

## COMPARISON BETWEEN OUTCOMES OF IPOM AND SUBLAY FOR VENTRAL HERNIA

AMNA JAVED MOEEN, MUHAMMAD SHABBIR AHMAD, FALAK SHER MAHL, FARMAN ALI,  
NEELAM WAJID, BASHARAT NAZIR

*Department of Surgery Unit-II, PGMI/AMC/LGH*

### ABSTRACT

**Introduction:** Abdominal wall hernia is a common condition encounter in surgical OPD. There is 2% chance of developing hernia in lifetime whereas umbilical / para-umbilical hernia accounts for 10-14% of all the hernias. Ultimate treatment of abdominal wall hernia is surgery and mesh placement. Early surgery can avoid multiple complications including incarceration of intestine. Multiple patient factors that can cause recurrence of hernia or development of incisional hernia laparotomy incorporate age, male sex, COPD, diabetes mellitus, smoking and obesity. Multiple operative modalities are present for ventral hernias, commonest being laparoscopic IPOM and Open sublay. Different meta-analysis recommends that laparoscopic hernia repair is best in defect size not more than 10cm.

**Objectives:** Objective of this study was to compare the efficacy of intra-peritoneal onlay (IPOM) mesh repair with open sublay mesh repair for PUH in terms of operative time, post-operative pain, hospital stay and recurrence.

**Material and Methods:** This study was done in department of surgery at Lahore General Hospital starting from January 2018 till January 2019. Patients presenting with para umbilical hernia were admitted from SOPD. An aggregate of 50 participants were included in this study. Majority of patients were females (46 in number) with age ranging from 26years to 55years. Rests of patients were males (4 in number) with age ranging from 40 years to 60 years. Patients undergoing open surgery were placed under O-group and patients undergoing laparoscopic repair were placed under the L-group. Patients were followed up on 10th post –op day, at 4<sup>th</sup> week, after 6 month and after 1 year post-operatively. Inclusion Criteria: All patients of both sexes with para umbilical hernia presenting in the SOPD was included in the study. Exclusion Criteria: All patients with incarcerated PUH were excluded. Patients with co-morbid conditions for example diabetes mellitus (DM), COPD, IHD (Ischemic Heart Disease) were also excluded.

**Results:** 50 participants included in this study had age ranging from 26 years to 60 years. Mean duration of operation in L-group was  $81 \pm 13$  minutes while in O-group, duration of operation was  $89 \pm 19$  minutes. Hernia defect size in both groups was approximately same. Mean size defect was  $13.3 \pm 2.6$  cm<sup>2</sup> for L-group and  $13.1 \pm 2.9$  cm<sup>2</sup> in O-group. Post-operative Duration of Hospital stay for L-group was 36-60 hours while hospital stay in O-group was 48 to 72 hours. Recurrence rate after 1 year in L-group was 1 while in O-group; recurrence was seen in 2 patients.

**Conclusion:** IPOM is a better option in management of paraumbilical / umbilical hernia in terms of duration of operation, hospital stay, recurrence of hernia and post-operative pain outcome as compared to open sublay technique.

### INTRODUCTION

Hernia of Abdominal wall is one of the prevailing problems all over the world. A Western estimation reveals that the lifespan risk of acquiring a hernia is approximately 2%. Keeping this in view, hernia repairs likely account to frequent most operations in general surgery. Above 20 million hernias are accessed to be fixed each year worldwide. <sup>[1]</sup>

Hernias through the umbilical ring (umbilical hernia) and hernias neighboring the umbilical ring (paraumbilical hernia) are regular in the grown-up populace, representing 10–14% of all hernias. <sup>[2]</sup>

The manifestation of a ventral hernia is itself, a sign for repair when no considerable comorbid condition present. Even though non-operative management has been assessed in a randomized trial for inguinal hernia, non-operative management of anterior abdominal wall hernias has not yet been contrasted with elective surgery in this way and is probably not going to be. Elective ventral and incisional hernia repair are embraced to a great extent to ease symptoms and to prevent incarceration of hernia with subsequent of the intestine. It is assessed that around 10% of all ventral hernias ends up in incarceration, although the definite percentage isn't known. <sup>[3]</sup>

