

ORIGINAL ARTICLE

Comparison of Post-Operative Pain and Hospital Stay in Patients Undergoing Intraperitoneal Onlay Mesh (IPOM) with open Sublay Mesh Repair Hernioplasty

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ABSTRACT

Objective: To compare the outcome (in-terms of mean post-operative pain and hospital stay) of intraperitoneal onlay mesh (IPOM) with open sublay mesh repair in patients undergoing ventral hernia repair.

Materials and Methods: A total number of 150 patients of ventral hernia planned for hernia repair were included in this randomized controlled trial from Jan-2020 to June-2021. Patients were divided into Group I (IPOM) and group II (OSM). IPOM; in these patients intraperitoneal onlay mesh (IPOM) repair was done laparoscopically. OSM group; in these patients open mesh repair was done. Post-operative pain score and hospital stay were main study outcomes.

Results: Mean duration of herniation was 5.96 ± 3.24 months in IPOM and 6.28 ± 2.35 months in OSM group (p-value 0.49). Hypertension was the commonest morbidity was hypertension, diagnosed in 40 (53.3%) patients in IPOM and in 41 (54.7%) patients in OSM group (p-value 0.88). Mean post-op pain was significantly high in OSM group; 2.60 ± 1.06 versus 1.68 ± 1.06 in OSM group (p-value < 0.0001). Mean hospital stay was shorter in IPOM group; 4.44 ± 1.62 days versus 5.65 ± 1.98 days in OSM group (p-value < 0.0001).

Conclusion: IPOM repair is a viable and safe option, according to the results of our research. The open SUBLAY approach has a higher morbidity than IPOM laparoscopic ventral hernia repair. A shorter hospital stay is another benefit of the IPOM.

Keywords: undergoing intraperitoneal onlay mesh (IPOM), open sublay mesh repair hernioplasty, post-operative pain.

INTRODUCTION

Ventral hernia (VH) as a presenting problem in surgical patients.¹ Approximately 300,000 incisional hernias are corrected every year throughout Europe. Herniation may be either primary (i.e. paraumbilical, epigastric, umbilical,) or secondary (incisional hernia).² When the integrity of the abdominal wall is compromised as a consequence of surgery, a number of factors may contribute to poor healing, which can result in a hernia.³

Many different surgical techniques have been used for VH repair, and there is still dispute over which is the best suitable way of repair. Repair of this kind is focused on sealing the fascial defect and strengthening the tissue with a supporting mesh.⁴⁻⁶ The location of the mesh is still up in the air. Onlay meshes are available in a variety of configurations, including onlay, pre-peritoneal, retro-rectus, bridging, and intraperitoneal (IPOM). However, it is still unclear which of the three techniques is the most effective. Sublay has been unanimously recognized as the ideal mesh placement in open, elective ventral hernia repair, according to an expert consensus.⁷

It has been demonstrated that laparoscopic hernia repair with IPOM mesh is superior to the open onlay technique in hernias with a fascial defect greater than 2 cm, resulting in fewer overall perioperative complications, shorter hospital stays, lower mortality rates, and lower total hospital costs than the open onlay technique.^{8,9} Several adverse events, including mesh adhesion and fistulation,

migration, erosion, and chronic pain have been associated to the insertion of foreign mesh material.¹⁰

The aim of the present study is to compare the outcomes of IPOM with open sublay mesh repair in patients of ventral hernia repair. As IPOM is a new technique and its outcomes against the most acceptable open mesh repair is not widely tested. This study results will help us to decide IPOM is superior to sublay repair or not.

MATERIAL AND METHODS

A total of 150 patients who underwent ventral hernia repair in the general surgery unit of the hospital were included from Jan-2020 to June-2021. Patients having hernia duration < 1 years and ASA status I or II, with age 20 to 60 years were included. Patients with history of previous abdominal surgeries and planned for re-herniotomy were excluded.

The Draw Randomization Technique was used to separate the patients into two groups. intraperitoneal mesh (IPOM) repairs were performed in Group I. Those in Group II had open mesh repair.

General anesthesia was used for all surgeries. After 24 hours following surgery, the VAS chart was used to compute the post-operative pain score by a surgeon who was not participating in the operation and was not aware of the technique being conducted. If the patient's pain score was higher than 4, rescue analgesics (Paracetamol 500 mg or diclofenac sodium 50 mg) were administered. The length

of each patient's stay in the hospital was also calculated at the time of release. Proformas were appended as an annexure to record all the information obtained.

RESULTS

Baseline patient's characteristics such as age, BMI and gender were comparable in both groups. Mean duration of herniation was 5.96±3.24 months in IPOM and 6.28±2.35 months in OSM group (p-value 0.49). Hypertension was the commonest morbidity was hypertension, diagnosed in 40 (53.3%) patients in IPOM and in 41 (54.7%) patients in OSM group (p-value 0.88). Majority of patients were having ASA II, 55 (73.3%) in IPOM group and in 49 (65.3%) patients in OSM group (p-value 0.28) [Table 1].

Mean surgery duration was 46.20±8.52 minutes in IPOM group and 46.96±8.49 minutes in OSM group (p-value 0.58). Mean post-op pain was significantly high in OSM group; 2.60±1.06 versus 1.68±1.06 in OSM group (p-value <0.0001). Mean hospital stay was shorter in IPOM group; 4.44±1.62 days versus 5.65±1.98 days in OSM group (p-value <0.0001) [Table 2].

