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Original Research Article

Clinical study on complicated presentations of groin hernias

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ABSTRACT

Background: Groin hernia is a very common type abdominal wall hernia encountered in surgical practice. Irreducibility, obstruction and strangulation are its commonest complications which usually presents as acute emergencies. Emergency repair of complicated hernias is associated with poor prognosis and a high rate of post-operative complications even with better care, improved anaesthetic management and advanced surgical techniques. The aim of this study was to determine the various modes of presentation, clinical finding, diagnostic and therapeutic strategies and to evaluate the postoperative outcome in complicated groin hernia surgeries in our set up.

Methods: The study was carried out among 40 patients of groin hernia, who had complicated clinical presentation like irreducibility, strangulation and obstruction in the department of general surgery, during the period from March 2012 to June 2014. Patients were enrolled into the study after proper consent for detailed clinical examination, investigation and subsequent treatment. The Data obtained included demographic characteristics, presentation, operative findings and outcome. The patients were followed up for immediate and late complications for once a week for 1 months, once every month for the next 6 months. After data collection, analysis was done with help of by SPSS software version 21.

Results: A total of 40 groin hernia patients with complicated presentation were evaluated during the study period. Among these cases 38 cases had inguinal hernias and two cases had femoral hernia. Majority of the patients were in 5th and 6th decade. Complicated presentation of groin hernia was commonly seen in males (95%) than in females (5%) with male to female ratio of 19:1. Inguinal hernia complications were seen predominantly in males and femoral hernia complications in females. Right sided hernias were more common. Incarceration was the commonest complication seen in 70% of case followed by strangulation (30%). Incarceration was high (17.5%) in the age group of 64-73 years and 44 - 53 years. Strangulation was high in the age group of 54-63 years. The duration of hernia varied for 1-2 years in 42.5% of cases and 3-6 years in 27.5% of cases. Majority of the patients (30%) presented with localized groin pain, vomiting, constipation and abdominal distension. All patients presented with swelling in the inguinoscrotal region, which was tender, and there was no impulse on coughing and 35% of patients had cardiorespiratory illness. Majority of the cases (34 numbers) were operated as emergency procedure. Viable bowel was seen in 77.5% of cases. Bowel resection and end-to-end anastomosis was done in all cases of non-viable bowel and orchidectomy in atrophied and gangrenous testis. The commonest postoperative complication encountered in the study was wound infection (22.5%) and scrotal seroma (17.50%). There was no evidence of recurrence in any of the operated cases.

Conclusions: Complicated presentations of groin hernias like, incarceration and strangulation are seen in low and middle socio-economic category of people and may be associated with chronic illness. The cumulative risk of strangulation increases with time and type of hernias. Timely diagnosis and prompted surgical repair is essential to prevent the complications.

Keywords: Groin hernia, Irreducible, Incarceration, Mortality, Strangulation

INTRODUCTION

Schwartz et al defined hernias as a protrusion of a viscus through an opening in the wall of a cavity in which it contained.[1] It occurs when aponeurosis and fasciae are devoid of the protecting support of striated muscle. Because of the anatomical relation the commonest site of herniation is in the groin region, other sites include umbilicus, linea alba, obturator, etc. Groin hernias are the most common type of hernia and account for 75% of all abdominal wall hernia. Inguinal hernias account for 95% of these and femoral hernia the rest.[2] These hernias become complicated when it is irreducible (incarcerated), obstructed, and later progress to strangulation. When the blood supply of its contents is seriously impaired, rendering gangrene imminent.

Incarcerated external hernias are said to be the most common cause of intestinal obstruction.[3] Acute intestinal obstruction is one of the most common acute abdominal emergencies and is associated with significant morbidity and mortality, especially if it progresses to bowel ischemia. It is one of the most common surgical emergencies in all the age groups. Gangrenous bowel is usually encountered in groin hernias and bowel obstruction.

The reason for the simple hernia to go into complications is because of the hesitancy of the patient to come out with complaints, and get it operated in an early stage. The complications that develop may make an easily treatable condition into a life threatening one. Early diagnosis and elective repair is a safe and effective strategy for patients of all ages that avoid incarceration, strangulation and their complications.[4] The accuracy in judging the severity of complicated groin hernias in a patient is of prime importance to follow the procedure of treatment. Surgery is a must with release of constricting band and if non-viable gut is present, resection is advised.

