

ORIGINAL ARTICLE

A Comparison of the Onlay and Sublay Mesh Procedures for the Repair Of Ventral HerniasFARYAL SAEED¹, KAMRAN KHAN², SANA ISRAR³, AJMAL KHAN⁴, IBRAR AHMED⁵, MARIUM KHURSHID⁶¹Senior Registrar, Women Medical & Dental College, Abbottabad²Assistant Professor, Abbottabad International Medical Institute, Abbottabad³Assistant Professor, Shahina Jamil Hospital, Abbottabad⁴General Surgeon, Surgery Dept; THQ Besham, Shangla⁵Medical Officer, General & Mental Hospital, Dadar, Mansehra⁶Medical Officer, DHQ, MansehraCorresponding author: Faryal Saeed, Email: surgeonfaryalsaeed@gmail.com, Cell: +92 336 9915477**ABSTRACT****Objective:** The purpose of this study is to compare the outcomes of the on-lay mesh technique and the sub-lay mesh technique for ventral hernia repair.**Study Design:** Observational/ Retrospective**Place & Duration:** Benazir Bhutto Shaheed Hospital, Abbottabad; from May 2022-October-2022**Methods:** 116 individuals of both sexes, aged 18 to 75, who were undergoing ventral hernia repair were examined. After receiving the patient's consent, information about the patient's age and gender was recorded. All of the patients were equally split into two groups, Group I and Group II. Participants in Group I were treated with an on-lay mesh method, while those in Group II were given a sub-lay approach. Consequences such as discomfort after surgery, bacterial infections, seroma development, and lengths of stay in the hospital were documented and compared between the two groups. All data was analyzed with SPSS 24.**Results:** In group I mean age was 47.12+5.38 years and in group II mean age was 48.7+11.66 years. Among all, majority of the cases 67 (57.8%) were females and 49 (42.2%) cases were males. Postoperative pain was significantly higher in the group I 5.1+3.18 whereas in the group II, it was lower 2.9+4.16, with wound infection affecting 10 (17.2%) patients vs 5 (5.2%) patients (P<0.005). Seroma was identified in 3 (5.2%) of Group II patients and 7 (12.1%) of Group I patients (p<0.005). Hospitalization durations were significantly longer for participants in Group I (6.0+1.36 days) compared to those in Group II (3.2+0.44 days; p<0.05).**Conclusion:** This research came to the conclusion that the sub-lay mesh approach for ventral hernia repair was not only successful but also safe, with a very low risk of problems when compared to the on-lay mesh operation.**Keywords:** On-lay Mesh Technique, Ventral Hernia Repair, Outcomes, Sub-lay Mesh Technique**INTRODUCTION**

A defect in the abdominal wall's musculoskeletal layers in the vicinity of the surgical scar is known as a ventral abdominal wall incisional hernia. [1] The most frequent surgical procedure globally is for primary or incisional ventral abdominal wall hernias. [2] It is estimated that 250,000 ventral hernia repairs are carried out annually in the United States alone. [3] Incisional hernia incidence in the literature from throughout the world ranges from 2-11% to 10-20%. [4,5] The high risk of recurrence, expense, and morbidity associated with incisional hernia surgery provide a significant challenge to general surgeons. [6] Using prosthetic mesh during open surgery (onlay technique and sublay technique). [1,7] Although there is disagreement over whether open mesh repair or suture repair is better, Arnault de Villeneuve initially documented epigastric hernias in 1285 A.D. and first recorded the first successful repair of the same in 1805. Since the development of anaesthesia, a sepsis, and anti-sepsis in the eleventh century, more abdominal operations have been conducted, which has led to a rise in the occurrence of incisional hernias. As a result, this has caused surgeons to consider this issue more closely. [3] In the current day, ventral hernias are one of the most frequent issues that surgeons must deal with. Repairing ventral hernias makes up 15–18% of all surgical operations, with incisional hernias being the most frequent long-term consequence of midline laparotomy incisions. Incisional hernia occurs in 3–13% of laparoscopic surgery patients, with a prevalence that rises to 23%. [4-7]

The location of the graft affects both postoperative complications and recurrence[8]. Previous research, however, failed to demonstrate the superiority of one strategy over another[8]. Additionally, in the systematic assessments of the papers concerning the "sublay" and "onlay" graft techniques, there were no discernible changes in the rates of recurrence and infection[9]. Contrarily, it is believed that "sublay" grafts lessen the production of seromas[10].

