

A Comparative Study between Onlay and Pre-Peritoneal Mesh Repair in Management of Ventral Hernias

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Abstract:

Background: Ventral hernia surgical repair done using prolene mesh. Mesh can be placed over anterior rectus sheath (onlay) or pre peritoneal space. These two techniques are compared to one another.

Materials and methods : Patients admitted in the surgical wards with ventral hernias at Chengalpattu Medical College Hospital for a period of one year were operated by the above mentioned two methods and five variables compared between two groups.

Results: Among the 50 patients, 25 patients underwent onlay and 25 patients underwent preperitoneal mesh repair. Out of 25 cases of onlay, only 8 cases took more than one hour for operating. Out of 25 cases of preperitoneal mesh repair, hospital stay was more than five days for only 4 cases and seroma was found in only 2 cases and wound infection was found in only one case and post operative pain score was less in most cases.

Conclusion: On analysis of results and five variables which are duration of surgery, post op pain, seroma, wound infection, duration of hospital stay, preperitoneal mesh repair is comparatively good option even though duration of surgery is little longer than onlay mesh repair.

Keywords: ventral hernia; onlay vs preperitoneal; mesh repair

I. Background

A ventral hernia is a bulge through abnormal opening in the anterior abdominal muscles. Ventral hernias include incisional hernia through previous surgical incision site, umbilical and paraumbilical hernia, epigastria hernia. Repair of ventral hernias with mesh as opposed to suture has substantially improved long-term outcomes and is accepted as the standard of care. However, many studies demonstrate an increased risk for wound complications with mesh placement including infections, seromas, and mesh erosions [12]. Mesh can be placed over anterior rectus sheath (onlay) or pre peritoneal space. These two techniques are comparable with one another. [1]. Each mesh location has its theoretical risks and benefits.

With onlay repair, skin flaps must be created, which increases the risk of wound complications and mesh infection.[2][4]. The risks of post operative complications are affected by where the mesh is placed. For example, mesh exposed to intra-abdominal contents potentially increases the risks of adhesions, bowel obstruction, and fistula formation.[10][11].

Preperitoneal space potentially protects the mesh from both superficial wound complications and intra-peritoneal contents. In addition, it also allows for load-bearing tissue in-growth from two directions.[5]. Due to excess mobilization of fat and disruption of perforators immediate post operative complications like seroma and wound infection rate will be more in onlay mesh technique.[3]. This comparative study to focus on advantage and disadvantage of two types of meshplasty and to provide information regarding benefits of one over another.[6].

II. Aims and Objectives of the study

To study regarding operative time, ease of procedure, its early post operative complications, duration of hospital stay.

III. Materials and methods

Patients admitted in the surgical wards with ventral hernias at Chengalpattu Medical College Hospital for a period of one year. Case sheets and investigation reports of the above said patients also form the materials

Clinical examination, biochemical and radiological investigations, surgical management and follow up are the methods. This is a prospective study which comprises of 50 patients, treated for ventral hernias for a period of one year at Chengalpattu Medical College Hospital.

Patients will be followed up in the immediate post operative period with standardized protocol and variables like duration of procedure, pain in immediate post operative period of three days with standardized analgesic regimen of Voveran 80mg im bd for three days and Inj. Fortwin and Inj. Phenergan 1cc i.m. HS on the day of surgery, seroma collection, wound infection, duration of hospital stay between two group of patients operated by two different techniques will be compared.[7][8].

Duration of Study: 1 year

Sample Size: 50

Type Of Study:- Prospective study, time bound study

Inclusion Criteria:-

All patients of age group more than 18 years who were presented with ventral hernias and undergone surgery were taken and analysed.

Exclusion Criteria:-

1. Patients less than 18 years.
2. Groin hernia.
3. Epigastric hernia.
4. Divarication of recti.
5. Patient's medically not fit for surgery.
6. Patients not giving consent.

