

Original Research Article

Preperitoneal mesh repair in incisional hernia: a prospective study

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ABSTRACT

Background: Incisional hernia is a common surgical condition encountered in day to day practice. Based on national operative statistics, incisional hernias account for 15 to 20% of all abdominal wall hernias. Of all hernias encountered incisional hernias can be the most frustrating and challenging to treat. This prospective study aims to assess the efficacy of preperitoneal mesh repair technique using polypropylene mesh in the management of incisional hernia.

Methods: A total of 40 patients with incisional hernia undergone open preperitoneal polypropylene mesh repair. It had evaluated for post-operative complications and recurrence for six months to one-year post-surgery. The results had tabulated statistically analysed and compared with other published reports in the literature.

Results: Out of 40 patients, the size of the defect, 10 patients had less than 2 cm, 28 patients had between 2.1-4 cm, 1 patient between 4.1-6 cm and 1 patient between 6.1-8 cm. The type of hernia, 32 patients had infra umbilical hernia, and 8 patients had a supraumbilical hernia. Post-operative complication 3 patients had seroma, 1 patient had edge necrosis, 1 patient had post-op ileus, and 1 patient had chronic pain. Based on follow up, 4 patients had followed until 6 months, 10 patients till 9 months and 26 patients till one year.

Conclusions: Post-operative complications following open preperitoneal polypropylene mesh repair are considerably less compared to other techniques of mesh repair and showed no recurrence among its subjects during the follow-up period, and longer follow-up is required to draw a definitive conclusion.

Keywords: Incisional hernia, Polypropylene mesh, Seroma, Recurrence

INTRODUCTION

An incisional hernia is a common surgical condition encountered in day to day practice. Based on national operative statistics, incisional hernia account for 15 to 20% of all abdominal wall hernias. Of all hernias encountered incisional hernias can be the most frustrating and challenging to treat. An incisional hernia had defined as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of operation or accidental wound. As a result of advances in surgical knowledge, and an increase in the variety and number of abdominal incisions, the incidence of post-operative incisional hernias has increased rapidly. To solve the incisional hernia problem, first of all, methods of prevention are needed.¹

Furthermore, once incisional hernia has developed. Ideally, methods of repair that do not lead to recurrence or other complications should be available. Mesh repair is the first-choice technique for incisional hernia treatment. The results of sublay technique are better than onlay technique. Several technical and patient related factors have linked to the occurrence of incisional hernias. There is no conclusive evidence that demonstrates the type of suture or technique of incisional closure at the primary operation, which affects hernia formation.²

Recurrence rates vary between 10 to 50% and is typically reduced by more than half with the use of prosthetic mesh. Prosthetic material may be placed as an on the lay patch to buttress a tissue repair, interposed between fascial defects,

sandwiched between tissue planes or put in an intraperitoneal position. Depending on its location, several essential properties of the mesh must have considered. Innumerable methods of repair have described. The results of these repairs have varied not only for different ways but also for the same way in the hands of other surgeons. Clarification regarding the type of mesh and its positioning and operative methods of open surgery and laparoscopic repair needs to have addressed and the best technique to provide a durable correction has yet to be determined. The numerous approaches, types of prosthetic materials for repair and possible locations of mesh placement testify to the lack of unequivocal evidence to promote any of repair techniques that have proposed so far.^{3,4} This prospective study looks into various risk factors involved in the formation of incisional hernia, its clinical presentation, and preperitoneal polypropylene mesh repair with regards to post-operative complications and recurrence.

This prospective study aims to assess the efficacy of preperitoneal mesh repair technique using polypropylene mesh in the management of incisional hernia.

METHODS

This prospective single institutional study was conducted in the department of surgery from the period of October 2018 to March 2020 in K. A. P. V., government medical college, Tiruchirappalli. Non-probability sampling method was used to collect data. A total of 40 patients who had admitted with the clinical diagnosis of incisional hernia to different surgical wards had undergone open preperitoneal polypropylene mesh repair. It had evaluated for post-operative complications and recurrence for six months to one-year post-surgery, and the results had tabulated statistically analysed and compared with other published reports in the literature.

Inclusion criteria included age between 15-75 years diagnosed with incisional hernia and exclusion criteria includes patients unfit for surgery, recurrent incisional hernia, strangulated incisional hernias and pregnancy with incisional hernia

Data had collected through specifically designed proforma. A case is recording proforma (C. R. P.) about the patient particulars good history, clinical examination, investigations, diagnosis and surgical procedure. The patient-related factors of sex, age, presence and absence of obesity and cough, constipation, prostatism, diabetes mellitus, glucocorticoid therapy, smoking status and abdominal surgical history had recorded. Factors related to the operation, including the surgical technique and presence or absence of hematoma, dehiscence and infection analysed. All the surgical procedures and medical management and investigations had conducted under direct guidance and supervision of our guide. Before the start of the study, a written/informed consent had obtained in local vernacular for each patient.

