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A Comparative Study of Laparoscopic Versus Open Repair of Ventral Abdominal Hernia

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ABSTRACT

Aims and objectives: To compare the efficacy and safety of laparoscopic and open repair of ventral abdominal hernia in the terms of Operative time, Post operative pain and requirement of analgesia, Post operative hospital stay, Time taken to resume to work, Post operative complications and the Recurrence rate.

Methodology: This comparative study was carried out on in patients presenting at the department of surgery, P.D.U Medical College Rajkot. A total of 50 patients were selected randomly and were divided into two groups each of 25 subjects. The first group included the patients with open hernia repair while the other group included the patients with laparoscopic repair. Standard techniques were used both in the open and laparoscopic approach for the hernia repair.

Results: There is no statistically significant difference between the two groups for the duration of surgery (P>0.39). Post operative pain score calculated at 24 hours was statistically significant with (P<0.0002). Post op analgesia requirement and post operative stay period were highly statistically significant having the values as (P<0.0003), and (P<0.003) respectively.

Conclusion: Laparoscopic approach for repair of ventral abdominal hernia has an advantage of decreased post operative pain, post operative analgesia requirement as compared to that of the open approach. Laparoscopic hernia repair also has an advantage of decreased post operative hospital stay as compared to open hernia repair. Patients undergoing laparoscopic hernia can return to their daily chores and activity earlier and there are few or none complications in the same.

KEYWORDS : ventral hernia, laparoscopy, repair.

INTRODUCTION

Ventral Hernias are those hernias which occur through the anterior abdominal wall. The anterior abdominal wall is the site of a variety of hernias due to the erect posture which renders the anterior abdominal wall weak[1,2]. Almost all these hernias protrude through the abdominal wall to form palpable swellings. They are typically classified by most etiology and location. Ventral hernias can occur as a result of prior surgery (incisional) or spontaneously (umbilical, epigastric, spigelian, or lumbar hernias).

These hernias mainly present as a swelling and they rarely go for complications like strangulation, incarceration and present with respective manifestations. Commonly hernias do not require any special investigations to diagnose them. Almost always they are diagnosed clinically and rarely they need any investigations to confirm diagnosis[3,4,5].

There is continued debate regarding the role of laparoscopy in ventral hernia repair. Although laparoscopic repair became increasingly popular, its outcome needs further evaluation regarding its benefits over conventional ventral hernia repair in developing countries where recourses as well as trained surgeons are deficient[6,7,8].

This study was thus planned to compare the outcomes of laparoscopic versus open repair of ventral abdominal hernia in its various entities.

METHODOLOGY

This observational prospective comparative study had been carried out in 50 cases of ventral abdominal hernia, admitted to department of general surgery in P.D.U. Medical College & General Hospital, Rajkot, from September 2011 to October 2012. All the patients were examined clinically and their history and examination findings were noted.

A total of 50 cases were included (25 cases for each technique). All cases were selected on a randomized basis. After admission they underwent thorough routine pre-operative investigations and assessment for fitness. Patients who were fit were explained the procedures, their advantages, disadvantages, risks, and were operated after taking written and informed consent.

Duration of the surgery was calculated in minutes. Post operative pain was calculated by the visual analogue scale at 24 hours. Post operative stay was calculated in days.

Data was recorded on a proforma. Chi square tests and t-tests were used to find out statistical difference between the groups. P value of < 0.05 was considered as statistically significant and highly significant if $P< 0.001$.

TECHNIQUE OF OPEN MESH REPAIR:

After induction of anaesthesia proper cleaning, painting and drapping of the part was done. Appropriate skin incision was kept according to the size and site of the defect. After dissection subcutaneous flaps were raised of about 4 to 5 cms around the defect, the sac was than found and reduced back. The hernial defect was closed with prolene no 1. Then prolene mesh was kept on rectus sheath and fixed with prolene 2.0. Lastly skin and fascia were closed after keeping the negative suction drain.

TECHNIQUE FOR LAPAROSCOPIC REPAIR:

After induction of anaesthesia, painting, drapping and isolation of the part was done. Than pneumoperitoneum was created and appropriate ports were inserted according to the size and site of the defect. Onlay technique was used for placement of the mesh.

RESULTS

In this prospective study the patients were divided into two groups

i.e. Group A and Group B, each having 25 subjects (n=25). Group A had undergone open hernia repair while the other group B, was operated through the laparoscopic approach and the following results confounded (TABLE 1):

The distribution of sex was same in both the groups i.e. the number of male and female subjects were same in both the group as 12 and 13 respectively.

In group A there were 6 persons with epigastric hernia, 5 people with incisional hernia, and 4, 9,and 1 persons with paraumbilical, umbilical and spigelion hernia respectively.

While in the group B there were 2 persons with epigastric, 9 with incisional hernias, 8 patients had paraumbilical hernia while the other 9 patients were having umbilical hernia.

The mean time required for open and laparoscopic repair of ventral hernia repair was 65.5 and 85.5 mins respectively. However there was not much statistical difference between the two as the P value was 0.39. (P= 0.39).

