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Clinical study of outcome and complications of emergency inguinal hernias repair at a tertiary care hospital

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Abstract

Background: Complications of inguinal hernia require emergency repair include strangulation, intestinal obstruction or incarceration and irreducibility. Present study was aimed to study outcome and complications of emergency inguinal hernias repair at a tertiary care hospital. **Material and Methods:** Present study was prospective, observational study, conducted in patients above 18 years, admitted in emergency with obstructed/ strangulated/ incarcerated inguinal hernia underwent emergency surgical repair. **Results:** 35 patients underwent surgery for emergency hernia repair were considered for study. Majority of patients were from >60 years age group (51.43 %), mean age of study patients was 58.9 ± 13.3 years. All patients were male. 13 patients (37.14 %) were ASA grade ≥ 3. Common high-risk factors noted were obesity (20 %), smoking (20 %), chronic constipation (17.14 %), hypertension (17.14 %), diabetes (8.57 %) & COPD (8.57 %). Left sided hernia (57.14 %) was common than right (42.86 %). Common type of hernia was Indirect inguinal hernia (65.71 %) followed by Direct inguinal hernia & Mixed (17.14 % each). Common intra-operative findings were obstructed inguinal hernia (42.86 %) & intestine was main content of hernia (60 %) in majority of cases. Mean duration of surgery was 69.31 ± 22.15 minutes. Hernioplasty with mesh repair was most common procedure (62.86 %), followed by adhesiolysis with hernioplasty with mesh repair (17.14 %), omentectomy and hernioplasty with mesh repair (11.43 %) while bowel resection with end-to-end anastomosis and hernioplasty with mesh repair was done in 3 cases (8.57 %) Common complications were wound infection (8.57 %), seroma (2.86 %), post-operative hematoma (2.86 %) & respiratory disturbances (2.86 %). **Conclusion:** Mesh placement in emergency inguinal hernia repair seems to be a good option with acceptable wound infection rate and fewer recurrences.

Keywords: Emergency hernia repair, mesh placement, inguinal hernia

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Introduction

Hernia describes the bulge or protrusion of an organ or a tissue through an abnormal opening in the abdominal wall.[1] An inguinal hernia is the most common type of hernia and it mainly affects men. It is said to be often associated with ageing and repeated strain on the abdomen.

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Inguinal hernias account for 75% of all abdominal wall hernias with a lifetime risk of 27% in men and 3% in women.[2]

With progresses in surgical techniques and anesthetic methods, elective inguinal hernia repair surgery has become a safe outpatient procedure that carries favorable outcomes.[3] However, when it comes to emergency hernia repair surgery, things are different. Compared with elective surgery, postoperative mortality can increase 7-fold in emergency operations, and 20-fold if bowel resection was undertaken.[4] Complications of inguinal hernia require emergency repair include strangulation, intestinal obstruction or incarceration and irreducibility.[5,6]

Incarcerated inguinal hernia manifests as an acutely irreducible inguinal mass, which requires timely surgery because it may eventuate in the strangulation and gangrene of the intestine; it represents between 5- 15% of groin hernial repairs.[7,8] Mortality and morbidity are related to the mean age of presentation, associated co-morbid conditions, tissue-based repair, symptoms at presentation, bowel resection and anastomosis and severity of post-operative complications. Present study was aimed to study outcome and complications of emergency inguinal hernias repair at a tertiary care hospital.

Material And Methods

Present study was prospective, observational study, conducted in Department of General Surgery, Dr Ulhas Patil Medical College & Hospital, Jalgaon, India. Study duration was of 18 months (January 2021 to July 2022). Study approval was obtained from institutional ethical committee.

