



A COMPARATIVE STUDY OF POSTOPERATIVE HOSPITAL STAY BETWEEN ONLAY AND SUBLAY MESH REPAIR IN THE TREATMENT OF VENTRAL HERNIAS

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ABSTRACT

Ventral hernias can be congenital or acquired and are usually due to previous surgical procedures, trauma, and weaknesses in the abdominal musculature resulting in discomfort, functional impairment. Repair aims at minimizing the risk of recurrence while avoiding complications such as infection, chronic pain, or poor cosmetic outcomes. Mesh repair has emerged as a cornerstone in the treatment of ventral hernias. Despite the widespread adoption of mesh repairs, there remains questions about technique of mesh placement, and factors including the size and location of the hernia, patient characteristics, surgeon preference, and the perceived risk of complications such as infection or mesh migration and post operative hospital stay. In the current study we aim to find the post operative stay in both the groups. **Objective-** To compare the duration of hospital stay in sublay and onlay mesh repair in the treatment of ventral hernias. **Methodology-** in this prospective study 50 patients were taken onlay and 50 patients were taken in sublay group. Patients with post laparotomy midline incisions, recurrent hernia and primary hernias were included. Any patient with strangulated or obstructed hernia or with local signs of inflammation; patients unwilling to participate were excluded. A written informed consent was taken. SPSS 25 was used for statistical analysis. **Results** - Onlay mesh repair is associated with a significantly longer postoperative stay (mean of 3.84 days) compared to Sublay repair (mean of 2.68 days), with a p-value of 0.0157 indicating statistical significance.

KEYWORDS : onlay , ventral ,sublay,mesh repair

INTRODUCTION

Ventral hernias refer to defects in the abdominal wall fascia that are not located in the groin or near the diaphragm. Acquired ventral hernias usually result from previous surgeries, trauma, or repetitive strain on naturally weak areas of the abdominal wall, such as the umbilicus, semilunar line, ostomy sites, inguinal region. A thorough personal, medical and surgical history, including previous hernias and weight changes, patient's occupation, diet, exercise, smoking, and alcohol consumption and physical examination are important. Additionally ultrasound, CT scan, or MRI may be utilized. Surgical managements gold standard and Non-surgical management using binders, trusses, or corsets is generally ineffective, though it may be the only option for patients who are not fit for surgery.¹ The principle for hernia repair is achieving a tension-free closure, preventing infections at the surgical site, and employing a sublay technique with fascial closure when possible. For defects of size less than 2 cm a primary open repair without mesh can be done. For larger defects, open repair with mesh can be used, with various options available for the type and placement of the mesh.² For larger defects where tension-free closure is not possible, component separation techniques are used which can be done. The onlay and sublay approaches are two of the most commonly employed methods. The decision between onlay and sublay mesh placement is influenced by several factors, including the size and location of the hernia, patient characteristics, surgeon preference, and the perceived risk of complications such as infection or mesh migration.³

The onlay mesh repair technique involves placing the mesh on top of the rectus muscle, external to the abdominal fascia. This method is favored for its ease of performance, especially in patients with large or complex hernias. It allows extensive coverage of the defect, potentially reducing recurrence. However, due to placement of mesh on more superficial plane risks for wound complications, seroma formation, infection, and increases. Still onlay mesh repair continues to be a popular choice, particularly in scenarios where rapid, reliable reinforcement of the abdominal wall is necessary.⁴

Sublay mesh repair technique, or retromuscular or RivesStoppa repair, involves placing the mesh beneath the rectus muscle. This method is lauded for its biomechanical advantages, as it provides a more robust repair by distributing intra-abdominal pressures across a larger surface area of the mesh. Lesser incidences of infection and seroma formation are noted. However, the sublay technique is technically more demanding, requiring a higher level of surgical expertise and longer operative times.⁵ Given these tradeoffs, the selection of an appropriate mesh repair technique is critical, and should be tailored to the individual patient's needs and circumstances.⁶ This study seeks to address this gap in knowledge by conducting a thorough comparative analysis of these two techniques, with the ultimate goal of improving patient care and surgical outcomes in the treatment of ventral hernias on the basis of their post operative duration of hospital stay.

MATERIALS AND METHODS

This prospective study was carried out in department of genral surgery at a tertiary care centre with 50 patients in each group. Patients with post laparotomy midline incisions, recurrent hernia and primary hernias were included. Any patient with strangulated or obstructed hernia or with local signs of inflammation; patients unwilling to participate were excluded. A written informed consent was taken. SPSS 25 was used for statistical analysis. Detailed information regarding the patients demographics (age,sex ,weight, BMI , Comorbidities) were taken , type of anesthesia , mesh were noted. Post-operative complications like seroma formation, suture line gape and infection were noted. The post operative duration of hospital stay were noted in both groups.

