

Outcome of Laparoscopic Repair in Ventral Hernia

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ABSTRACT

Aim: To determine the outcome of laparoscopic repair in ventral hernia.

Study design: Prospective observational study.

Place and duration of study: General Surgery Department of Tertiary Care Hospital, Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro Sindh from 1st March 2017 to 30th June 2020.

Methodology: Eighty six patients with ventral wall hernia were enrolled. Hernia was approached laterally and ports were placed from farther side of abdomen. In all cases three trocars were used one for 10mm and 2 ports for 5 mm. polypropylene mesh was used for hernia repair. Mesh was placed using intracorporeal mesh fixation technique.

Results: The mean age of patients was 46±8.3 years. Fifty two (60.4%) were females and 34 (39.5%) were males. The ratio of females with ventral wall hernia is higher than males requiring surgery. The mean BMI of study participants was 30.8±4.3 kg/m². Bowel perforation is characterized to be the most severe complications of laparoscopy and it affected 3.4% of the participants. The most common complication post-operatively was severe pain in 26.7% of patients, controlled by I/V pain killers for two to three days followed by seroma formation

Conclusion: Laparoscopic ventral hernia repair is an excellent technique as compared to conventional techniques and has fewer complications but it requires surgical expertise and specific instruments. Although it is an ideal procedure for simple ventral wall hernias, it is not used for complex hernia.

Key words: Laparoscopic repair, Ventral hernia, Mesh repair

INTRODUCTION

Ventral hernias are a common issue dealt primarily by surgeons and carry noticeable mortality by conventional abdominal surgery techniques.¹ Ventral hernia is defined as protrusion of abdominal viscus via the anterior abdominal wall other than the inguinal and femoral regions. The most common etiology of ventral hernia is due to previous surgery scar or any abdominal wall defect.² Epigastric, umbilical, paraumbilical and incisional hernia constitute most of the ventral wall hernias in males and females.³ Other factors associated with development of hernia include smoking, obesity, hx of intrabdominal surgery and cesarean section. Positive history of abdominal surgery is associated with recurrent ventral wall hernias and the wall defects are difficult to repair⁴.

Recurrent ventral wall hernias carry a large burden of mortality especially when conventional techniques were used. Laparoscopic ventral hernia repair is now the most preferred option for ventral wall hernia repair with lesser hospital stay required, fewer complications and decreased morbidity and mortality.⁵ Laparoscopic repair also carries risk of hernia termed as trocar site hernia for which the highest reported incidence is found to be 22%.⁶ Its incidence can be reduced by use of small trocar ports and use of appropriate techniques for mesh insertion. Factors increasing the risk of trocar site hernia include inadequate abdominal wall repair in hernia, not using aseptic techniques while mesh placement and large size trocar use. Seromas also contribute to considerable part of complications secondary to laparoscopic surgery worldwide⁷.

Repair of ventral wall hernia is a challenging task for surgeon due to complicated anatomy and presence of adhesions. Laparoscopic repair in recurrent ventral wall hernias is still not established in developing countries and the conventional method with synthetic non-absorbable mesh is preferred⁸.

In this study we will be evaluating the outcomes of laparoscopic repair in ventral hernia and incidence of complications in a tertiary care hospital in Pakistan.

MATERIALS AND METHODS

After IRB permission, this is a prospective observational study conducted in General Surgery Department of tertiary care hospital of Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro Sindh to evaluate outcome of laparoscopic hernia repair. It was made sure there was required surgical expertise present in this hospital for ventral hernia repair. All patients from 1st March 2017 to 30th June 2020 presenting to the surgical OPD with ventral wall hernia were enrolled. Patients with hemodynamic instability, symptoms of obstruction, strangulation or having large wall defects >10cm were included. All patients with abdominal wall defects less than 3 cm were also excluded. Paracolostomy hernia and drainage site hernias were not included in the study. Informed consent and procedures were taken by patients and their data was kept anonymous. Post operatively all patients were followed up for one year to assess complications and recurrence.