METHODS

A two-year prospective study was conducted from March 2012 to June 2014 in the department of surgery, Sri Raja Rajeshwari Medical College Hospital, Bangalore. All patients who presented with complicated presentation of groin hernias were included in the study. Patients with history of groin hernias those subjected to manual reduction and paediatric groin hernias were excluded from study. Total of 40 cases of complicated groin hernias were evaluated. Patients were enrolled into the study after proper consent for detailed clinical examination, relevant investigation and subsequent surgical treatment. The patients were followed up for immediate complications like infection, bleeding, pain, seroma, scrotal edema, ischemic orchitis, testicular atrophy, paraesthesia, anastomotic leak and late complication like recurrence, obstruction, and chronic groin pain. Follow up interval was once a week for one month, once every month for the next 6 months. The Data obtained included demographic characteristics, presentation, operative findings and outcome. After data collection, analysis was done with help of by SPSS software version 21.

RESULTS

A total of 40 cases presented with complicated presentation during the study period, were evaluated. Among these cases 38 cases had inguinal hernias and two cases had femoral hernia. Majority of the cases of complicated groin hernias were seen in 5th and 6th decade, Incarceration was the commonest complication seen in 70% (28 numbers) of cases, followed by strangulation in 30% (28 numbers) of cases. Incarceration was high in the age group of 64-73 years and 44-53 years (17.5% each), followed by 54-63 years (15%). Strangulation was high in the age group of 54-63 years (Table 1).

Table 1: The age distribution and clinical profiles.

Age (years)	No. of cases		Total	Percent	Incarcerated	Strangulated
	Inguinal	Femoral				
14-23	4 (10%)	0	4	10%	2 (5%)	2 (5%)
24-33	3 (7.5%)	0	3	7.50%	1 (2.5%)	2 (5%)
34-43	4 (10%)	1 (2.5%)	5	12.50%	4 (10%)	1 (2.5%)
44-53	9 (22.5%)	0	9	22.50%	7 (17.5%)	2 (5%)
54-63	9 (22.5%)	0	9	22.50%	6 (15%)	3 (7.5%)
64-73	7 (17.5%)	1 (2.5%)	8	20%	7 (17.5%)	1 (2.5%)
74-83	2 (5%)	0	2	5%	1 (2.5%)	1 (2.5%)
Total	38	2	40	100%	28 (70%)	12 (30%)

Complicated presentation of groin hernia was commonly seen predominantly in males [95% (38 cases)] than in females [5% (2 cases)] with male to female ratio of 19:1. Among inguinal hernias, right-sided hernias (67.5%)

were more common than left side (22.5%), 2 cases had bilateral inguinal hernias (5%). Indirect inguinal hernias (92.5%) were common than direct inguinal hernias. Femoral hernias were seen in 2 cases, of them one was on the right side and other on the left (Table 2).

Table 2: Location of Groin hernia.

Type	Side	No. of cases	Percentage
Inguinal	Right	27	67.5%
	Left	9	22.5%
	Bilateral	2	5%
Femoral	Right	1	2.5%
	Left	1	2.5%
Total		40	100%

The clinical presentation and duration of hernia varied in the study group, among which 17 patients (42.5%) had hernia for 1-2 years, 11 patients (27.5%) had hernia for 3-6 years, 7 patients (17.5%) had hernia for 2-10 months and 5 cases had hernia for more than 8 years (12.5%). Three cases gave history of previous hernia surgery. Clinically 12cases (30%) had localized groin pain, vomiting, constipation and abdominal distension, 11 cases (27.5%) had localized groin pain, with vomiting and was associated with constipation in 8 cases (20%). Localized pain and swelling in the groin was seen in only 9 cases (22.5%) (Table 3). The duration of pain was for 1-2 days in 24 cases (60%) and 2-5 days in 10 cases (25%) and more than a week in 4 cases (10%).

Table 3: Clinical modes of presentation.

Symptoms	No. of cases	Percentage
Localized pain in hernia swelling	9	22.5%
Localized pain in hernia swelling and vomiting	11	27.5%
Localized pain in hernia swelling, vomiting, and constipation	8	20.00%
Localized pain in hernia swelling, vomiting, constipation, abdomen distension	12	30.00%