Inclusion criteria

- Patients above 18 years, admitted in emergency with obstructed/ strangulated/ incarcerated inguinal hernia underwent emergency surgical repair, willing to participate in present study

Exclusion criteria

- Patients with normal reducible inguinal hernia, patients managed conservatively.
- Patients unfit for surgery
- Patients not willing to participate

Study was explained to patients in local language & written consent was taken for participation & study. The diagnosis of inguinal hernia was made by taking thorough history and physical examination. Laboratory & radiological investigations such as Hb%, TLC, DC, ESR, RBS, RFT, LFT, ECG & chest X-ray were done in all patients. Ultrasound abdomen, X-ray abdomen erect, 2D ECHO were done whenever needed. Cases with inguinal hernias which had signs of obstruction and inability to reduce the hernia are taken up for emergency surgical intervention within 6-8 hours.

Emergency preparation of the patient was done by initial resuscitation of the patient with crystalloids to maintain haemodynamic stability, Nasogastric tube aspiration was done and bladder catheterization was done. All cases were performed under general anaesthesia. Various surgical procedures such as hernia repair with mesh fixation, herniorrhaphy along with omentectomy, herniorrhaphy along with resection and anastomosis were done as needed. All patients received standard care in the peri-operative period. Antibiotics & chest physiotherapy was given. The cord was routinely palpated until the patient was discharged. Follow up kept for 3 months.

Clinical details, intraoperative findings, postoperative course, complications were noted in proforma. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

Results

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35 patients underwent surgery for emergency hernia repair were considered for study. Majority of patients were from >60 years age group (51.43 %), mean age of study patients was 58.9 ± 13.3 years. All patients were male. 13 patients (37.14 %) were ASA grade ≥ 3. Common high-risk factors noted were obesity (20 %), smoking (20 %), chronic constipation (17.14 %), hypertension (17.14 %), diabetes (8.57 %) & COPD (8.57 %). Duration between the onset of symptoms and presentation to hospital was < 6 hours in majority of cases (51.43 %) followed by 6-24 hours (40 %) & >24 hours (8.57 %). Left sided hernia (57.14 %) was common than right (42.86 %). Common type of hernia was Indirect inguinal hernia (65.71 %) followed by Direct inguinal hernia & Mixed (17.14 % each).

Table 1: General characteristics

	No. of patients	**Percentage**
Age groups (in years)		
30-39	1	2.86
40-49	4	11.43
50-59	12	34.29
60-69	14	40
70-79	4	11.43
Mean age (mean±SD)	58.9 ± 13.3	
ASA grade		
I	3	8.57
II	19	54.29
III or more	13	37.14
High risk factors		
Obesity	7	20
Smoking	7	20
Chronic constipation	6	17.14
Hypertension	6	17.14
Diabetes	3	8.57
COPD	3	8.57
Duration between the onset of symptoms and presentation to hospital		
< 6hours	18	51.43
6-24 hours	14	40
>24 hours	3	8.57
Site of hernia		
Right	15	42.86
Left	20	57.14
Type of hernia		
Direct inguinal hernia	6	17.14
Indirect inguinal hernia	23	65.71
Mixed	6	17.14

In present study, common intra-operative findings were obstructed inguinal hernia (42.86 %) & intestine was main content of hernia (60 %) in majority of cases. Mean duration of surgery was 69.31 ± 22.15 minutes. Hernioplasty with mesh repair was most common procedure (62.86 %), followed by adhesiolysis with hernioplasty with mesh repair (17.14 %), omentectomy and hernioplasty with mesh repair (11.43 %) while bowel resection with end-to-end anastomosis and hernioplasty with mesh repair was done in 3 cases (8.57 %)

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Table 2: Intra-Operative findings

Characteristics	**Number of patients**	**Percentage**
Diagnosis		
Obstructed inguinal hernia	15	42.86
Irreducible inguinal hernia	11	31.43
Strangulated inguinal hernia	9	25.71
Main contents of hernia		
Intestine	21	60
Omentum	10	28.57
Colon	3	8.57
Others	1	2.86
Duration of operation (min)	69.31 ± 22.15	
Mode of surgery		
Hernioplasty with mesh repair	22	62.86
Adhesiolysis with hernioplasty with mesh repair	6	17.14
Omentectomy and hernioplasty with mesh repair	4	11.43
Bowel resection, end to end anastomosis and hernioplasty with mesh repair	3	8.57

Common complications were wound infection (8.57 %), seroma (2.86 %), post-operative hematoma (2.86 %) & respiratory disturbances (2.86 %). No paraesthesia, mortality was noted in present study.

