



## A COMPARATIVE STUDY OF LAPAROSCOPIC VERSUS OPEN VENTRAL HERNIA EXCLUDING INGUINAL HERNIA

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### ABSTRACT

**Background:** Laparoscopic ventral hernia repair is evolving rapidly worldwide to become a standard procedure. The purpose of this study was to compare the benefits, effectiveness, and postoperative outcome of laparoscopic and open repair of ventral hernia.

**Patients and Methods:** Prospectively collected data of 100 patients who underwent open and laparoscopic ventral hernia repair between January 2017 and June 2018, of whom 50 underwent open mesh repair and 50 underwent Laparoscopic repair, were prospectively reviewed. For each patient demographic, preoperative and postoperative data were studied. Statistical analysis was performed by Mean, Standard Deviation, chi-square test and level of significance Results: Both the groups were comparable in age, sex, religion, site of hernia, ASA score, risk factor, comorbidity, mean fascial defect size, and mean size of mesh. The operating time was longer in open group than Laparoscopic group of patients, intraoperative blood loss was more in open group than Laparoscopic group, intraoperative complication like bleeding and bowel injury was more in open group than Laparoscopic although the difference was insignificant. Postoperative complication assessed as early (pain, seroma formation, SSI, urinary retention, postoperative ileus) and late (recurrence and mesh infection). Both early and late complication is more in open group. Postoperative ambulatory period, postoperative requirement of analgesia, postoperative hospital stay were less in laparoscopic group.

**Conclusion:** The findings of present study demonstrate that laparoscopic ventral hernia repair in our experience was safe and resulted in shorter operating time with less postoperative complications, shorter hospital stay, less recurrence, more cosmesis although size was limitation.

**KEYWORDS :** Laparoscopic repair of ventral hernia, Excluding Inguinal hernia, Ventral hernia.

### INTRODUCTION

Ventral hernia (VH) occur as a result of weakness in the musculofascial layer of the anterior abdominal wall<sup>[1]</sup>. The most popular classification is: congenital, acquired, incisional and traumatic<sup>[2]</sup>. A successful series of laparoscopic repair for VH was done by LeBlanc in 1993<sup>[3]</sup>. Operative costs may be optimized with selection of Mesh and optimal use of trans-abdominal suture and fixation devices.

The introduction of a prosthetic Mesh to ensure abdominal wall strength without tension has decreased the recurrence rate, but open repair requires significant soft tissue dissection in tissues that are already of poor quality as well as flap creation, increasing complication rates and affecting the recurrence rate. A minimally invasive approach was applied to the repair of ventral hernia, with the expectations of early recovery, fewer postoperative complications, and decreased recurrence rates. This prospective study was performed to objectively analyze and compare the outcomes after open and laparoscopic ventral hernia repair.<sup>[4]</sup>

### AIMS AND OBJECTIVES

The aim of this study was to compare the effectiveness and safety of laparoscopic and open repair of ventral hernia and to discuss important controversial issues for both procedures including,

1. Patient selection
2. Technique and operative care for laparoscopic and open repair of ventral hernia
3. Operative time of laparoscopic and open repair of ventral hernia
4. Intraoperative and postoperative complications
5. Postoperative pain and amount of different drugs used
6. Time until resumption of diet and movement
7. Postoperative morbidity
8. Length of hospital stay
9. Cost effectiveness and Mesh selection
10. Recurrence and re-recurrence after both procedures.

### MATERIAL AND METHODS

This study included patients who consented to get operated for

midline ventral hernia, with the help of relevant history, clinical examination, and appropriate investigations at our institution from January 2017 to June 2018.

### INCLUSION CRITERIA:

Patients presenting with ventral hernias who were managed in our hospital were included after obtaining a written consent.

### Exclusion criteria:

- Severe hemodynamic instability
- Obstructed hernia
- All incisional and inguinal hernia
- Fascial defect by USG >10cm
- Chronic liver disease and CKD patients

### Methodology:

All patients were evaluated by obtaining proper history and performing detailed physical examination and routine blood investigations and High resolution sonography to measure accurate size of defect and at the same time to rule out other abdominal pathologies and organomegaly (splenomegaly). All patients received antibiotic prophylaxis half an hour before surgery.

### Postoperative management:

During the postoperative period, all patients received intravenous aqueous diclofenac injections every 12 hours for 1 day unless contraindicated, and thereafter oral analgesics were given on the patient demand. All the patients were ambulated within 12 hours of surgery and were encouraged for oral feeds. Initially, we started with sips of liquids followed by normal diet after the resolution of postoperative ileus (indicated by passing of flatus, normal bowel sounds on auscultation, and return of appetite). In patients with persistent ileus, nasogastric tube was passed only to be removed after resolution. The wound was inspected for any seroma, hematoma, or infection. In the open group, drains were removed when the collection was less than 30 ml for 2 consecutive days. Patients were discharged after complete ambulation and tolerating normal diet.

