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# MESH HERNIOPLASTY FOR COMPLICATED HERNIAS UNDER EMERGENCY SETTINGS

**Syed Mushtaq Ahmad Shah[1], R. S. Bali[1]*, Sushant Verma[2]**

[1]Department of General Surgery, Government Medical College Srinagar, J&K, India.
[2]Department of General Surgery, Maulana Azad Medical College & Lok Nayak Hospital, New Delhi, India.

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***Corresponding Author**
**Dr. R. S. Bali**
Department of General Surgery, Government Medical College Srinagar, J&K, India.

## ABSTRACT

Background: Common complications of hernia are irreducibility, obstruction and strangulation. Repair of complicated hernias is technically challenging due to edematous and friable tissues with occasional need for concurrent bowel resection and carries high rates of post-operative infective complications. Traditionally, placement of mesh is avoided in cases of emergency hernia surgery. The aim of this study was to evaluate the clinical outcome of mesh repair for complicated hernia. Patients and methods: The study was conducted in the Department of Surgery, Maulana Azad Medical College & Lok Nayak Hospital, Delhi between August 2010 to February 2015. 40 cases of complicated hernias (26 inguinal, 10 para-umbilical and 4 incisional) repaired using mesh placement (Lichensteins repair with prolene mesh) were studied in terms of patient characteristics, clinical presentation, operative findings and clinical course. Results: Of the 40 patients; 18 had irreducible, 12 had obstructed and 10 had strangulated hernia. 4 patients developed wound infections (10%) and 4 developed localized seromas (10%). No mortality was recorded. Conclusions: Mesh placement should not be a contraindication for emergency hernia repair and it should be considered using an adequate surgical technique.

**KEYWORDS:** Emergency hernia repair, mesh placement.

## INTRODUCTION

Irreducibility, obstruction and strangulation comprise the common complications of hernia. Complicated hernias, both inguinal and ventral, are frequently seen in the surgical emergency in developing countries. The treatment of complicated hernia consists of urgent surgical

exploration, with reduction of its contents often requiring bowel resection in cases of strangulation. Such emergency repair is technically challenging due to the edematous and friable tissues.[1] Mesh placement is advocated in elective hernia repair over primary repair owing to its lower recurrence rate.[2] However, placement of mesh in complicated hernia repair in emergency setting is avoided due to risk of infection, as high as 10%-30%.[3] Some studies show about 20%-30% infection rates in cases requiring bowel resection.[4] There is paucity of literature about the role of prosthetic mesh repair in cases of complicated hernia repair, especially in the emergency setting.

The aim of this study was to evaluate the outcome of mesh hernia repair of complicated hernias in the emergency setting and to evaluate its complications.

## PATIENTS AND METHODS

A prospective study was conducted in the Department of Surgery, Maulana Azad Medical College & Lok Nayak Hospital, Delhi between August 2010 and February 2015. The study included first 40 patients of complicated hernia undergoing mesh placement for hernia repair. Age, sex, body mass index and type of hernia were noted. History of previous surgery was noted in cases of patients presenting with complicated incisional hernia. Patients were operated within 24 hours of presentation. All patients received antibiotic prophylaxis consisting of ceftriaxone. In cases of obstructed hernias, gut viability was checked before reduction of contents.

Double layered full thickness bowel anastomosis was done in cases of strangulation requiring bowel resection. Prolene mesh was used for hernia repair in all cases. Inguinal hernias were managed by Lichtensteins mesh hernioplasty whereas the ventral hernias were managed by onlay mesh hernioplasty, using prolene mesh in all.

In the intra operative period, the following parameters were evaluated:

Contents of the hernia sac.

Vitality of the contents.

Requirement of bowel/omental resection.

Wound related complications viz. seroma formation and wound infection were noted post-operatively. The patients were followed up for 3 months post operatively.

**Inclusion criteria**

The study included first 40 patients of complicated hernias who underwent emergency surgical exploration followed by mesh hernioplasty.

**Statistical analysis**

The data was analyzed in SPSS version 17. P-value less than 0.05 was considered to be significant.

**RESULTS**

A total of 40 patients with complicated hernia undergoing mesh repair in the emergency setting were evaluated. Mean age group of the patients was 45.22 years (range from 25-72 years). Majority of patients were males (75%), with a male: female ratio of 3:1. 65% patients had a body mass index of >30 (Table 1).