Observation and results:

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Duration of surgery	50	48	42	90	67.18	13.080
Hospital stay	50	11	3	14	6.26	2.230
Age	50	64	21	85	48.16	15.710

Sex

		Frequency	Percent
Valid	Male	30	60.0
	Female	20	40.0
	Total	50	100.0

Type of Ventral Hernia

		Frequency	Percent
Valid	Paraumbilical	13	26.0
	Umbilical	16	32.0
	Incisional	17	34.0
	Epigastric	4	8.0
	Total	50	100.0

Mesh Repair

		Frequency	Percent
Valid	Onlay	25	50.0
	Preperitoneal	25	50.0
	Total	50	100.0

Post Operative Pain

		Frequency	Percent
Valid	3	2	4.0
	4	7	14.0
	5	17	34.0
	6	12	24.0
	7	7	14.0
	8	5	10.0
	Total	50	100.0

Wound Infection

		Frequency	Percent
Valid	Present	7	14.0
	Absent	43	86.0
	Total	50	100.0

Seroma

		Frequency	Percent
Valid	Present	8	16.0
	Absent	42	84.0
	Total	50	100.0

Age Distribution

		Frequency	Percent
Valid	<30years	7	14.0
	30-50years	22	44.0
	50-70years	16	32.0
	>70years	5	10.0
	Total	50	100.0

Duration Of Surgery

		Frequency	Percent
Valid	<1 Hour	17	34.0
	>1 Hour	33	66.0
	Total	50	100.0

Duration Of Hospital Stay

		Frequency	Percent
Valid	<5 Days	23	46.0
	>5 Days	27	54.0
	Total	50	100.0

Duration of surgery * Mesh repair type

Cross tabulation					
			Mesh repair type		Total
			ONLAY	PREPERITONEAL	
DURATION OF SURGERY	<1 HOUR	Count	17	0	17
		% Within DURATION OF SURGERY	100.0%	.0%	100.0%
		% Within Mesh repair type	68.0%	.0%	34.0%
	>1 HOUR	Count	8	25	33
		% Within DURATION OF SURGERY	24.2%	75.8%	100.0%
		% Within Mesh repair type	32.0%	100.0%	66.0%
Total	Count	25	25	50	
	% Within DURATION OF SURGERY	50.0%	50.0%	100.0%	
	% Within Mesh repair type	100.0%	100.0%	100.0%	

Hospital stay * Mesh repair type

Cross tabulation					
			Mesh repair type		Total
			Onlay	Preperitoneal	
Hospital stay	<5 Days	Count	2	21	23
		% Within Hospital stay	8.7%	91.3%	100.0%
		% Within Mesh repair type	8.0%	84.0%	46.0%
	>5 Days	Count	23	4	27
		% Within Hospital stay	85.2%	14.8%	100.0%
		% Within Mesh repair type	92.0%	16.0%	54.0%
Total	Count	25	25	50	
	% Within Hospital stay	50.0%	50.0%	100.0%	
	% Within Mesh repair type	100.0%	100.0%	100.0%	

Seroma * Mesh repair type

Cross tabulation					
			Mesh repair type		Total
			ONLAY	PREPERITONEAL	
Seroma	Present	Count	6	2	8
		% Within Seroma	75.0%	25.0%	100.0%
		% Within Mesh repair type	24.0%	8.0%	16.0%
	Absent	Count	19	23	42
		% Within Seroma	45.2%	54.8%	100.0%
		% Within Mesh repair type	76.0%	92.0%	84.0%
Total	Count	25	25	50	
	% Within Seroma	50.0%	50.0%	100.0%	
	% Within Mesh repair type	100.0%	100.0%	100.0%	

