

# Laparoscopic Repair of Ventral Hernia an Early Experience at Khyber Teaching Hospital, Peshawar

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## Abstract

*Objective:* To analyze the results and outcome of laparoscopic ventral hernia repair as a relatively new technique in our setup.

*Design and duration:* Prospective study from June 2007 to June 2008.

*Setting:* Surgical-D Unit, Khyber Teaching Hospital, Peshawar.

*Patients:* All the patients undergoing laparoscopic ventral hernia repair.

*Methodology:* The patients were evaluated clinically and by investigations. After appropriate preparation, laparoscopic mesh repair was performed. Intra- and postoperative complications, and the outcomes were noted and the whole data analyzed.

*Results:* Out of the total 54 cases, 7 (12.96%) were umbilical hernia, 13 (24.07%) paraumbilical, 9 (16.66%) epigastric and 25 (46.29%) were incisional hernia. All patients had mesh repaired, the operating time ranged from 35 minutes to 2 hours in difficult cases with adhesions. All cases were successfully carried out laparoscopically. The complication rate was low with only 3 patients having port-site bleeding, 9 (16.66%) omental bleeding, 2 (3.7%) seroma, 3 (5.55%) had superficial infection. Severe pain in 11 (20.37%) requiring injectable analgesics and only 1 (1.85%) patient had recurrence at 4 months. No mortality and major complication were reported with excellent patient and surgeon satisfaction.

*Conclusion:* LVHR is a safe procedure with shorter operating time, few complications, short hospital stay, less recurrence and better patient satisfaction.

**Keywords:** Ventral hernia; laparoscopic repair; outcome; complications.

## INTRODUCTION

Ventral hernias result from a weakness or loss of structural integrity, of the musculoaponeurotic layer of the anterior abdominal wall. Primary ventral hernias occurs spontaneously

due to primary fascial pathology, and include umbilical, epigastric, spigelian, lumbar and other hernias.<sup>1</sup> Postoperative ventral hernia or incisional hernia is a common complication following abdominal surgery and is a significant cause of morbidity.<sup>2</sup> An incisional hernia develops in 3-13% of laparotomy incisions.<sup>3</sup>

Repair of ventral hernia may be difficult, and a wide range of surgical procedure have been developed for it. Tension-free repair is one of the key concepts in hernia surgery. The repair may be direct suturing or use of prosthetic mesh using the open or laparoscopic technique. Prosthetic mesh and tension free repair has revolutionized the repair of ventral hernias resulting in decrease in recurrence rates.<sup>4</sup>

Laparoscopic repair of ventral hernias is rapidly becoming more common, its utility, cost-effectiveness, lower infection and recurrence rates make it a very attractive option.<sup>5,6</sup>

We receive a number of patients with primary and incisional ventral hernias, sometimes recurrent hernias, from different parts of the province. Laparoscopic repair of ventral hernias has been recently started in our setup. This study was aimed to analyze the outcome of laparoscopic repair of ventral hernias using a prosthetic mesh as a relatively new technique in our setup.

## MATERIALS AND METHODS

This study was conducted in the surgical-D unit of Khyber Teaching Hospital, Peshawar from June 2007 to June 2008. All patients presenting with ventral hernia were included in the study. Patients with respiratory and cardiac compromise unfit for laparoscopy and anesthesia were excluded.

Patients were evaluated by a detailed history including history of previous surgery, medical disease. Detailed physical examination was done to demarcate the extent and location of

hernia and to rule out any strangulation, etc. Routine base line investigations like full blood count, blood glucose level, urinalysis and hepatitis screen were done in all patients. An abdominal ultrasonography was done to the exclude any other pathology like gallstones or any other intra-abdominal pathology. The patient was counseled regarding the procedure and a written consent was obtained. The laparoscopic mesh repair was performed under general anesthesia. The patient was positioned according to the site of hernia.

