

## ORIGINAL ARTICLE

# Compare the Efficacy and Safety between Onlay Versus Sublay Mesh Repair for Para-Umbilical Hernia

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## ABSTRACT

**Objective:** To compare the efficacy and safety between onlay mesh technique and sublay mesh technique in patients undergoing paraumbilical hernia repair.

**Study Design:** Retrospective/Observational

**Place & Duration:** In the department of surgery, Muhammad Teaching Hospital, Peshawar and Fauji Foundation Hospital, Rawalpindi and conducted during the period from March 2021 to August 2021.

**Methods:** A total of 166 patients with both genders having ages 18 to 65 years who were undergoing para-umbilical hernia repair were included. Patients demographic including age, gender were recorded after informed consent. Patients were equally divided into two groups Group O and Group S. Group O (83 patients) received onlay mesh technique and Group S (83 patients) received sublay technique. Outcomes such as post-operative pain, wound infection, seroma formation and hospital stay were recorded and compare the results between both groups.

**Results:** In group O 48 (57.83%) patients and in group S 47 (56.63%) patients were females while 35 (42.17%) and 36 (43.37%) patients were males in group O and S. There was significant difference in term of post-operative pain  $6.01 \pm 2.26$  vs  $3.58 \pm 1.44$  (P-value  $< 0.05$ ). In group O 14 (16.87%) patients and in group S 4 (4.82%) patients had wound infection. 8 (9.64%) patients in Group O and 2 (2.40%) patients in Group S had seroma. Mean Hospital stay in days was high in Group O compared to Group B  $5.32 \pm 1.74$  vs  $2.46 \pm 1.38$  days ( $p < 0.05$ ). There was a statistical significant difference regarding efficacy between both procedures with p-value 0.036.

**Conclusion:** We concluded that sublay mesh technique for para-umbilical hernia repair was safe and effective with very low rate of complications as compared to onlay mesh procedure.

**Keywords:** Paraumbilical Hernia Repair, Onlay Mesh Technique, Sublay Mesh Technique, Outcomes.

## INTRODUCTION

One of the most common surgical procedures is the repair of a hernia in the rectus. As a result of the weakening of the abdominal muscles following an abdominal incision, these may be congenital, or they may be caused by pregnancy or childbirth. After abdominal incision, the incidence rate ranges from 10% to 20% [2, 3]. A hernia in the linea alba near the navel is a protrusion of the intestines or gut through a weak spot in the muscles or ligaments [1]. Incisional hernias and this type of hernia make up the majority of ventral abdominal hernias [2]. These hernia sacs are filled with intestines, omentum, or pre-peritoneal fat. Complications such as obstruction, strangulation, or gangrene can occur if the sac's neck is too narrow. Surgical repair is the cornerstone of hernia treatment. Repairing a paraumbilical hernia can be accomplished through a variety of methods. Mayo's, onlay, sublay, and inlay mesh repair are the most popular. In the past, paraumbilical hernia repair was done using the Keel or Mayo's suture technique. Under 2 centimetres in diameter, the abdominal defect can be repaired using stitches. There is a high recurrence rate [3-5] of almost 19% to 54%.

Para-umbilical hernias with defects smaller than 2 cm in diameter can be sutured. [6] Mesh repair is recommended for defects of more than 2 centimetres in diameter. Tension-free mesh repair is used in a wide range

of mesh repair techniques, but they all follow the same principle. The anatomical site where the mesh is implanted makes a significant difference [7].

There is a greater tendency for these procedures to be used because they are more straightforward: onlay, sublay, and inlay. Because mesh-to-bowel contact can lead to serious complications like chronic pain obstruction and the formation of enterocutaneous fistulas, inlay mesh repair is less frequently used. Onlay and sublay procedures are two of the most common options today. Recurrence rates for mesh and suture repair are 2.7 percent and 8.2 percent, respectively [6]. As a result of a high recurrence rate, these hernias were previously treated with tension-free suture, which led to a decrease in their popularity [8].

Mesh is widely used today to repair hernia defects, either open or laparoscopically. The recurrence rate for all types of hernias has been drastically reduced by the use of a tension-free mesh technique [9]. Many factors have been cited for the recurrence of PUH after surgery, including the presence of large seromas and surgical site infections. Other factors include obesity and excessive weight gain after repair [10, 11].

## MATERIAL AND METHODS

This retrospective/observational study was conducted at Department of surgery, Muhammad Teaching Hospital,

Peshawar and Fauji Foundation Hospital, Rawalpindi and conducted during the period from March 2021 to August 2021. From 18 to 70 years old, we collected data on 166 ventral hernia repair patients, both men and women, who underwent the procedure. Patients' personal information, such as their age and gender, was obtained after they had given informed written consent to participate. The treatment of patients under the age of eighteen, those who had not signed a consent form, and those who had liver cancer were all ruled unfit.

The patients in Groups O and S were divided equally amongst them. Group O consists of 83 patients who underwent general anaesthesia and were treated with the onlay mesh technique, while Group S consists of 83 patients who underwent general anaesthesia and were treated with the sublay technique. Data was gathered in order to compare outcomes such as post-operative discomfort, wound infection, and the formation of seroma between the two groups of participants.

