

# Comparison of Complications Between Mayo's Repair and Mesh Repair (Pre-Peritoneal Approach) for Para Umbilical Hernia

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**Objective.** The purpose of the study is to compare the rate of complications in Mayo's repair with mesh repair. (Pre-peritoneal approach) **Design.** Comparative study. **Place and Duration of Study.** Nishtar Hospital Multan during the period of January 2001 to August 2003. **Patients and Methods.** Only patients with fully reducible hernias were included in the study. Unfit patients having serious cardiac and respiratory illness, patients with obstructive and strangulated para-umbilical hernia were excluded from study. Two groups comprising of 25 patients each were made on random basis and operated (Mayo's repair in-group one and mesh repair in-group two) randomly by surgical team. A separate file was kept for each patient. A detailed history and full physical examination and various investigations of all patients were carried out. Later on, operative findings and complications were also noted. **Results.** The age of the patients ranges from 20 to 60 years (mean 40 years). 80% were female while remaining 20 % were male The commonest mode of presentation was swelling in the umbilical region (100%) and dragging pain in the umbilical region during heavy working (60%). On physical examination positive cough impulse was present in (80%). There was significant difference between postoperative complications in two groups. As seroma formation (8% vs 0%), wound infection (8% vs 0%), wound haematoma (12% vs 4%) was seen more in group I. However mesh infection was present in-group 2 only. **Conclusion.** It is concluded that recurrences after open tension free repair are rare, complications are few, and the operation is simple to perform. Optimally hernias should be repaired using mesh repair

**Key Words.** Para umbilical hernia, mesh repair, Mayo's repairs, infection, seroma, haematoma.

Para umbilical hernia means protrusion through linea alba, just above or below the Umbilicus<sup>1</sup>. Hernias of abdominal wall are the commonest conditions requiring major surgery and account for 10-15% of all the operations performed<sup>2</sup>. Para umbilical hernias are commonest acquired umbilical hernias<sup>3</sup> and 2<sup>nd</sup> most commonly encountered, following inguinal on the top<sup>4</sup>. Females are affected five times more than males<sup>5</sup>, obesity and repeated pregnancies being the main risk factors<sup>6</sup>. There are certain risk factors believed to have a role in causing Para-umbilical hernia, as they produce increase in intra abdominal pressure.<sup>7</sup> The risk factors include pregnancy, chronic cough, ascities, chronic constipation and flabbiness of abdominal muscles. Usually the hernial sac only contains omentum, but gut (both small and large) may be present in it, which if obstructed can give rise to other gastrointestinal symptoms like nausea, vomiting or features of intestinal obstruction<sup>5</sup>

Most patients come in surgical out patient department, mainly with pain or deformity in or around the umbilicus<sup>8</sup>. Some patients present in emergency with symptoms and signs of strangulation like pain, fever, vomiting, tense, and tender swelling, in which case the mortality is high<sup>9</sup>.

There are two treatment options for patients of Para umbilical hernia. One option is conservative and 2<sup>nd</sup> is surgical. Operative repair of defect is carried out, where ever possible, but those having asymptomatic hernias or those who are unfit for any kind of surgery could be managed conservatively, by reducing their weight<sup>10</sup> or by using belts.

Outcome of hernia surgery is highly surgeon dependent. Classical repair of Para umbilical hernia is Mayo's<sup>11</sup>, in which after excision of sac, the defect is closed by suture, the upper crescent being fixed over the front of lower half of defect. Recently tension free Mesh repair has been introduced, which utilizes an artificial prosthesis to cover the defective area<sup>13</sup>.

## Materials and Methods:

**Study design:** This is a comparative study of fifty patients of para umbilical hernia admitted in the Surgical Unit II, Nishtar Hospital Multan during the years 2001 & 2003.

**Inclusion and exclusion criteria:** Only patients with fully reducible hernias were included in the study. Unfit patients having serious cardiac and respiratory illness, patients with obstructive and strangulated para-umbilical hernia were excluded. Patients refused to come for follow up were also excluded from study.

**Data collection:** Fifty patients were admitted in the ward through Outpatient Department. All patients were operated on planned list. A detailed history and thorough physical examination and investigations (complete blood examination, complete urine examination, ECG and chest X-ray of the patients above 45 years) were carried out in each case. Patients were selected at random basis. Patients were allotted and operated under general anesthesia randomly, to each of the two groups i.e. mesh repair and Mayo's repair. All the data was recorded on the pre designed Performa. Data about operative and post-operative complications was recorded.

