

## Evaluation of outcome of laparoscopic ventral hernia repair

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### ABSTRACT:

**Background:** The repair of ventral hernia has evolved from simple suture approximation to the use of prosthetic mesh and recently laparoscopic procedures. Now a day's ventral hernia repair is increasingly performed laparoscopically. But Complications rate with this procedure are not well characterized.

**Objective:** To evaluate the outcome of laparoscopic ventral hernia repair.

**Method:** This prospective observational study was conducted in the department of surgery, Bangladesh Medical University, Shahbag, Dhaka, during the period of June 2018 to July 2019. The calculated sample size was 28, but due to less availability of patient, time constraint and costly procedure total 18 patients with ventral hernia were selected. Signed informed consent were obtained from all patients, Laparoscopic intraperitoneal only mesh technique was applied and composite mesh was used. All patients were followed post operatively. A predesigned questionnaire was formed for collecting data.

**Results:** Most patients were found in the age group 41 – 50 years. Mean age of the patients was  $41 \pm 7.42$  years. 13 patients (72.22%) were female and 5 patients (27.78%) were male. Umbilical, Para umbilical and incisional hernia were observed in 2(11.11%), 4(22.22%) and 12(66.67%) patients respectively. Mean  $\pm$ SD time for operative procedure was  $82.6 \pm 19.10$ . 1 (5.5%) patient had been suffering from gut injury. Total 5 patients (27.61%) had been suffering from postoperative complications. postoperative Ileus developed in 2 (11.11%) patients, Seroma, port site and mesh site infection were observed in 1 (5.5%) patient individually. According to visual analogue scale post operatively pain was assessed and shown to decline gradually. AT 30th POD follow up, 1 patient (5.6%) felt mild pain and 17 patients (94.44%) felt no pain over surgical site. Mean hospital stay was  $4 \pm 3.39$  days. Mean of return to activity was  $5.6 \pm 2.17$ .

**Conclusion:** From this study it can be concluded that laparoscopic ventral hernia repair is an effective procedure and can be performed as short stay surgery. It provides much benefit with low complications. This technique can be safely applied in the patients suffering from ventral hernia.

### Key Words:

ventral hernia, port site infection, visual analogue scale

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### Introduction:

Ventral hernia occurs as a result of weakness in musculo-fascial layer of anterior abdominal wall. Several

techniques for the repair of ventral hernia have been described including primary repair, open repair with mesh and recently laparoscopic intraperitoneal only

mesh(IPOM). Laparoscopic technique offers several advantages i.e. shorter hospital stay, less postoperative pain, early convalescence and low recurrence rate. Postoperative complications were more in open group than laparoscopic group. Short term post operative pain was more intense in open group than laparoscopic group. Mean operative time of laparoscopic group was significant longer than open group.(22)

## Methodology

This was a prospective observational study conducted in the department of Surgery, Bangladesh Medical University, Shahbagh, Dhaka, from June 2018 to July 2019. Based on the inclusion and exclusion criteria included patients above 18 years of age with ventral hernia defect between 3-10 cm scheduled for elective surgery. Exclusion criteria includes patients with obstructed or strangulated hernia, major loss of abdominal domain, coagulopathy and severe cardiopulmonary disease. data were collected via a structured questionnaire covering patient demographics, comorbidities, medications, hernia type, operative time, complications and post operative outcome. statistical analysis was performed by SPSS software.

## Results

**Table 1 Sample demographic and clinical characteristics (N=18)**

characteristics	Frequency n(%)	Mean±sd
Gender		
Male	13(72.22)	
Female	5(27.78)	
Age in year		41±7.42
18-30	2(11.11)	
31-40	7(38.89)	
40-50	8(44.44)	
>50	1(5.56)	
Occupation		
House wife	13(72.22)	
Businessman	3(16.67)	
Service man	2(11.11)	
Hernia type		
Incisional hernia	12(66.66)	
Para umbilical hernia	4(22.22)	
Umbilical hernia	2(11.11)	

Table 1 summarized demographic and clinical characteristics of the patients. Among the 18 patients, female were predominant. 13 (72.22%) patients were female and 5 (27.78%) patients were male. Majority of patients,

8(44.44%) patients were between the age of 40-50 years and mean age was 41± 7.42years. 13 (72.22%) patients were house wife. 12(66.66%) patients had been suffering from incisional hernia. 4(22.22%) patients had para umbilical hernia and 2 (11.11) had umbilical hernia

**Table 2 Duration of operation time**

time in minute	Frequency n(%)	Mean±sd
30 – 60	3 (16.67)	82.6±19.10
61 – 90	10 (55.56)	
90 -120	5 (27.77)	

Table 2 shows that Mean ±SD time for operative procedure was 82.6 ± 19.10 minute. Most of the patients, 10 (55.56 %) patients were operated within 61– 90 minutes.

**Table 3 per operative & postoperative complications**

Complication	Frequency n(%)	Total	Percentage
per operative gut injury	1(5.5)	1	5.5%
Postoperative Ileus	2 (11.11)	5	27.62%
Seroma	1(5.5)		
Port site infection	1(5.5)		
mesh infection	1 (5.5)		

Table 3: shows per operative and postoperative complications of laparoscopic ventral hernia repair. Per operative gut injury occur in 1 (5.5) patient. No other per operative complications was found. total 5 patients (27.61%) had been suffering from postoperative complications.

