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Original Research Article

THE STUDY OF HERNIOPLASTY WITH DOUBLE LAYER MESH REPAIR IN A TERTIARY CARE TEACHING INSTITUTE

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Abstract

Background: For general surgeons, recurrent incisional hernias are a prevalent issue. The best way to treat hernias is a topic of much controversy. Recent research supports tension-free hernia repairs using prosthetic mesh. The purpose of this study is to assess the efficacy of double-layered mesh repair for incisional hernias.

Methods: The study was carried out at the Rajiv Gandhi Institute of Medical Sciences and Hospital [RIMS], Adilabad, in the department of general surgery. Patients who had incisional hernias had surgery, and the cases were monitored for six months after the procedure. N=30 patients in all received treatment using this method.

Results: A total of 30 patients n=5 men and n=25 women were enrolled in the research. The patients ranged in age from 30 to 60 years, with an average age of 42.73 years. According to past procedures, incisional hernia incidence was the percentages for the sub umbilical midline, upper midline, upper right paramedian, lower right paramedian, and Pfannenstiel incision were as follows: 66.66%, 6.6%, 6.6%, and 13.33%. After surgery, patients often stayed in the hospital for 10 to 14 days on average, and there were no postoperative complications that resulted in death, morbidity, or persistent discomfort. Following surgery, the patients were monitored for 5 years, and only 1 instance (3.3%) of recurrence was discovered.

Conclusion: Tension-free double-layered mesh repair is an effective way of surgical treatment for incisional hernias. With their loose and saggy abdominal walls, the Indian populace benefits most from this kind of approach. The operation is often without serious morbidity and recurrence problems as noted in the current study.

Keywords: Double layered Mesh repair, Incisional Hernias, Recurrence

Introduction

A protrusion that is visible and felt while the patient is upright and frequently needs support or treatment is known as an incisional hernia. [1] Patients who have had abdominal procedures frequently get incisional hernias. Hernias can occur following primary surgery in a range of 1 to 19% of cases. [2-4] Within three years of surgery, the majority of incisional hernias return. [3] It has been shown that several risk variables, such as wound infection, age, obesity, the state of the abdominal wall, and others, are linked to incisional hernias. Recurrences can be caused by a variety of factors, including the type of incision made, the surgical technique employed, the quality of the materials utilized, and the length of the procedure. [5, 6] One of the primary causes of recurrence is thought to be tension on the

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suture line. With significant morbidity and mortality rates, the recurrence rates of incisional hernia repair following the initial closure of a hernia without the use of prosthetic material are between 10 and 50%. [7-9] The reason may be related to the suture line being under too much stress or to the incision and subsequent reapproximation of the avascular scar tissue. [10] Numerous researchers have discovered that prosthetic materials that reduce stress are well tolerated and linked to impressively low recurrence rates. [11-15] Ancient Greeks invented the first prosthetic materials. [16] Burke first made tantalum metal sheets available in 1940, and these are being used today to make real prosthetics. [17] Research into alternative materials is prompted by severe problems, patient pain, and material resorption.

The idea for the present prosthesis repair procedure is ascribed to Theodore Billroth. He stated in 1857 that the key to hernia repair would be found "if we could artificially make a tissue of the density and hardness of fascia and tendon. [18] First used as a suture and then woven into mesh prostheses for hernia treatment, nylon was the first plastic prosthetic material. [18] However, due to hydrolytic digestion, it lost strength and, if diseased, required removal. Later, various synthetic materials that were resistant to infection were created. Usher (19) first popularised the use of plastic prosthetic materials, which had clear benefits such as simplicity of use and resistance to aging-related disintegration. Studies done on plastic material showed no negative effects from having the mesh in close contact with the omentum or intestines and stated that positioning the mesh in a subfascial location had mechanical benefits. [19] The study's objectives were to outline the benefits of tension-free incisional hernia repair utilizing double-layered polyester mesh as well as to determine any post-operative problems.

Material and Methods

This cross-sectional study was conducted in the Department of General Surgery, Rajiv Gandhi Institute of Medical Sciences (RIMS), Adilabad. Institutional Ethical approval was obtained for the study. Written consent was obtained from all the participants of the study after explaining the nature of the study in vernacular language. Patients with incisional hernias who underwent surgery were monitored until 6 months follow-up. Only those patients who were prepared for long-term follow-up were included in the research after detailed explanations of the operation and 6 months of follow-up were given to the patients involved. N=30 patients in all received treatment using this method.

Surgical Technique: For 48 hours following surgery, 2nd Generation cephalosporin was administered intravenously (IV) to every patient. Provide Iodine was used to clean the skin before it was draped and the hernia was palpated, identified, and the area above the sac was carefully cut. In each case, the scar from the incision was removed, and the sac and anatomical layers of the front abdominal wall were meticulously separated. After removing the protruded portion of the sac, adhesions were freed from the surrounding tissue, and the fascial borders were dissected free to prevent any damage during reconstruction.

