Original Article

Hernioplasty

Long Term Outcome of Ventral Hernia Repair by Onlay Mesh Hernioplasty

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ABSTRACT

Objective: The study was conducted to assess short and especially long term (2-years) outcome of ventral hernia repair by onlay mesh hernioplasty.

Study Design: Observational / descriptive study

Place and Duration of Study: This study was conducted at the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore from 12-Mar-2013 to 30-Nov-2015.

Materials and Methods: A total of 117 adult patients with ventral hernia, irrespective of sex was included in this by convenient sampling. On lay mesh hernioplasty was done. Patients were scheduled for follow-up visits. Minimum follow-up was two years, thus providing sufficient time to assess for recurrence, chronic pain and other complications. The data of all patients were collected for age, sex, operation time, complication, postoperative hospital stay and analyzed with SPSS ver. 21.

Results: Out of 117 patients 94 (80.34%) were female and 23 (19.65%) were male. Mean age of the patients was 38.56 ± 9.73 years. The mean operating time was 40.12 ± 6.40 minutes. The mean hospital stay was 2 days. Commonest postoperative complication was seroma noted in 2 patients (1.71%) had followed by superficial surgical site infection 1 patient (0.85%). In short term follow up 6 patients (5.13%) complained of occasional ache or pain following exertion. Three patients were lost in long term follow-up. Rest of the 114 patients (97.43%) on long term follow-up did not show any persistent pain. However, recurrence was noted in two female patients (1.17%).

Conclusion: The onlay tension free mesh repair is relatively easy to learn, simple to perform with promising long-term results.

Key Words: Ventral Hernia, Onlay Mesh hernioplasty, Para-umblical, Epigastric.

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INTRODUCTION

Ventral hernia is defined as a protrusion through a defect in anterior abdominal wall with the exception of the hernia through inguinofemoral region.[1] It include epigastric, umbilical, and incisional hernias. These hernias are liable to various complications; obstruction, incarceration and strangulation, that's way elective surgical repair is the treatment of choice.[2] Suture repair techniques have dominated over a century. One of the most popular techniques was the Mayo duplication.[3] In larger hernias, suture repair requires the application of tension to the fascia in order to close the orifice. Therefore, many suture repairs failed mechanically, and recurrence rates were found to be as high a 54%. The advantages of mesh implantation have first been confirmed in an influential trial by Luijendijk et al.[3,4]

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According literature review [5] there is a good evidence that open mesh repair is superior to suture repair in terms of recurrences and an insufficient evidence as to which type of mesh or which mesh position (onlay or sublay) should be used. [3] We decided to analyze the feasibility and long-term results of one of the position of the mesh i.e., onlay mesh repair in our setup. The objective of this study was to assess short and especially long-term outcome (2-years follow-up) of ventral hernia repair by onlay mesh hernioplasty. In our country, such a long-term follow-up of this technique with this sample size was not evaluated previously to date.

MATERIALS AND METHODS

This Descriptive observational study was conducted from 12-March-2013 to 30-November-2015 in the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore. The study was approved by the ethical review committee of our institution. A total of 117 adult patients with ventral hernia, irrespective of sex was included in this by convenient sampling. Patients with obstructed, strangulated and having signs of infection were excluded from the study. Written informed consent was taken. Complete blood count,

viral screening and clotting profile were performed. A routine preoperative abdominal ultrasound scan was performed in all the cases. All operations were performed under general anesthesia. A dose of broad-spectrum antibiotic was given prior to anesthesia. A skin incision over the bulge or the defect was made in most of the cases, except in huge paraumbilical hernia where an elliptical incision including hernia and umbilicus was made. The subcutaneous tissues were dissected off the rectus sheath and linea Alba to expose the hernia sac. The sac was incised at its neck and adhesions from the omentum or bowel were divided and the contents are returned to the peritoneal cavity. The defect in the linea alba was closed primarily with continuous non-absorbable polypropylene suture 1/0. A space was created 5 cm all around the suture line between rectus sheath and subcutaneous tissues. Hemostasis was secured. An adequate size of standard polypropylene non-absorbable mesh (15 x 15 cm or 30 x 30 cm) was placed on the rectus sheath and fixed with 3/0 polypropylene interrupted sutures. At this point injection gentamycin 160 mg is spilled directly over the mesh evenly. A suction drain is placed over the mesh. Subcutaneous tissue was closed with 3/0 polyglactin. Skin was closed with interrupted 3/0 polypropylene and antiseptic dressing was applied. Post-operative patients were encouraged to be ambulant and pass urine. All the patients were reassessed in the all the shifts for any post-operative complication. Oral fluid was allowed if there was no nausea and on adequate bowel sounds. On second post-operative day soft diet was allowed and patient was discharged. Drains were removed when drainage was less than 20 ml in 24 hours. All obese patients were counseled to control weight. Follow-up visits were scheduled after one week, six weeks, three months, six months, one year and two years in out-patient department to assess early and late complications. The data of all patients were collected for age, sex, operation time, complication, postoperative hospital stay. Data were analyzed using SPSS version 21. Descriptive statistics were applied. Frequency and percentage were calculated for categorical variables like gender whereas mean and standard deviation were calculated for numerical variables like age and operation time.

RESULTS

Table No. 1: Ventral Hernia

	Patients	%
Epigastric	23	19.66
Para-umblical	87	74.36
Incisional	7	5.98
Total	117	100.00

Out of 117 patients 94 (80.34%) were female and 23 (19.65%) were male. Mean age of the patients was 38.56 ± 9.73 years. Youngest patient was 23 years old and eldest was 77 years old. The mean operating time was 40.12 ± 6.40 minutes. The mean hospital stay was 2 days. Site of ventral hernia repaired is given in Table 1.