All surgical procedures were performed under general anesthesia, whereas Foley's and nasogastric tubes were placed before surgery. All patients had mechanical bowel perforation before surgery and received intravenous antibiotics and low molecular weight heparin (enoxaparin 0.5mg/kg) was given subcutaneously.

Post operatively, all patients were giving same analgesics and antibiotics on first three post-operative days. Pain score of patients was defined by visual analogue scale for the first week after surgery. Hernia was approached laterally and ports were placed from farther side of abdomen. Veres needle was used to create pneumoperitoneum in the left upper quadrant. In all cases three trocars were used one for 10mm and 2 ports for 5 mm. polypropylene mesh was used for hernia repair. Mesh was placed using intracorporeal mesh fixation technique. Statistical analysis was done by SPSS-21. A p-value of 0.05 was found to be significant.

RESULTS

The mean age of patients was found to be 46±8.3 years. Fifty two (60.4%) were females and 34 (39.5%) were males. The ration of females with ventral wall hernia is higher than males

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requiring surgery. The mean BMI of study participants was calculated to be 30.8±4.3kg/m². 31.3% of patients had developed hernia second time and had undergone surgical intervention previously (Tables 1-2).

Bowel perforation is characterized to be the most dangerous complications of laparoscopy and it affected 3.4% of the participants. The most common complication post-operatively was severe pain in 26.7% of patients, controlled by I/V pain killers for two to three days followed by seroma formation. Hernia recurrence occurred in 11.6% of patients and half of them already had surgery previously and other complications are as listed in the Table 3.

Table 1: Demographic characteristics of study participants

Parameter	Mean	%age
Age (years)	46±8.3	
Recurrent hernia	27	31.3
BMI (kg/m ²)	30.8±4.3	

Table 2: Gender distribution of study participants

Gender	No.	%age
Male	34	39.5
Female	52	60.5

Table 3: Complications of laparoscopic hernia repair

Complication	No.	%age
Ileus	2	2.3
Bowel perforation	3	3.4
Seroma/ hematoma	21	24.4
Mesh removal due to infection	15	17.4
Severe pain	23	26.7
Recurrence in next one month	10	11.6

DISCUSSION

Although ventral hernias include incisional, trocar site, parastomal, epigastric and umbilical hernias, our study only includes patients having incisional, epigastric and umbilical hernias. There is always a continuous debate regarding the best surgical technique to correct the ventral wall defects⁹. Majority of the hernias today are repaired by mesh except for small anterior wall defects, recurrence rate of ventral wall hernia reduce significantly using it. Placement of mesh via sublay or underlay technique in the pre-peritoneal plane provides adequate mechanical support to the ventral wall¹⁰. There have been various randomized controlled trials and systemic reviews conducted where surgeons have been readily accepting laparoscopic ventral hernia repair due to improve clinical outcome¹¹. A systematic review done on comparison of open and laparoscopic repair showed level 1 evidence that during mid follow up postoperative pain and hernia recurrence rate is almost equal but there is definite low post operative infection rate in laparoscopic hernia repair group¹².

Patient related factors include obesity, diabetes, COPD, smoking and wall defects >10cm whereas surgery related factors include repair without using mesh, inadequate sized mesh placement, improper mesh fixation and prosthesis infection¹³. In our study, the incidence of recurrent hernia has been found to be 4% 1year post surgery. Recurrent hernia repair is challenging task and there are no guidelines specifically for it, hence its outcome totally depends on surgeon's expertise. In laparoscopy, hernia is examined from the safe zone, there is less than 2% chance of rupture.¹⁴ Infection of prosthetic mesh for ventral hernia repair poses significant mortality and financial burden. In a systematic review for complications of infected mesh removal, 62% of the patients had further incisional complications years after infected mesh removal¹⁵.

The hospital cost with infected mesh removal is more than double the cost of laparoscopic surgery. In a developing country like Pakistan, the healthcare burden is significant so it's really

important to maintain aseptic techniques and instrument sterilization¹. Seroma formation is more common in laparoscopic ventral hernia repair as the hernia sac is not resected, the peak presentation of seroma is 7 days after presentation. Most the seromas resolve spontaneously hence patients should be told about possible seroma formation. In our study 24.4% of patients had seroma formation. Aspiration of seromas does not prove to be of any benefit and increase the chances of further seroma. Also the use of abdominal binder does not reduce risk of seroma formation¹⁶.

