

Outcome of Open Repair with ON LAY Mesh Hernioplasty in Patients Presenting with Ventral Hernia -A Retrospective Analysis

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Abstract

Objective: To determine the outcome of ON LAY mesh hernioplasty in patients presenting with ventral and incisional hernias.

Method: The study is a descriptive case series carried out in Surgical Unit 1, Services hospital Lahore from January 2012 to December 2021. Data of 197 patients fulfilling the inclusion criteria who had ON LAY mesh hernioplasty were collected. Demographic as well as all other information was recorded on a Performa. All patients underwent ON LAY mesh hernioplasty under general anesthesia. Duration of surgery was noted. After surgery patients were shifted to ward and observed for immediate postop complications. Then patients were discharged and were follow-up for assessment of complications like wound infection, seroma formation and recurrence.

Results: Out of 197 patients 47 (23.85%) had para umbilical hernia, 16 (8.12%) had epigastric hernia, 79 (40.1%) had incisional hernia and 55 (27.91%) had recurrent incisional hernia. Mean age of patients was 41.15 years. There were 132 (67%) females and 65 (32.9%) males. Mean operative time was 145.65±29.33 minutes. There were 11 (5.58%) patients who had wound infection 8 female (4.06%) and 3 male (1.52%). Seroma formation was seen in 7 (3.55%) patients, 5 (2.53%) females and 2 (1.01%) males. Maximum duration of drains was 16 days and minimum was 8 days with mean duration 10.78±2.04 days. Recurrence was seen in 5 (2.53%) patients, 4 (2.03%) females and 1 (0.507%) male.

Conclusion: Based on the results of this study it can be said that ON LAY mesh hernioplasty is a safe, convenient and very effective method of treating ventral and incisional hernias having minimum complications and recurrence with excellent long term results.

Keywords: ON LAY mesh hernioplasty, Ventral and incisional hernia repair, Seroma formation, Wound infection

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Introduction

Abdominal wall hernias are frequently encountered in surgical practice accounting for 15% - 18% of all surgical procedures. Worldwide, more than

20 million hernias are operated per year.¹ Abdominal wall hernias have been reported more prevalent in low socioeconomic status.

Primary or secondary ventral hernia of abdominal wall is a fascial defect through which intraabdominal or preperitoneal contents protrude out continuously or intermittently.² Primary are true ventral hernias, whereas secondary are acquired (incisional or recurrent) hernias. Ventral hernias can also be described as reducible, incarcerated and strangulated. Cause of primary ventral hernia is multifactorial and evidence of connective tissue disorder favors familial predisposition³. Acquired her-

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nias may become clinically evident late but actual fascial separation starts in very early postop period⁴.

Ventral Incisional Hernias (VIH) are a well-known complication after abdominal surgery and the incidence after laparotomy reported in literature ranges from 10% to 20%.⁵ Early diagnosis, easily accessible health facilities and health education are important to prevent complications.

Despite advances in surgical technique and prosthetic technologies, the risks for recurrence and infection are high following the repair of ventral incisional hernias. High-quality data suggest that all ventral hernia repairs should be reinforced with prosthetic repair materials.⁶

Repair of ventral hernias can be done with open method as well as laparoscopically. Open repair of ventral hernias with mesh instead of sutures have become a standard procedure with excellent outcome⁷. It is associated with risk of wound infection, seroma formation and chronic pain⁸. Complications of open ventral hernia repair (OVHR) are related to location of mesh placement e.g. mesh coming in contact with abdominal contents have more chances of intestinal obstruction and fistula formation⁹. Mesh can be placed ON LAY, SUB LAY or IN LAY in OVHR. All the locations have advantages and disadvantages. Most of the literature support the SUB LAY (retro muscular) location with low rate of infection, seroma formation and recurrence and it is considered as gold standard¹⁰. ON LAY technique can be used in OVHR with meticulous dissection and good hemostasis along with precautionary measures like thorough saline wash at the end of procedure, prolonged drainage and abdominal binder with excellent outcome¹¹.

Material and Methods

The study is a descriptive case series carried out in Surgical Unit 1, Department of Surgery, SIMS Services hospital Lahore from January 2012 to December 2021. Total no of 197 patients were included in the study. Inclusion criteria was patients age 25-60 years of either gender with ventral hernia, BMI 18-40 Kg/m² and ASA status I-II. Patients with Diabetes Mellitus (BSR> 186 mg/dl), abnormal clotting profile (PT>20sec, APTT> 15 sec, INR>2) and ASA III or IV were excluded from the study.

