



LAPAROSCOPIC VENTRAL HERNIA REPAIR;

SUCCESS BY USING OMENTUM AS A BARRIER IN PATIENTS PRESENTING WITH VENTRAL HERNIA

Qaim Deen¹, Muhammad Adeel Kaiser², Qasim Farooq³, Uzma Intisar⁴, Amna Mazhar⁵

1. MBBS, FCPS
Senior Registrar,
Surgical Unit-3,
Services Hospital Lahore.
2. MBBS, FCPS
Postgraduate Trainee,
Surgical Unit-3,
Services Hospital Lahore.
3. MBBS, FCPS
Postgraduate Trainee,
Surgical Unit-3,
Services Hospital Lahore.
4. MBBS
Senior Demonstrator,
Pharmacology Department,
Services Institute of
Medical Sciences Lahore.
5. MBBS
House Officer,
Surgical Unit-3,
Services Hospital Lahore.

Correspondence Address:

Dr. Qaim Deen
Senior Registrar,
Surgical Unit-3,
Services Hospital Lahore.
yaseengujjar@gmail.com

Article received on:

07/10/2017

Accepted for publication:

15/01/2018

Received after proof reading:

05/04/2018

ABSTRACT... Introduction: The common practice in laparoscopic ventral hernia repair (LVHR) is to place a dual mesh to prevent visceral adhesions, as majority of the patients are not able to afford the expense of these meshes. We use prolene mesh to repair hernia. **Objectives:** The aim of this study was to determine the frequency of success of laparoscopic ventral hernia repair (LVHR) using omentum as a barrier in patients presenting with ventral hernia. **Study Design:** Descriptive case series. **Setting:** Surgical Unit 3, Services Hospital Lahore, Pakistan. **Period:** 6 months duration from 16th of July 2015 to 15th January 2016. **Methods:** 60 patients were selected fulfilling the criteria from Department of General Surgery. 10mm telescope angled at 30 degree was employed. Hernial contents were reduced but the peritoneal sac was left as such. The prolene mesh was inserted into the abdominal cavity through a port of 10mm diameter and fixed. Omentum was then sandwiched between abdominal wall and viscera. Patients were followed-up in OPD for 12 months. **Results:** Majority of the patients were females (56.7%) with the mean age of 46.40 years and mean weight of 68 kg. The patients were averagely found obese with a mean BMI of 25.40kg/m². Majority of the patients (n=50, 83.3%) had success in hernia repair. Stratification of patients by age, gender and BMI showed (*p*-value was >0.05 in all 3 cases) statistically insignificant difference between various subgroups. **Conclusion:** LVHR is a useful technique and simple proline mesh with omental barrier is a safe and low-cost alternative to dual mesh technique.

Key words: Laparoscopic Surgery, Ventral Hernia Repair, Omentum, Laparoscopy.

Article Citation: Deen Q, Kaiser MA, Farooq Q, Intisar U, Mazhar A. Laparoscopic ventral hernia repair; success by using omentum as a barrier in patients presenting with ventral hernia. Professional Med J 2018; 25(4):594-598. DOI:10.29309/TPMJ/18.4392

INTRODUCTION

Ventral hernia repair (VHR) procedure is commonly executed in the United States even greater than 365,000 times annually.¹ There are two options available including open and laparoscopic surgical repair.² Several studies compared the results of both methods. However, these studies mostly emphasized on incisional hernia or a mixed population of VHR.^{3,4}

With the advancement, open surgery should be avoided to decrease the associated problems and recurrence.⁵ LVHR is gaining popularity⁶, and is usually done by placing dual mesh but it is very expensive and unaffordable for many people.⁵ In our study we used simple low cost prolene mesh and use omentum as barrier between mesh and bowl to prevent its complications.

