Original Research Article

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A clinical study of complicated inguinal hernias

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ABSTRACT

Background: Hernia is a common, treatable condition, if ignored can lead to life- threatening complications. Lack of health awareness, poverty, and lack of surgical facilities will lead to devastating complications. This study aims at illustrating the various modes of presentation, management and postoperative outcome in complicated inguinal hernias.

Methods: 50 patients of complicated inguinal hernia admitted in Basaveshwar Teaching and General Hospital attached to M.R. Medical College, Kalaburagi from September 2016 to August 2018 was studied.

Results: 12 cases (24%) presented within 24 hrs of onset of symptoms, while 38 cases (76%) after 24 hrs. 32 cases (64%) were right sided and 16 cases (32%) were left sided hernias. 2 cases (4%) were bilateral hernias but had complication on only 1 side. 44% cases were irreducible, 36% were obstructed and 20% were strangulated. 96% cases were indirect while only 4% were direct hernia. 82% cases were from rural and 18% cases were from urban areas. Most common age of presentation was 4th and 5th decade. Most common mode of presentation was an irreducible swelling (100%), followed by pain in 48% and vomiting in 46% cases. The content was small bowel in 54% cases, omentum in 18% cases and both in 16% cases. Herniorrhaphy was performed in 74% cases and hernioplasty in 14%. 6 cases of strangulated hernia with non-viable bowel underwent resection and anastomosis. 3 deaths (6%) were reported.

Conclusions: Patients who presented within 24 hours of onset of symptoms had shorter hospital stay, lesser complications and no mortality. Whereas cases presented after (>24 hrs) had higher rate of complications and mortality. Most of the complicated cases were from rural area and were right sided indirect inguinal hernias.

Keywords: Cholelithiasis, Cholecystitis, Serum cholesterol, Serum iron

INTRODUCTION

Hernias are defined as the protrusion of part or whole the viscus and its content. The first inguinal hernia repair performed in 1884 by Bassini, it has evolved and has become a day care procedure now.

Incarcerated external hernias are the second most common cause of small intestinal obstruction. In general, a hernia is electively repaired to avoid the complicated presentations. Nevertheless, patients remain undiagnosed or reluctant to have surgical correction of hernias, and as

a result, many emergency procedures are performed for complication of neglected hernias.²

Compared to uncomplicated hernias, the treatment of which has made great progress in modern times, complicated hernias have been relatively neglected for fear that their treatment may cause even greater risk to the patient than the hernia itself.³ Large number of abdominal hernias require emergency surgery. However, these procedures are associated with poor prognosis and a higher rate of post-operative complications.⁴

METHODS

The material for this study was taken from cases admitted in surgical department of Basaveshwar Teaching and General Hospital attached to M. R. Medical College, Kalaburagi from September 2016 to August 2018.

Inclusion criteria

All adult patients (>18 years), admitted with complicated presentation of inguinal hernia i.e. irreducibility, incarceration, obstruction, and strangulation, during the time period of study were included in the study.

Exclusion criteria

Patients admitted with irreducible hernia that got reduced spontaneously were excluded from the study. The patients were started on intra-venous fluid therapy. Ryle's tube aspiration was done. All the patients were catheterized and parenteral I. V. antibiotics were given.

Once the diagnosis of obstructed or strangulated hernia was made the patients were immediately shifted to the Emergency Room. Blood samples were taken for investigations viz, haemoglobin %, total count and differential count, blood urea, serum creatinine, serum electrolytes, blood sugar, blood grouping and cross matching. Ultrasound of abdomen and inguino-scrotum was done.

Meanwhile a detailed history was taken. The symptoms like pain, vomiting, constipation and abdominal distension were enquired. The duration of hernia and the duration of irreducibility of hernia were noted.

A thorough physical examination was done. Abdomen was examined for signs of peritonitis. Per rectal examination was done in all cases to rule out enlargement of prostate. Examination of penis was done for pin-hole meatus and urethral stricture. Respiratory and cardiovascular systems were examined.

Only in a few cases, X-ray erect abdomen was taken. Once the patients were resuscitated, usually within 3hours of admission, patients were taken for surgery.

Almost all patients were operated under spinal anaesthesia. Occasionally general anaesthesia was given.

An appropriate incision was taken for the type of hernia, sac was dissected out and was opened, the site of constriction noted and the contents of the sac were seen. The bowels were examined for viability. When doubtful or non-viable bowel was seen, oxygen was administered for 3-4 minutes and a warm saline mop was placed on the intestinal loops. If the color returned, peristaltic waves seen on stimulation and mesenteric pulsations felt, the bowel was returned to the abdomen. When the bowel was non-viable, it was resected and end to end anastomosis was done. Appropriate repair of the hernia was done. The resected specimen was sent for histopathologic examination.

