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A comparative study of anatomical repair versus meshplasty in para umbilical hernia

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Abstract

Introduction: Para Umbilical hernia is the commonest of all the abdominal hernias. It constitutes about 6% of all abdominal hernias in adults. Mesh onlay repair by open surgery can be applied to all sizes of para umbilical hernias, it has low recurrence rate and the rates of morbidity and recurrence are comparable with international standards.

Aim and Objectives: To compare the surgical outcome of anatomical repair versus meshplasty in the treatment of uncomplicated para umbilical hernias in context of post-operative pain, wound infection, hospital stay, post-operative complications, cost of treatment and recurrence rate.

Material and Methods: A total of 50 patients attending the general surgery department for para-umbilical hernia with defect of less than 3cms were included in the study. The surgical outcome of anatomical repair versus meshplasty in the treatment of uncomplicated para umbilical hernias with respect to post-operative pain, wound infection, hospital stay, postoperative complications (seroma, hematoma), and cost of treatment and recurrence rate was compared.

Results: The mean age of the patients was 44.4 ± 9.67 yrs of age. There was equal distribution of gender with 48% male and 52% female patients with male to female ratio of approximately 1:1. Significant lower mean pain score was seen among the patients who underwent meshplasty. Incidence of SSI, seroma and hematoma was present in 8% among the anatomical repair. Significant higher duration of hospital stay was seen among the patients who underwent anatomical repair (6.24 ± 0.72 days) as compared to meshplasty (5.64 ± 0.7 days). The cost of treatment was higher among the patients of meshplasty, whereas the rate of recurrence was higher among the patients with anatomical repair (12%) as compared to meshplasty.

Conclusion: We found significant better outcome in patients who underwent meshplasty as compared to anatomical repair.

Keywords: Meshplasty, anatomical repair, para-umbilical hernia, seroma, hematoma

Introduction

Ventral Hernia is a protrusion of an abdominal viscus or part of a viscus through the anterior abdominal wall occurring at any site other than groin. It includes incisional hernias, paraumbilical hernias, umbilical hernia, epigastric hernias and spigelian hernias respectively [1].

Para Umbilical hernia is the commonest of all the abdominal hernias. It constitutes about 6% of all abdominal hernias in adults. The midline protrusion bordering in the umbilicus either superiorly or inferiorly are encompassed in this group and are known as paraumbilical hernias. The incidence is common in females. Obesity, multiparity and prolonged labour are the influencing factors to para-umbilical hernias [2].

Para umbilical hernia is a rather common surgical problem. Elective repair after diagnosis is advised. Suture repair have high recurrence rates; therefore mesh reinforcement is recommended [3].

Mesh onlay repair by open surgery can be applied to all sizes of para umbilical hernias, it has low recurrence rate and the rates of morbidity and recurrence are comparable with international standards [4].

In contrast to all primary hernias, there is no agreement that the repair of umbilical hernia should be mesh-based. In general, para umbilical hernias are more common in women than men; however, there are series in which male patients are more frequent [1].

A para umbilical hernia has a tendency to be associated with high morbidity and mortality in comparison with inguinal hernia because of the higher risk of incarceration and strangulation

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that require an emergency repair. Previously method of Mayo's repair was commonly practised, but the significant recurrence rate was between 25 - 45% [1].

These hernias are commonly mended by using either fascia (Mayo repair) or by a simple suture repair. Both these different types of procedures are allied with high recurrence rates (10% to 30%). Various studies suggest that recurrence rates can be lowered to 0-2% if mesh is used to repair these hernias [3, 5]. Recurrence may develop even in cases where a prosthetic mesh is used. Hence, this study was done to know the effectiveness of meshplasty in treating para umbilical hernias.

Materials and Methods

This was a comparative study conducted over a period of 2 years after ethical committee's approval, in the department of General Surgery of a tertiary care hospital. A total of 50 patients were included in the study who attended surgery OPD with a diagnosis of uncomplicated para umbilical hernia with defect <3cm by pre-op clinical assessment. All the patients with diagnosis of para umbilical hernia with defect <3 cm, willing to give consent for the study, in the age group 20-60 years and of sexes were included in the study.

Patients not fit for surgery, with co-morbidity like diabetes mellitus, immunocompromised, anemia, connective tissue disorder, complicated hernias like obstruction and strangulation, recurrent hernias, para umbilical hernia secondary to ascites, liver pathology, with age less than 20 and more than 60 years and who didn't give consent were excluded from the study.

