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ORIGINAL ARTICLE

Laparoscopic Ventral Hernia Repair versus Open Hernioplasty

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ABSTRACT

Background: Ventral hernia repair is the most common and usual procedure which applies various treatment approaches.
Aim: To compare the laparoscopic ventral hernia repair surgery with open surgical procedure.
Study design: Prospective comparative study
Place and duration of study: Department of Surgery Unit-II, Fatima Memorial Hospital, Shadman Lahore from 1st July 2016 to 1st March 2021.
Methodology: Ninety six patients who underwent either open or laparoscopic surgery. They were divided in two groups. Group A (n=40) was of open surgery and Group B (n=56) was laparoscopic. Patients' demographic and clinical information was documented, postoperative pain, wound healing, duration of hospital stay, and recurrence rate was also recorded.
Results: There were 43 males and 53 females. The mean age of patients was 52.2±14 years. The mean fascial defect size was 6.94±0.3 cm^2. Majority of patients were obese. The postoperative study analysis revealed no wound infections and reduced hospital stay in laparoscopic operated patients than open surgery operated cases.
Conclusion: Laparoscopic surgery is much safer and more efficient than open surgery protocol for ventral hernia repair in context to wound infection and postoperative complications.
Keywords: Ventral hernia, Laparoscopic, Open surgery

INTRODUCTION

Ventral hernia can be defined as abdominal wall fascial abnormality causing protusion of intra-abdominal or preperitoneal contents[1]. It is non-inguinaland non-hiatal deformity.[2] Ventral hernia (VH) can be of two types depending on etiological characteristics. One which are acquired and other are congenital. Majority of VH are acquired with a few being left untreated from congenital state onward. The common reason of VH includes history of previous surgery developing hernia due to incision, or due to trauma, repetitive localized stress on weak abdominal wall points. These points include umbilicus, bilateral inguinal areas semilunar line, esophageal hiatus and ostomy positions. Obesity is considered as a major component causing VH. In obesity the abdominal fascia is stretched and weekend resulting into herniation. Moreover, weight gaining and repeated pregnancies also leads to weakened abdominal wall and subsequent hernia[3]. In post-surgical settings patients have a risk of 10%for developing VH after a midline laparotomy and a risk upto 5% for VH formation after transverse muscle incision[4,5].

Ventral hernia repair can be performed by surgery in those with either symptomatic or elevated hernia risk and in those with acceptable operational risk[6-8]. In previous years the VH was performed by open surgery with simple stitches and closure techniques, although, with improvement in science more advanced methods including mesh restoration and component separation have been introduced. Laparoscopic surgeries have been shown to decrease post-surgical pain and stay. However, an unclear data concerning wound infection and rate of recurrence has been reported[9-10] requiring the need for further investigations in this context.

The objective of the study was to compare the laparoscopic ventral hernia repair surgery with open surgical procedure.

MATERIALS AND METHODS

This Prospective comparative study was conducted at Department of Surgery Unit-II, Fatima Memorial Hospital, Shadman Lahore after permission from IRB, from 1st July 2016 to 1st March 2021. Ninety six patients from both genders which were further divided into two groups; Group A were those who underwent open surgery verses group B had laparoscopic procedure. There were 40 patients in Group A and 56 patients in Group B respectively. Written informed consent was taken from the patients. Patient's demographic information BMI, smoking history, diabetes status and fascial deformity size were noted. The Group A patients were prepared for open surgery under regional or general anaesthesia. An incision exactly at hernial location was performed. By assistance of electro-cauterization protocol the hernia and its adjacent fascia were exposed and hernial sac was reduced. The closure was done in consideration with size of fascial defect using non absorbable form of sutures and then placing a prolene mesh on that repair3-5 cm overlapping.

During laparoscopic procedure pneumoperitoneum was created and 3 trocars were positioned (Two 10-mm and one 5 mm port). A Composite mesh piece of 3-5 cm overlapping fascial deformity was placed and further familiarized into peritoneal cavity and kept anchored with abdominal wall trans-fascial suturing and non-absorbable tackers. The circumferential staples were positioned in form of double ring. A postoperative hospital stay, and complication rate including post op pain wound infection, and recurrence rate was recorded. All patients were refrained from tobacco use post operatively for preventing relapse. Data was entered in SPPS version 23.0 and analyzed by independent t test and chi square. P value <0.05 was taken as significant.