The patients were seen in the outpatient department one-week post operatively to detect possible wound complications and then 1, 3, 6 months post operatively for recurrence.

**Data analysis:** The hypothesis was tested by Spearman's rank correlation coefficient test. A p value of <0.05% was considered significant. Percentages, means were calculated. All calculations were done by SPSS 10.0.

**Results:**

A total of 50 patients were divided into two groups. Group I (n=25) underwent Mayo's repair. Group II patients had tension free mesh repair (n= 25).

The age of the patients ranged from 20 to 60 years (mean 40 years) (table1). 80% were female while remaining 20 % were male The commonest mode of presentation was swelling in the umbilical region (100%) and dragging pain in the umbilical region during heavy working (60%). On physical examination positive cough impulse was present in (80%).

The prosthetic material used in all cases was polypropylene mesh. In-Group I, 25 patients (100%) underwent Mayo's repair. In-Group II, 25 patients (100 %) had mesh repair.

There were no major intra-operative complications or postoperative deaths in either group. Ten (20%) complications were observed. Out of these eight (16.0%) were in-group I and two (4.0%) were in group II. All were managed conservatively (table 2).

The main complications were wound haematoma in four patients (8%), wound infection in two patients (4%), seroma formation in two patients (4%), sinus formation in one patients (2%), mesh infection in one patients (2%) and no recurrence was detected in any patients (0%).

There was significant difference between postoperative complications in two groups. As seroma formation (8% vs 0%), wound infection (8% vs 0%), wound haematoma (12% vs 4%) was seen more in group I. However mesh infection was present in-group 2 only.

Table 1: Age of patient

Age in years	Frequency	%age
20 - 30	3	6
31 - 40	25	50
41 - 50	15	30
51 - 60	7	14
Total	50	100.0

Table 2: Comparison of postoperative complications

Complication	Group 1	%	Group 2	%
Haematoma	3	12	1	4
Wound infection	2	8	0	0
Seroma formation	2	8	0	0
Sinus formation	1	4%	0	0
Mesh infection	---	---	1	4
Recurrence	0	0 %	0	0

**Discussion:**

Hernias of abdominal wall are common conditions requiring major surgery and account for 10-15% of all surgical procedures<sup>2</sup>. According to study carried out at North penn hernia institute, para umbilical hernias are 2<sup>nd</sup> most common surgically treated hernias<sup>14</sup>. Para umbilical hernia is repaired with different techniques. These include Mayo's repair, genkin's repair, open Mesh repair and laparoscopic mesh repair etc<sup>16</sup>.

With the use of modern mesh prosthesis it is now possible to repair para umbilical hernia with out distortion of normal anatomy and with no suture line tension.

All age groups are affected. However this study shows peak occurrence in fourth-fifth decade. (table-1). A study by Qamaruddin Baloch, showed peak occurrence in fourth-fifth decade of life.<sup>13</sup> while mean age of presentation in various international studies is 57 years<sup>15</sup>, 57.1 years<sup>16</sup>, and 53 years<sup>17</sup>.

Para umbilical hernias are 5 times more common in females<sup>6</sup>. In this study, female patients were 80%. In some other studies by Qamaruddin Baloch<sup>13</sup> and by other international investigators, female dominancy was seen<sup>15,16,17</sup>.

Wound infection was found in 4% of my cases which is quite low as compared to other local studies like 16.6% by Qamaruddin Baloch<sup>13</sup>. The reason for low infection rate in our study is the judicious use of prophylactic antibiotic and particular attention given to sterilization. In another international study by Millikan KW, reported wound infection was less than 2%<sup>17</sup>.

In my study wound haematoma was found in 8% of cases. All of them were treated conservatively. Postoperative haematoma was seen more commonly in cases of Mayo's repair as dissection leads to more chances of damage to the underlying tissues. And more tension on suture line in Mayo's repair causes temporary obstruction of venous and lymphatic outflow. This leads to more tissue edema, stasis, and infection. Study by Arroyo Sebastian A, showed wound haematoma in 2.3% of cases<sup>16</sup>.

In my study, seroma formation occurred in 4% of cases, while in some international studies incidence of seroma formation was high, i.e. 5.6%<sup>16</sup>.

There was one case of mesh infection requiring removal of part of mesh in my study. Other studies like Arroyo Sebastian A<sup>16</sup>, also reported 0.95% infection to mesh. Mortality was 0%, in my study as well as in other studies<sup>17</sup>.