Blood was transfused, whenever necessary. Post operatively intravenous fluids and Ryle's tube aspiration were continued. The wound complications were treated accordingly. Precipitating factors like cough, constipation were managed medically.

Sutures were removed on the 7th or 8th day and were discharged. Patients were advised for follow- up and also advised against lifting heavy objects for 3 months. Patients who had infection and presented late (>24 hrs) were found to have a longer stay. This clinical material was analysed and discussed.

RESULTS

During the period of study from September 2016 to August 2018, the total number of surgical patients was 7100. Among them, 403 cases were inguinal hernia patients. Patients with complicated inguinal hernia, meeting the study criteria were 50, constituting 0.7% of the total surgical inpatients.

In this study total inguinal hernia patients were 403. Amongst them, 397 were male and 6 females. There were 50 (12.4%) cases of complicated inguinal hernia of which only 13 cases presented within 24 hours of onset of complication and the remaining 37 cases presented after 24 hours (Table 1).

- 1	l'able 1	l: .	Incidence	and	durat	ion (of	compl	licat	ted	hernia.	

Total inguinal hernia patients Total number of complicated inguinal hernia (n=403)					Percentage (%)
	50				
	<24 hrs		>24 hrs		
Male (n=397)	Male	Female	Male	Female	12.4
Female (n=6)	13	0	37	0	

In this study we have recorded 22 (44%) cases of irreducible hernias, 18 (36%) cases of obstructed hernias and 10 (20%) cases of strangulated inguinal hernias. Irreducible hernia amounted to the maximum number of

cases (Table 2). In the current study, 48 (96%) cases of complicated hernias were indirect hernias, while only 2 (4%) cases were of the direct type (Table 3).

Table 2: Type of complication.

Type of complication	Number of cases	Percentage (%)
Irreducible	22	44
Obstructed	18	36
Strangulated	10	20
Total	50	100

Table 3: Incidence of direct and indirect complicated inguinal hernia.

Type of hernia	Number of cases	Percentage (%)
Indirect	48	96
Direct	02	04
Total	50	100

In our study, the most common presenting symptoms of complicated inguinal hernia were an irreducible swelling, which was seen in all 50 (100%) cases. Pain was observed to be the presenting complaint in 24 (48%) cases and vomiting in 23 (46%) cases. 16 patients (32%) complained of constipation, while abdominal distension was observed in 13 (26%) cases. 8 cases presented to the hospital with dehydration (Table 4).

Table 4: Frequency of the presenting symptoms.

Presenting symptom	Number of cases	Percentage (%)
Irreducible swelling	50	100
Pain	24	48
Vomiting	23	46
Constipation	16	32
Abdominal distension	13	26
Dehydration	8	16

In this study, majority cases were complete hernias reaching to the base of the scrotum: 26 cases (52%), 5 cases (10%) were bubonocele and 19 cases (38%) (Table 5).

Table 5: Extent of hernia.

Extent of hernia	Number of cases	Percentage (%)
Bubonocele	5	10
Funicular	19	38
hernia		
Complete hernia	26	52
Total	50	100

In the present study, small intestine was observed to be the most common content of the hernia sac, followed by omentum (Table 6).

Table 6: Contents of sac in complicated inguinal hernia.

Contents of sac	Number of cases	Percentage (%)
Small intestine	27	54
Omentum	9	18
Small intestine and omentum	8	16
Caecum and Appendix	3	6
Colon	3	6

We observed that amongst the total 50 cases of complicated inguinal hernia, 6 cases were having a non-viable bowel requiring resection and anastomosis. Further break-up of the data showed that all 6cases of non-viable bowel were cases that presented late to the hospital (>24 hours) (Table 7).

Table 7: Duration of symptoms and non-viability of the bowel.

Duration of symptoms	Number of cases with bowel as content	Number of cases with non-viability of bowel requiring resection	Percentage (%)
<24 hrs	9	0	0
>24 hrs	32	6	18.75

In our study, herniorrhaphy was the most common surgical procedure performed for complicated inguinal hernias, amounting to 37 cases (74%), while 7 (14%) patients underwent hernioplasty. 6 (12%) patients of strangulation with non-viable bowel required resection and anastomosis followed by herniorrhaphy (Table 8).

Table 8: Operative procedure performed.

