week)	3(10%)	1(3.3%)
Reccurence	1(3.3%)	0(0%)

## DISCUSSION

We studied 60 patients, out of which 29 males and 31 females from various age group between 20 to 90. Out of which 29 belongs between 50 to 70 age group. Here the most common ventral hernia was incisional hernia 23 in number and least was epigastric 6 in number.

In our study group 30 cases underwent sublay and 30 cases underwent onlay meshplasty.

When considering the ideal location for mesh placement, various features should be considered. Devascularisation of flaps needs to be avoided to prevent wound complications like infections, flap necrosis and surgical site infections, seroma formations. In sublay repair tissue integration from two load-bearing tissues, posterior rectus sheath and the anterior myo-fascial complex are included. The sublay mesh placement protects the mesh from superficial wound complications, intra-abdominal adhesions, and contamination due to deeper plane of mesh placement. Creation of devascularizing skin flaps is avoided. Onlay meshplasty allows for tissue growth from both direction and the skin flaps are not load bearing. Mesh placed in the onlay location is prone for superficial wound complications and hence devascularizing skin flaps are being made for mesh cover.

**SURGICAL SITE INFECTIONS:** The superficial location of mesh in onlay meshplasty puts it at increased risk of surgical site. Wound infection was found in 12 cases. Out of these, 9(30%) were in a onlay group and 3(10%) were in sublay group. They were treated with empirical and specific antibiotics along with regular dressing. Removal of mesh wasn't required because the infection was superficial, which could be managed and they also responded well to antibiotics.

**SEROMA:** The most common complication observed was seroma more than 30ml after 7 days in patients. Out of patients, 3(10%) were in onlay and 1 (3%) in sublay mesh repair group. This complication was managed with seroma drainage. Onlay technique had more seroma formation since it requires significant subcutaneous dissection, hence devascularising the fat for mesh placement.

**RECCURENCE:** This was the most common and important late complication after hernia repair. Here, out of 60 patients recurrence was found in 1 case. 1(3%) in onlay and 0 were in sublay.

## CONCLUSION

Sublay mesh repair is a good alternative to onlay mesh repair that may be applicable to all forms of ventral hernia as the mesh related overall complications like seroma formation, surgical site infections and late complications like hernia recurrence are less compared to onlay meshplasty. Hence, sublay meshplasty can be used

as the best method of choice for the treatment of ventral hernias.

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