

Evaluation of Outcome of Laparoscopic and Open Ventral Hernia Repairs

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ABSTRACT:

Background: Epigastric, umbilical, spigelian, parastomal, and incisional hernias are several types of ventral hernias. Epigastrium and umbilical area hernias are regarded as main ventral hernias. Hernias can be repaired in a number of methods, but the tension-free repair is still the most crucial. Prior to placing mesh transabdominally, which should be of the right size and kind, the contents of the hernia are first repositioned back into the abdomen in order to do a repair by laparoscopy.

Methods: The goal of the current study, which is a prospective observational one, is to analyse and assess the results of ventral hernia repairs using laparoscopic and open surgery that were presented to the Himalayan Hospital over a one-year period.

Results: According to the study, the majority of cases—which were documented in the 25–50 age range (mean: 46 years)—were involving females. The most frequent hernias were umbilical (46.2%), incisional (28.3%), paraumbilical(22.3%), and epigastric (2.9%). The most prevalent comorbidity was diabetes mellitus (87.7%), followed by hypertension (63.8%). When compared to open surgery, there was a statistically significant difference in VAS score between patients who underwent laparoscopic surgery. Additionally, a substantial difference between the surgical process and mobilisation period was seen.

Conclusion: Less post-operative discomfort, fewer complications, a shorter hospital stay, and a quicker return to regular activities are all benefits of ventral hernia surgery performed laparoscopically.

Keywords: Open hernia, laparoscopic hernia treatment, and IPOM for a ventral hernia.

INTRODUCTION:

There are five different types of ventral hernias: incisional, umbilical, spigelian, and epigastric. Those primary ventral hernias are those that develop in the epigastrium and umbilical area. 1 Even if there are several methods for hernia repair, the tension-free repair is

still the most crucial. Mesh placement became necessary as the techniques advanced, and the need for overlapping it around the flaw was also investigated. This study revealed that a 3-5 cm overlap produced good results. Laparoscopic surgery has modernised the procedure for repairing abdominal wall hernias. 2 In order to do a laparoscopic repair, the hernia's contents are first repositioned back into the abdomen. Transabdominally, there is mesh placement, and it should be of the best type and size. Following that, the prosthetic ought to unfold inside the abdomen. Using a double crowning technique, this mesh is subsequently attached to the posterior portion of the anterior abdominal wall. These procedures are a standard step-by-step procedure for laparoscopic repairs. 3 In this study, the outcomes of ventral hernias repaired with open surgery and laparoscopic surgery will be compared.

METHODS:

Over the course of a year, the study was carried out at the general surgery department of the Himalayan Institute of Medical Sciences in Swami Ram Nagar, Dehradun. After receiving the study participants' informed consents, patients were included in accordance with the inclusion criteria. The institutional ethics committee provided approval for the study's ethical conduct.

Research plan

This observational follow-up study was performed on 71 patients at Santosh Medical college and Hospital, presented with a ventral hernia to the surgical OPD were recruited. The study included patients with simple ventral hernias who were between the ages of 18 and 70. The study excluded pregnant women, those with complex ventral hernia (obstructed, imprisoned, strangulated, or recurrent), people with immunocompromised conditions, and people with liver cirrhosis and/or ascites.

The patients were given a comprehensive clinical history and examination. According to the patient's preference, the patients were divided into one of the two groups—either the open or laparoscopic surgical method. Investigations were carried out, including radiological ones like USG and CT (if done). Both postoperative groups received VAS score cards to express their level of discomfort on POD 2, which was then recorded. It was noted the post-operative day of mobilisation and the post-operative day of discharge. In order to check on the effectiveness of the treatment, the patients were "followed up in the post-operative phase after discharge for duration of one month. Using the SF-8 score card for QOL and the VAS score card for pain severity, patients were evaluated once more after two weeks. On follow-up at one month, an SF-8 score card was used to assess the Quality of Life index. The day of return to work and any difficulties were also noted.

Statistical Analysis

Application of descriptive methods will be used to interpret and analyse the results using the software SPSS version 22 and MS Excel (significance). The gathered data will be analysed (p value, Chi square/Fisher test, unpaired t test) and shown as tables or charts.

