



## Surgical Management of Umbilical and Paraumbilical Hernia in Adults

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### Abstract

*This was a Prospective observational study of umbilical and paraumbilical hernias in adults. It included patients admitted with umbilical and paraumbilical hernias to the surgical wards from November 2015 to October 2017.*

*60 patients were selected for the study, of which 36 were females and 24 were males. 6 patients underwent Mayo repair and 35 patients underwent Onlay Mesh repair and 19 patients underwent Sublay mesh repair. The follow up period was between 6 months to 22 months (avg 12 months).*

*In the study period, 60 cases of umbilical and paraumbilical hernias were operated, out of which 32 were umbilical hernias and 28 were paraumbilical hernias.*

*Swelling and pain were the most common modes of presentation. The mean BMI of all patients was 25.7. This substantiates the fact that obesity is a major risk factor in development of these hernias.*

*Most of the females were multiparous increasing the risk of development of hernia.*

*Peroperatively, omentum was the most common content with most cases having adhesions at the neck of the sac.*

*Observations made during the study in the management were: Postoperative incidence of seroma, wound dehiscence and wound infection was higher in Onlay repair and lesser in sublay repair. Hospital stay was lesser in sublay mesh repair along with patient satisfaction. Recurrence was noted in Mayo repair while no recurrence was reported in Mesh repair.*

**Keywords:** *Umbilical hernia, Paraumbilical hernia, Mesh repair, Mayo repair.*

### Introduction

A hernia is the bulging of part of the contents of the abdominal cavity through a weakness in the abdominal wall. Umbilical hernia is a protrusion of a viscus or part of a viscus through the umbilical cicatrix. In adults, umbilical hernias are due to a lot of risk factors like ascites, obesity, repeated pregnancies

This study attempts to evaluate the prevalence, clinical features, risk factors, operative techniques, and post operative course of umbilical and paraumbilical hernias in adults..Since women are the predominant cases, (sex ratio F:M=3:1) umbilical and paraumbilical hernias can cause distress to these patients not only because of their complications, but also

because of its effect on cosmesis. This study is also intended to get a more conclusive perspective on the type of repair that is ideal for umbilical and paraumbilical hernias in adults.

The study aims to evaluate the prevalence, clinical features, risk factors, operative techniques and post operative course of umbilical and paraumbilical hernias in adults

William, J. Mayo aptly said "this form of hernia has been the hardest to cure. Usually found in very corpulent people with small muscular development, the conditions are naturally unfavourable," in his classical paper on Aug 1898 presented before the American Academy of Rail Road Surgery. He subsequently published it in the Annals of Surgery 1899. In this paper he instituted his classical technique of overlapping fascia for the repair of umbilical hernia<sup>5</sup>

In his original description of repair, he did not extend the defect laterally and imbricating the peritoneum and the fascia as a mode of repair for umbilical hernia. For over 7 decades this procedure called the 'vest over pants' method remained unchallenged with very few modifications.<sup>5</sup> with the advent of prosthetic mesh, mesh repairs in hernias with large defect has become the standard of care

### Methodology

This was a prospective observational study. It included patients admitted with umbilical and paraumbilical hernias to the surgical wards between December 2015 to October 2017.

A proforma was developed to register patients with umbilical and paraumbilical hernia and collect data. Those willing to undergo corrective surgery were registered and interviewed systematically. 60 patients were selected for the study, of which 36 were females (60%) and 24 (40%) were males. The mean follow up period was 12 months (6 to 22 months).

### Data collected included

Detailed history regarding duration of hernia,

progression of size and associated symptoms like pain, vomiting, reducibility, Risk factors like chronic cough, constipation, difficulty in micturition, multiparity were assessed. Clinical examination findings of hernia: Position, size, shape, consistency, reducibility, cough impulse, size of the defect were noted.

Routine and special investigations (Thyroid profile and USG abdomen) were conducted Operative techniques followed: Mayo/Anatomical repair, Onlay repair and Sublay mesh repair On lay repair involves placement of mesh in the subcutaneous plane. It's the simplest technique. The linea alba is closed vertically with sutures after hernia repair and a disc of mesh is placed on the anterior rectus sheath.

In sublay mesh repair the prosthesis is positioned in contact with the muscle fibers that is in the space between the rectus abdominis and the posterior lamina of the rectus sheath. This requires opening the rectus sheath near the linea alba to enter the retromuscular space and expose the posterior aspect of the rectus muscle.

Based on the hernia defect size as per USG, patients with defect of <1.5 cm underwent Mayo's or Anatomical repair and patients with defect >1.5 cm underwent either Onlay or Sublay mesh repair. Peroperative findings (contents of the sac, defect size) Post operative course and complications are studied

Surgery was done under spinal anaesthesia (some with epidural supplementation). Suction drains were kept for a period of 2-7 days in all mesh repair cases. Antibiotics were administered postoperatively for 3-7 days in all cases.

Patients were followed up for a period of about 6 to 22 months.

The data collected was analysed by applying appropriate statistical methods

All patients below 18 years, Patients with obstructed/ strangulated/ complicated umbilical hernia which needed emergency surgery and patients with associated abdominal malignancies are excluded from the study

**Results**

In the study, 41 patients (68.3%) presented with only swelling as the main complaint while 19 patients (31.6%) presented with swelling associated with pain, Out of the 60 patients, 28 patients had Paraumbilical hernia (46.7%) and 32 patients had Umbilical hernia

(53.3%). Among 35 females in the study group, 7 females had one child, 22 females had two children (62.9%) and 6 had three children (17.1%) .

The results obtained during the study conducted is tabulated as below.