Four metaanalysis²⁻³ Including Cochrane systematic review⁵ have evaluated the success of open and LVHR and found no difference in recurrence and post-operative pain, however significant fewer wound infections occur after LVHR. Three further RCTs have been carried out since this study of level I evidence.⁶⁻⁸

Ventral hernia occurs as a result of defects in the abdominal wall. They may develop due to failure of tissue to heal after surgery (incisional) or they are spontaneous (umbilical, epigastric, paraumbilical, Spigelian).⁴ It is estimated incisional hernia may progress in nearly 10-15% of visceral incisions^{2,3} and upto 23% in patients who develop wound infections.⁴

LVHR by using prolene mesh (single layer)

and using omentum as barrier may be an advantageous procedure but presently very few works have been reported⁷. One study conducted on LVHR using only single layer mesh reported the recurrence rate in only 8.8% of cases but author did not report the use of omentum as barrier. One local trial has found the success of LVHR by using prolene mesh and omentum as barrier was 87.5% cases and recurrence in 12.5% (n=16) cases⁹, however the study was conducted on short sample size.

In a long term retrospective study from Europe, recurrence after suture repair for incisional hernias was 60% with use of mesh decreased to about 30%.¹¹⁻¹³ Several studies have shown that the recurrence after LVHR in less than 10%.^{18,19} Available meta-analyses is difficult to compare as variety in terms of techniques, types of mesh, placement and methods of fixation. Furthermore, longest average follow-up was only 35 months and after that there is no any difference in recurrence between open and laparoscopic approach was demonstrated as level I evidence.⁷

This study based on the objective of determining the frequency of success of LVHR using simple prolene mesh and using omentum as barrier in patients presenting with ventral hernia. This study was conducted on 60 subjects. Rationale of this research study was to determine the success of LVHR using omentum as barrier to prevent complications. Literature has shown that omentum could be beneficial in reducing adhesions of abdominal viscera with mesh and thus reducing the need for implementation of dual mesh as well as reducing the cost of surgery. This study aimed at finding, LVHR using simple prolene mesh and omentum as obstacle, is harmless and low-cost substitute to dual mesh method.

MATERIALS AND METHODS

This study has been conducted for 6 months duration from 16th of July 2015 to 15st January 2016. It is based on descriptive case series conducted at Surgical Unit 3, Services Hospital, Lahore, Pakistan. A total of 60 patients were selected who fulfilled the criteria through non-probability consecutive sampling technique with

a confidence level of 95%, 8.5% margin of error and taking expected percentage of success i.e. 87.5% of laparoscopic repair of hernia.

Patients presented with the diagnosis of ventral hernia (as per operational definition) defect size >4cm, both genders age ranged between 18-60 years. However, the patients were excluded who had defect size >10 cm, BMI >35kg/m², pregnancy, derange INR. All patient underwent routine laboratory studies CBC, blood chemistries, chest radiograph and ECG and an approval was taken from hospital ethical committee to enroll patient.

Technique

Surgery was done under general anesthesia by single surgical team. Pneumoperitoneum was created by verses needle placing in the left hypochondrium, (30 degrees) angled 10mm telescope used. Adhenolysis was done using sharp dissection with minimal use of diathermy, hernial contents were reduced but peritoneal sac was left in-situ. The margins of hernia defect was outlined and measured with the help of spinal needle internally. The mesh was then tailored that it cover the defect 3cm to 5cm on all sides. Mesh was introduced through 10mm port and fixed by using ticker at 1cm interval, fourproline 2/0 sutures at corners were also taken through anterior abdominal wall using suture passer. Omentum was then sandwiched between abdominal mesh and viscera usually by taking suture. Patients were followed-up in OPD for 12 months after procedure for assessment of success (as per operational definition) by researchers themselves. All information was recorded on performa attached and analyzed through SPSS version 20.0.

RESULTS

Out of 60 patients, 26 (43.3%) were males and 34 (56.7%) were their counterpart, average age 46.40 years, range 18–60 years. Average weight was 68Kg and mean BMI of study participants was 25.40kg/m² as outlined in Table-I.