Data of 197 patients fulfilling inclusion criteria were retrieved from database of surgical ward 1 Department of Surgery, Services hospital, Lahore. The demographic information like age, sex and address were noted. All patients underwent open ON LAY mesh hernioplasty

under general anesthesia. After surgery patients were shifted to ward and managed with antibiotics, analgesia, I/V fluids and other supportive treatment. Patients were discharged with drains between 5th to 7th postop day and called for follow up in the ward after 3 to 4 days for wound examination, change of dressing, drain measurements. Drains were removed when output is reduced to 20 to 30 ml anywhere between 10 to 16 days. Then patients were follow-up in OPD fortnightly for three months to look for any delayed wound infection or seroma formation and then every six months for recurrence. All the data was collected on a pre-designed proforma (attached).

The data was entered and analyzed in SPSS version 20. Quantitative variables like age was calculated as mean and standard deviation. Qualitative variables like gender and complications were calculated as frequency and percentage.

Outcome was measured in terms of mean hospital stay, mean operative time, wound infection, seroma formation and mean duration of the drain requirement in days. Hospital stay was measured in days taking operative day as day 0 and patients were discharged when they were oral free and pain free. Operative time was from the incision till the end of the last stitch and was calculated in minutes by using stop watch. Wound infection (redness, erythema, pus discharge at site of wound) was graded according to Southampton wound grading system. It was labelled +ve if grade >3. It was assessed 10 days postop. Seroma was a localized collection of fluid detected clinically and with the help of ultrasound which needed drainage. It was assessed 10 days postop. Drains were removed when volume was less than 30 ml/24 hours and duration of drains were calculated in days.

Results

Out of 197 patients, 47 (23.85%) had para umbilical hernia, 16 (8.12%) had epigastric hernia, 79 (40.1%) had incisional hernia and 55 (27.91%) had recurrent incisional hernia (Table 1). Mean age of patients was 41.15 years. Minimum and maximum age of patients was 25 and 60 years. (Table-2). There were 132 (67%) females and 65 (32.9%) males. Mean BMI of patients was 21.4 ± 1.75 (Table-2). Mean operative time was 145.65±29.33 minutes ranging from 100 to 200 minutes. (Table-2). Maximum duration of drains was 16 days and minimum

was 8 days with mean duration 10.78 ± 2.04 days. Mean drain volumes for right and left side drain were 198.04 ± 79.45 and 193.61 ± 74.27 ml. (Table-2). As shown in Table 3 and Figure 1, 11 (5.58%) patients had wound infection including 8 females (4.06%) and 3 males (1.52%). Recurrence was seen in 5 (2.53%) patients, 4(2.03%) females and 1(0.507%) male (Table 3). Seroma formation was seen in 7 (3.55%) patients, being 5 (2.53%) females and 2 (1.01%) males (Table 3, Figure 1).

Table 1: Types of hernia (n = 197)

Type	Number of patients	Percentage (%)
Paraumbilical hernia	47	23.85
Epigastric hernia	16	8.12
Incisional hernia	79	40.12
Recurrent incisional hernia	55	27.91
Total	197	100

Table 2: Characteristics of patients (n=197)

Item	Mean	SD	Min.	Max.
Age (years)	41.15	11.05	25	60
BMI (Kg/m ²)	21.47	1.75	19	25
Operative time (minutes)	145.65	29.33	100	200
Drain volume				
Right side (mL)	198.04	79.45	53	428
Left side (mL)	193.61	74.27	74	376
Duration of drain	10.78	2.04	8	16

Table 3: Types of complications (n=197)

Complication	Number of patient	Frequency (%)
Recurrence	5	2.53
Seroma formation	7	3.55
Wound infection	11	5.58