### Follow-up evaluation:

After discharge, patients were encouraged to return to their normal

activities as early as possible. Follow-up was done at 1 week, 1 month, 3 months, and 6 months. In the initial follow-up, the patients were evaluated for short-term complications such as seroma, hematoma, wound infection, and wound dehiscence. During subsequent visits, chronic pain at the operated site, return to normal activity, and recurrence were noted.

#### Statistical methods:

Descriptive and inferential statistical analysis was done. Variables on continuous measurements are presented on Mean  $\pm$  SD (Min–Max) and variables on categorical measurements are presented as number (%). Significance is assessed at 5% level of significance. Chi-square/Fisher exact test was used to determine the significance of study parameters on categorical scale between two or more groups. A P value of  $<0.05$  was considered significance.

#### RESULTS

Demographically (i.e. age, gender, religion) both the groups were comparable with p value=0.91. mean age in Group A was  $48.80 \pm 10.79$  and mean age in Group B was  $45.96 \pm 15.45$ .

#### Duration of surgery:

Duration of surgery was found to be 61–70 mins in majority (74%) of the patients in Group A whereas in Group –B duration was found to be 81–90 minutes in majority (72%) of the patients. This difference was found to be highly significant with p-value  $< 0.0001$ . It was seen that operating time also depends on expertise of surgeons and intraoperative complications encountered as the operating time differed over a wide range in previously published studies<sup>[6]</sup>.

#### Intraoperative blood loss:

In Group A majority of the patients (84%) had  $<50$ ml blood loss whereas in Group-B majority of the patient (64%) had blood loss in the range of 101–150 ml. This difference was found to be highly statistically significant with p-value  $< 0.0001$ . This result was in concordance with the previously published studies<sup>[7]</sup>.

#### Intraoperative complication:

In our study we found that one patient in Group-A had bleeding complication whereas four patients had bleeding complication in Group-B. We also found that in Group-A none of the patient had enterotomy whereas one patient had enterotomy in Group-B. This finding was contradictory to previously published studies, wherein bleeding and bowel injury was more frequently associated with laparoscopic repair than in open repair<sup>[8]</sup>.

#### Early postoperative complications:

In our study we found that majority of the patients in both the study Groups had postoperative pain followed by surgical site infection as the most frequent complication. Incidence of pain was very high in Group B (58%) than Group A (14%). This Data was statistically significant ( $p < 0.05$ ). Postoperative pain: In our study we found that majority of the patients in both the study Groups had postoperative pain. Similar results has been observed in other study also<sup>[9]</sup>.

#### Late post op complications:

In our study we found that Only one patient in Group-B had recurrence. None of the patient had mesh infection in either of the two groups. Data was comparable among both the groups and statistically insignificant<sup>[9]</sup>.

#### Post op ambulation:

In our study Ambulation was started in majority of the patients (94%) on first day itself in Group –A whereas in Group- B majority of the patients (60%) began ambulation on second postoperative day. This difference was found to be highly statistically significant with p value=0.0001<sup>[11]</sup>.

#### Duration of hospital stay:

In our study we found that majority of the patients (82%) in Group-A had less than three days of hospital stay whereas in Group-B (56%)

majority of the patients had hospital stay ranging from 4–6 days. This difference was found to be statistically significant with p-value  $< 0.001$ . This result was in accordance with previously published studies<sup>[12]</sup>.

#### Follow up:

In our study we found that majority of the patients (62%) in Group- A had followed up till 4–6 months whereas in Group-B had followed up for more than a year, to compare long term comparison of quality of life in laparoscopic versus open ventral hernia repair. Patients were also followed up due to chronic pain and to compare other factors like complications and recurrence and to see effectiveness of the procedure. majority of the patients (58%) in Group B required follow up for more than a year. This difference was found to be statistically significant with p-value  $< 0.0001$ . This result was in accordance with previously published studies<sup>[13]</sup>.

#### Drawbacks of the study:

- Single institutional study
- Non-randomized study
- Small sample size
- Selection bias
- Period for assessment of recurrence rates is short.

#### CONCLUSIONS

- Laparoscopic ventral hernia repair has shown promising results and a clear advantage over open repair in regard with:
  - Reduced postoperative pain,
  - Decreased postoperative complications,
  - Reduced length of hospital stay,
  - Less time for return to normal activity
  - Better cosmesis
  - Lower recurrence.

Hence, laparoscopic ventral hernia repair is a safe and feasible alternative to open repair.

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