A comparitive study of anatomical repair vs meshplasty in paraumbilical hernia

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ABSTRACT

Aim: The purpose of this study is to evaluate the effectiveness of anatomical repair versus meshplasty in the treatment of para umbilical hernias.

Materials and Methods: A total of sixty patients who visited surgery outpatient department with a pre-op clinical evaluation diagnostic of an uncomplicated para umbilical hernia with a defect of less than three centimeters were included in the research. Participants had to have a diagnosis of para umbilical hernia with a defect of at least 3 centimeters, be willing to provide permission for the research, be in the age range of 18-65 years, and be of both sexes in order to be included in the study. Patients were evaluated based on their medical histories as well as their physical examinations, which included a complete blood count, ultrasound of the abdomen, urine analysis, electrocardiogram, and chest x-ray. After the first evaluation, the patient was prepped for surgery and then transported away to undergo anesthesia once they were ready. Patients were split into two groups, each consisting of thirty people, using a procedure called systematic random sampling.

Results: When we compared the post-operative pain experienced by patients who had meshplasty with that experienced by patients who had anatomical repair for para-umbilical hernia, we found that the patients who had meshplasty had a significantly lower mean pain score over the course of the post-operative pain assessment. Patients who had meshplasty had much less pain during the course of the study's first eight, sixteen, twenty-four, forty-eight, seventy-second, ninety-sixth, and one hundred twenty-second hours. After doing an analysis of the surgical site infections and complications such as seroma and hematoma, we discovered that there was no significant difference in the distribution of these conditions between the two groups of therapy. Nonetheless, the frequency of SSI, seroma, and hematoma was present in 10% of the patients who had anatomical repair as opposed to the patients who underwent meshplaty. Anatomical repair patients had a significantly longer length of hospital stay (6.36±0.87 days) compared to meshplasty patients (5.77±0.69 days), as determined by an evaluation of total hospital stays for both groups of patients.

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Conclusion: Those who had meshplasty as opposed to anatomical repair had much superior outcomes. This was found in both the short and long term. Patients who had meshplasty had a considerably lower post-operative mean score; also, there was a decreased frequency of surgical site infection, seroma, and hematoma.

Keywords: Anatomical repair, Meshplasty, Para umbilical hernia

Introduction

A ventral hernia occurs when an abdominal viscus or portion of an abdominal viscus protrudes through the anterior abdominal wall at a location other than the groin. Hernias that result from incisions, paraumbilical hernias, umbilical hernias, epigastric hernias, and spigelian hernias are all included in this category.[1]Thepara-umbilical hernia is the most frequent kind of abdominal hernia. Around six percent of all abdominal hernias in adults are caused by this condition. The midline protrusion that borders in the umbilicus either superiorly or inferiorly is included in this group and is known as a paraumbilical hernia. This group is known as a hernia. The phenomenon is more prevalent in females. The risk of developing a para-umbilical hernia increases with obesity, the presence of several parties, and extended labor.[2]Thepara umbilical hernia is an issue that arises rather often in surgical practice. After diagnosis, it is recommended to perform any elective repairs necessary. High recurrence rates are associated with suture repair; as a result, mesh reinforcement is indicated.[3] Mesh onlay repair with open surgery may be performed on hernias of any size, it has a low recurrence rate, and its rates of morbidity and recurrence are equivalent to those of international standards.[4] There is a lack of consensus about the treatment of umbilical hernias, in contrast to the treatment of all primary hernias, which should include the use of mesh. Nonetheless, there are certain series in which male patients make up a greater percentage of the patient population.[1] In general, women are more likely to suffer from para umbilical hernias than males.

When compared to an inguinal hernia, a para umbilical hernia is more likely to be associated with a higher risk of incarceration and strangulation, both of which require immediate medical attention. As a result, this type of hernia is more likely to be associated with a higher risk of morbidity and mortality. In the past, the Mayo repair procedure was widely used, although it had a considerable recurrence rate that ranged between 25 and 45%.[1]

The fascia (Mayo repair) or a straightforward suture repair are the two most prevalent methods for treating hernias of this kind. These two distinct kinds of surgical treatments are associated with substantial recurrence rates (ranging from 10% to 30%). If mesh is utilized in the treatment of these hernias, according to the findings of a number of studies[3,5], the recurrence rate may be reduced to 0-2%. Even in situations when a prosthetic mesh is used, recurrence is still a possibility. As a result, this research was carried out to determine whether or not meshplasty is successful in the treatment of para umbilical hernias.