RESULTS

Table-1 Distribution of Study Subjects by Sex

Sex	Operative Procedure for Hernial			p-value
	Onlay mesh repair	Sublay mesh repair	Total	

Female	16	19	35	0.3545
	32%	38%	70%	
Male	9	6	15	
	18%	12%	30%	
Total	25	25	50	
	50%	50%	100%	

32% of females underwent Onlay mesh repair, while 38% underwent Sublay mesh repair. For males, 18% had Onlay mesh repair, and 12% had Sublay mesh repair.

Table-2 Distribution of Study Subjects by Postoperative Stay Duration

Operative Procedure	Label	N	Mean	SD	Minimum	Maximum	p-value
Onlay mesh repair	POSTOPERATIVE STAY DURATION	25	3.84	1.68	2	7	0.0157
		5	4	68			
Sublay mesh repair	POSTOPERATIVE STAY DURATION	25	2.68	1.6	2	8	0.0157
		5	8	6			

The comparison of postoperative stay duration between Onlay and Sublay mesh repair for hernia shows that the mean duration for Onlay mesh repair is 3.84 days with a standard deviation of 1.68, while the mean duration for Sublay mesh repair is 2.68 days with a standard deviation of 1.6. The p-value of 0.0157 indicates a statistically significant difference, with Onlay mesh repair being associated with a longer postoperative stay compared to Sublay mesh repair.

Table-3 Distribution of Study Subjects by POC Seroma

POC Seroma	Operative Procedure for Hernial			p-value
	Onlay mesh repair	Sublay mesh repair	Total	
No	18	23	41	0.0657
	36%	46%	82%	
Yes	7	2	9	
	14%	4%	18%	
Total	25	25	50	
	50%	50%	100%	

The comparison of postoperative seroma between Onlay and Sublay mesh repair for hernia shows that 14% of Onlay cases and 4% of Sublay cases experienced seroma. Conversely, 36% of Onlay cases and 46% of Sublay cases did not experience seroma. The pvalue of 0.0657 suggests a trend towards a difference in the occurrence of postoperative seroma between the two repair methods, though it is not statistically significant at the conventional threshold

DISCUSSION

Sex- The comparison of sex distribution between Onlay and Sublay mesh repair groups for ventral hernia in our study indicates no statistically significant difference between the two techniques. Specifically, our study reports that 32% of females underwent Onlay mesh repair, while 38% had Sublay mesh repair. For males, 18% underwent Onlay mesh repair, and 12% had Sublay mesh repair, with an overall equal

distribution of procedures between the two techniques (50% each). The p-value of 0.3545 suggests that sex does not significantly influence the choice between Onlay and Sublay mesh repair techniques. This finding is consistent with recent studies in the field. For instance, Singh et al. (2021)⁷

Postoperative stay duration- Reveals that Onlay mesh repair is associated with a longer postoperative stay (mean of 3.84 days, SD = 1.68) compared to Sublay mesh repair (mean of 2.68 days, SD = 1.6), with a p-value of 0.0157 indicating statistical significance. This finding is consistent with recent studies that have explored the impact of different hernia repair techniques on postoperative recovery times. For instance, a study by Patel et al. (2020)⁸ observed that patients undergoing Onlay mesh repair had a significantly longer postoperative hospital stay compared to those who had Sublay mesh repair. They attributed this difference to the more extensive tissue dissection and potentially higher inflammatory response associated with the Onlay technique. Postoperative seroma - 14% of Onlay cases experienced seroma, while only 4% of Sublay cases did. The p-value of 0.0657 suggests a trend toward a difference in the occurrence of postoperative seroma between the two repair methods, although it does not reach the conventional threshold for statistical significance. This trend aligns with findings from recent research on seroma formation in hernia repairs. For instance, a study by Kumar et al. (2021)⁹ investigated postoperative complications in Onlay versus Sublay mesh repairs and found a similar trend, with a higher incidence of seroma in Onlay repair cases compared to Sublay. Their study highlighted that while the difference was not statistically significant, it did suggest a potential increased risk of seroma with the Onlay technique.

CONCLUSIONS

In conclusion, the comparison between Onlay and Sublay mesh repair for hernia, shows that Onlay repair is associated with a significantly longer postoperative hospital stay. Despite some trends in postoperative complications like seroma formation that did not reach statistical significance, indicating that both techniques are largely comparable, with hospital stay being the main differentiating factor.

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