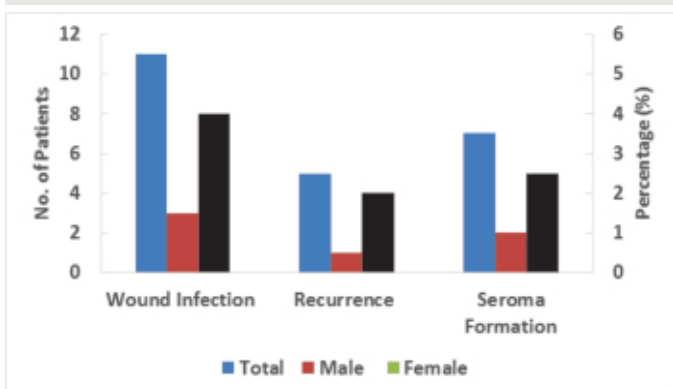


Figure 1: Showing the frequency distribution of complications

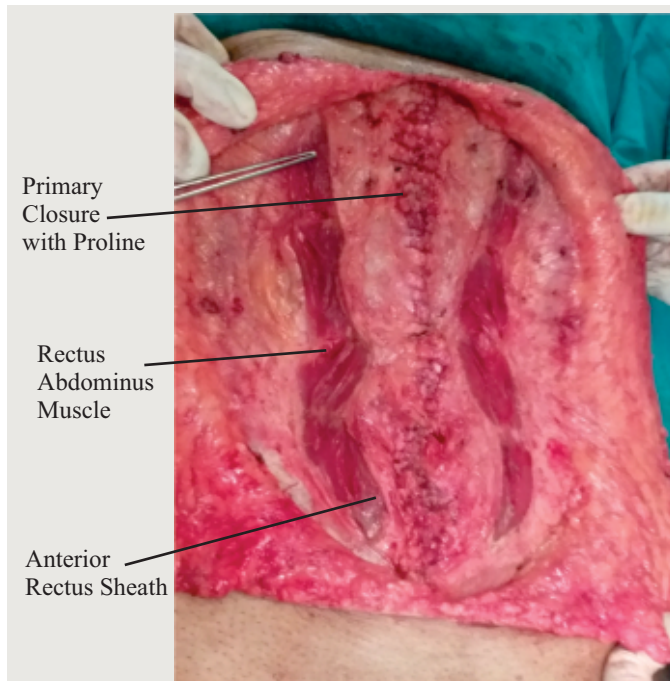


Figure 2: Showing primary closure with sutures

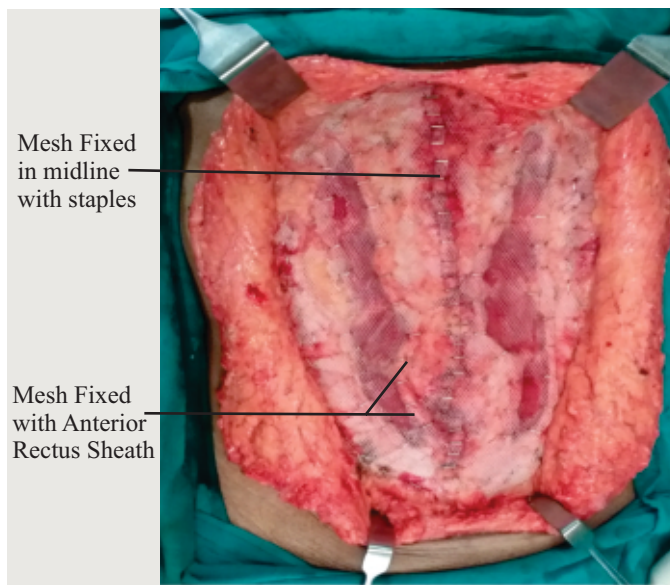


Figure 3: Showing mesh fixed with staples

Discussion

The mean age of our cohort was about 41.15 years that is very comparable with other studies like Singh et al. (47 ± 8.54), Bhattaria et al. (47 years), Ellis et al (49.4 years), Odeh JM et al (50.5 years) and Dhaigude et al (49.46 years)¹²⁻¹⁷. However, another study of Garg N et al found that mean age was quite less compared to our study.¹⁶

In our study, more prevalence of ventral hernia was

noted in female as compared to male (1:2.03) patients which is quite similar to other studies like Singh et al¹⁷. Similarly, Odeh JM and Garg N also reported that male to female ratio were 25:39 and 37:63 respectively¹⁴⁻¹⁶.

Our results showed that wound infection occurred in 11(5.58%) patients that was similar as reported by Dhaigude et al and his co-workers (6.0%), but higher (12.5%) as recorded by Singh and his colleagues¹⁵⁻¹⁷. A body of evidences also demonstrated that incidence of wound infection rate ranged between 6 to 12%.¹⁸⁻²⁰ In another study conducted in Pakistan, 9.23% patients showed wound infection²¹.

Seroma developed in 7 (3.55%) patients in our cohort. Dhaigude et al observed seroma formation in 8% patients¹⁵. A quite high incidence was reported by Singh et al (30%), kaafrani HM (23.3%), Poelman et al (28%), Ibrahim et al (15%)^{17, 22-24}. In a study carried out in Quetta City during July 2016 to December 2017 by Manzoor et al seroma developed in 20% of patients²¹.

Recurrence in the present study was found in 5 (2.53%) patients. Dhaigude et al noted recurrence in 1%, Saber et al in 3%, Ibrahim et al in 5%, Poelman et al in 16% patients^{15,23-25}. Leithy et al found 2% recurrence in patients treated with ON LAY mesh hernioplasty²⁰. No hernia recurrence was noted in studies by Singh et al and Manzoor et al.^{17,21}

Conclusion

Based on the results of this study it can be said that ON LAY mesh hernioplasty is a safe, convenient and very effective method of treating ventral and incisional hernias having minimum complications and recurrence with excellent long term results.

Conflict of Interest

None

Funding Source

None

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Authors Contribution

ABQ: Conceptualization of Project

ABQ: Data Collection

ABQ: Literature Search

ABQ: Statistical Analysis

ABQ: Drafting, Revision

ABQ: Writing of Manuscript