CONCLUSION

Laparoscopic ventral hernia repair is an excellent technique as compared to conventional techniques and has fewer complications. Although it is an ideal procedure for simple ventral wall hernias, it is not suitable for complex hernia.

Conflict of interest: Nil

REFERENCES

1. Townsend RC, Beauchamp BD, Mattox MEK. Clinical surgery of hernia. Sabiston Textbook of Surgery, 19th ed. Volume II, Elsevier; 2016: 1128
2. Bencini L, Sanchez LJ, Bernini M, et al. Predictors of recurrence after laparoscopic ventral hernia repair. Surg Laparosc Endosc Percutan Tech 2009;19(2):128-32.
3. Pham CT, Perera CL, Scott Watkin D, Maddern GJ. Laparoscopic ventral hernia repair: a systematic review. Surg Endoscopy 2009; 23(1): 4-15.
4. Carter SA, Hicks SC, Brahmabhatt R, Liang MK. Recurrence and pseudorecurrence after laparoscopic ventral hernia repair: predictors and patient-focused outcomes. Am Surgeon 2014; 80(2):138-48.
5. Nimeri AA, Brunt LM. Laparoscopic ventral hernia repair: 5-mm port technique and alternative mesh insertion method. J Am Coll Surg 2006; 202(4):708-10
6. Boldo E, Perez de Lucia G, Aracil JP, Martin F, Escrig J, Martinez D, Miralles JM, et al. Trocar site hernia after laparoscopic ventral hernia repair. Surg Endosc 2007; 21(5):798-800.
7. Agarwal BB, Agarwal S, Mahajan KC. Laparoscopic ventral hernia repair: innovative anatomical closure, mesh insertion without 10-mm transmyofascial port, and atraumatic mesh fixation: a preliminary experience of a new technique. Surg Endoscopy 2009;23(4):900-5.
8. Dey S, Parthasarathi R, Sabnis SC, Jain R, Praveen Raj P, Senthilnathan P, et al. Laparoscopic management of recurrent ventral hernia: an experience of 222 patients. Hernia 2019;23(5):927-34.
9. Anadol AZ, Tezel E, Yilmaz U, Kurukahvecioglu O, Ersoy E. Laparoscopic primary repair of ventral hernias: early results of a new technique. Surgery Today 2010; 40(1):88-91.
10. Bittner R, Bingener-Casey J, Dietz U, et al. Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS): Surg Endosc 2014;28:2-29.
11. Poulouse BK, Shelton J, Phillips S, et al. Epidemiology and cost of ventral hernia repair: making the case for hernia research. Hernia 2012;16:179-83.
12. Forbes SS, Eskicioglu C, McLeod RS, Okrainec A. Metaanalysis of randomized controlled trials comparing open and laparoscopic ventral and incisional hernia repair with mesh. Br J Surg 2009; 96:851-8.
13. Moreno-Egea A, Carrillo-Alcaraz A, Aguayo-Albasini JL. Is the outcome of laparoscopic incisional hernia repair affected by defect size? a prospective study. Am J Surg 2012;203:87-94.
14. Uranues S, Salehi B, Bergamaschi R. Adverse events, quality of life, and recurrence rates after laparoscopic adhesiolysis and recurrent incisional hernia mesh repair in patients with previous failed repairs. J Am Coll Surg 2008; 207:663-9.
15. Plymale MA, Davenport DL, Walsh-Blackmore S, Hess J, Griffiths WS, Plymale MC, Totten CF, Roth JS. Costs and complications associated with infected mesh for ventral hernia repair. Surg Infect 2020;21(4):344-9.
16. Forbes SS, Eskicioglu C, McLeod RS, et al. Metaanalysis of randomized controlled trials comparing open and laparoscopic ventral and incisional hernia repair with mesh. Br J Surg 2009;96:851-8.