Even though "onlay" graft repair has a high risk of complications, it is also claimed that it results in fewer

recurrences[11]. According to recent articles, the long-term consequences of implanting grafts in various layers of the abdominal wall are still not completely understood. [12]

We conducted the current study with the intent of comparing the results of the on-lay and sub-lay mesh methods and examining their respective results.

MATERIALS AND METHODS

This retrospective/observational study was conducted at Department of surgery Benazir Bhutto Shaheed Hospital, Abbottabad; from May 2022-October-2022. A total of 116 patients with either gender between the ages of 18 and 75 who were having a ventral hernia repaired were included. After receiving written consent from patients, demographic data including age and gender were obtained. Patients under the age of 18, those who did not sign the consent form, and those who had liver cancer were eliminated. Patients were split evenly between Group I and Group II. Both Group I and Group II, which each had 58 patients, used the on-lay mesh technique while under general anaesthesia, and the sub-lay technique. In order to compare the results between the two groups, outcomes including post-operative discomfort, wound infection, seroma development, and hospital stay were documented. The data was examined using SPSS 24. Chi-square testing and student t testing were used. The difference was deemed significant at a P-value of <0.05.

RESULTS

Among all, majority of the cases 67 (57.8%) were females and 49 (42.2%) cases were males.(figure 1)

In group I mean age was 47.12+5.38 years and in group II mean age was 48.7+11.66 years. Mean BMI in group I was 22.6+6.44 kg/m² and in group II mean BMI was 23.1+3.29 kg/m². (Table 1)

The most prevalent form in both groups was para-umbilical, which was followed by incisional, epigastric and umbilical. (Figure 2)

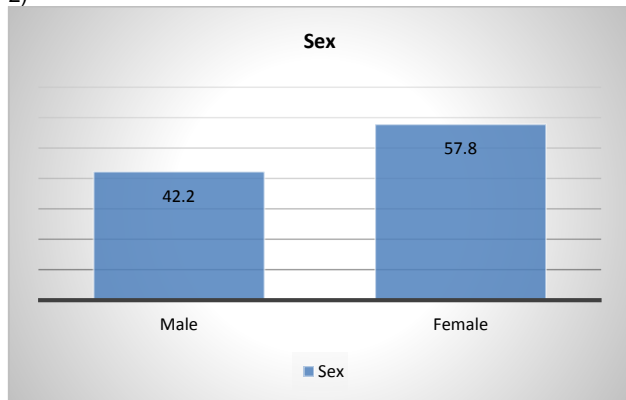


Figure-1: Sex distribution among all cases

Table-1: Body mass index and age of the cases

| Variables | Group I | Group II |
|-------------------------------|------------|------------|
| Mean age (years) | 47.12+5.38 | 48.7+11.66 |
| Mean BMI (kg/m ²) | 22.6+6.44 | 23.1+3.29 |

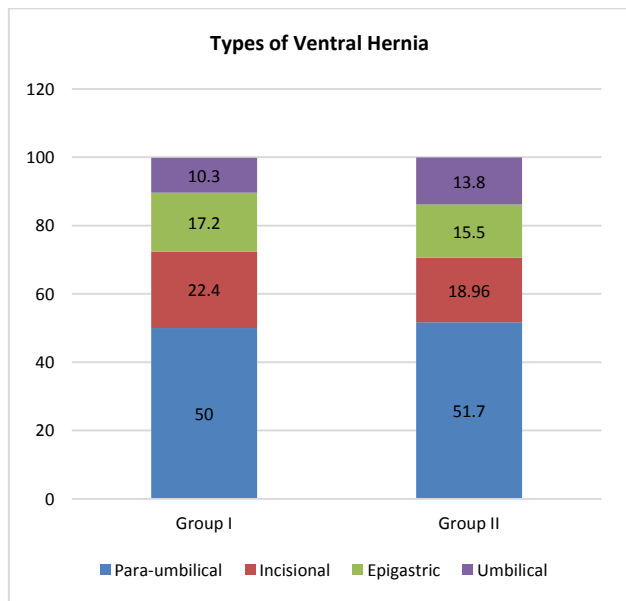


Figure-2: Both groups underwent various ventral hernia repairs.