## TECHNIQUE

Two or three and sometimes four ports were used depending on the hernia, using base ball diamond concept. Adhesiolysis was performed and contents of the sac were released and reduced. The defect was identified and proline mesh was measured on the defect from the outside. Sutures were applied at three corners of the mesh using vicryl 1 or 0 suture, and both the ends of the suture were left long and cut at 6-10 cm length and needle removed. Skin stab nicks were made at four quadrants of the hernia defect site, for passing a suture passer. Now through one of the skin nicks one end of another vicryl suture was passed into the abdominal cavity with the help of a suture passer and its end pulled into the abdominal cavity and then again brought out through the lateral part and then secured to the forth corner of the mesh. The end was left long and the needle cut. The mesh was pulled in the cavity through this part, by pulling on the last vicryl already passed in the skin. The mesh was fixed over the defect. The long ends of the vicryl stitches attached on 4 corners of the mesh were brought out through the skin holes with the help of suture passer and they were tied outside securing the mesh to the abdominal wall. Sometimes in large defects another suture was placed in the center of mesh for better fixation. The omentum was then brought down under the mesh. The ports are removed after deflating the gas and port sites stitched. The total time taken by the procedure ranged from 35 minutes to 2 hours. Post operatively the patients were given systemic antibiotic for 24 hours. The need for pain relief was minimum. Patients were mobilized in the evening and were allowed oral sips. They were discharged on the first or second day on oral antibiotics and analgesics given if were needed. Follow up was done at 2 weeks and then at 6 weeks for any late complications. This procedure is practiced in Laparoscopy Hospital , Tilak Nagar, New Delhi, India by renowned Laparoscopic Surgeon Dr RK Mishra.

## RESULTS

Fifty-four patients underwent laparoscopic ventral hernia repair during the study period. 38 were female and 16 were males. The ages ranged from 25-62 years with only 3 patients above 50 years of age. Majority of the patients had incisional hernia forming 46.29% of all patients as shown in Table 1. 13 (24.07%)

patients had paraumbilical hernia, 9 (16.66%) had epigastric and 7 (12.96%) had umbilical hernia. Umbilical and paraumbilical hernias were small ranging from 2-5 cm defect. The incisional hernia ranged from 5-10 cm while in only 2 (3.20%) patients defects was greater than 10 cm in size (Table 2). Incisional hernias of the upper middle and lower middle scars were 5 (9.25%) each while 6 (11.11%) occurred after suprapubic (pfaunenstiel) incision.

Only 2 ports for laparoscopic repair were used in 22 patients, in 19 patients 3 ports were used whereas in 3 patients with big hernias a 4th port was also introduced. In all patients proline mesh was used. In all patients the procedure was successfully completed laparoscopically. No additional procedure were carried out during herniorrhaphy. Intraoperative blood loss was negligible. The duration of operation was 35 minutes to 2 hours. The postoperative stay in hospital ranged from 1-3 days (Table 3).

**TABLE 1: Types of hernia (n = 54)**

Type of hernia	No. of patients	%age
Umbilical	7	12.9
Paraumbilical	13	24.07
Epigastric	9	16.66
Incisional	25	46.29
• Upper midline	5	9.25
• Lower midline	5	9.25
• Pfannenstiel	6	11.11
• Subcostal	4	7.40
• Grid iron	4	7.40
• Transverse midline	1	1.85

**TABLE 2: Size of hernial defect (n = 54)**

Size in cm	No. of Patients	%age
2-5 cm	33	61.11
6-10 cm	19	35.18
>10 cm	2	3.70

**TABLE 3: Complications and outcome**

Complications	No. of patients	%age
Port site bleeding	3	5.55
Omental bleeding	9	16.66
Pain		
• severe	11	20.37
• moderate	22	40.74
• mild	18	33.33
Port site infection	3	5.55
Seroma	2	3.70
Reoccurrence	1	1.85
Conversion	0	—
Mortality	0	—

In our series complication rate was low. There was no mortality or major complication. 3 patients had port site bleeding which was controlled by taking a simple suture. 9 (16.66%) patients had omental bleeding, which was controlled with diathermy. Severe pain was complained postoperatively by only 11 (20.37%) patients requiring multiple analgesic injections while in the rest mild to moderate pain was relieved after a single analgesic injection. 2 (3.7%) patients developed a seroma that subsided with conservative treatment in 2 weeks while another 3 (5.55%) had superficial port site infection. This responded to daily dressing and cleaning with antibiotic treatment. During follow-up period, there was a single recurrence at 4 months, giving a rate of 1.85%. The overall outcome with patient and surgeon satisfaction was excellent.