**Table 1: Patient related factors**

| | | |
|---|---|---|
| Mean age (years) | | 45.22 |
| Sex | 30 (male) | 10 (female) |
| Body mass index (kg/m$^2$) | 26 (> 30) | 14 (<30) |

In our study, 10% cases had associated comorbid conditions. The most common comorbidity was chronic obstructive pulmonary disease followed by hypertension and diabetes.Complicated inguinal hernias were most common (65%) followed by para-umbilical (25%) and incisional hernias (10%). The most common complication was irreducibilty (45%) followed by obstruction (30%) and strangulation (25%). In cases of complicated inguinal hernias, 14 were on the right side and 12 on the left side.Of the 26 inguinal hernias operated upon by us there were 12 indirect, 8 direct and 6 pantaloon inguinal hernias.

The distribution of the type of complicated hernia is shown in table 2.

**Table 2: Distribution of the type of complicated hernia**

| Hernia type | Number | Males | Females |
|---|---|---|---|
| Inguinal | 26 | 26 | 0 |
| Para-umbilical | 10 | 4 | 6 |
| Incisional | 4 | 0 | 4 |
| Total | 40 | 30 | 10 |

In our study, 34 patients had omentum and 6 patients had bowel and omentum as the contents of the hernia sac. Amongst these, 10 patients required resection of the omentum present in the

hernia sac and 2 required resection anastamosis of the small bowel (inguinal hernias) as they had irreversible ischemic injury.

The type of complication is shown in table 3.

**Table 3: Type of hernia complication**

| Hernia type | Irreducibility | Obstruction | Strangulation |
|---|---|---|---|
| Inguinal | 16 | 6 | 4 |
| Para-umbilical | 2 | 4 | 4 |
| Incisional | 0 | 2 | 2 |
| Total | 18 | 12 | 10 |

Patients were monitored carefully in the post-operative period for complications. Of the 40 patients, 4 patients developed localized seroma (2 patients with obstructed para-umbilical hernia and 2 patients with obstructed incisional hernia). 4 patients developed wound infection (2 patients with strangulated inguinal hernia and 2 patients with irreducible inguinal hernia).

**Table 4: Post-operative complications**

| Complication | Number |
|---|---|
| Seroma | 4 |
| Wound infection | 4 |

Both cases of wound infections were superficial in nature and were managed with local wound debridement and antiseptic dressing. Cases of strangulated hernia undergoing emergency mesh repair had a significant complication rate ($p<0.05$). No mortality was recorded. All but two of the patients in our study group were followed up for 3 months with routine OPD visits at 10 days, one month and three months post operative. The two patients who did not complete followup did not turn up for their said visits at 3 months, at their last recorded visit at one month post-op they had no complications. 95% of our patients completed their required followup.

## DISCUSSION

Mesh repair is favored for elective hernia repair owing to a low incidence of recurrence rates as compared to primary repair.[2] However, even today, use of mesh in cases of emergency hernia repair is avoided due to fear of post-operative infective complications.[3] The combination of the acutely complicated hernia, unprepared patient and lack of local hygiene, often lead to a high incidence of infective complications in the post-operative period. Studies

have shown high post-operative infective complications in cases of mesh repair for strangulated hernias, which require bowel resection.[5]

The high wound infection in patients with bowel resection is postulated to be secondary due to bacterial translocation.[6] In our study, 2 patient undergoing mesh placement for strangulated hernia developed wound infection in the post-operative period. Removal of mesh was not required in these cases and clinical improvement was seen with the use of antibiotics and local wound dressings.

Recently, studies have shown low incidence of infectious complications for emergency mesh repair. Atila et al, found an incidence rate of 11% in their prospective clinical study consisting of prosthetic repair of acutely incarcerated groin hernias.[7] Similarly, Birolini C, found a 15% incidence of wound related complications in their clinical study.[8] Legnani GL, found a low incidence of complications in their initial evaluation of 9 cases of strangulated inguinal hernias repaired laparoscopically.[9]

In our study, all the 8 patients developing wound related complications in the post-operative period, were managed conservatively and discharged in good clinical condition. All the 40 patients were in sound clinical condition in the follow up period.

## CONCLUSION

The small sample size of this study precludes it from advocating the routine use of mesh placement in emergency repair of complicated hernias. However, from the results of this study, mesh repair should not be a contraindication for emergency repair of complicated hernias. Mesh may be used with a relatively low incidence of post-operative wound related complications. This study also highlights the need for future prospective studies to evaluate the long term results of mesh repair for emergency repair of complicated hernias.

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