Patients were selected consecutively as per inclusion and exclusion criteria and divided into 2 groups. Both gender more than 18 years were considered. Patient informed consent was obtained before surgery

Patient were assessed for history and clinical examination, complete blood count, USG abdomen, urine routine, ECG and Chest x-ray. Following initial assessment patient was taken up for surgery after obtaining anaesthesia fitness. Patients were divided in two groups by systematic random sampling method in to 25 each. Study variables included Age, Sex, Size of the defect and outcome variables included post-operative pain that was measured every 6th hour intervals for first 24 hrs then at 24 hr interval till discharge from hospital, duration of hospital stay, wound infection rate, complications (seroma, hematoma) and recurrence.

Statistical Analysis

All the data was collected in predesigned pro forma and entered in excel sheet. The data was summarised as mean and standard deviation for continuous variables and frequency, percentage for categorical variables. The summarized data were represented using the tables, figures, bar diagrams and pie charts. The mean difference between the continuous variables was analysed using independent student t-test and non-parametric categorical variables using chi-square test. The strength of association between the variables was analysed using chi-square test. A p-value of <0.05 was considered statistically significant and the statistical analysis was performed using SPSS v21 operating on windows 10.

Results

In present study, total of 50 patients fulfilling the inclusion criteria were included. The patients were divided into two groups; with 25 in each group based on the operative type patients underwent. The mean age of the patients in the study was 44.4±9.67 yrs of age. The study included 52% (26) females

and 48% (24) males. The mean age for anatomical repair was 44.32±8.78 and 44.56±10.67 who underwent meshplasty. Gender distribution between the groups is shown in the following figure 1.

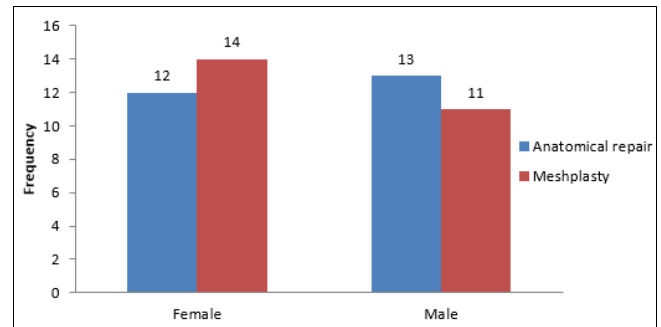


Fig 1: Comparison of the gender distribution between the groups

Comparison of the post-operative pain at various interval between the groups is shown in the following figure 2.

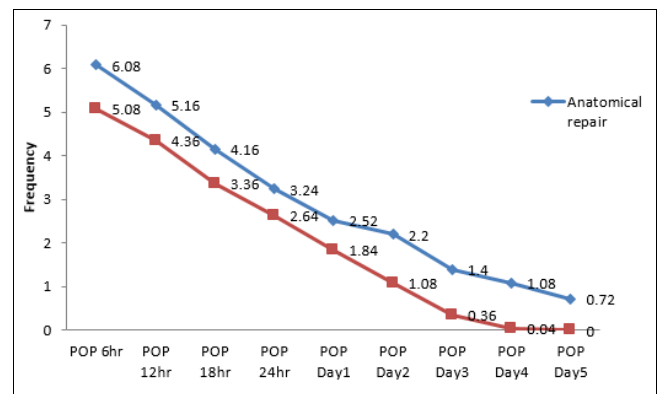


Fig 2: Comparison of the post-operative pain at various interval between the groups

Comparison of presence of SSI, Seroma and Hematoma between the groups is shown in the following figure 3.

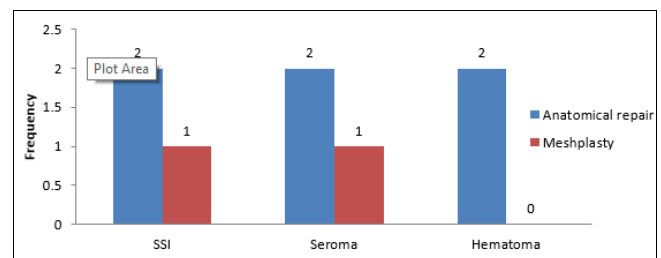


Fig 3: Comparison of presence of SSI, Seroma and Hematoma between the groups

The mean hospital stay was (6.24±0.72 days) among the patients who underwent anatomical repair as compared to meshplasty (5.64±0.7 days). the cost of treatment was ~6000 and ~8000 for anatomical repair and Meshplasty respectively.

