



COMPARATIVE STUDY OF MESH REPAIR VS ANATOMICAL REPAIR FOR SMALL UMBILICAL HERNIA AMONG PATIENTS ATTENDING JSS HOSPITAL, MYSURU.

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ABSTRACT **INTRODUCTION:** Umbilical hernia can be repaired by either anatomical repair with sutures or by mesh repair, but there is little documentation about the benefits of mesh repair in case of small umbilical hernias (1-4cm) and majority of the surgeons don't prefer using mesh for these small hernias. As Umbilical hernia is a condition that affects 2% of the adult population. It has not received much attention as compared to other abdominal wall defects. So the study will be carried out to highlight and compare postoperative hospital stay, postoperative complications and recurrences encountered in mesh repair and anatomical repair of umbilical hernia.

AIMS:

PRIMARY OBJECTIVE:

- To compare surgical outcomes following mesh repair and anatomical repair for umbilical hernias in adults.

SECONDARY OBJECTIVE:

- To compare postoperative hospital stay following mesh repair and anatomical repair for umbilical hernias in adults.
- To compare the frequency of postoperative complications following mesh repair and suture repair for umbilical hernia in adults.
- To compare the rate of recurrence between the two methods.

METHODOLOGY:

- Design of study:** Prospective Interventional study
- Place of Study:** JSS Medical College and Hospital, Mysuru
- Study Duration:** 1.5 years
- Sample size:** sample size estimated as 38 in each group.

RESULTS: In the present study, the mean duration hospital stay was lower in anatomical repair when compared to Meshplasty, the difference was statistically significant.

No recurrence was seen in any of the cases after a follow up period of 6 months in our present study. On the day of discharge there was a significant difference in the level of pain across the groups as more pain was observed in Meshplasty group.

CONCLUSION: According to this study Anatomical repair for small umbilical hernia had lower post-operative pain and duration of hospital stay as compared to Meshplasty. In the present study there were no recurrence was seen in any of the cases after a follow up time of 6 months.

KEYWORDS : Umbilical hernia, Meshplasty, Anatomical repair.

AIMS AND OBJECTIVES:

Primary Objective:

- To compare surgical outcomes following mesh repair and anatomical repair for umbilical hernias in adults.

Secondary Objective:

- To compare postoperative hospital stay following mesh repair and anatomical repair for umbilical hernias in adults.
- To compare the frequency of postoperative complications following mesh repair and suture repair for umbilical hernia in adults
- To compare the rate of recurrence between the two methods.

METHODOLOGY:

- Design of study:** Prospective interventional study
- Place of Study:** JSS Medical College and Hospital, Mysuru
- Study Duration:** 1.5 years
- Sample size:** sample size estimated as 38 in each group, considering SD1 and SD2 of postoperative hospital stay as 2.2 and 3.3 days and to pick up mean difference of at least 2 days postoperative stay with alpha error of 5% and power of 85% (1 sided hypothesis) i.e. through literature it is known that mesh repair group will have longer postoperative hospital stay.

e) Sampling technique:

- Study populations are all cases admitted in JSS Hospital for umbilical hernia repair.

The following determinants were taken into consideration for comparing the two groups

- Postoperative hospital stay
- Postoperative complications
 - Wound infection
 - Seroma
 - Hematoma
 - Postoperative pain

- Umbilical hernia defect size

- BMI (kg per square metre)

- Rate of recurrence

F) Inclusion Criteria

- All patients undergoing umbilical hernia repair at JSS hospital.