**Table 4 Duration of hospital stay and Day of return to daily activities**

	Days	Frequency n(%)	Mean±sd
Hospital stay	2 days	5(27.22)	4±3.39
	3 days	10(55.56)	
	>3 days	3(16.67)	
Day of return normal activity	<5days	6(33.33)	5±2.17
	5-7days	9(50)	
	8-10 days	2(11.11)	
	>10 days	1(5.56)	

Table 4 shows Majority patients (55.56%) leave the hospital at 3rd postoperative day. Mean hospital stay was 4 ± 3.39. Majority patients (50%) joined their daily activity at 5 - 7 days of operation. Mean of return to activity was 5.6±2.17

**Table 5 preoperative and postoperative pain status**

Grade	Preoperative	Postoperative		
		3 <sup>rd</sup> day n (%)	7 <sup>th</sup> day n (%)	30 <sup>th</sup> day n (%)
0	0 (0.0)	0 (0.0)	6 (33.33)	17 (94.44)
2	0 (0.0)	8 (44.44)	12 (66.67)	1 (5.56)
4	0 (0.0)	10 (55.56)	0 (0.0)	0 (0.0)
6	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
8	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
10	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Total</b>	<b>0 (0.0)</b>	<b>18 (100%)</b>	<b>18(100%)</b>	<b>18 (100%)</b>

Table 5 According to visual analogue scale, preoperatively no patient felt pain over hernia site. At 30th day follow up, 1 patient (5.6%) felt mild pain and 17 patients (94.44%) felt no pain over surgical site

## Discussion

In this study, majority patients (44.44%) were found in the age group 41 – 50 years. Mean age of the patients was  $41 \pm 7.42$  years whereas previous studies reported mean age of the patients were from  $41 \pm 7.42$  to 47.7 years (18,19,28). Most of the patients were female (72.22%) (5,18). In this study, majority patients, 10 (55.56%) were operated within 61 – 90 minutes. Mean time for operative procedure was  $82.6 \pm 19.10$  minutes. patient who had recurrent incisional hernia required 120 minutes to complete the procedure due to the presence of adhesion. Other previous studies stated mean operative time for primary ventral hernia was (45 -71.16) minutes and for incisional hernia 101.19 minutes. (5,18,19,17,36). Per operative complication showed that 1 patient (5.5%) had been suffering from gut injury which was serosal tear without any spillage. This tear occurred during adhesiolysis. It was repaired laparoscopically. No other per operative complications were found. Other previous studied also showed iatrogenic injuries ranges from 1.1%-14%.(5,12,26). Perrone JM et al(2005) stated in their study that there were 4 enterotomies (3.3%), 3 occurred as a result of adhesiolysis and 1 resulted from trochar injury. (26)

As regarding postoperative complications, total 5 patients (27.61%) had been suffering from postoperative complications. Postoperative ileus developed in 2 (11.11%) patients who had recurrent incisional hernia and had adhesion which needed adhesiolysis. Both of these patients were treated conservatively. Seroma, port

site infection and mesh infection occurred in three individual patient. Seroma formed in 1 (5.5%) patient that was identified at 7th POD and managed by USG guided aspiration. Port site infection occurred in 1 (5.5%) patient which was SSI (superficial SSI) and was treated with antibiotics according to culture sensitivity. Mesh infection was found in 1 (5.5%) patient which needed repeated USG guided drainage of pus and subsequently patient's developed discharging sinus that was planned for mesh removal. Consequently, previous studies found postoperative complications in different ranges. Seroma was observed in 3% to 3.7%, prolonged ileus was found in 1.8% to 2.6%. (19,28,36). Postoperative pain status was measured by visual analogue scale. Preoperatively no patient felt pain over hernia site. Post operatively pain was reduced gradually at different point of follow up. At 30th postoperative day, 1 patient (5.6%) felt mild pain and 17 patients (94.44%) felt no pain over surgical site. In other previous studies 1(1.4%) to 2(3.7%) patient developed prolonged postoperative pain(5,10,19,35). In our study majority patients (55.56%) leaved the hospital within 3 days of operation. Mean length of hospital stay was  $4 \pm 3.39$  days. In this study majority patients (50%) joined their daily activity at 5 - 7 days of operation. Mean of return to activity was  $5.6 \pm 2.17$  days. Regarding postoperative hospital stay, previous studies showed postoperative mean hospital stay was 1-9 days,(32,35)

our study shows better outcome for laparoscopic repair of ventral hernia with minimum postoperative complications. But this procedure is quite expensive due to its resource demanding procedure and is not applicable in obstructed and strangulated hernia.

## Limitation

- Recurrence rate could not be assessed due to short period of follow up.
- This study was conducted in a single center
- Small sample size due to cost constrains and patient availability

## Conclusion

From this study it can be concluded that laparoscopic ventral hernia repair is an effective, minimally invasive technique that can be safely performed as short stay surgery. It provides much benefits with low complications, making it a preferred option for ventral hernia repair.

## Recommendations

- Larger sample size and multi centered studies are recommended for validation .
- Long- term follow up is needed to assess recurrence .
- Accessibility and affordability of laparoscopic equipment should be improved.

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