



COMPARATIVE STUDY OF “ONLAY” AND “INLAY” MESH REPAIR IN TERMS OF EARLY AND LATE COMPLICATIONS IN SELECTED VENTRAL HERNIA (INCISIONAL, UMBILICAL, PARAUMBILICAL).

Dr. Medicherla Krishna Manikumar

Postgraduate student, Department of General surgery, IMS &SUM hospital, Bhubaneswar

Dr.G.Trinath patra*

Associate professor, Department of General surgery, IMS &SUM hospital, Bhubaneswar*Corresponding Author

Dr. Darisa Saisaranya

Postgraduate student, Department of General surgery, IMS &SUM hospital, Bhubaneswar

Dr.Subhrajeet Pradhan

Postgraduate student, Department of General surgery, IMS &SUM hospital, Bhubaneswar

ABSTRACT

Objectives: This case study aimed to compare early and late complications in Onlay and Inlay mesh repair of ventral hernia in terms of demography, post op pain, seroma, bleeding, SSI, recurrence. **Methodology:** 50 patients operated by open mesh repair in our surgical unit of IMS & SUMH HOSPITAL in last 3 years and complications evaluated prospectively for 6 months in each patient. Two groups 25 each formed as Onlay (“O” group) and Inlay (“I” group) and clinical data recorded postoperatively for pain, seroma, bleeding, SSI, recurrence. Data was analyzed through 16th version of SPSS software. chi-square test was applied and a p-value < 0.05 was considered as significant. **Results:** There are 50 patients in the study with age ranging from 20 to 60 years. Females are more than male patients. There are no differences in terms of demography and clinical characteristics. The duration of surgery in “I” group is longer. The length of hospital stay has no difference, although drains are kept longer in “I” group. Recurrence and infection are more in “O” group when compared to “I” group. **Conclusion:** In this study Inlay meshplasty had better out comes than Onlay meshplasty in ventral hernia repair. Retrorectus(Sublay) mesh repair has good results, but it requires more expertise, time taking, laparoscopic and robotic platform which is not available in all places.

KEYWORDS : ventral hernia, meshplasty, onlay mesh repair, inlay mesh repair.

1. INTRODUCTION

In this study Incisional, Umbilical and Paraumbilical hernias are included and treated surgically by open Onlay and Inlay meshplasty with prolene mesh and compared in terms of early and late complications. 50 patients operated by open mesh repair in our surgical unit of IMS & SUM HOSPITAL in last 3 years and complications evaluated prospectively for 6 months in each patient. Two groups 25 each formed as Onlay (“O” group) and Inlay (“I” group) and clinical data recorded postoperatively for post op pain, seroma, bleeding, SSI and recurrence.

2. MATERIALS AND METHODS

source of data-The prospective observational study comprises of 50 patients presenting with ventral hernia attending OPD and admitted to surgical unit -1 of IMS & SUM hospital Bhubaneswar during the study period of July 2019 to August 2022. Method of collecting data-In this study, 50 patients presenting with ventral hernia were selected by random sampling techniques.

Inclusion criteria: -1. Age of the patient >20 years 2. Uncomplicated ventral hernia.

Exclusion criteria: - 1. Patients with severe comorbidities like Asthma, abdominal malignancies, CKD, end stage liver disease. 2. Complicated hernia like obstructed and strangulated ventral hernias presenting as emergencies.

3. OPERATIVE TECHNIQUE

Incisions for Umbilical and Paraumbilical hernias are transverse, for Incisional hernias are vertical with excision of previous old scar. In the “ONLAY” technique, after the bulging part of the hernia sac was dissected, excess sac was excised and peritoneum closed and fascial sheath were closed with continuous prolene suture, mesh was placed anterior to rectus sheath covering at least 5 cm in all directions from the defect margins and fixed with interrupted prolene sutures. In the “INLAY” technique after dissection of hernial sac, content is reduced, anterior rectus sheath was incised close to the defect margins exposing the rectus muscle, and mobilising anterior rectus sheath from rectus muscle on both side of the gap provides medialisation of stretched Linea alba and divergated rectus muscles, excess hernial sac was

excised and closed, Linea alba was mobilized above and below the defect after closure of peritoneum, bridging of the hernial gap with prolene mesh (INLAY) was done below anterior rectus sheath and anterior to rectus muscle covering rectus muscles and peritoneum, mesh stitched to anterior rectus sheath with Prolene interrupted suture all around in two rows. Romovac was given in both Onlay and Inlay technique, skin closure done.

