



A STUDY OF MESH REPAIR IN EMERGENCY INGUINAL HERNIA SURGERY IN PATNA MEDICAL COLLEGE AND HOSPITAL, PATNA.

General Surgery

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ABSTRACT

Background: Mesh repair is the procedure of choice for elective inguinal hernia surgery; however its use in the emergency setting is still limited due to the risk of mesh related complications. The present study has been conducted to evaluate the role of mesh placement in emergency inguinal hernia surgery. **Patients and Methods:** The study extended over a period of 12 months from September 2017 to August 2018 and included 94 patients who presented to emergency department with complications of inguinal hernia. This included 77 patients with obstruction & strangulation and 17 patients with irreducible inguinal hernia. Age of the patients ranged from 20 years to 77 years and all of them were male. Patients in whom resection of bowel was done due to gangrene were excluded from the study. Hernia repair was done using polypropylene mesh in all the patients and a suction drain was routinely inserted. The following parameters were calculated: Incidence of wound infection, incidence of seroma formation, need for mesh removal, length of hospital stay or recurrence of hernia. **Results:** Out of 94 patients included in the study 05 patients (5.3%) developed wound infection which was managed conservatively while seroma developed in 12 patients (12.7%) which was also conservatively managed. Duration of hospital stay ranged from 04 days to 13 days with a mean of 5.17 ± 1.09 days. None of the patient required the removal of mesh or developed any recurrence. **Conclusion:** Emergency repair of inguinal hernia can be safely done using polypropylene mesh with an acceptable incidence of wound infection; however patient selection is very important and it should include only the patients in whom bowel gangrene has not developed.

KEYWORDS

Strangulated inguinal hernia; Obstructed inguinal hernia; Irreducible inguinal hernia; Mesh repair.

INTRODUCTION

Inguinal hernia is one of the most common problems encountered by the general surgeons and has a significant complication rate if it is not treated timely. Complications of inguinal hernia include (1) Strangulation which occurs in 0.3–2.9% of all inguinal hernias in adults, (2) Intestinal obstruction or incarceration and (3) Irreducibility (3)

Strangulation is more common in primary inguinal hernias and small hernias than large and recurrent hernias at a ratio of 5:1.4 The risk of hernia strangulation is greatest during the first 3 months of its appearance and occurs at an average age of 69 years with no difference between genders (5). Strangulation is also more common in indirect hernias than direct and femoral hernias (6) The right side is more commonly affected (2:1). Prosthetic meshes have been used for many years to reinforce elective hernia repair with good results; however, mesh use in emergency repair of complicated inguinal hernia is a concern owing to infectious complications. Risk increases especially in the presence of strangulation and intestinal necrosis. There is no unanimity with regard to the use of mesh in potentially contaminated operating field (7-9) This is a crucial issue because the presence of complicated inguinal hernia is a serious clinical condition that is responsible for the significant morbidity and mortality and requires tension-free and a sturdy repair to prevent immediate or delayed recurrence. Patients with a large irreducible hernia sac for example sliding hernia or those presenting late there is increased chance of post-operative scrotal edema and increased incidence of wound infection. Placement of drains into the mesh site has shown decreased wound infection and edema.

AIMS AND OBJECTIVES

- To evaluate the role of polypropylene mesh repair in emergency inguinal hernia surgery.
- To calculate the-
 - a) Incidence of wound infection
 - b) Incidence of seroma formation
 - c) Need for mesh removal
 - d) Length of hospital stay
 - e) Recurrence

Type of Study: Prospective

Inclusion Criteria

All patients >20 years of age presenting to emergency department with strangulated, obstructed or irreducible inguinal hernia were included.

Exclusion Criteria

Patients who required resection of bowel because of gangrene were

excluded from the study.

Patients and Methods

A total of 111 patients presented to emergency department with complicated inguinal hernia over a period of 12 months from September 2017 to August 2018. 17 were excluded from the study due to one of the following reasons (1) Intestinal necrosis in 12 patients (2) Age <20 years in 05 patients. Remaining 94 patients were included in the study and age of the patients ranged from 20 years to 77 years and all of them were male.

Lichtenstein's tension free mesh repair was done in all the patients using polypropylene mesh and a 12-French vacuum suction drain was routinely inserted to prevent post-operative oedema and seroma formation. Broad spectrum intravenous antibiotics were given to all the patients for at least 72 hours.

RESULTS

Out of 94 patients included in the study 87 had indirect inguinal hernia and 07 patients had direct inguinal hernia. There were 77 patients with obstruction & strangulation and the contents of sac were as follows: small intestine - 61 patients, Omentum - 04, transverse colon - 11, incarcerated vermiform appendix i.e. Amyand's hernia in 01 Patient. Irreducible inguinal hernia was present in 17 patients and the contents were sigmoid colon and cecum in 13 patients (sliding hernia) and in 4 patients transverse colon was present (Table 1). Preoperatively features of strangulation were present in 57 patients which gradually returned to normal after the obstruction was relieved.