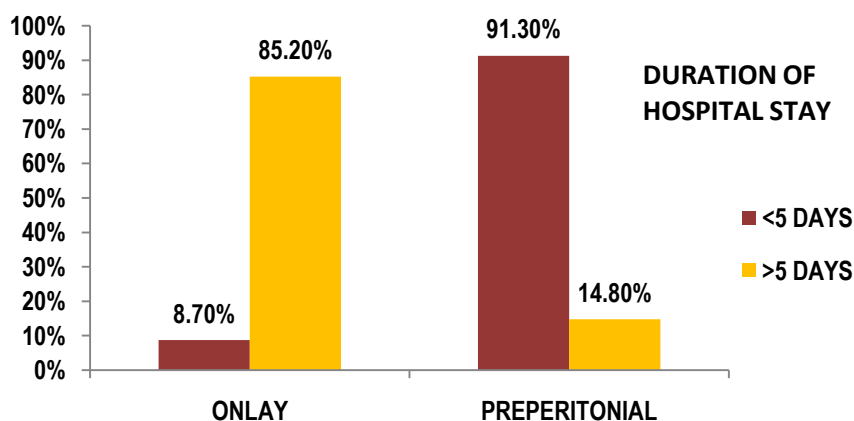
Wound infection * Mesh repair type

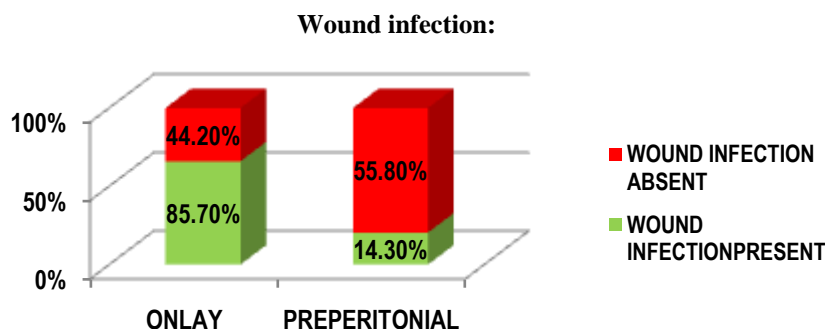
Cross tabulation					
		Mesh repair type			Total
			ONLAY	Preperitoneal	
Wound infection	Present	Count	6	1	7
		% Within Wound infection	85.7%	14.3%	100.0%
		% Within Mesh repair type	24.0%	4.0%	14.0%
	Absent	Count	19	24	43
		% Within Wound infection	44.2%	55.8%	100.0%
		% Within Mesh repair type	76.0%	96.0%	86.0%
Total		Count	25	25	50
		% Within Wound infection	50.0%	50.0%	100.0%
		% Within Mesh repair type	100.0%	100.0%	100.0%

Postoperative pain * Mesh repair type

Cross tabulation					
		Mesh repair type			Total
			ONLAY	PREPERITONEAL	
Postop pain	3	Count	0	2	2
		% within Postop pain	.0%	100.0%	100.0%
		% within Mesh repair type	.0%	8.0%	4.0%
	4	Count	1	6	7
		% within Postop pain	14.3%	85.7%	100.0%
		% within Mesh repair type	4.0%	24.0%	14.0%
	5	Count	3	14	17
		% within Postop pain	17.6%	82.4%	100.0%
		% within Mesh repair type	12.0%	56.0%	34.0%
	6	Count	9	3	12
		% within Postop pain	75.0%	25.0%	100.0%
		% within Mesh repair type	36.0%	12.0%	24.0%
	7	Count	7	0	7
		% within Postop pain	100.0%	.0%	100.0%
		% within Mesh repair type	28.0%	.0%	14.0%
	8	Count	5	0	5
		% within Postop pain	100.0%	.0%	100.0%
		% within Mesh repair type	20.0%	.0%	10.0%
Total		Count	25	25	50
		% within Postop pain	50.0%	50.0%	100.0%
		% within Mesh repair type	100.0%	100.0%	100.0%

Duration of hospital stay:





IV. Discussion

Most important comparable factors are duration of hospital stay, post-operative complications, recurrence and resume to routine work. [9]. At the end of analysis, results mentioned above are compared. Based on the above results, duration of surgery was less in case of onlay mesh repair compared to preperitoneal mesh repair. In case of onlay mesh repair, 68% of cases took less than an hour for operating. But 100% of preperitoneal mesh repair took more than an hour for operating. In 84% preperitoneal mesh repair, hospital stay was less than five days. In 92% of onlay mesh repair, hospital stay was more than five days. 24% of onlay mesh repair cases developed seroma. But only 8% of preperitoneal mesh repair developed seroma. 24% of onlay mesh repair cases developed wound infection. But only 4% of preperitoneal mesh repair cases developed wound infection. Post operative pain score was 4 and 5 for more than 70% of the preperitoneal mesh repair cases. But pain score was more than 5 in most of the cases in onlay mesh repair.

V. Conclusion

So, In view of less wound related complications and post operative pain and early return to work, preperitoneal mesh repair is better option compared to onlay mesh repair.

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