4. RESULTS

TABLE 1: OPERATIVE PROCEDURE

Operative procedure	No of Patients	Percentage of Patients
Onlay	25	50%
Inlay	25	50%
Total	50	100%

Out of 50 cases of ventral hernia On lay mesh repair was done in 25 (50%) patients and in 25 patients (50%) Inlay mesh repair was done. The method of mesh repair was selected by the operating surgeon.

TABLE 2: AGE & GENDER STATISTICS OF BOTH GROUPS (n=50)

AGE GROUP (YEARS)	“O” GROUP	“I” GROUP	P-VALUE
20-30	04(16.0%)	03(12.0%)	0.932755
31-40	06(24.0%)	06(24.0%)	
41-50	05(20.0%)	04(16.0%)	
51-60	10(40.0%)	12(48.0%)	0.74714
Gender			
Male	7(28.0%)	6(24.0%)	
Female	18(72.0%)	19(76.0%)	

There are 50 patients in the study with age ranging from 20 to 60 years, females are more in number than males.

TABLE 3: POST OPERATIVE PAIN MEASUREMENT ON WONG BAKER'S VAS (on a scale of 10)

Type of operation	No of patients	Pain measurement on VAS
ONLAY	25	Min-3/10 4.68/10

		Max-6/10	
INLAY	25	Min-4/10	6.37/10 (mean)
		Max-8/10	

Post op pain on VAS scale	ONLAY	INLAY
>5	7(28.0%)	18(72.0%)
<5	18(72.0%)	7(28.0%)
Total	25(100%)	25(100%)

Post-operative pain was calculated by using the Wong Baker's visual analogue scale (VAS) of 1-10, and those with pain scale of more than 5 were considered significant. The patients who underwent Inlay repair experienced more pain as compared to the patients who had an Onlay mesh. For pain relieving treatment according to WHO Ladder pattern was given.

TABLE 4: OPERATIVE PROCEDURES AND COMPLICATIONS

COMPLICATIONS	ONLAY (N=25)	INLAY (N=25)	P value
Nil	14	21	0.030754
Present	11	04	

COMPLICATIONS	"O" GROUP	"I" GROUP
Seroma	04	01
Bleeding	01	03
SSI	06	00

In our study 50 cases, complications related to surgery like seroma, bleeding, SSI were more found to be associated with Onlay mesh repair, and the association was found to be significant ($p < 0.01$).

TABLE 5: RECURRENCE IN POSTOPERATIVE PATIENTS IN VENTRAL HERNIA

TYPE OF MESH REPAIR	NO OF PATIENTS	RECURRENCE	PERCENTAGE (%)
Onlay	25	2	8 %
Inlay	25	0	0
TOTAL	50	2	

On follow up for 6 months, 2 patients developed recurrence and these were operated by Onlay mesh repair. These patients had hernia size defect >4cms in size.

- There are 50 patients in the study with age ranging from 20 to 60 years, females are more in number than males.
- There are no differences in terms of demography and clinical characteristics.
- The duration of surgery in "I" group is longer.
- The length of hospital stay has no difference although drains are kept longer in "I" group.
- Infections and recurrence are more in "O" group when compared to "I" group however final recurrence rate cannot be assessed unless patients are followed for minimum three years.

5. DISCUSSION

- For ONLAY mesh repair large hernial defects are difficult for tension free closure and are liable for infection and recurrence.
- For INLAY mesh repair by mobilising anterior rectus sheath provides medialisation of stretched linea alba and divaricated rectus muscles which adds to the strength of repair, and mesh is fixed in healthy musculoaponeurotic layer. By mobilising linea alba above and below the defect, mesh covers other subclinical small hernias and weak spots.
- In ONLAY as the mesh is placed directly beneath the subcutaneous tissue so more prone for SSI and recurrence.
- In INLAY as the dissection is deeper so the changes of bleeding and post operative pain is more.
- But the overall differences are less and depends on expertise and case selection.

6. CONCLUSION

- In this study INLAY meshplasty is better than ONLAY meshplasty in ventral hernia repair.
- However, Retrorectus preperitoneal (SUBLAY) mesh repair has good results, but it is time taking, requires more expertise, laparoscopic and robotic platform which is not available in all centers.

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