Postoperative pain was significantly higher in the group I 5.1+3.18 whereas in the group II, it was lower 2.9+4.16, with wound infection affecting 10 (17.2%) patients vs 5 (8.6%) patients (P<0.005). Seroma was identified in 3 (5.2%) of Group II patients and 7 (12.1%) of Group I patients (p<0.005). Hospitalization durations were significantly longer for participants in Group I (6.0+1.36 days) compared to those in Group II (3.2+0.44 days; p<0.05). (Table 3)

Table-2: Postoperative outcomes between both groups

| Variables | Group I | Group II |
|---------------------------|------------|----------|
| Post-op pain | 5.1+3.18 | 2.9+4.16 |
| Wound Infection | 10 (17.2%) | 5 (8.6%) |
| Seroma | 7 (12.1%) | 3 (5.2%) |
| Mean Hospital Stay (days) | 6.0+1.36 | 3.2+0.44 |

DISCUSSION

Hernias in the ventral abdominal wall are a common surgical issue seen in clinical practise. Surgery results depend on the operator's competence, thorough dissection, tension-free repair, and other factors in addition to the technique utilised. There are several ways to treat these hernias, according to [13]. Mesh, either in a sublay or onlay position, is used in commonly used hernia repair procedures. [14] The improved sublay approach has been deemed the gold standard of therapy for ventral hernias because it reduced recurrence rates and had an overall superior outcome. Higher unacceptably high recurrence rates are related to primary tissue healing. Today's tension-free mesh repair is the best method for hernia repair. [15]

In current study 116 patients of both genders were presented. Among all, majority of the cases 67 (57.8%) were females and 49 (42.2%) cases were males. Patients were equally divided in two groups. In group I mean age was 47.12+5.38 years and in group II mean age was 48.7+11.66 years. Mean BMI in group I was 22.6+6.44 kg/m² and in group II mean BMI was 23.1+3.29 kg/m². Results of our study were comparable to the previous study.[16] The most prevalent form in both groups was para-umbilical, which was followed by incisional, epigastric and umbilical.[17]

Postoperative pain was significantly higher in the group I 5.1+3.18 whereas in the group II, it was lower 2.9+4.16. In contrast to the patients in the sublay group, the patients in the onlay group postoperatively feel more discomfort. Onlay meshplasty involves fixing the mesh immediately above the anterior rectus sheath, which has a lot of nerve fibres that cause discomfort. The mesh is put subcutaneously. Onlay repairs are more vulnerable to wound infection because of the mesh's subcutaneous insertion, which increases discomfort. Rajsiddharth et al research 's in Telagana, India, and Thangamani et al study 's in Tamil Nadu, both of India, both produced results that are consistent with the findings of our study. But no discernible variation in the feeling of pain was found in the study carried out in Hungary by Baracs et al. [18,19]

In our study wound infection was higher in group I 10 (17.2%) patients as compared to group II in (8.6%) patients P<0.005). Seroma was identified in 3 (5.2%) of Group II patients and 7 (12.1%) of Group I patients (p<0.005). Hospitalization durations were significantly longer for participants in Group I (6.0+1.36 days) compared to those in Group II (3.2+0.44 days; p<0.05). Furat Shani discovered seroma in onlays and sublays at 12% and 1%, AlySaber discovered seroma at 6% and 2%, and Kharde K et al. discovered seroma at 16% and 12% in onlays and sublays, respectively, in their study.[22-22]

CONCLUSION

Mesh implantation for ventral hernia repair is being evaluated as a treatment of preference to minimise postoperative problems. Researchers came to the conclusion that the sub-layer mesh approach for ventral hernia repair was safe and successful in terms of postoperative discomfort, wound infection, and seroma development with a shorter hospital stay than the on-layer mesh surgery.

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