## DISCUSSION

Ventral abdominal hernias represent a frequent and often formidable clinical problem, and a lasting surgical correction remains a challenge. Laparoscopic ventral hernia repair (LVHR) is becoming a popular technique with good results and a fast postoperative recovery. The mesh is placed directly under the peritoneum and anchored with transabdominal sutures and tacks.<sup>7</sup>

The LVHR utilizes the principles of the open technique, including using a large mesh prosthesis, adequate overlap of the hernia defect and eliminating tension. The mesh is placed intraperitoneally and extensive soft tissue dissection is eliminated.<sup>8</sup> Various comparative studies have shown that with LVHR, wound complication rate, patient discomfort, length of hospital stay, time to return to normal activities and recurrence rates are all reduced.<sup>2,9,10</sup>

Our study group included 54 patients with ages ranging between 25-62 years whereas other studies have reported mean ages of 55.25 years and 56 years.<sup>2,9</sup> Incisional hernias were the commonest ventral hernias followed by paraumbilical hernias in our patients. Other studies also show postoperative ventral hernias as a common occurrence and a significant cause of morbidity and a common indication for laparoscopic repair.<sup>1,9,11</sup>

In our series, the patient as a group had a good outcome. Despite an early experience with this technique there were no conversion to open surgery. The operating time ranged between 35 minutes to 2 hours in difficult cases due to adhesions and obesity. Others have reported mean operating time as 90.6 minutes and 117 minutes, whereas in one series average time taken was 65.6 minutes (range 28-130 minutes).<sup>2,8,9</sup> Open mesh repair also required longer operating time and associated with greater blood loss than simple repair.<sup>12</sup>

There were no major intraoperative accidents and also no mortality or major complication in our series. Omental bleeding occurred in 9 (16.66%) and port site bleeding occurred in 3 (5.55%) patients, it was controlled with diathermy lapar-

oscopically. Other series also have reported fewer complications, commonly a seroma in 2-4.4%, pain in 2.5% and sepsis in only 0.25% patients.<sup>9,10,13</sup> We had seroma in only 2 (3.7%) patients and they were treated conservatively.

The suture site pain was common and severe pain was complained by 11 (20.31%), and moderate pain by 22 (40.74%) patients. Suture site pain may have originated from tissue or nerve entrapment during placement of sutures through full thickness of anterior abdominal wall. It could also result from traction of transabdominal sutures fixing the mesh to the anterior abdominal wall. However fixing is vital to the long-term durability of mesh repair and do not advocate any change in technique. Suture site pain was managed by analgesics and improved with time. The other major complications following LVHR, like enterotomy, mesh infection, skin breakdown, intra-abdominal abscess have been documented, but we did not encounter such complications. There was only 1 (1.85%) recurrence at 4 months in our series, however other have reported a recurrence rate of 4% and 2.5% between 1-3 months of surgery.<sup>4,9</sup> Cobb WS et al reported recurrence as 4.7% after a mean follow up period of 21 months.<sup>14</sup>

Mobilization, hospital discharge and return to activities were prompt, with an average hospital stay of 2 days in our patients, and majority of them returned to work after 2 weeks. Mean hospital stay in LVHR has been reported as 2.4 and 3 days.<sup>10,14</sup> Navitsky YW, et al has described LVHR as an approach of choice in obese patients with no perioperative mortality, mean hospital stay of 2.6 days and a recurrence rate of 5.5% at 25 months follow-up.<sup>15</sup> LVHR can be extended to any patient who is a candidate for open repair and with an acceptable risk for general anesthesia.<sup>8</sup> As experience increases LVHR can safely be done in patients with multiple prior abdominal procedures and in atypically located hernias. The limitations in our study are the relatively small study group and the short mean follow up period. This paper serves to show our experience for better awareness and acceptability of the procedure.

## CONCLUSION

Although LVHR may be challenging, it has the potential to be considered a primary approach for most ventral and incisional hernias, regardless of patient status or hernia complexity. LVHR in our experience was safe and resulted in shorter operative time, fewer complications, shorter hospital stays, and less recurrence. It should be considered as the procedure of choice for ventral hernia repair.

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