Table 1: Total Number Of Patients And Type Of Complicated Hernia

Type of hernia	Total No. of patients (n=94)
Strangulated inguinal hernia	57
Obstructed inguinal hernia	20
Irreducible inguinal hernia	17

56 patients presented within 6 hours, 23 patients presented in 6-24 hours while 15 patients presented after 24 hours of the onset of symptoms. (Table 2)

Table 2: Time Duration Between The Onset Of Symptoms And Presentation To Hospital

Time duration between the onset of symptoms and presentation to hospital	Number of patients
<6 hours	56
6-24 hours	23
>24 hours	15

Incidence of wound infection was 5.3% (5 patients) which was managed conservatively. The incidence of seroma formation was 12.7% (12 patients) and this included 07 patients with irreducible inguinal hernia, it was also managed conservatively. Mean length of hospital stay was 5.17 $\pm$ 1.09 days with a range of 4-13 days. None of the patient required removal of the mesh and there was no recurrence in the follow-up period. Overall mortality was 1.1% (01 patient). (Table 3)

Table 3: Length Of Hospital Stay, Complications And Outcome Of The Patients

Parameters	Total number of patients (n=94)
Incidence of wound infection	05 (5.3%)
Incidence of seroma formation	12 (12.7%)
Need for mesh removal	0
Mean Length of hospital stay (d, $\pm$ SD)	5.17($\pm$ 1.09)
Hernia Recurrence in follow-up	0
Mortality	01

DISCUSSION

Groin hernia afflicts approximately 5% of adult men and it should be repaired under elective conditions to reduce the complication rates. However, about 5-15% of all patients with groin hernia are operated under emergency conditions due to patient ignorance or delayed diagnosis (10). Strangulation, intestinal obstruction and irreducibility are the most frequent complications. (11) Strangulated inguinal hernia is one of the common surgical emergencies dealt with by surgeons worldwide and it is one of the most common causes of intestinal obstruction in all age groups. (7) About 15% of all patients with strangulated inguinal hernia require bowel resection due to necrosis. (12,13) As there is always a fear of mesh infection in emergency repair of inguinal hernia; only very few studies have been done in patients with strangulated hernia and mostly no synthetic material was used for the repair (7-9) For this reason, we aimed to study the outcome of emergency hernia repair treated by non-absorbable mesh.

One of the important factors responsible for undesirable outcome of the patients with incarcerated groin hernia is advanced age. Andrews defined that incarceration rate reached to peak incidence in the eighth decade. (14) Oishiet al, in their series, reported all mortalities over 68 years of age. (15) Kulah et al also observed that the advanced age completely affected strangulation rate, bowel resection requirement, hospital stay, morbidity, and mortality. (10) Another important factor that plays a role in undesirable outcome is patient's co-morbidity. The length of hospital stay was found to be longer in patients with uncontrolled co-existing diseases. In the literature, morbidity and mortality rates had been defined as about 20% and 10%, respectively (12)

In our study wound infection occurred in 5 patients (5.3%) and it was managed conservatively in all the patients with antibiotics and dressing of the wound. None of the patient required removal of the mesh. Seroma formation occurred in 12 patients (12.7%). Seroma formation was most commonly found in patients with irreducible inguinal hernia (07 patients). We routinely inserted vacuum suction drain in all the patients and it was kept for at least 48-72 hours.

In our study mean length of hospital stay was 5.17 $\pm$ 1.09 days with a range of 4-13 days. Follow-up of the patients was done for 6 months and there was no recurrence. There was only one mortality (1.1%) in our series and that too because of pulmonary complications. The reason for low mortality in our study is due to the fact that only the patients who didn't require resection of bowel because of necrosis were included.

The first of the few papers about the prosthetic mesh usage in the treatment of strangulated groin hernias was published by Pans et al. (7) In his series of 35 patients with strangulated inguinal hernias, nine had undergone intestinal resection, whereas three had encountered appendectomy, and in conclusion, they have shown that preperitoneal mesh usage was a safe procedure, even when ischemic necrotic intestinal segment had been resected. Atilla et al in their study on 95 patients with strangulated hernia found no statistically significant complication rate when mesh was used. (16) Faridi et al reported a case with Amyand's hernia in which prosthetic mesh was applied after the removal of incarcerated vermiform appendix with satisfactory results. (17) Similarly, some reports regarding prosthesis implantation for incarcerated or strangulated groin hernias have shown that it is a

safe procedure. (18) However, there is still some concern in the literature about the efficacy and safety of prosthetic hernia repair in the presence of clean contaminated or contaminated fields. (19) Kurt et al identified 152 patients who underwent surgical treatment for an incarcerated hernia, out of which 16 required intestinal resection. (2)

Incision site of strangulated or incarcerated hernia, which is repaired under emergent conditions, might be infected by bacteria originating from the intestinal tract. Prophylactic antibiotic therapy turns out to be the main treatment regimen owing to this assumption. According to our experience, broad spectrum antibiotic administration should be extended to 7 days in the presence of intestinal necrosis when prosthetic mesh is used. If there is no intestinal necrosis, antibiotic therapy can be used only for 2 to 4 days postoperatively. The use of perioperative antibiotics, careful preparation of the operative field, and meticulous hemostasis have probably contributed to the acceptable rate of wound infection following intestinal resection and mesh implantation. Recently, new meshes have been introduced that seem to be more immune in infected fields. (20)

In cases of patients having a large hernia sac or those presenting late there is increased chance of post-operative scrotal oedema. This can be attributed to a large sac and maybe also due to longstanding hernia. Major tissue dissection and handling can also be one of the reasons for oedema. As scrotum is a lax structure, large amount of fluid can be collected. Because of the collection there is increased incidence of wound infection. Placement of drains into the mesh site and below the stitch line has shown to decrease wound infection and oedema.

CONCLUSION

Acutely incarcerated groin hernias can be repaired safely with non-absorbable mesh with an acceptable incidence of wound infection and seroma formation however patient selection is very important and it should include only the patients in whom bowel gangrene has not developed.

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