G) Exclusion Criteria

- Recurrent umbilical hernias.
- Strangulated umbilical hernias.
- Umbilical hernia defect size <1cm or >4cm
- Age <18 years

H) METHOD OF COLLECTION OF DATA:

- This study was conducted in JSS Medical college and hospital, Mysore a teaching, tertiary care hospital, the target population were the patients undergoing umbilical hernia repair in JSS Hospital.
- The data of patients admitted for umbilical hernia repair were noted on a proforma. A thorough medical history was taken and a clinical examination was performed and patient's general characteristics like age, gender, BMI, medical history, defect size were recorded.
- The two groups were compared on the basis of postoperative complications, postoperative hospital stay, and recurrence rates
- Postoperative pain will be assessed with the help of VAS pain scores and number of analgesics doses
- Patients will be followed for a period of six months of duration through telephone for recurrence and chronic pain, patients who were admitted and operated but didn't participate in follow up will be excluded from study.

Data Analysis:

Summary statistics was done using mean, SD, median and interquartile range. Categorical variables will be summarized as percentage. Inferential stats was done using Independent T-test, Chi-square test/Fischer exact test.

All measurements will be done using SPSSr21.0 software.

P values of less than 0.05 will be considered statistically significant.

In the present study, the mean size of the defect was 1.77 ± 0.60 .

RESULTS

Table 1: Age distribution

AGE(years)	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
21 – 30	6	15.8%	3	7.9%	9	11.8%
31 – 40	7	18.4%	10	26.3%	17	22.4%
41 – 50	12	31.6%	10	26.3%	22	28.9%
51 – 60	6	15.8%	8	21.1%	14	18.4%
>60	7	18.4%	7	18.4%	14	18.4%
Total	38	100.0%	38	100.0%	76	100%
Mean ± SD	45.28 ± 13.04		46.92 ± 11.28		46.10 ± 12.14	

Chi square test = 1.99 , p=0.73, Not statistically significant

Both the groups stand comparable in terms of age.

Table 2: Gender distribution

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
Male	21	55.3%	22	57.9%	43	56.6%
Female	17	44.7%	16	42.1%	33	43.4%
Total	38	100.0%	38	100.0%	76	100%

Chi square test = 0.05, p=0.81, Not statistically significant

In terms of gender, no significant differences were found between the two groups.

Table 3: Body mass index

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
18.5 – 24.9	29	76.3%	27	71.1%	58	74.3%
25 – 29.9	9	23.7%	11	28.9%	20	25.7%
Total	38	100.0%	38	100.0%	76	100%
Mean ± SD	23.30 ± 2.44		23.42 ± 1.86		23.36 ± 2.15	

Chi square test = 0.14 , p=0.70, Not statistically significant

The mean BMI of the participants was found to be 23.36 ± 2.15 kg/m².

Table 4: Clinical presentation

Clinical presentation	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
Pain abdomen	16	42.1%	10	26.3%	26	34.2%
Swelling over umbilicus	22	57.9%	28	73.7%	50	65.8%
Total	38	100.0%	38	100.0%	76	100.0%

Chi square test = 2.10 p=0.14, Not statistically significant

In the present study the most common clinical presentation was swelling over the umbilical region, 34.2% had pain abdomen.

Table 5: Postoperative stay in days

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
<5	34	89.47%	23	60.50%	57	56.58%
>5	4	10.53%	15	39.50%	19	43.42%
Total	38	100.0%	38	100.0%	76	100%
Mean ± SD	4.09 ± 0.96		5.39 ± 1.56		4.73 ± 1.45	

Chi square test = 8.38 , p=0.008*, statistically significant

The mean duration hospital stay was lower in anatomical repair when compared to Meshplasty, the difference was statistically significant.

Table 6: Defect Size in cm

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
< 1.5 cm	18	47.4%	12	31.6%	30	39.5%
> 1.5 cm	20	52.6%	26	68.4%	46	60.5%
Total	38	100.0%	38	100.0%	76	100%
Mean ± SD	1.60 ± 0.42		1.97 ± 0.70		1.77 ± 0.60	

Chi square test = 1.95 , p=0.16, Not statistically significant

Table 7: Postoperative complications

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
Wound infection	2	5.3%	3	7.9%	5	6.6%
Seroma	1	2.6%	1	2.6%	2	2.6%
Hematoma	0	0.0%	0	0.0%	0	0.0%
No complications	35	92.1%	34	89.5%	69	90.8%
Total	38	100.0%	38	100.0%	76	100.0%

In 92.1% of the patients who underwent anatomical repair and 89.5% of the patients who underwent Meshplasty did not have any complications and wound infection was seen in 6.6% of the patients and 2.6% had seroma.