Clinically all patients presented with swelling in the inguinoscrotal region, which was tender, and there was no impulse on coughing. Abdominal examinations showed tenderness in lower abdomen in 23 cases (57.5%), abdominal distension 12 cases (30%), and reduced or absent bowel sound in 15 cases (37.5%). 3 patients had operative scar in hernia site. Among these 40 cases, 23 cases had associated medical illness of which 14 cases (35%) had chronic respiratory disease and 9 cases (22.5%) had hypertensive heart disease (Table 4). Clinically it was difficult to distinguish between incarcerations from strangulation as all the cases had localized pain, tenderness at the hernia site and was associated with vomiting in most of them. Radiological investigation, erect abdomen X-ray was done in all cases. 10 cases (25%) showed multiple air fluid levels, one of them showed multiple air fluid level and air under diaphragm suggesting intestinal perforation and peritonitis. Ultrasonography abdomen and pelvis was done in only 4 cases; of them 2 cases had undescended testis with bowel loop in the sac, other two cases showed omentum with bowel loop. Chest X-ray was advised in patients who had cough which revealed chronic obstructive pulmonary disease in 14 cases (35%) and hypertensive heart disease in 9 cases (22.5%). Serum Electrolytes was done in all 40 cases of them 6 cases had dyselectrolytemia, reduced sodium, potassium and chloride levels. One case shows elevated serum urea and creatinine.

Table 4: Clinical findings at presentation.

Clinical findings	No. of cases	Percentage
Abdomen distension	12	30.00%
Visible peristalsis	5	12.50%
Lower abdomen tenderness	23	57.50%
Decreased/ absent bowel sounds	15	37.50%
Swelling in hernia site	40	100%
No impulse on coughing	40	100%
Irreducible	40	100%
Local tenderness	40	100%
Previous surgeries	3	8%
Associated illness (COPD+CVS)	(14+9) 23	57.50%

Table 5: Surgeries performed on complicated groin hernias.

Operations	No. of cases	Percentage
Hernia contents replacement in abdomen with hemiorraphy	15	37.50%
Release of adhesion with replacement of sac contents in abdomen with hemioraphy	15	37.50%
Omentectomy and hemiorraphy	5	12.50%
Omentectomy, bowel resection, end to end anastomosis and hemiorraphy	2	5.00%
Bowel resection, end to end anastomosis and hemiorraphy	2	5.00%
Inter loop release of adhesion, appendectomy with hemiorraphy	1	2.50%

In the study group, 34 cases were operated as emergency procedure and six were taken for elective surgery. Of the above case laprotomy was done 5 cases (12.5%) under general anaesthesia, and rests of them were operated under spinal anesthesia as they have associated systemic disease. Herniorraphy was done in all cases. Modified

Bassini's was performed in inguinal hernias and Lothessian repair in femoral hernia. Bowel resection and end-to-end anastomosis was done in all cases of non-viable bowel (22.5%); orchidectomy was done in 4 cases, of which testis were atrophied in 2 cases, and gangrenous in 2 cases. The various operative procedures performed depending on the type and complications of groin hernias (Table 5).

Table 6: Contents of the Sac.

Viability	No. (percent)	Contents	No. (percent)
Viable	31 (77.5%)	Only omentum	13 (32.50%)
		Omentum and small intestine	12 (30.00%)
		Only small intestine	1 (2.50%)
		Omentum and large intestine	4 (10.00%)
		Sigmoid colon	1 (2.50%)
Non-viable	9 (22.5%)	Only omentum	5 (12.50%)
		Omentum and small intestine	2 (5.00%)
		Only small intestine	2 (5.00%)

The site of obstruction in indirect inguinal hernia was seen at deep inguinal ring, whereas in case of direct inguinal hernia obstruction was at the neck of the sac. Both femoral hernias had obstruction at the neck of the sac. Viable bowel was seen in 31 cases (77.5%) and non-viable bowel in 9 cases (22.5%). The viable contents included only omentum 13 cases (32.5%), omentum and small bowel 12 cases (30%), small bowel alone and sigmoid colon one case each, and large bowel with omentum in 4 cases (10%). Non-viable contents include only omentum in 5 cases (12.5%) followed by omentum and small bowel alone in 2 cases each (Table 6).

The commonest postoperative complication encountered in the study was wound infection (22.5%) and scrotal seroma (17.50%) followed by scrotal hematoma (7.50%). Septicemia, multi- organ failure and death occurred in one case on the 7th postoperative day. Rest of the 39 patients came to regular check-up and none of them had recurrence.