Comparison of the recurrence rate between two groups is shown in the following figure 4,

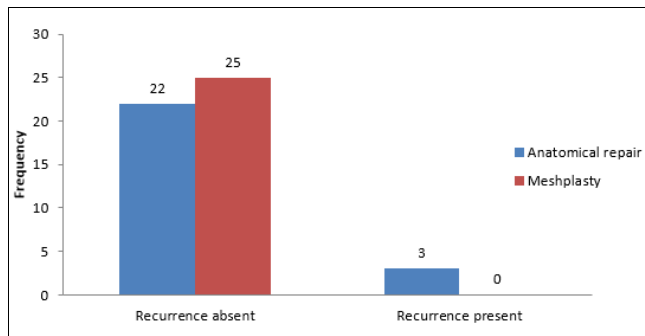


Fig 1: Comparison of the recurrence rate between two groups

Discussion

The study was conducted among the patients attending the general surgery department for para-umbilical hernia with defect of less than 3 cms. Study aimed to compare the surgical outcome of anatomical repair versus meshplasty in the treatment of uncomplicated para umbilical hernias with respect to post operative pain, wound infection, hospital stay, postoperative complications (seroma, hematoma), cost of treatment and recurrence rate.

In present study, total of 50 patients fulfilling the inclusion criteria were included. The patients were divided into two groups; with 25 in each group based on the operative type patients underwent. The mean age of the patients in the study was 44.4 ± 9.67 yrs of age. There was no significant difference in mean age difference between two groups. ($p > 0.05$) Similar to present study, the mean age of the patients in study by Thakur *et al.*, documented the 44.26yr. ($p > 0.05$)

Among the included patients, there was equal distribution of gender with 48% were male patients and 52% were female patients with male to female ratio of approximately 1:1. In study there was no significant difference in gender distribution between two groups. ($p > 0.05$) In study by Thakur *et al.*, they documented the female preponderance similar to present study [6].

On assessment of the post operative pain at various interval of time, we found a significant lower mean pain score among the patients who underwent meshplasty as compared to the patients who underwent anatomical repair for para-umbilical hernia. ($p < 0.05$) The mean pain score at the 6th hr, 12th, 18th, 24th hr, day 1, 2, 3, and day 4 was significantly lower among the meshplasty group of patients. On assessment of the surgical site infections and complications like seroma and hematoma we found no significant difference in distribution between the group of treatment. However the incidence of SSI, seroma and hematoma was present in 8% among the anatomical repair compared to the patients in meshplasty. ($p > 0.05$) In study by Thakur *et al.*, there was higher incidence of wound infection and seroma among the patients who underwent anatomical repair as compared to the meshplasty, however there was no significant difference in distribution.⁶ In contrast study by Kaufmann *et al.*, revealed slightly higher incidence of wound infections in mesh group as compared to non-mesh group. Also there was no statistically significant difference between both techniques regarding incidence of seroma formation postoperatively which is identical to our basic results [7].

On assessment of total hospital stay, there was significant higher duration of hospital stay among the patients who underwent anatomical repair (6.24 ± 0.72 days) as compared to patients who underwent meshplasty (5.64 ± 0.7 days). ($p < 0.01$) The cost of treatment was higher among the patients who underwent meshplasty compared to patients who underwent anatomical

repair. ($p < 0.05$) In study by Thakur IS *et al.*, anatomical non-mesh repair of small-sized para-umbilical hernias exhibited a strong association with shorter operation time, smaller incision size, and lower total expenses than mesh repairs, according to the study [6].

On assessment of the recurrence rate, there was significant higher rate of recurrence among the patients who underwent the anatomical repair (12%) as compared to the patients who underwent meshplasty. ($p < 0.05$) In study by Ismaeil *et al.*, Mesh onlay repair by open surgery used to treat para umbilical hernias of all sizes, had a low recurrence rate and morbidity and recurrence rates were equivalent to international standards.⁴ In study by Ahmad QA, *et al.*, onlay mesh hernioplasty took less time and required less stay in the hospital. When compared to sublay mesh hernioplasty, there is no significant difference in wound infection and recurrence rate [8].

Conclusion

Significant better outcome was seen in patients who underwent meshplasty as compared to anatomical repair. The post operative mean score was significantly lower in patients who underwent meshplasty; also there was lower incidence of surgical site infection, seroma and hematoma. There was also significant lower hospital stay and recurrence rate among the patients who underwent the meshplasty as compared to anatomical repair for para-umbilical hernia. The cost of meshplasty was higher than the anatomical repair, but the benefits outweigh the cost of the surgery.

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