Figure-1: Post operative complications

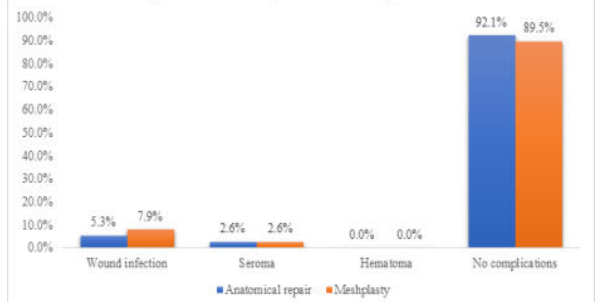


Table 8: Recurrence

	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
Yes	0	0%	0	0%	0	0%
No	38	100%	38	100%	76	100%
Total	38	100.0%	38	100.0%	76	100%

No recurrence was seen in any of the cases after a follow up time of 6 months.

Table 9: Postoperative pain – Day 1

Visual Analog Scale (VAS) Score	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
4	14	36.8%	15	39.5%	29	38.2%
5	7	18.4%	13	34.2%	20	26.3%
6	17	44.7%	10	26.3%	27	35.5%
Total	38	100%	38	100%	76	100%

Chi square test = 3.64, p=0.16, Not statistically significant

On post op day 1 the VAS of 4 was reported by 38.2% of the participants. 26.3% reported a VAS score of 5, and 35.5% had a VAS score of 6. In both modalities, there was no statistically significant difference in pain levels.

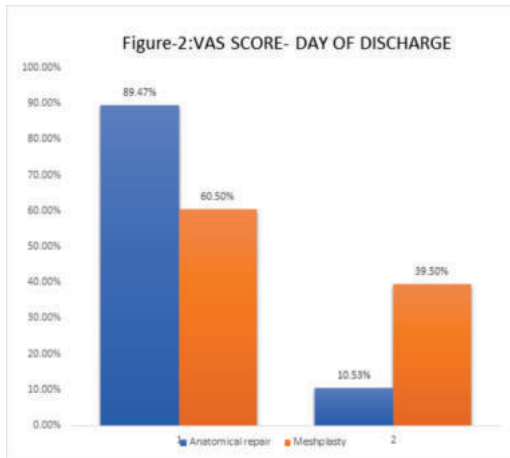
Table 10: Postoperative pain – Day 3

VAS Score	Anatomical repair		Meshplasty		Total	
	N	%	N	%	N	%
2	18	47.4%	17	44.7%	35	46.1%
3	20	52.6%	21	55.3%	41	53.9%
Total	38	100%	38	100%	76	100%

Chi square test = 0.05, p=0.81, Not statistically significant

There was no statistically significant difference in pain severity between the groups on postoperative day 3.

On the day of discharge, the Meshplasty group experienced higher discomfort.



DISCUSSION

Although the concept of repairing an umbilical hernia in an adult is not new, the best surgical approach is still up for dispute. Mayo's repair is a straightforward procedure that is widely used, however it has a high recurrence rate of 22-40 percent. Prosthetic mesh is now commonly utilised to correct hernia defects. Tension-free hernioplasty, which has advantages over Mayo's surgery, has recently been used to treat umbilical hernias. The interposition of prosthetic mesh not only decreases tension but also prevents avascular tissue from re-approximating, which explains the low recurrence rate.(1)

Socio demographic characteristics:

The mean age of the participants in this study was 46.10 +/- . Both the groups were comparable in age.