RESULT:

The purpose of this study was to compare the results of laparoscopic and open ventral hernia repair depending on the following factors.

Reveals that the age group between 26 and 50 years had more than 50% of the cases, followed by the 50 and over (42.3%) and the 25 and under (2.8%) age groups. Additionally, there were somewhat more female instances than male cases.

The average age of the cases was 46 years, their average height was 1.51, their average weight was 60 kg, and their average BMI was 23.47. Out of the entire study participants, open surgery was performed in 42 cases, whereas laparoscopic surgery was performed in 25 cases.

Table1: Type of hernia

Type of hernia	Frequency	Percent (%)
UH	31	46.2
PUH	15	22.3
IH	19	28.3
Epigastric	2	2.9
Total	67	100.0

46.2% of patients with ventral hernia presented with an umbilical hernia, which was followed by incisional hernia (28.3%), paraumbilical hernia (22.3%), and epigastric hernia (2.9%). (Table 1). The bulk of the cases (87.7%) had diabetes mellitus as a comorbidity, followed by hypertension (63.8%).

Table 2: Relation of Life quality and VAS score with management process.

	Procedure	Open	Laparoscopic	P-value
Life quality	14days	27.52±0.369	19.74±3.347	<0.001
	28 days	18.57±3.890	10.81±2.403	<0.001
VAS score	2 days	5.14±1.19	3.81±1.54	<0.001
	14 days	2.77±0.985	1.52±0.975	<0.001
Mobilisation of POD		1.60±0.895	1.29±0.542	<0.001

A significant difference between surgical procedure and quality of life was found, as indicated in Table 2. The VAS score between the two differs statistically significantly. It was discovered that as compared to open surgery, it was lower in those who underwent a laparoscopy.

A substantial difference was seen between the surgical operation and mobilisation period, as illustrated in Table 2. Compared to patients who underwent open surgery, it was lower in individuals who underwent laparoscopic surgery. Between the surgical surgery and the day of return to work, a substantial difference was seen. Compared to those who underwent open surgery, it was lower in those who underwent laparoscopic surgery.

There were 5 post-operative problems in total among the cases. There were 3 incidences of surgical site infections among those who had open surgery, and these were then followed by other complications such acute kidney injury (AKI), abdominal distension, and serous discharge, while only one patient experienced a complication after having laparoscopic surgery.

DISCUSSION:

Every year, about 25,000 ventral hernias are operated upon in the United Kingdom. [4] Only a few of them have symptoms, but due to the risks associated with waiting to have surgery, all of the patients are given the same advice. Surgery can be performed in a variety of ways, starting with primary repair and ending with the installation of a mesh prosthesis. Later, laparoscopic repair emerged, which is now the recommended method and the gold standard, but it is still being scrutinised. [5] A total of 67 patients were included in the current study, with 51.7% of them being female and 48.3% being male. Of these total cases, 25 received laparoscopic surgery and 42 got open surgery. More than 50% of the cases in our study were found to be between the ages of 25 and 50, according to the age-wise distribution of the cases. In our study, the oldest patient was 69 years old, while the youngest patient was 18 years old. Patil's study, which accounts for more than 50% of all instances, found that the bulk of the cases were between the ages of 30 and 50.[6] The 20-year-old patient in his study and the 70-year-old patient were both participants. In a different study by CA Courtney et al, 120 patients underwent surgery for ventral hernia. [7] The average age of the population was 54.6 years (range from 23 to 87), with 55% of men and 45% of women. The most frequent presentation in the patients we recruited for our study was an umbilical hernia, which was followed by incisional hernia and paraumbilical hernia. We also included three cases of epigastric hernia in our analysis. In contrast to our findings, Patil's study found that paraumbilical hernia was the patients' most frequent presentation, with incisional hernia, epigastric hernia, and umbilical hernia all being common. On the other hand, incisional hernia was the most typical presentation among the recruited cases in a study conducted by CA Courtney et al. According to the distribution of study participants in our study according to the presence of co-morbidities, diabetes mellitus was the co-morbidity present in the