Commonest postoperative complication (Table 2) was seroma noted in 2 patients (1.71%) had followed by superficial surgical site infection 1 patient (0.85%). Seroma was aspirated under ultrasound guidance, while superficial surgical site Infection was treated with local wound care, cultures were taken and treated with antibiotics.

Table No. 2: Early postoperative complications

	Patients	%
Seroma	2	1.71
Hemorrhage	0	0.00
Superficial Surgical Site Infection	1	0.85
Deep Surgical Site Infection	0	0.00
Wound Dehiscence	0	0.00
Total	3	2.56

In short term follow up (Table 3) 6 patients (5.13%) complained of occasional ache or pain following exertion at the site of operation. None of the patient had recurrence.

Table No. 3: Short Term follow-up (complications)

	Patients	%
Occasional pain / Pain after exertion	6	5.13
Recurrence	0	0.00
Total	0	5.13

Three patients were lost in long term follow-up (Minimum 2-years). Rest of the 114 patients (97.43%) on long term follow-up (Table. 4) did not show any persistent pain. However, recurrence was noted in two female patients (1.17%) who failed to control their weight.

Table No. 4: Long term complications

	Patients	%
Persistent Pain	0	0.00
Recurrence	2	1.75
Total	2	1.75

DISCUSSION

In the last two decade the rate of tension-free surgical technique has been dramatically increased [3] for all types of hernia even in the developing countries. However, it is somewhat surprising that the question of optimal choice of repair is not yet settled.[6]

Several methods of securing the mesh to the fascia have been described for ventral hernias, with the most common being mesh onlay (prefascial placement) and sublay (retrorectus placement). The onlay technique is popular among surgeons because it avoids direct contact with the bowel and technically is not difficult

for surgeons. [7, 8] The present study determines the efficacy of onlay mesh repair in various types of ventral hernias with both short and long-term follow-up. Incidence of paraumbilical hernias is found to be the highest in our series followed by epigastric hernia which is consistent with local data.[9]

Onlay mesh repair requires wide tissue undermining, which may predispose wound-related complications like seroma and superficial surgical site infection. [3, 7] Seroma formation is a common complication after repair of abdominal wall hernia, which can lead to significant morbidity.[10,11] Seroma occurs due to an excessive inflammatory response to suture or mesh which cannot be prevented. In most of the cases it resolves spontaneously but may require aspiration. In present study seroma was seen in 1.71% of the patients which is quite low as compare to local [2, 9] and international study. [12, 13] This discrepancy certainly be due to two main factors. First is, during creation of space for mesh above the rectus sheath, we used minimum current of monopolar cautery to avoid collateral damage. Secondly, we strictly followed the suction drain removal criteria of drainage less than 20 ml in 24 hours. Perhaps, this helped us in preventing of seroma collection in the wound.

One apparent drawback of the onlay technique is the higher risk of infection.[14,15] In literature reported incidence of wound infection of onlay mesh is 6-12%.[15,17] Infection rate in our study is considerably low (0.85%) because in all the cases we used injection gentamycin spilled technique directly over the mesh. Moreover, we kept the drain till the drainage is less than 20 ml in 24 hours, thus preventing of seroma and blood accumulation which might get infect.

The causes of persistent postoperative pain are likely multifactorial and may include iatrogenic nerve injury or entrapment, inflammatory reaction to mesh, or issues related to mesh tension due to additional suture or tack fixation. [18] Venclauskas reported significant lower pain incidence after tension-free reconstruction. [19]

Hernia recurrence is a distressing event to patient and embarrassing to surgeons. Although tension free mesh repair is an ideal technique which has decreased the incidence of recurrence [20-23] as compare to suture repair. In a Cochrane review from 2008, there was not sufficient evidence about which position of the mesh is superior.[24] When comparing the two most common mesh positions; Onlay and Sublay mesh placement, the recurrence rates in the literature do not differ significantly. [25]

Recurrence of hernia is multifactorial, large seroma, and surgical site infection are classical complications that may result in recurrence.[26] Multiparous women, obesity and excessive weight gain following repair are obviously potential risk factors.[27] Moreover, smoking may create a risk for recurrence.[28] In order to prevent recurrence Steven. B recommend good overlap of the mesh of about 4 cm - 5 cm from each side of the primary repair suture line. [18] In our study two case of recurrence were reported, probably because of strictly followed criteria of equal or more than 5 cm overlap. Our results are comparable with recent literature. [18]

Limitation of the Study:

The main limitation of this study was a small sample size, which may have been insufficient to detect rare events.

Future Interest:

In order to further elucidate the benefit of onlay mesh, we recommend that future studies consider a larger sample size with longer follow-up along with comparison with sub-lay technique.

CONCLUSION

The onlay tension free mesh repair is relatively easy to learn, simple to perform with promising long-term results. It has negligible infection and recurrence rate. Most commonly recurrence occurs in obese and multiparous women.

Author's Contribution:

Concept & Design of Study:	Abid Hussain
Drafting:	Asif Imran and Aqeel Ahmad
Data Analysis:	Asif Imran and Aqeel Ahmad
Revisiting Critically:	Abid Hussain, Asif Imran and Aqeel Ahmad
Final Approval of version:	Aqeel Ahmad

Conflict of Interest: The study has no conflict of interest to declare by any author.

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