Open mesh hernioplasty technique for ventral and incisional hernias comprises of onlay, inlay, sublay, and underlay mesh deployment. Most of the surgeons acknowledge that sublay mesh repair is an ultimate

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*Corresponding to: Amna Javed Moeen, Department of Surgery Unit-II, PGMI/AMC/LGH  
E-mail: amnaj66@yahoo.com*

procedure for repair of these hernias. On the other hand, open sublay hernioplasty requires a significant skin incision with huge tissue dissection so as to accomplish a satisfactory plane so that the mesh adequately covers the hernial defect; this technique additionally incorporate estimating mesh size to allow for subsequent mesh contraction. Extensive duration of operation and large-scale tissue dissection enhance likelihood of wound infection. In course of wound infection, the mesh being an external object is especially liable.<sup>[4]</sup>

Incisional hernia stays a commonest complication following abdominal surgery, with a surmised pace of 10–20% after laparotomy. Patient risk factors associated with an increase incidence of incisional hernias after laparotomy incorporate age, male sex, COPD, diabetes mellitus, smoking and obesity. Moreover, obesity isn't only a demonstrated risk factor for establishing incisional hernias, but may also intensify morbidity and recurrence after repairing incisional hernia. In this manner overweight and obese patients are frequently requested to lose weight proceeding to management of incisional hernia.<sup>[5]</sup>

While meta-analyses have demonstrated benefits for the laparoscopy compared with open procedures for correcting incisional hernia. In the standardized protocols the laparoscopic intraperitoneal onlay mesh (IPOM) procedure is prescribed only for a deformity size of up to 10 cm. In a Systematic Survey the board admitted that for open elective incisional hernia surgery sublay mesh position is favored, but open IPOM may be beneficial in particular settings.<sup>[6]</sup>

This study has been conducted to compare the efficacy of intra-peritoneal onlay (IPOM) mesh repair with open sublay mesh hernioplasty for PUH in terms of operative time, post-operative pain, hospital stay and recurrence.

## MATERIAL AND METHODS

This study was done in department of surgery at Lahore General Hospital starting from January 2018 till January 2019. Patients presenting with para umbilical hernia were admitted from SOPD. Patients were explained both methods of repair and were asked to pick up choice of surgery via lottery method. An aggregate of 50 participants were included in this study. Majority of patients were females (46 in number) with age ranging from 26 years to 55 years. Rests of patients were males (4 in number) with age ranging from 40 years to 60 years. Patients undergoing open surgery were placed under O-group and patients undergoing laparoscopic repair were placed under the L-group. Informed consent was taken and all the patient details were entered on a

preforma. 25 patients were put in each group. Two surgical teams were made A & B. Patients in the L-group were operated by team A whereas patients in the O-group were operated by team B. Out of 25 patients in the L group 24 were females and only one was male patient. Out of 25 patients in the O group 22 were females and 3 were males. Patients were followed up regarding operative time; post-op pain was assessed by the visual analog pain score, duration of hospital stay and recurrence at 1 year interval. Patients were followed up on 10<sup>th</sup> post –op day, 4 weeks, 6 month and 1 year interval.

**Inclusion Criteria:** All patients of both sexes with para umbilical hernia presenting in the SOPD was included in the study.

**Exclusion Criteria:** All patients with incarcerated PUH were excluded in the study. Patients with co-morbid conditions like diabetes mellitus (DM), COPD (Chronic obstructive pulmonary disease), IHD (Ischemic Heart Disease) were also excluded.

## OPERATIVE TECHNIQUE LAPROSCOPIC REPAIR

Pneumoperitoneum will be created via Verres Needle. Three ports are made one 10 mm port and two 5mm ports. All ports are made on one side of the abdomen just within the anterior axillary line. Diagnostic Laparoscopy is performed. Adhenolysis is done and the contents of the hernia are reduced. The defect is measured in centimeters and the size of the mesh to be placed is determined. Mesh of 15x15cm is used with a minimum of 7.5cm of mesh on either side of the defect.