Gender	No. of Patients	Percentage
Male	26	43.3%
Female	34	56.7%
Average Age	46.40 Years	
Range	18 – 60 Years	
BMI	No. of Patients	Percentage
≤25 kg/m ²	25	41.7%
>25 kg/m ²	35	58.3%
Mean	25.40 kg/m ²	
Standard Deviation	+2.27	

Table-I. Demography of the subjects (N=60)

A total of 50 patients (83.3%) had success of hernia in terms of recurrence. Stratification of patients was presented by age group, gender and BMI in Table-II. P-value was >0.05 in all 3 cases showing statistically insignificant difference between various subgroups.

Stratification (by)	Success Rate (Frequency)	Chi Square
		p-value
Gender		
Male	22	0.02
Female	28	0.89
Age Group		
18-35	8	0.26
36-50	27	
51-70	15	
BMI		
≤25 kg/m ²		0.08
>25 kg/m ²		0.77

Table-II. Success of LVHR (n=50, 83.3%)

DISCUSSION

Patients as group has good outcome in our series. There was no conversion to open repair. The average operation time was determined as 100 min. approximately with a single case taking 200 min. due to dense adhesions. Mean operative time is relatively longer than most other series which ranges from 82 to 97 minutes.^{5,7,10,15}

For accurate and qualitative results, the surgeons employed this technique more carefully and meticulously to execute this new procedure results in little above average mean time. No major complication or mortality was observed during this procedure. Seroma formation was most common post-operative complication which might be considerable if it persists for more than

6 weeks. We found that all of them were resolved without treatment within 6 weeks, only five needed aspiration. Common minor complications including suture site pain and seroma were also reported in other series of studies.^{7,14,16} Suture site pain may originate from nerve entrapment or by traction of trans-abdominal sutures fixing the mesh to the anterior abdominal wall. Since they are vital or long term durability of the mesh no change was advocated in the technique. Major complications which may follow LVHR include senterotomy, mesh infection, skin breakdown, intra-abdominal abscess and mortality, none of them were reported in our studies. The recurrence rate in our series was 16.7% given that 66% to 90% of recurrences occur during 1 year our mean follow-up of about 12 months is acceptable and we do not expect the recurrence rate in this series to change markedly.^{8,17}

We therefore recommend through our experience the use of simple prolene mesh to cover the defect and using omentum as a protective barrier to prevent the adhesions between the mesh and viscera. It shown to have given comparable results to that seen with dual meshes. The cost of LVHR has been markedly brought down by it and made this procedure low-cost and affordable; especially in Pakistan.

The data derived from 60 patients represent the first large scale local series on LVHR in Pakistan using prolene mesh and omentum as barrier. In our observation this procedure was found technically feasible, safe and effective with fruitful clinical outcomes. Possible limitations in our series are short mean follow-up period i-e 12 months and small study group i-e 60.

CONCLUSION

The study successfully demonstrates, in patients with ventral hernia, laparoscopic hernia repair is a useful technique and simple polyester based mesh and using omental barrier is a safe and inexpensive alternative to the dual mesh technique.

Copyright© 15 Jan, 2018.