The peritoneum was then closed with polyglyconate running suture 0-2 Vicryl. Over the rectus sheath, a double-layered composite mesh was placed, and its edges were sewn to the muscle using interrupted non-absorbable Prolene 0-2 sutures. The wound was sealed off, the vacuum drain was retained, and hemostasis was established. On the fifth post-operative day, the drains were taken out, and on the eighth day, the sutures were taken out.

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Results

The number of patients included in the study was (n=30) male n= 5 and female n = 25. The age range of the patients was 30 -60 years the average age was 42.73 ± 5.6 years. The demographic profile of the patients included, and distribution is shown in table 1.

Table 1: Demographic profile of the patients involved in the study.

Age Group	*Male*	*Female*	*Total (percentage)*
30 - 35	6	1	7 (22.34)
36 – 40	3	0	3 (10.00)
41 – 45	8	1	9 (30.00)
46 – 50	4	2	6 (20.00)
51 – 55	2	1	3 (10.00)
56 – 60	2	0	2 (6.67)
Total	25	5	30(100)

According to prior procedures, the incidence of incisional hernias was 6.6% in the Pfannenstiel incision, 6.6% in the upper midline, 6.6% in the upper right paramedian, and 6.6% in the lower right paramedian (table 2). After surgery, patients often stayed in the hospital for 10 to 14 days on average, and there were no postoperative consequences including, morbidity, or persistent discomfort in the cases of the study. Following surgery, the patients were monitored for 6 months and only 1 instance (3.3%) of recurrence was discovered.

Table 2: The incidences of incisional hernias according to the incision given in primary surgeries.

SL. No	**Previous surgeries**	**Frequency**	**percentage**
1	Sub umbilical midline	20	66.67%
2	Upper midline	2	6.67%
3	Upper right Paramedian	2	6.67%
4	Lower paramedian	4	13.33%
5	Pfannenstiel incision	2	6.67%
	Total	30	100%

After surgery, patients often stayed in the hospital for 10 to 14 days on average, and there were no postoperative complications that resulted in death, morbidity, or persistent discomfort. Following surgery, the patients were monitored for 5 years, and only n=1 instance (3.3%) of recurrence was discovered which was managed adequately.

Discussion

A patient will often detect an asymptomatic protrusion in the abdominal wall when they have an incisional hernia. 60% of hernia patients do not exhibit any symptoms, however, the surgeon may occasionally find one after a thorough physical examination. Some people experience pain as a result of physically demanding activities. Contrary to transverse incisions, midline incisions are the main surgical incisions that result in incisional hernias. [4, 8, 20] In our investigation, we discovered that 66.67% of patients had an incisional hernia in the sub-umbilical midline area. The borders of the fascial defect are often approximated with continuous or interrupted sutures when closing the main surgical incisions of the midline. However, this method may result in excessive tension, wound dehiscence from tissue

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ischemia, and cutting of sutures through the tissues [4, 8, 21]. Since 1950, prosthetic materials have become more and more common for hernia repair. The boundaries of the abdominal walls and aponeurosis are bridged by prosthetic materials, which are also employed to strengthen the fascia. [22] The best mesh for prosthetic repair is up for dispute because each one of them has many benefits and drawbacks. One of the major drawbacks of prosthetics is the possibility of adhesion development, mechanical bowel blockage, or fistula formation in the event of a significant peritoneal defect and direct contact between the mesh and intraabdominal organs. [23] The multifilament polyester mesh had a noticeably higher number of complications per patient, according to a study by GD Leber et al. [24] looking at long-term consequences linked to prosthetic repair of an incisional hernia. We obtained acceptable success rates in our trial using a double-layered composite mesh, and there was only one instance of recurrence (3.3%). After 5 years of follow-up, we had no major postoperative morbidity, death, or wound infections. RW Luijendijk et al; [8] found regardless of the extent of the hernia, mesh repair has been demonstrated to be better than suture repair in studies comparing mesh repair with suture repair of incisional hernias. It seems that the effectiveness of hernia surgery depends on the choice of cases for repair, the surgeon's ability, post-operative care, and follow-up in addition to the type of material employed. In our study, we designed completely tension-free hernia repairs using double-layered mesh. The remarkable success rate of mesh repair for incisional hernias in our study can be attributed to this, among other things.

Conclusion

Within the limitations of the current study, it can be found that a tension-free repair of incisional hernia with double-layered mesh is an effective way of surgical treatment. With their loose and saggy abdominal walls, the Indian population benefits most from this approach. The operation is often without serious morbidity and recurrence problems.

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