Table 3: Postoperative complications.

Complication	**No of patients**	**Percentage (%)**
Wound infection	3	8.57
Seroma	1	2.86
Post-operative hematoma	1	2.86
Respiratory disturbances	1	2.86
Paralytic ileus	1	2.86

Discussion

Surgical repair of the inguinal hernia is the most common general surgery procedure performed today. The successful surgical repair of inguinal hernia depends on a tension free closer of hernia defect to attain the lowest possible recurrence rate.[9] The overall goal, therefore, is to maintain a balance between expensive cutting-edge techniques and an affordable surgical practice.

Presence of constipation, prostatism, bronchitis (coughing) or abdominal fat deposit that may affect old patients, furthermore the loss of strength of the abdominal wall is caused by alteration in collagen (the collagen becomes more rigid and crystalline and its tension diminished) typical of elderly.[10] Also the higher rate of comorbidity in combination with the usage of general anesthesia in old patient increases the risk of complications.[11]

Hariprasad et al.,[12] conducted a clinical study on the complicated presentations of groin hernias and reported that the incidence was highest in the age groups between 44-53 years. Shakya et al.,[13] on the outcome of complicated hernias, the incidence of acute groin hernias was reported to be higher in males than females, 88.5% in males and 11.5% in females, findings are consistent with present study.

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Padmasree G.[14] studied 53 obstructed inguinal hernia patients; incarceration was the commonest complication seen in 92.45% of cases followed by strangulation (7.54%). The most common content was small bowel followed by omentum (52.8% and 35.8% respectively). Viable bowel was seen 88.67% of cases. Bowel resection and end-to-end anastomosis was done in all cases of non-viable bowel. The commonest post-operative complication encountered in the study was wound infection (9.43%), scrotal seroma (9.43%) and mortality was observed in two patients (3.7%) and the causes of death were sepsis and acute respiratory distress syndrome.

In surgeries with a possible risk of bacterial contamination like incarcerated hernia, most surgeons are concerned regarding well known complications associated with foreign material implantation in the setting of incarcerated or strangulated bowel loops. Several studies have reported beneficial outcomes of mesh hernioplasty in emergency situations without intestinal resection,[15,16] but only few articles addressed the application of mesh repair in presence of intestinal resection.[17]

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.[18,19]

In study by Faridi SH et al.,[20] 77 patients with obstruction & strangulation and 17 patients with irreducible inguinal hernia were studied. Age of the patients ranged from 20 years to 77 years and all of them were male. 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. 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.

In study Prasad D,[21] patients underwent standard Lichtenstein mesh hernioplasty for obstructed inguinal hernia repair. 5 patients (33%) developed wound site infection, 4 patients (27%) developed inguinodynia, 2 patient (13%) developed seroma formation, 1 patient (6%) developed hanging testis. 1 patient (6%) developed testicular infarct. Average postoperative hospital stay was 5.6 days (range =2-18 days). Mesh repairs can be safely performed in emergency inguinal hernia repair with acceptable morbidity

The results from several meta-analyses have shown that the use of mesh is better to the non-mesh repairs in inguinal hernia surgery. In complicated hernias with obstruction, the use of mesh is presumed to further increase the risk of infections, but recent publications show that the mesh is safe and it does not increase infection risk.[22] In the setting of bowel incarceration, if there is no ischemia and no need for resection, use of permanent mesh is still relatively safe.[23,24]

Conclusion

Emergency inguinal hernia repair with mesh is associated with minimal immediate & late complications. Mesh placement in emergency inguinal hernia repair seems to be a good option with acceptable wound infection rate and fewer recurrences. Further prospective studies are needed to confirm this finding.

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