Materials and Methods

Comparative research was carried out at the General Surgery department for the purpose of this study. A total of sixty patients who visited surgery outpatient department with a pre-op

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clinical evaluation diagnostic of an uncomplicated para umbilical hernia with a defect of less than three centimeters were included in the research. Participants had to have a diagnosis of para umbilical hernia with a defect of at least 3 centimeters, be willing to provide permission for the research, be in the age range of 18-65 years, and be of both sexes in order to be included in the study.

Patients who were unable to undergo surgery, had co-morbidities such as diabetes mellitus, were immunocompromised, had anemia or a connective tissue disorder, had complicated hernias such as obstruction and strangulation, recurrent hernias, para umbilical hernias secondary to ascites, liver pathology, were younger than 18 or older than 65, and did not give consent were not included in the study.

Patients were picked one at a time in accordance with the inclusion and exclusion criteria, and then the patients were split into two groups. Both sexes above the age of 18 were taken into consideration. Prior to the operation, the patient's permission after being fully informed was acquired.

Patients were evaluated based on their medical histories as well as their physical examinations, which included a complete blood count, ultrasound of the abdomen, urine analysis, electrocardiogram, and chest x-ray. After the first evaluation, the patient was prepped for surgery and then transported away to undergo anesthesia once they were ready. Patients were split into two groups, each consisting of thirty people, using a procedure called systematic random sampling. Outcome variables included post-operative pain, which was measured every 6th hour interval for the first 24 hours, then at 24 hr interval until discharge from hospital, duration of hospital stay, wound infection rate, complications (seroma, hematoma), and recurrence. Study variables included Age, Sex, and Size of the defect.

Statistical Analysis

The information was collected using a predesigned data collection form that was then imported into an Excel spreadsheet. For continuous variables, the data were summarized using the mean and standard deviation, while for categorical variables, the frequency and percentage were used. Tables, figures, bar graphs, and pie charts were used in order to graphically portray the data once they were summarized. The independent student t-test was used to analyze the mean difference in the continuous variables, and the chi-square test was used to analyze the differences in the non-parametric categorical variables. The chi-square test was used in order to investigate the degree to which the variables were linked to one another. A p value of less than 0.05 was regarded to be statistically significant, and SPSS version 25.0 running on Windows 11 was used to conduct the statistical analysis.

Results

In this particular research, a total of sixty patients who met the requirements for participation were enrolled. The patients were split up into two groups, with 30 people in each group, depending on the different types of operations that were carried out on the patients. The patients in the research had a mean age of 45.69 years old, with a standard deviation of 6.33 years. In all, there were 33 female participants (55%) and 27 male participants (45%) in the

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research. Among patients who received meshplasty, the mean age was 45.26±6.14, whereas the mean age for patients who underwent anatomical repair was 45.11±5.39.

When we compared the post-operative pain experienced by patients who had meshplasty with that experienced by patients who had anatomical repair for para-umbilical hernia, we found that the patients who had meshplasty had a significantly lower mean pain score over the course of the post-operative pain assessment. (p<0.05) Patients who had meshplasty had much less pain during the course of the study's first eight, sixteen, twenty-four, forty-eight, seventy-second, ninety-sixth, and one hundred twenty-second hours. After doing an analysis of the surgical site infections and complications such as seroma and hematoma, we discovered that there was no significant difference in the distribution of these conditions between the two groups of therapy. Nonetheless, the frequency of SSI, seroma, and hematoma was present in 10% of the patients who had anatomical repair as opposed to the patients who underwent meshplaty.

Anatomical repair patients had a significantly longer length of hospital stay (6.36±0.87 days) compared to meshplasty patients (5.77±0.69 days), as determined by an evaluation of total hospital stays for both groups of patients. (p<0.01) Patients who had meshplasty performed on them had a greater overall cost of therapy compared to those who had anatomical repair performed on them. In terms of the recurrence rate, it was shown that patients who had anatomical repair performed had a much greater incidence of recurrence (13.33%), in comparison to those who had meshplasty performed.