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RESULTS

There were 43 males and 53 females in this study with almost similar percentage of men in Groups A and Group B. The frequency of females was higher in open surgery protocol in comparison with laparoscopic procedure (Table 1).

The mean age of patients was 52.2±14 years with a mean fascial defect size as 6.95±1.3 cm^2.The fascial defect ranged from 2.5–15cm^2) with an average size of mesh in use as:16×16 cm^2such as 9×9–25×20 cm^2.

In addition to this the mean BMI levels of all the cases showed an increased trend towards obesity with a value of 29.5±15.25 kg/m^2 (Table 2).

The mean previous VH repair, previous abdominal surgeries were insignificantly different in percentage between open surgery patients and laparoscopic cases. The frequency of diabetes was lower in laparoscopic operated patients than open surgery cases (Fig. 1).

The postoperative analysis showed no wound infection and transacted bowel, lower hospital stays and less VH recurrence in laparoscopic patients than open surgery operated cases (Table 3).

Table 1: Distribution of gender between group A and B

Gender	Open surgery(n-40)	Laparoscopic surgery (n=56)
Male	18 (45%)	25 (44.6%)
Female	24 (55%)	29 (51.7%)

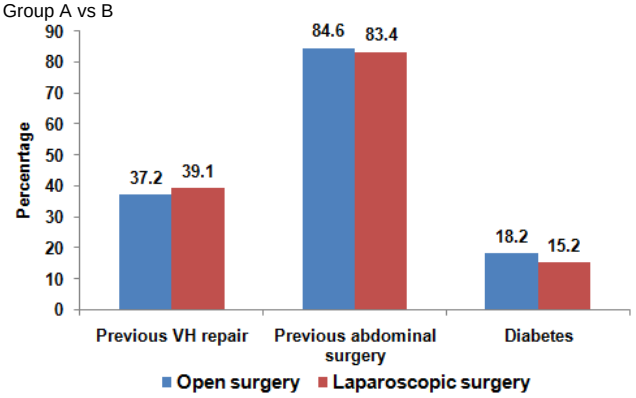
Table 2: Comparison of demographic, BMI and mean fascial defect size between Group A and B

Variable	Open surgery	Laparoscopic surgery	P value
Age (years)	51.2±15	53.2±13	0.95
BMI (kg/m^2)	30.1±11	28.9±8.5	0.68
Average fascial defect size (cm^2)	5.7±1.1	8.2±1.5	0.21

Table 3: Comparison of wound infection and hospital stay and risk factors between Group A and B

Variable	Open surgery	Laparoscopic surgery	P value
Hospital stay (days)	6.7±3.1	4.4±2	0.019
Smoker	13.9±2.1	22.6±1.2	0.159
Bowel transected	2.88±0.1	2.36±0.1	0.001
VH recurrence	13.1±1.2	11.1±0.8	0.04

Fig 1: Frequency of previous VH repair, abdominal surgery and diabetes in Group A vs B



DISCUSSION

Ventral hernia repair has been advanced with introduction of more sophisticated techniques for better care and treatment. However traditional operational procedures are also as much important and required in many difficult cases. In the present study a comparison of open and laparoscopic surgery techniques was conducted. It was observed that majority of the patients were above 50 years of age with a mean age of 52.2±14 years. VH formation is frequently seen between middle age to above with elderly being most vulnerable for surgical complications regarding incisional operations. Laparoscopic surgeries have shown improved and safe outcomes even in elderly patients than conventional surgical approaches[11-12]. Despite of the fact that majority of studies performed on VH are compared between various techniques, however gender specificity related to VH could not be overlooked. In the resent study it was seen that females were more prone towards VH than men[13].

The ratio VH among women under child bearing age is considered much higher than the other. The reason behind this could be multiple stress to abdominal wall or surgical procedure involved in delivery[14]. Traditionally the laparoscopic technique needs mesh which cover peritoneal cavity as seen on this study as well with pre-suture closing[15-17]. The present study results showed that laparoscopic procedure had short hospital stay, less chances of recurrence and minimal wound infection chances. It is documented in scientific articles that laparoscopic procedure is an appropriate choice for decreasing hospital length and also the risk of recurrence. The chance of wound infections is also very low in laparoscopic VH repair in comparison to the open surgery procedure[18-20].

CONCLUSION

Laparoscopic surgery for VH repair is much safer and more efficient in preventing wound infection and reducing hospital stay in comparison to open surgery procedure.

Conflict of interest: Nil

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