**Table 1:** One Way Anova Test: For Continuous Variables Read with Posthoc Test

	GROUPS	N	Mean	Std. Deviation
Age	ANAT	6	62.83	8.01
	OL	35	42.43	10.193
	SL	19	42.58	12.742
	Total	60	44.52	12.36
Ht	ANAT	6	168.33	5.82
	OL	35	157.14	8.575
	SL	19	156.79	8.658
	Total	60	158.15	8.936
Wt	ANAT	6	74.17	8.681
	OL	35	64.77	7.926
	SL	19	61	9.375
	Total	60	64.52	9.105
BMI	ANAT	6	26.125	1.67493
	OL	35	26.2351	2.61663
	SL	19	24.5853	1.57818
	Total	60	25.7017	2.35194

Hernia defect	ANAT	6	1.466667	0.280476
	OL	35	1.754286	0.414688
	SL	19	2.052632	0.433805
	Total	60	1.82	0.442566
Hosp.stay	ANAT	6	7.33	1.033
	OL	35	7.66	1.924
	SL	19	6.68	1.057
	Total	60	7.32	1.662

Amongst the study group, 15 patients out of 60 had comorbidities like Chronic Obstructive Pulmonary Disease (13.3%), Diabetes(26%), Hypertension, Benign Prostatic Hyperplasia

(6.7%), Ischaemic Heart Disease, Epilepsy.

In the study group, 61.7% had hernia defect size of < 2 cm and 38.3% had defect size of >2cm.

**Table 2:** Hernia Defect

Crosstab						
		PROCEDURE			Total	
		ANAT	OL	SL		
Hernia defect	<=2	Count	6	24	7	37
		% within PROCEDURE	100.0%	68.6%	36.8%	61.7%
	>2	Count	0	11	12	23
		% within PROCEDURE	0.0%	31.4%	63.2%	38.3%
Total		Count	6	35	19	60
		% within PROCEDURE	100.0%	100.0%	100.0%	100.0%

During the procedure, Omentum was found to be the hernia content in 73.3%, Bowel was the content in 6.7% and both Bowel and Omentum was found in 20% of the cases.

## Duration of Hospital Stay

OL group had the highest value of 7.66 and SL had the least value of 6.68.

**Table 4:** Hospital Stay

Crosstab						
		PROCEDURE			Total	
		ANAT	OL	SL		
Hosp.stay	'5-6	Count	1	11	11	23
		% within PROCEDURE	16.7%	31.4%	57.9%	38.3%
	'7-8	Count	4	15	7	26
		% within PROCEDURE	66.7%	42.9%	36.8%	43.3%
	'9-10	Count	1	6	1	8
		% within PROCEDURE	16.7%	17.1%	5.3%	13.3%
	>10	Count	0	3	0	3
		% within PROCEDURE	0.0%	8.6%	0.0%	5.0%
Total		Count	6	35	19	60
		% within PROCEDURE	100.0%	100.0%	100.0%	100.0%

During the study, 15 patients had complications. In Anat group 1 patient developed Wound infection. In Onlay group, 13 patients developed complications out of which 7 developed Seroma, 2 had wound dehiscence, 4 developed wound infection. In Sublay group 2 patients developed complications, out of which only one patient developed seroma and other patient had wound infection.

**Discussion**

In the study period, 60 cases of umbilical and paraumbilical hernias were operated, out of which 32 were umbilical hernias and 28 were paraumbilical hernias, The M:F sex ratio in this study was 1.2: 1.8 with comparatively higher incidence in females. Females were affected at a younger age group, and as the age increases, the male to female ratio disparity comes down as more and more males are affected in the older age group. 68.3% of the cases were above the normal range of BMI. The mean BMI was 25.7. This substantiates the fact that obesity is a major risk factor in development of these hernias. Out of 35 females in the study group were 28 multiparous, with 2 or more pregnancies. Multiparity being a risk factor has been quoted by Nyhus and Condon textbook of Hernia

Amongst the study group, 15 patients out of 60 had comorbidities like Chronic

Obstructive Pulmonary Disease, Diabetes, Hypertension, Benign Prostatic Hyperplasia, Ischaemic Heart Disease, Epilepsy.

The hospital stay between the three groups showed that OL group had the highest value of 7.66 and SL had the least value of 6.68.

15 patients had complications. In Anat group 1 patient developed Wound infection. In Onlay group, 13 patients developed complications out of which 7 developed Seroma, 2 had wound dehiscence, 4 developed wound infection. In Sublay group 2 patients developed complications, out of which only one patient developed seroma and other patient had wound infection. There appeared to be an increase in incidence of Surgical site infection with mesh repair. According to Nyhus and Condon textbook of Hernia, both seromas and SSI occur more with Mesh repair.

During the period of followup one patient who underwent anat repair developed recurrence. No recurrences were found with mesh repair with a mean follow up period of 12 months.

**Conclusion**

Umbilical and para umbilical hernia were more common in females than in males.

The risk factors for the development of Umbilical and Para Umbilical Hernia are Obesity, Multiparity, Chronic bronchitis and

BPH.

The most frequent mode of presentation is swelling and pain due to dragging of the omentum and tissue tension and also due to intermittent bowel obstruction.

The defect size varies in size and may be very small or very large. Omentum is more commonly found as herniating content.

Three operative techniques were followed: Mayo/Anat repair, Onlay and Sublay mesh repair. Of the three, Mayo repair used for the repair of smaller defects and Mesh repair followed for larger defects. But Mayo repair showed a recurrence during long term follow up. No recurrence was noted in mesh repair. The classical Mayo's overlap is less costly and easier to perform. But it is reported to have a higher recurrence potential (40% by Halm in 2005).<sup>27</sup>

The incidence of Seroma and wound infection was higher in Onlay mesh repair compared to Sublay mesh repair. The duration of hospital stay was longer in Onlay but shorter in case of Sublay mesh repair.

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