

Hernioplasty: Tension free mesh repair versus Mayo's repair for umbilical hernias

Nazir Ahmed Tunio

Abstract

Objectives: To compare two different techniques of repairing umbilical hernia.

Methods: The comparative study was conducted from April 2009 to December 2011 at the Gambat Institute of Medical Sciences, Gambat, Pakistan, and comprised hernia patients who were randomly allocated to group A and group B. In group A, repair was carried with tension free hernioplasty, while group B underwent Mayo's repair. All patients were operated by the same consultant surgeon. All patients were followed up for 36 months.

Results: The 86 patients were divided into two groups of 43(50%) each. There were 18(20.9%) males and 68(79%) females. Patients in group A needed less post-operative analgesics 4.3 ± 7.49 ($p < 0.05$) and short hospital stay 6.14 ± 1.3 days ($p < 0.05$). Postoperative complications were more in group B ($p < 0.05$). There was 1(2.3%) recurrence in group A and 3(7%) in group B over the 36-month follow-up.

Conclusion: Tension free mesh repair was found to be a better technique than Mayo's repair for umbilical hernia.

Keywords: Hernioplasty, Mayo's repair, Umbilical hernias. (JPMA 67: 24; 2017)

Introduction

Umbilical hernias are the most common of all the abdominal hernias representing 6% of all abdominal hernias in adults.¹ The midline hernias abutting in the umbilicus superiorly or inferiorly are included in this group and are known as para-umbilical hernias.² They are more common in females.³ Obesity, multiparity and prolonged labour are the predisposing factors to para-umbilical hernias.⁴

The concept of repair of umbilical hernia in adults is not new, but the choice of appropriate surgical procedure is still a subject of debate.⁵ The simple method of Mayo's repair has been commonly performed, but has the significant recurrence rate between 22-40%.^{6,7} Nowadays, prosthetic mesh is frequently used to repair hernia defect.⁸ More recently tension free hernioplasty has been performed for repair of umbilical hernias which has advantage over the Mayo's repair.⁹ The intersposition of prosthetic mesh not only reduces the tension but also avoids the re-approximation of avascular tissue and this explains the low recurrence rate.¹⁰

The current study was planned to assess the long-term outcome of Mayo's versus tension free mesh repair in umbilical hernias.

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Surgical Department Gambat Institute of Medical Science, Gambat (G.I.M.S), Sindh.

Correspondence: Nazir Ahmed Tunio. Email: surgeon.tunio@hotmail.com

Patients and Method

The comparative study was conducted from April 2009 to December 2011 at the Gambat Institute of Medical Sciences, Gambat, Pakistan, and comprised hernia patients 21-70 years of age and having defect of more than 3cm size. They were randomly allocated to group A and group B. In group A, repair was carried with tension free hernioplasty, while group B underwent Mayo's repair. Patients below age 21, or had known diabetic, hypertension, chronic liver disease or having defect of less than 3cm were excluded.

In group A, an inferior para-Umbilical /transverse supra-umbilical incision was made. The sac was dissected and freed up to its neck. Where it was opened, the contents was reduced and the sac was ligated at its neck. Aponeurotic plain was cleared from subcutaneous tissue about 3-4cm around the border of the defect. Polypropylene (Prolene) mesh was cut according to the size of the defect extending 3cm beyond the margins of the defect. The mesh covering the defect was placed over the anterior rectus sheath and anchored there with interrupted sutures prolene 2/0 (onlay fashion). Haemostasis was secured and the suction drain was left in the subcutaneous space. Skin was closed with interrupted sutures.

In group B, classical steps were applied in which transverse double-breasting repair with non-absorbable suture material prolene no 1 was used. Skin was closed with interrupted suture, while the drain was left in the subcutaneous tissue.

All patients in both groups were operated upon under

general anaesthesia.

The need for post-operative analgesia was studied. All patients were given fixed protocol of diclofenac sodium. Post-operative pain was experienced in both groups with variable intensity which was measured using the Verbal Rating Scale. The total number of doses were counted from the time of recovery from anaesthesia till the discharge from hospital.

Results

The 86 patients were divided into two groups of 43(50%) each. There were 18(20.9%) males and 68(79%) females. Within an age range of 25-65 years, the peak incidence was in the 31-40 group with 49(57%) patients (Table-1).

In group 1, mean analgesic dose was 2.5 ± 1.31 (range: 3-8), while in group B it was 4.41 ± 7.49 (range: 3-16) ($p < 0.05$). Group A had significantly shorter period of hospital stay compared to group B ($p < 0.05$) (Table-2).

Post-operative complications were observed in patients of both groups, which were significantly higher in group B ($p < 0.05$). Cases of recurrence were also compared between the groups (Table-3).

Table-1: Age distribution.

Age group years	No. of Patients	Percentage
21-30	15	17.44%
31-40	49	56.98%
41-50	14	16.28%
51-60	6	6.98%
61-70	2	2.33%

Table-2: Postoperative hospital stay (in days).

Type of Repair	Post-operative Hospital Stay (in days)										Mean Stay (in days)	Return to normal activity range in days
	1	2	3	4	5	6	7	8	9	10		
Mayo's (no. 43)	0	13	10	7	8	1	-	2	-	2	6.14 ± 1.31	15-25
Mesh (No. 43)	15	21	4	3	-	-	-	-	-	-	4.3 ± 7.49	15-18

Table-3: Post-operative complications.

Complications	Group A mesh repair (n=7)		Group B Mayo's repair (n=10)	
	No. of Cases	%	No. of Cases	%
Seroma	3	42.86%	1	10.00%
Haematoma	1	14.29%	2	20.00%
Wound Infection	2	28.57%	4	40.00%
Recurrence	1	14.29%	3	30.00%

Discussion

Historical review of literature suggests that umbilical hernias are more common in female than male (8:1).¹¹ Manzar and Soliman observed male-to-female ratio of 1:4 and 1: 4.6 respectively.^{12,13} In our study the ratio was 1:4 which correlated with other studies. In the present study, age ranged between 25-65 years with peak incidence in the fourth decade while one study found it between 25-55 years.¹⁴

The overall early postoperative complications in group A were 7 and group B were 10, i.e., 3(42.86%) patients developed seroma in group A and 1 (10%) case in group B. Haematoma was observed in 1(14.29%) case in group A and 2(20.00%) in group B. Wound infection was observed in 2 (58.27%) cases in group A and in 4(40.00%) in group B. Complication rate was less in group A compared to group B and all were managed conservatively, as reported in other studies.^{15,16}

Recurrence rate has been reported in literature by using various techniques. One study observed 3.4% recurrence rate in onlay mesh repair and almost double in suture method repair.¹⁷ Others have reported 4% and 8% recurrence rate by using onlay mesh repair.^{18,19} Celdran observed no recurrence in 25 cases of umbilical hernias by using technique of tension free mesh repair after follow-up of 13 months.⁹ In the present study, single recurrence (14.29%) was observed by using tension free mesh repair and 3 (30%) cases by Mayo's technique after follow-up of 36 months.

Despite various repair techniques, recurrence-free repair continues to challenge general surgeons. The factors believed to result in recurrence of hernia include faulty

technique i.e., increasing vertical or transverse tension on already stretched aponeurosis, infection and increased intra-abdominal pressure.²⁰ Hence, there is pressing need for a more effective technique to improve long-term results of the repair.

Conclusion

On the basis of short hospital stay, early return to normal activity, overall minimum complications and less recurrence rate, the tension free mesh repair was found to be superior than Mayo's repair.

Acknowledgments

We are grateful to GIMS Director for his assistance and encouragement.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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