Table 1 Age and gender distribution of patients

	Anatomical repair	%	Meshplasty	%	Total
Gender					
Male	13	43.33	14	46.67	27(45%)
Female	17	56.67	16	53.33	33(55%)
Age	45.11±5.39		45.26±6.14		

Table 2. Comparison of the post-operative pain at various interval between the groups

Pop After	Anatomical repair	Meshplasty
8hrs	7.01	6.45
16hrs	6.21	5.87
24hrs	4.98	4.11
48hrs	3.41	2.65
72hrs	2.31	1.01
96hrs	1.11	0.36

120hrs	0.65	0.00

Table 3 Complications

	Anatomical repair	%	Meshplasty	%
SSI	3	10	2	6.67
Seroma	3	10	1	3.33
Hematoma	3	10	0	0

Discussion

Patients who presented to the general surgery department for treatment of para-umbilical hernia and had defects measuring less than three centimeters were included in the research. This study aimed to compare the surgical outcomes of anatomical repair and meshplasty in the treatment of uncomplicated para umbilical hernias. These outcomes included postoperative pain, wound infection, length of hospital stay, postoperative complications (such as seroma and hematoma), overall cost of treatment, and recurrence rate.

In this particular research, a total of sixty patients who met the requirements for participation were enrolled. The patients were split up into two groups, with 30 people in each group, depending on the different types of operations that were carried out on the patients. The patients in the research had a mean age of 45.69 years old, with a standard deviation of 6.33 years. There was not a significant difference between the two groups in terms of the mean age difference. ($p>0.05$) The mean age of the patients in the research by Thakur et al. was reported to be 44.26 years, which is the same as the current study. ($p>0.05$) The ratio of male patients to female patients was around 0.82 to 1, and there was an even distribution of gender among the patients who were included in the study. There were 45% male patients and 55% female patients. According to the findings of the research, there was no discernible variation in the gender distribution of the two groups. ($p>0.05$) Thakur et al[6] also revealed the female majority, which is comparable to the findings of the current study.

When we compared the post-operative pain experienced by patients who had meshplasty with that experienced by patients who had anatomical repair for para-umbilical hernia, we found that the patients who had meshplasty had a significantly lower mean pain score over the course of the post-operative pain assessment. ($p<0.05$) Patients who had meshplasty had much less pain during the course of the study's first eight, sixteen, twenty-four, forty-eight, seventy-second, ninety-sixth, and one hundred twenty-second hours. After doing an analysis of the surgical site infections and complications such as seroma and hematoma, we discovered that there was no significant difference in the distribution of these conditions between the two groups of therapy. Nonetheless, the frequency of SSI, seroma, and hematoma was present in 10% of the patients who had anatomical repair as opposed to the patients who underwent meshplaty. ($p>0.05$) According to a research carried out by Thakur

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and colleagues, patients who had anatomical repair rather than meshplasty had a much greater incidence of wound infection and seroma, despite the fact that there was no significant difference in the distribution of these complications.[6] In contrast, a research conducted by Kaufmann and colleagues found that patients treated with mesh had a slightly greater rate of wound infections compared to those treated without mesh. In addition, there was not a statistically significant difference between the two procedures with respect to the incidence of seroma development postoperatively, which is consistent with our fundamental findings.[7]

Anatomical repair patients had a significantly longer length of hospital stay (6.36 ± 0.87 days) compared to meshplasty patients (5.77 ± 0.69 days), as determined by an evaluation of total hospital stays for both groups of patients. ($p<0.01$) Patients who had meshplasty performed on them had a greater overall cost of therapy compared to those who had anatomical repair performed on them. ($p<0.05$) 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 a study that was conducted by Thakur IS et al. [6]This was found in a study that was conducted by Thakur IS et al.

In terms of the recurrence rate, it was shown that patients who had anatomical repair performed had a much greater incidence of recurrence (13.33%), in comparison to those who had meshplasty performed. ($p<0.05$) The mesh onlay repair by open surgery that was used to treat para umbilical hernias of all sizes had a low recurrence rate, and both the morbidity and recurrence rates were similar to international norms, according to a research that was conducted by Ismaeil and colleagues.[4] According to the findings of a research conducted by Ahmad QA et al., onlay mesh hernioplasty needed a shorter amount of time spent in the hospital. There is not a significant difference in the rates of wound infection and recurrence when this procedure is compared to sublay mesh hernioplasty. [8]

Conclusion

Those who had meshplasty as opposed to anatomical repair had much superior outcomes. This was found in both the short and long term. Patients who had meshplasty had a considerably lower post-operative mean score; also, there was a decreased frequency of surgical site infection, seroma, and hematoma. As compared to anatomical repair for para-umbilical hernia, meshplasty resulted in much shorter hospital stays and a significantly reduced recurrence rate for the patients who received the procedure. The anatomical repair was less expensive than the meshplasty, but the advantages of the operation more than make up for the expense of the procedure.

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