The dataset was analysed using SPSS 20.0, which was used to do the statistical analysis. In this study, the t-test for students and the Chi-square test were both used to analyse the data. A statistically significant difference was determined as one with a p-value of less than 0.05 in the two groups.

**RESULTS**

In group O 48 (57.83%) patients and in group S 47 (56.63%) patients were females while 35 (42.17%) and 36 (43.37%) patients were males in group O and S. Mean age of patients in Group O was 44.72+7.36 years and in Group S it was 45.84+8.58 years. (Table 1)

Table 1: Age and gender wise distribution

Characteristics	Group O (Onlay)	Group S (Sublay)	P-value
Mean Age	44.72+7.36	45.84+8.58	N/S
Gender			
Male	35 (42.17%)	36 (43.37%)	>0.05
Female	48 (57.83%)	47 (56.63%)	>0.05

There was significant difference in term of post-operative pain 6.01+2.26 vs 3.58+1.44 (P-value <0.05). In group O 14 (16.87%) patients and in group S 4 (4.82%) patients had wound infection. 8 (9.64%) patients in Group O and 2 (2.40%) patients in Group S had seroma. Mean Hospital stay in days was high in Group O compared to Group B 5.32+1.74 vs 2.46+1.38 days (p=<0.05). (Table 3)

Table 3: Postoperative outcomes between both groups

Outcomes	Group O (Onlay)	Group S (Sublay)	P-value
Post-op pain	6.01+2.26	3.58+1.44	0.0001
Wound Infection	14 (16.87%)	4 (4.82%)	0.042
Seroma	8 (9.64%)	2 (2.40%)	0.036
Mean Hospital Stay (days)	5.32+1.74	2.46+1.38	0.024

In group O efficacy of procedure was 84.34% while in group S efficacy was 96.39%. There was a statistical significant difference regarding efficacy between both procedures with p-value 0.036. (Figure 1)

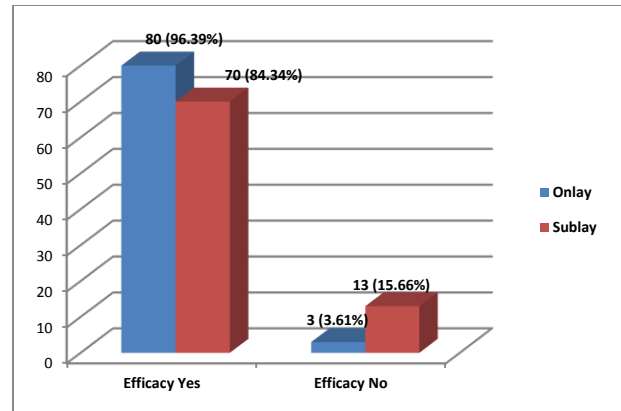


Figure 1: Comparison of Efficacy between both groups

**DISCUSSION**

Ventral hernia repair surgery is one of the most commonly performed surgical procedures worldwide [11]. There have been numerous advances in the surgical field to help surgeons do Ventral Hernia Repair with the least amount of difficulties possible [12-13]. It is widely accepted that mesh surgery is both successful and safe, with a very low incidence of problems. When repairing a hernia, mesh replacement procedures like as sublay and onlay are the most frequently used. Because of the lower likelihood of mesh infection and stoma formation, researchers say the sublay approach should be considered the gold standard [14-15].

The goal of this study was to compare the results of the two approaches. Ventral hernia repair was performed on an overall number of 166 participants in this study. Patients were evenly split into two groups. In group O 48 (57.83%) patients and in group S 47 (56.63%) patients were females while 35 (42.17%) and 36 (43.37%) patients were males in group O and S. Mean age of patients in Group O was 44.72+7.36 years and in Group S it was 45.84+8.58 years. Female patients outnumbered male patients, according to a study by H Ahsan et al. [16]. In the onlay and sublay groups, 64% had an age of 51.4 + 9.8 years and 60% had an age of 52.3 + 10.1 years, respectively. Female patients were more prevalent than male patients, and the majority of patients were between the ages of 30 and 50 [17].

There was significant difference in term of post-operative pain 6.01+2.26 vs 3.58+1.44 (P-value <0.05). In group O 14 (16.87%) patients and in group S 4 (4.82%) patients had wound infection. 8 (9.64%) patients in Group O and 2 (2.40%) patients in Group S had seroma. Mean Hospital stay in days was high in Group O compared to Group B 5.32+1.74 vs 2.46+1.38 days (p=<0.05). Many other studies have shown that the sublay mesh approach is a successful and safe procedure in terms of postoperative discomfort, wound infection, and seroma production as compared to the onlay mesh operation [18-20].

The sublay treatment was shown to be 96.39 percent more effective than the onlay procedure in this investigation. A p-value of 0.036 revealed a statistically significant difference in efficacy between the two methods. Sublay repair has been shown to be more effective and safe than onlay repair in prior research [21-22]. The sublay

and onlay procedures for hernia repair were found to be equally effective and safe in some trials, however some studies showed sublay was more effective than onlay procedure [23-24].

## CONCLUSION

To reduce post-operative problems, mesh installation for ventral hernia repair is suggested. In comparison to the onlay mesh treatment, we found that the sublay mesh technique for ventral hernia repair was both safe and successful in terms of postoperative discomfort, wound infection, and seroma production.

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