majority of instances, followed by hypertension (63.8%). However, a randomised trial carried out by Kamal et al. revealed that diabetes was present in the majority of the patients. [8] Additionally, co-morbid conditions such chronic constipation and weight loss were noted in several of the individuals. In a second study by Tessier and his collaborators, 76% of the 97 patients who had laparoscopic repair of a ventral hernia were older than 60 years old. [9] The older patient group (more than or equal to 60 years) had more co-morbidities, however when compared to the younger group, this group showed equivalent postoperative duration of hospital stay and complication rates (younger than 60 years). According to our study, patients who underwent laparoscopic surgery had a lower mean VAS score. Compared to those who had open surgery. Additionally, a notable distinction between VAS and the surgical process was discovered. Ilani et al. further shown that the laparoscopic group had a lower pain score (mean 2.23) on the third post-operative day than the open group (mean 6.23). [8] The current research also revealed that patients who received laparoscopic surgery had higher quality of life than those who underwent open surgery. Patients who had laparoscopic surgery as opposed to patients who had open surgery saw shorter recovery times and quicker returns to work. Additionally, in our study, the mean number of days that patients moved around after having laparoscopic surgery was 1.30 ± 0.542 , compared to 2.61 ± 0.895 in the group of patients who had open surgery. The findings of Patil et al., who indicated that the mean post-operative day of movement in the laparoscopic group was 1.8 days and in the open repair group was 2.8 days, showed similar outcomes. Compared to individuals who had open surgery, patients in the laparoscopic group returned to work sooner after surgery. Laparoscopic surgery required a mean recovery time of 9.22 days, whereas open surgery required a mean recovery time of 16.57 days. Relevant to our findings, Patil et al. in their study found that, compared to open surgery, laparoscopic repair patients returned to work in less time (on average 12.8 days) after surgery (average 18.5 days). In their analysis, Raftopoulos et al. discovered that the average time to resume normal activities was 25.95 days as opposed to 47.8 days, which they found to be longer than the Itani et al. study's average of 23 days as opposed to 28.5 days. [8,10] There were 5 cases with problems following surgery. Five instances of this case involving open surgery and post-operative complications have been documented. These issues included serous discharge, severe renal damage, abdominal distension, and surgical site infections (6.81%). (2.27). On the other hand, a hematoma was noted in one of the total cases that had laparoscopic surgery. According to Patilet al. findings seroma, surgical site infection, and chronic pain were the most common post-operative complications. Park et al. and Goodney et al. also demonstrated the problems that are pertinent to our findings. [10,11]

CONCLUSION:

The goal of the current study is to analyse and compare the effectiveness of mesh repair procedures using open and laparoscopic surgery. The cases' ages ranged from 18 to 70. However, the majority of the cases—more than 50% of the cases—were found in people

between the ages of 25 and 50. Females made up the majority of instances with ventral hernia (51.7%), followed by men (48.3%). 37.3% of the cases received laparoscopic surgery, while 62.7% of the overall cases (n=67) underwent open surgery. Umbilical hernias were the most prevalent hernia in this study. In the majority of instances, diabetes was the co-morbidity that was most frequently noted. The enrolled cases' quality of life was evaluated using both approaches on the 14th and 28th day following surgery. The majority of those who had laparoscopic surgery said that they felt great for the first four weeks following the procedure. But none of the patients receiving open surgery were in really good health. When it came to their regular daily activities, the patients were questioned about their physical condition (such as walking or stairs). The majority of individuals who underwent laparoscopic surgery were found to be healthy. Patients who underwent laparoscopic surgery had a higher quality of life than those who underwent open surgery. Both groups in our study experienced a number of post-operative problems. These side effects included serous discharge, hematoma, severe renal injury, stomach distension, and infections at the surgical site. The bulk of the open surgery group's patients, however, involved difficulties. Life quality, VAS score, time spent mobilising, and days taken to resume work were all substantially correlated with the procedure. Laparoscopic ventral hernia surgery results in less post-operative discomfort, fewer complications, a shorter hospital stay, and a less economic effect because patients were back to their regular activities faster.

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