The data were collected using designed proforma and converted to Microsoft excel. Data were presented as frequency and percentage.

RESULTS

Out of 40 patients, 34 patients were females, and 6 patients were males.

Table 1: Gender distribution.

Gender	No. of patients	Percentage
Male	6	15
Female	34	85

Out of 40 patients, 34 patients were females, and 6 patients were males. Based on the age group, 12 patients were in the age group of 40 years, 14 patients between 41-50 years, 9 patients between 51-60 years, 5 patients above 60 years.

Table 2: Age distribution.

Age (years)	No. of patients	Percentage
Below 40	12	30
41-50	14	35
51-60	9	22.5
Above 60	5	12.5

Out of 40 patients, 34 patients were females, and 6 patients were males. Based on the size of the defect, 10 patients had less than 2 cm, 28 patients had between 2.1-4 cm, 1 patient between 4.1-6 cm and 1 patient between 6.1-8 cm.

Table 3: Size of the defect.

Size of the defect (cm)	No. of patients	Percentage
Below 2	10	25
2.1-4	28	70
4.1-6	1	2.5
6.1-8	1	2.5

Out of 40 patients, 34 patients were females, and 6 patients were males. Based on the type of hernia, 32 patients had infra umbilical hernia, and 8 patients had a supraumbilical hernia.

Table 4: Type of hernia.

Type of hernia	No. of patients	Percentage
Supraumbilical	8	20
Infraumbilical	32	80

Out of 40 patients, 34 patients were females, and 6 patients were males. Based on post-operative complication 3 patients had seroma, 1 patient had edge necrosis, 1 patient had post-op ileus, and 1 patient had chronic pain.

Table 5: Post-operative complications.

Post-operative complication	No. of patients	Percentage
Seroma	3	7.5
Wound infection	0	0
Hematoma	0	0
Edge necrosis	1	2.5
Wound dehiscence	0	0
Post op ileus	1	2.5
DVT	0	0
Mesh removal	0	0
Recurrence	0	0
Chronic pain	1	2.5

Out of 40 patients, 34 patients were females, and 6 patients were males. Based on follow up, 4 patients had followed until 6 months, 10 patients till 9 months and 26 patients till one year.

Table 6: Follow-up among subjects.

Follow-up	No. of patients	Percentage
Six months	4	10
Nine months	10	25
One year	26	65

DISCUSSION

An incisional hernia is a common post-operative complication of abdominal surgeries, with an incidence ranging from 11% up to 20% of all laparotomy incisions and the most common indication for reoperation after laparotomy.

In the present study of 40 subjects, the youngest aged 24 and the oldest 72 years. The mean age was 46.8 years. Most of the patients were in the age group between 41 to 50 years (35%). As per Maingot's mean age was around 45 years, and in the survey on incisional hernia conducted by Ellis et al, it was 49.4 years.^{5,6} There was female preponderance with 85%, i.e. 34 subjects were females with male to female ratio at 1:5.⁶

This was in line with the study results of Regnad et al that had a male to female ratio of 1:5.⁷ The exact male to female ratio varies in the literature. 47.5% of subjects presented with complaint of swelling alone and 52.5% had a complaint of pain, dull aching to dragging in nature along with swelling.

Of the 40 patients, 72.5% had an elective surgery which leads to an incisional hernia, and the remaining 27.5% underwent emergency index surgery. Parekh et al in, their study found that 72% had undergone elective versus 28% who had emergency surgery.⁸

In the present study majority of cases had infra umbilical defect 80% and 20% had supra umbilical defect. Goel and

Dubey also noted in the lower abdominal incisions are the most standard site of incisional hernia.⁹ Ponka in, his study noted a 36% incidence and Milbourne noted 28.7% incidence among gynaecological procedure.^{10,11} Bucknall et al, in his research of 1129 abdominal procedures, reported that index surgery had been complicated by post-op wound infection in 48.8%.¹²

Ellis et al in, their study had 35.85% wound infection rate.⁶ Overall the complication rate is 15% which is comparable or in line with the survey on preperitoneal mesh repair by Manohar et al which was 14% complaint of chronic pain or discomfort is seen only one subject against two in Hamy et al study.¹¹⁻¹³ In comparison to the studies of suture techniques of Langer, George, Liakakos, and Hamy et al and the recurrence noted were nil.¹³⁻¹⁵

Limitations

Larger sample size with longer follow-up may give more details of the improvement.

CONCLUSION

In the present study, the post-operative complications following open preperitoneal polypropylene mesh repair are considerably less compared to other techniques of mesh repair and showed no recurrence among its subjects during the follow-up period. Longer follow-up is required to draw a definitive conclusion.

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