Table 1: Baseline Descriptive Statistics.

	IPOM Group (N=75)	Open Sublay Mesh (OSM) Group (N=75)	P-value
Mean Age (Years)	42.44±11.46	39.78±10.70	0.14
BMI (Kg/m ²)	25.07±3.11	24.72±3.67	0.53
Male/Female Gender	56 (74.7%)/19 (25.3%)	49 (65.3%)/26 (34.7%)	0.21
Duration (months)	5.96±3.24	6.28±2.35	0.49
Smoking	32 (42.7%)	31 (41.3%)	0.87
Hypertension	40 (53.3%)	41 (54.7%)	0.88
Diabetes	31 (41.3%)	37 (49.3%)	0.32
ASA (I/II)	20 (26.7%)/55 (73.3%)	26 (34.7%)/49 (65.3%)	0.28

Table 2: Comparison of Study Outcomes.

	IPOM (N=75)	Open Sublay Mesh (N=75)	P-value
Surgery Duration (mins)	46.20±8.52	46.96±8.49	0.58
Post-op Pain	1.68±1.06	2.60±1.06	<0.0001
Hospital Stay (Days)	4.44±1.62	5.65±1.98	<0.0001

DISCUSSION

Incisional hernias are often treated by the insertion of synthetic mesh. It has long been established that mesh repair is preferable to traditional suture repair, which has an 85% greater chance that the problem would reoccur.^{11,12} Mesh placement in the treatment of a ventral hernia varies widely. Onlay, bridging, retro-rectus, pre-peritoneal, and intraperitoneal mesh are all common deployment locations (IPOM).

In the onlay procedure, the fascial defect is first closed, and then the prosthetic mesh is placed on top of the repaired fascia and the anterior rectus sheath is secured with sutures or facial staplers. The mesh is well-separated from the abdominal contents, lowering the risk of infection. There are various drawbacks to this procedure, such as seroma collection, mesh infection in superficial

wound breakdown, initial healing under strain, and a higher chance of recurrence.^{13,14}

The sublay procedure involves the implantation of prosthetic mesh in the recto-rectus submucosal area, either intraperitoneally or preperitoneally, in order to restore function. As shown by research from a randomized, controlled trial, preperitoneal mesh placement is associated with lower recurrence rates, as well as lower rates of postoperative wound complications (49.1 vs. 24 percent) as compared to using the onlay technique.¹⁵ Repairing a wound with a Pfannenstiel or elliptical surgical scar is conceivable, as is the removal of the previous scar during the procedure. Skin excision, lipectomy, and subcuticular closure are all techniques that may be used to treat a lax abdominal wall at the same time as the procedure. Peritoneal peritonitis is quite rare and poses little risk.¹⁶

In recent years, there has been growing concern that the use of IPOM is related with greater rates of long-term problems, including mesh erosion into the gastrointestinal tract and other viscera.^{17,18}

In present study, we compared the outcomes of IPOM with open sublay mesh repair in-terms of post-operative pain score and hospital stay. We found significantly lower post-operative pain score and shorter hospital stay in IPOM group in comparison to open sublay mesh repair.

A study conducted by Köckerling et al. found significantly lower hospital stay in IPOM repair 4.35 ± 3.32 days versus 6.14 ± 5.29 days in open sublay mesh repair. While they did not found any significant difference in post-op pain; 15.4% in IPOM versus 15.1% in open sublay mesh repair.¹⁹

Another study by Alizai et al. also found lower hospital stay 4 (IQR =1) days in IPOM versus 7 (IQR =3) in open sublay mesh repair. However, these authors did not compared post-op pain between the groups.²⁰

The conclusions reported here are mostly consistent with those of previous meta-analyses, as well as with the assertions and recommendations of the International Guidelines on Human Rights. 83-86 In addition, 5-year follow-up data from the Danish Hernia Database revealed that laparoscopic IPOM had no drawbacks in terms of recurrence rate or mesh-related problems when compared to open incisional hernia repair. Another research found that 11.5 percent of people had intestinal blockage caused by adhesions, according to the findings.¹⁹ Laparoscopic procedures are more expensive than open procedures, but since they need less time in the hospital, they may be more cost efficient in the long run.

Laparoscopic repair, according to the EHS recommendations, is not only a viable option to open repair, but it is also favorable in terms of shorter hospital stays and lower wound infection rates. The treatment of a recurrent ventral hernia following prior open surgery might be an indication for laparoscopic correction in certain cases. 84,85 Furthermore, for obese individuals with incisional hernias, a laparoscopic technique may be more advantageous than an open method. The use of open hernia repair, on the other hand, is still warranted in patients who are unable to undergo laparoscopic surgery or in patients who have suffered from a recurrent hernia after earlier laparoscopic surgery. Patients who have enterocutaneous fistulae or significant intraabdominal

adhesions may benefit from an open approach as well as those who do not. A degree of abdominoplasty is often performed during open surgery, which may boost patient satisfaction with their visual look.²¹

CONCLUSION

IPOM repair is a viable and safe option, according to the results of our research. The open SUBLAY approach has a higher morbidity than IPOM laparoscopic ventral hernia repair. A shorter hospital stay is another benefit of the IPOM.

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