Recurrence of hernia after mesh repair in my study was in 0% of cases, which matched with other studies like study by Qamaruddin Baloch, as well<sup>13</sup>. In international study, carried out by Arroyo A, hernia recurrence rate was higher after suture repair (11%) than after mesh repair (01%).<sup>15</sup> Another study by Arroyo Sebastian A, showed overall recurrence rate as 0.95%<sup>16</sup>.

This study reported, that postoperative complications like seroma formation, haematoma, wound sepsis, were seen more often in Mayo's group, than in mesh group.

The studies by Arroyo Sebastian A, suggest that the mesh repairs may be superior to the Mayo's repair in terms of hernia recurrence.<sup>15, 16</sup>

#### Conclusion:

It is concluded that recurrences after open tension free repair are rare, complications are few, and the operation is simple to perform. Optimally hernias should be repaired using mesh repair. Standard techniques, still widely utilized today, attempt to repair these hernias by simply closing the muscle defect with sutures under significant tension.

The result of hernias repaired with suture technique only causes excessively prolonged recovery, and more importantly, a high risk of recurrence. This need not be the case any longer. By results of present study we can safely say that mesh repair should be considered as gold standard for hernias repair.

#### References:

1. Albert DM, Barash PG, Behrman RE, Blackburn GL, et al. Dorlands Illustrated Medical dictionary. 28<sup>th</sup> ed. Philadelphia. W.B.Saunders, 1994: 1233.
2. Converse JM. Reconstructive plastic surgery. Philadelphia: W.B.Saunders. 1964.
3. Das S. Examination of a case of hernia: a manual on clinical surgery. 4<sup>th</sup> ed. Calcutta: S.Das, 1996: 439.
4. Goraya AR, Khalil H, Chaudhry MS, Muhammad Y, Chaudhry AM. Role of apronectomy combined with repair in incisional hernias. Ann K E Med Coll 2002; 8: 128-30.
5. Kingsnorth A, Bennet DH. Hernias: umbilicus, abdominal wall. In: Russel RCG, Williams NS, Bulstrode CJK, Mclean AM, Coleman DJ, Langford RM, et al. Bailey and Love's short practice of surgery. 23<sup>rd</sup> ed. London: Arnold, 2000: 1154-55.
6. Wantz GE, Abdominal wall hernias. In: Schwatz SI. Principles of surgery. 7<sup>th</sup> ed. Vol.- 1. Newyork: McGraw-Hill, 1999: 1604-05.
7. Eubanks S. Hernias. In: Sabiston DC. Textbook of surgery, the biologic basis of modern surgical practice. 15<sup>th</sup> ed. Philadelphia: W.B. Saunders, 1997: 1227-29.
8. Goodyear J A. Broad street, Suite 100. Lansdale, PA 19446. 215-368-1122.(Pubmed research site)
9. Johnstone JMS, Rintoul RF. In: Rintoul RF, Farquharson's Textbook of operative surgery. 8<sup>th</sup> ed. Edinburgh: Churchill Livingstone, 1995: 537-38.
10. Watkin DFL, Kirk RM. Abdominal wall and groin. In: Kirk RM. General surgical operations. 4<sup>th</sup> ed. London: Churchill Livingstone, 2001: 131-33.
11. George E.Wantz. Abdominal wall hernias. In: Seymour I.Schwartz. Principles of surgery. 7<sup>th</sup> ed. Newyork. McGraw Hill. 1998. 1605.
12. Deveny. Use of prosthesis in hernia repair. In: Qamaruddin B. Dissertation on para umbilical hernia. Karachi: 1990: 60.
13. Baloch Qamaruddin. Historical background: A Study of repair of para umbilical hernia. Karachi. 1990. 40.
14. Goodyear J A. Broad street, Suite 100. Lansdale, PA 19446. 215-368-1122. (North penn hernia institute, Pubmed research site).
15. Arroyo A, Garcia P, Perez F, Andreu J, Candela F, Calpena R. Randomized clinical trial comparing suture and mesh repair of para umbilical hernia in adults. Br J Surg. 2001.Oct; 88(10): 1321-3.
16. Arroyo Sebastian A, Perez F, Serrano P, Costa D, Oliver I, Ferrer R, et al. Is prosthetic para umbilical hernia repair bound to replace primary herniorraphy in the adult patient? Hernia. 2002. Dec; 6(4): 175-7.
17. Millikan KW, Baptista M, Amin B, Deziel DT, Doolas A. Intra peritoneal underlay ventral hernia repair utilizing bilayer expanded polytetrafluoroethylene and polypropylene mesh. Am Surg. 2003 Apr; 69(4): 287-91; discussion 291-2.