Procedure performed	Number of patients	Percentage (%)
Herniorrhaphy	37	74
Hernioplasty	7	14
Resection and anastomosis with herniorrhaphy	6	12

There were 3 deaths among the cases included in our study. 1 patient died due to ischemic heart disease, while 2 cases expired following bowel resection in strangulated hernia (Table 9).

Table 9: Cause of death.

Cause of death	Number of cases
Small bowel resection	1
Large bowel resection	1
Ischemic heart disease	1

Average length of hospital stay was 11.64 days. Most of the patients were discharged after suture removal within 8 to 10 days. Remaining patients, whose hospital stay was prolonged because of surgical site infection, mostly comprised of those patients who presented late to the hospital (Table 10).

Table 10: Duration of hospital stay

Duration (in days)	Number of cases	Percentage (%)
7 or less	5	10
8-10	18	36
11-15	23	46
More than 15	4	8

DISCUSSION

The incidence of age at presentation of inguinal hernia was highest between 40- 60yrs of life in studies by Louies and Wendell, Delvin and Bhola singh.⁵⁻⁷ In our study the maximum incidence of age was between 4th and 5th decades of life and the results are comparable with the above studies (Table 11).

Table 11: Age at presentation.

Age group (years)	Delvin ⁵	Bhola Singh Sidhu ⁶	Louies & Wendell ⁷	Present study
<20	-	-	0.3%	-
21-30	10.1%	12%	12.1%	6%
31-40	11.6%	28%	16.2%	12%
41-50	17.3%	20%	17.3%	30%
51-60	28.6%	8%	27.4%	30%
61-70	-	24%	23.3%	14%
71-80	-	-	-	8%

In a study by Ira, 90% inguinal hernia cases were males and 10% females. In studies by Lichtenstein 94% were male patients and 6% female patients occurring at any age. Males were more commonly affected than females. In this study 98% were males and 2% were females. The results of the present study are comparable with that of the previous studies (Table 12).

Table 12: Sex distribution.

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Study	Male	Female
Ira	90%	10%
Lichtenstein	94%	6%
Present study	98%	2%

According to the present study, 24% patients came within 24 hours of onset of symptoms and 76% cases presented after 24 hrs which is comparable to the given studies. Late presentation to us was attributed to lack of surgical facilities at rural level and unawareness of patients about elective hernia repairs (Table 13).

Table 13: Time of presentation.

	<24 hrs	>24 hrs
Kulah B etal ¹	15	85
Andrews NJ ⁸	28	72
Present study	24	76

In the present study, 96% of complicated inguinal hernias were indirect hernias and only 4% were direct, which is comparable to the quoted study (Table 14).

Table 14: Type of hernia.

	Direct	Indirect
Ohene Yeboah M ⁹	13.3%	86.6%
Present study	4%	96%

In the present study, 64% cases were right sided, 32% cases were left sided and 4% were bilateral hernias, which is comparable to the previous studies (Table 15).

Table 15: Laterality of hernia.

	Louies & Wendell ⁷	Bhola Singh study ⁶	Present study
Right	49	60	64
Left	38	36	32
Bilateral	13	4	4

Content of the hernia sac

In the present study, small intestine (70%) was observed to be the most common content of the hernia sac, followed by omentum (34%).

Mortality

In the present study, out of 50 cases, 3(6%) cases died. All the deaths occurred in patients who presented late to the hospital (>24 hrs). This is comparable with the studies of Kulah et al, and Ohene Yeboah M, where the mortality was 6.4% and 6.2% respectively.^{1,9}

Duration of hospital stay

Average length of hospital stay was 11.64 days. Most of the patients were discharged after suture removal within 8 to 10 days. Remaining patients, whose hospital stay was prolonged because of surgical site infection, mostly comprised of those patients who presented late to the hospital.

CONCLUSION

Incidence of complicated inguinal hernia cases was 50 (12.4%). 12(24%) cases presented within 24 hours of onset of symptoms and 38 case (76%) presented after 24 hours.

Clinical presentation of patients who presented before 24 hours and after 24 hours, 100% cases were irreducible in both groups. Pain, vomiting, dehydration, constipation and distension of abdomen symptoms were more in the late presented group.

64% of complicated hernia cases were on right side whereas 32% on left side. 4% cases had bilateral inguinal hernia with complications unilaterally (right side).

Mortality in patients who presented within 24 hours of onset of symptoms were nil as against 3 cases with delayed presentation. Early surgical interventation is recommended to prevent mortality.

Patients who presented within 24 hours of onset had shorter hospital stay, while the delayed presenters, had a prolonged hospital stay.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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