REFERENCES

1. Poulouse BK, Shelton J, Phillips S, Moore D, Nealon W, Penson D, et al. **Epidemiology and cost of ventral hernia repair: making the case for hernia research.** *Hernia* 2012; 16(2):179-183.
2. Rosen MJ. **Polyester-based mesh for ventral hernia repair: is it safe?** *Am J Surg* 2009; 197(3):353-359.
3. Subramanian A, Clapp ML, Hicks SC, Awad SS, Liang MK. **Laparoscopic ventral hernia repair: primary versus secondary hernias.** *J Surg Res* 2013; 181(1):e1-e5.
4. Liang MK, Berger RL, Li LT, Davila JA, Hicks SC, Kao LS. **Outcomes of laparoscopic vs open repair of primary ventral hernias.** *J Am Med Assoc* 2013; 148(11):1043-1048.
5. Nguyen MT, Berger RL, Hicks SC, Davila JA, Li LT, Kao LS, et al. **Comparison of outcomes of synthetic mesh vs suture repair of elective primary ventral herniorrhaphy: a systematic review and meta-analysis.** *J Am Med Assoc* 2014; 149(5):415-421.
6. Brady RR, Ventham NT, de Beaux AC, Tulloh B. **Laparoscopic partially extraperitoneal (pep) mesh repair for laterally placed ventral and incisional hernias.** *SurgLaparoscEndoscPercutan Tech* 2014; 24(3):E99-100.
7. Carter SA, Hicks SC, Brahmabhatt R, Liang MK. **Recurrence and pseudo recurrence after laparoscopic ventral hernia repair: predictors and patient-focused outcomes.** *Am Surg* 2014; 80(2):138-148.
8. Afzal MF, Hayat W, Farooka MW. **Laparoscopic ventral hernia repair using intraperitoneal onlay polyester mesh alone.** *Pak J Med Health Sci* 2010; 4(4):362-365.
9. Bangash A, Wazir M. **Laparoscopic incisional hernia repair: polyester versus polytetrafluoroethylene mesh.** *J Sci Soc* 2012; 39(3):118-123.
10. Melvin S, Renton D. **Laparoscopic ventral hernia repair.** *World J Surg* 2011; 35:1496-1499.
11. Jenkins ED, Yom VH, Melman L, Pierce RA, Schuessler RB, Frisella MM, Christopher Eagon J, Michael Brunt L, Matthews BD. **Clinical predictors of operative complexity in laparoscopic ventral hernia repair: a prospective study.** *SurgEndosc* 2010; 24:1872-1877.
12. Cuccurullo D, Piccoli M, Agresta F, Magnone S, Corcione F, Stancanelli V, Melotti G. **Laparoscopic ventral incisional hernia repair: evidence-based guidelines of the first Italian Consensus Conference.** *Hernia*, 2013.
13. Aura T, Habib E, Mekkaoui M, Brassier D, Elhadad. **Laparoscopic tension-free repair of anterior abdominal wall incisional and ventral hernias with an intraperitoneal Gore-Tex mesh: prospective study and review of the literature.** *J LaparoendoscAdvSurg Tech A* 2002; 12:263-267.
14. Ben-Haim M, Kuriansky J, Tal R, Zmora O, Mintz Y, Rosin D, Ayalon A, Shabtai M. **Pitfalls and complications with laparoscopic intraperitoneal expanded polytetrafluoroethylene patch repair of postoperative ventral hernia.** *SurgEndosc* 2002; 16:785-788.
15. Franklin ME, Dorman JP, Glass JL, Balli J E, Gonzalez JJ. **Laparoscopic ventral and incisional hernia repair.** *SurgLaparoscEndosc* 1998; 8:294-299.
16. Heniford B T, Park A, Ramshaw B J, Voeller G. **Laparoscopic repair of ventral hernias: nine years' experience with 850 consecutive hernias.** *Ann Surg* 2003; 238:391-399; discussion 399-400.
17. Robbins SB, Pofahl WE, Gonzalez RP. **Laparoscopic ventral hernia repair reduces wound complications.** *Am Surg* 2001; 67:896-900.
18. Rosen M, Brody F, Ponsky J, Walsh RM, Rosenblatt S, Duperier F, Fanning A, Siperstein A. **Recurrence after laparoscopic ventral hernia repair.** *Surg Endosc* 2003; 17:123-128.
19. Toy FK, Bailey RW, Carey S, Chappuis CW, Gagner M, Josephs LG, Mangiante EC, Park AE, Pomp A, Smoot RT, Jr., Uddo JF, Jr., Voeller GR. **Prospective, multicenter study of laparoscopic ventral hernioplasty. Preliminary results.** *SurgEndosc* 1998; 12:955-959.





“

Victory belongs to the most persevering.

– Napoleon Bonaparte –

”

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Qaim Deen	Conceptualization of project	
2	M. Adeel Kaiser	Data collection	
3	Qasim Farooq	Literature search	
4	Uzma Intisar	Statistical analysis	
5	Amna Mazhar	Drafting, revision, writing of manuscript	