The pain score assessment was done at 24 hours using VAS scale. The mean of this score was 5.88 and 4.04 for the open and laparoscopic group respectively and was statistically highly significant as the P value was less than 0.001 (P<0.001).

Mean analgesia requirement for the patients was of 2.84 weeks in the open approach group, while it was 1.64 for the laparoscopic group. This too was also statistically highly significant as the P value was less than 0.001 (P<0.001).

The mean period of post operative stay for the Open group and the Lap group was 4.6 and 2.68 days respectively, which was statistically significant as the P value was less than 0.05 (P<0.05).

There were 2 patients who developed complications in form of infection and seroma formation in open group, while in the laparoscopic group there was a single patient who developed complication in the form of ileus.

However there were no any recurrences seen in any of the groups.

DISCUSSION:

Ventral hernia repair has been an area of debate for the consideration of the laparoscopic or the open approach for its repair[5,6]. There are also controversies associated with laparoscopic ventral hernia repair. But still the laparoscopic approach for the ventral hernia repair has continued to evolve significantly. Hence this study has been a little effort towards clearing of the horizon view[8,9].

As already mention above, this prospective study was carried out at the Department of Surgery, P.D.U. Medical college and hospital, Rajkot, Gujarat.

Various parameters were assessed and varied outcomes confronted through it are discussed as under:

In both the groups the number of male and females were 12 and 13 respectively. This shows that there was slight increase in the number of the female subjects in the study. This in short signifies that it is the female sex who is more prone to develop ventral hernia, which may be due to pregnancy, obesity various other gynecological procedures etc.

The mean operative time for the open and laparoscopic procedures were 65.5 and 85.5 mins respectively. This was not statistically significant as P=0.39. This concludes that time taken to complete the procedure depends upon the surgeon and his practice. A surgeon well versed in laparoscopic procedure can complete the surgery earlier than the time taken in the open repair[10,11,12,15].

The Mean VAS score at 24 hours was 5.86 and 4.04 in open and laparoscopic approach. It was statistically highly significant (P< 0.001) which means that patients operated through the laparoscopic approach have low pain as compared to the one operated through the open repair.

Mean post operative stay for the laparoscopic and open approach was 4.6 and 2.6 days respectively, which too was statistically significant as (P<0.05), which means that in the laparoscopic approach the patients become early mobile and become candidates for earlier discharge. This in turn helps in two ways as it decreases the hospital acquired infections and also decreases the hospital stay charges of the patient[8,9,14].

The mean number of weeks for which analgesia was required was 2.84 and 1.46 in the open and laparoscopic approaches respectively. This was also statistically highly significant as the P value was less than 0.001(P.001). This leads to the conclusion that patients who had undergone the laparoscopic approach had decreased requirement of analgesia as compared to the ones who were operated through the open approach[13,14].

Patients could return to normal activity in about 3.2 mean days in the open group and in 2.6 mean days in the laparoscopic group. Time taken to return to routine activity was 8.8 mean days in open group and 7.8 mean days in the laparoscopic group. This was not much statistically significant as the P value for the former was 0.3 and for the latter was 0.1.

Similarly time taken to return to hard work in open group and in laparoscopic group is 30.7 and 21.3 mean days respectively. This was highly significant as the P value was less than 0.001 (P<0.001).

This concludes that in the initial post operative period there a little advantage of laparoscopic approach for early ambulation than open approach, but it may sometimes however be relative[10,15,16]. But the laparoscopic approach has a definitely more added advantage to return to hard work over a period of time as compared to the open approach method.

Several large studies on laparoscopic hernia repair have been reported which suggest that, this technique has proven to be safe and feasible alternative to open hernia repair[9,17,18]. Based on these studies also the laparoscopic ventral hernia repair has been found to have shorter operative time, lower complication rate, low recurrence rate

\s early post operative ambulation and low post operative analgesia requirement.

CONCLUSION:

Despite local limitations regarding availability of instruments and expertise, laparoscopic ventral hernia repair is still beneficial when compared to open mesh repair, in terms of post operative pain, postoperative analgesia requirement and duration of hospital stay. It is also helpful in promoting early ambulation and early return to work. In short once mastered the laparoscopic procedure can be considered a better option for ventral hernia repair.

Table 1: Summary of results

FACTOR	OPEN (mean)	LAP (mean)	'p' VALUE
OPERATIVE TIME (mins)	65.5	85.5	0.39
POST OPERATIVE STAY (days)	4.6	2.68	0.0003
VAS SCORE AT 24 HOURS	5.88	4.04	0.000002
POST–OP ANALGESIA REQUIREMENT (weeks)	2.84	1.64	0.000003
RETURN TO NORMAL ACTIVITY (days)	3.2	2.6	0.3
RETURN TO ROUTINE ACTIVITY (days)	8.8	7.8	0.1
RETURN TO HARD WORK (days)	30.9	21.37	0.000002

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