## RESULTS

Out of 50 participants included in this study, 46 were females with age ranging from 26 years to 55 years  $46 \pm 4.5$  years. While 4 patients were males with age ranging from 40 years to 60 years  $38.4 \pm 3.2$  years.

Mean duration of operation in L-group was  $81 \pm 13$  minutes while in O-group, duration of operation was  $89 \pm 19$  minutes.

Hernia defect size in both groups was approximately same. Mean size defect was  $13.3 \pm 2.6$  cm<sup>2</sup> for L-group and  $13.1 \pm 2.9$  cm<sup>2</sup> in O-group.

Post-operative Duration of Hospital stay for L-group was 36–60 hours while hospital stay in O-group was 48 to 72 hours

Recurrence rate after 1 year in L-group was 1 while in O-group; recurrence was seen in 2 patients.

Visual analogue scale for pain in both groups at different follow-ups are shown in Table I

**Table 1:** Mean Visual Analogue Scale

Post-Op Duration	L-Group	O-Group
After 24 hours	4.3	4.7
After 48 hours	4.1	4.3
10 <sup>th</sup> POD	3.1	3.8
4 <sup>th</sup> week	2.4	3.2
6 months	1.9	2.6
1 year	1.5	1.4

## DISCUSSION

This research is a randomized control trial comparing laparoscopic IPOM and open sublay operations.

Gender distribution in this research demonstrated that umbilical & para umbilical hernias were more in female than males. In another research carried out in Chennai, India also showed incidence of para /umbilical hernia slightly more in females than males. [7] These results demonstrate that ventral hernias are commoner in females than in males.

Mean duration of operation in this research was 81 and 89 minutes for L-group and O-group respectively. In a study done at Hamburg University Hospital Germany shows that duration of operation for IPOM and Sublay was 82, and 95 minutes respectively. [8]

In our study, patients having hernial defect size in both groups were approximately 13cm<sup>2</sup>. (Mean size defect was 13.3 ± 2.6 cm<sup>2</sup> for L-group and 13.1 ± 2.9 cm<sup>2</sup> in O-group). Another study conducted at Oulu University Hospital, Oulu, Finland assessed defect size in Laparoscopic group and Hybrid group as 13.2 ± 11.1 cm<sup>2</sup> and 10.5 ± 8.9 cm<sup>2</sup> respectively. [9] This represents small size defects give excellent results post operatively and also recommend that early treatment of ventral hernia should practice.

Post-operative Duration of Hospital stay for L-group was 36-60 hours while hospital stay in O-group was 48 to 72 hours. While a study done in Austria showed matching results where hospital stay of Laparoscopic IPOM group was of 5.7d (ranging 1–13d) while Sublay group stayed in hospital for 10.0d (ranging 5–19d). [10] This reflects that IPOM/laparoscopic group needs less duration of hospital stay in contrast with open/sublay group. Our study also recommends that discharging patients early can also benefit in avoidance of nosocomial infections.

Recurrence rate after 1 year in L-group was 1 while in O-group; recurrence was seen in 2 patients. In contrast with our results, another study published in JAMA Surgery shows recurrence of 18% in Laparoscopic group while 14 % in Sublay. [11] With advance laparoscopic skills, recurrence rate of hernia can be minimized.

VAS score for pain in our study showed that there is decrease post-operative pain score in L- group as compared to O-group but the difference is not very significant. Another study done at Oulu Finland discussed similar results with mean VAS score of pain 1 year after operation was 1.5 in LG and 1.4 in HG. [12]

## CONCLUSION

Laparoscopic IPOM is a better option in management of paraumbilical / umbilical hernia in terms of operation duration, hospital stay and post-operative pain outcome. Further studies to evaluate these findings on a larger group are recommended.

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