In the study conducted by **Lal K et al.(2)** the majority of the participants were in the age group of 40-50 years and the finding was in consonance with the present study.

Gender:

In the present study, 56.6% were male participants and 43.4% were female participants. Both the groups were comparable in terms of gender as no statistical difference was observed.

In the study conducted by **Tunio NA et al.(3)** again a female preponderance has been observed which was a discordant finding.

Bmi:

The mean BMI of the participants was found to be 23.36 ± 2.15 kg/m², majority (74.3%) of the participants had BMI of 18.5-24.9 and 25.7% had BMI 25-29.9 kg/m².

Signs and symptoms:

In the present study the most common clinical presentation was swelling over the umbilical region, and 34.2% had pain abdomen.

Hospital stay:

The average length of stay in the hospital in this study was 4.73 +/- 1.45 days. Anatomical repair had a shorter average hospital stay than Meshplasty, and the difference was statistically significant.

In the studies conducted by **Lal K et al(2)** and **Tunio NA et al** has observed that the duration of stay in mesh repair was slightly lower than the persons who underwent anatomical repair which was a discordant finding.

Post VAS score:

On post op day 1 there was no statistically significant difference in the levels of pain in both the modalities.

On postoperative day 3 also there was no statistically significant difference in the severity of pain across the groups.

On the day of discharge there was a significant difference in the level of pain across the groups as more pain was observed in Meshplasty group.

Postoperative complications:

In 90.8% of the patients who underwent hernioplasty did not have any complications and wound infection was seen in 6.6% of the patients and 2.6% had seroma.

Tunio NA et al found that the overall early postoperative complications in the Meshplasty group were 7 and the Anatomical Repair group were 10, i.e., 3 (42.86%) patients in the Meshplasty group developed seroma and 1 (10%) case in the Anatomical Repair group. Haematoma was found in one instance (14.29%) in the Meshplasty group and two cases (20%) in the Anatomical repair group. Wound infection was seen in 2 (58.27%) of the Meshplasty cases and 4 (40.00%) of the Anatomical repair cases. As documented in prior research, the Meshplasty group had a lower complication rate than the Anatomical Repair group, and both groups were treated conservatively. Patients in both groups experienced post-operative problems, which were substantially higher in the Anatomical group (p<0.05). This conclusion contradicted the findings of the current study, which revealed no significant differences in the levels of problems.

Recurrence:

In the current investigation, no recurrence was detected in any of the cases following a 6-month follow-up period.

In a RCT, **Polat et al(4)** examined the outcomes of open mesh and suture repair of umbilical hernias and found that mesh treatment had no recurrences whereas suture repair had 11% recurrences. Wound infection, haematoma, and seroma occurred at similar rates in both groups.

CONCLUSION

Umbilical hernia can be repaired by either anatomical repair with sutures or by mesh repair, but there is little documentation about the benefits of mesh repair in case of small umbilical hernias. Despite several repair approaches, general surgeons still face a problem in preventing recurrence. The factors known to result in recurrence of hernia include faulty technique i.e., increasing vertical or transverse tension on stretched aponeurosis which is already stretched, infection and raised intra-abdominal pressure.

According to this study Anatomical repair for small umbilical hernia had less post-operative pain and duration of hospital stay as compared to Meshplasty. In the present study there were no recurrence was seen in any of the cases after a follow up time of 6 months.

Summary

- In the present study, the mean duration hospital stay was lower in anatomical repair when compared to Meshplasty, the difference was statistically significant.
- In 92.1% of the patients who underwent anatomical repair and 89.50% of the patients who underwent Meshplasty did not have any complications and wound infection was seen in 6.6% of the patients and 2.6% had seroma.
- No recurrence was seen in any of the cases after a follow up time of 6 months in the present study.
- On the day of discharge, there was a substantial difference in pain levels between the groups, with the Meshplasty group experiencing higher discomfort.

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