DISCUSSION

Complicated presentations of hernias in groin region are usually associated with the increased duration of hernias and can affect any age group. This study focuses on individuals over 14 years of age and examines the reason for which they came to surgeon's attention, as well as the possible influence of age, gender, type of presentation and outcome, diagnostic and therapeutic strategies adopted in the management and postoperative out comes. Complications were noted hernias of more than 1-2 years (42.5%) and in 3-6 years (27.5%). Our findings show that complication occurs in long standing case of groin hernias. The risk of strangulations increases with the duration of hernias.[5] Most of the patients develop complication like, either incarceration or strangulation, and are seen in low socioeconomic category of people and in hard to moderately hard-working people. Incarceration is our important finding that should urge the surgeon to undertake operation sooner rather than later.[3] Patients with chronic cardio-respiratory illness are prone for getting hernias probably due to persistent severe coughing. In this study 57.50% of patients had chronic cardio-respiratory illness. The incidence of groin hernias is common in male than in female, with male to female ratio of 19:1. Inguinal hernias are commonly seen in male than in females, more commonly on right side, and most of them occur in indirect inguinal hernias. Femoral hernias commonly occur in females and become complicated more frequently than inguinal hernias.[3] The mean age of patients with complications is 55years, compared to 65 years in other study by Pollok and 70 years by Andrew and Kulah et a1.[6-8] Takuev and colleagues found age as a significant factors for morbidity after operation for incarcerated hernias.[9] Elderly patients usually have complicated presentations and bowel obstruction and are consistent with the published observation of Oishi, Desunkamni, Andrew, Pollock, Dennis.[4,7,10-12] The advanced age completely affected strangulation rate, bowel of resection requirement, hospital stay, morbidity and mortality.

In this study, all the patients clinically presented with local swelling, pain was associated with vomiting, constipation and abdominal distension in majority of cases (30%), followed by localized pain and vomiting without constipation and abdominal distension (27.5%). Pain developed in the hernia swelling and presented within 48 hours in 60% of cases, 30% of cases had pain at hernia site for 2-5 days, and more than one week in 10% cases. Our hospital serves a patient population mostly coming from rural areas. This was a reason while the vast majority of the patients in the present series were admitted to the hospital 48 hours or more after the onset of symptoms. The other cause was low awareness and delayed hospitalization. Abdominal tenderness, peritoneal irritation, decreased or absent bowel sounds, tender hernia with local inflammation indicate non-viable bowel may be present and are the early indicators of strangulation of incarcerated mass, and in such cases postural reduction should not be attempted. Clinically it was difficult to distinguish between incarcerations from strangulation as all the cases had localized pain, tenderness at the hernia site and was associated with vomiting in most of them. Groin ultrasound scan, computerized tomographic scan or magnetic resonance imaging are rarely needed unless when the diagnosis is uncertain or if there are complications or in differentiating a hernia from other causes of groin swellings.[13] The definitive diagnosis of strangulation can be made only at the timely exploration. Bekoe in his

prospective review of 118 patients with incarcerated/strangulation stated that he could find "no definite criterion" to differentiate incarcerated hernia with viable contents from the non-viable contents and cannot be diagnosed on clinical grounds."[14] Incarceration and strangulation are clinically obvious and correlate better with ultimate viability of entrapped bowel. Obstruction is associated with 50% risk of bowel ischemia.[4] Only 10-15% of obstructed groin hernias contain necrotic bowel.[14,15] In this study 45% of cases had bowel obstruction and among these 22.5% had non-viable contents. Complicated hernias are fraught with increased mortality with and without operative management. The choice of technique depends on several factors, including the type of hernia, anaesthetic considerations, cost, period of postoperative disability and the surgeon's expertise.[16-19] In the primary management of all complicated hernias from surgical reduction and repair accompanied by aggressive pre and postoperative care is suggested. Elective repair should be deferred in case of advancing age and in case in which groin hernia may be difficult to diagnosis. Transabdominal and pre-peritoneal approach of surgical procedures are used for reduction and repair of complicated groin hernias. In this study, all cases of complicated inguinal hernias were operated by open anterior approach and complicated femoral hernia was operated by Lothessian repair. Various surgeries performed is enlisted in Figure 4. Bowel resection and end-to-end anastomosis with repair was done in 10% of cases that had nonviable bowel, as compared to 6% by Kulah et al.[3] 35% of femoral hernias strangulate.[4] In this study both cases of femoral hernias had gangrenous pre-peritoneal fat. Elderly patients had in increased incidence of necrotic bowel resection when compared with adults for the same duration of irreducibility.[7,8] This could not be explained by increased vulnerability of entrapped bowel to incarceration and ischemia in advanced ages. The basis keystone for successful outcome in the management of gangrenous bowel is early surgical intervention with liberal and antibiotic administration. Late hospitalization was considered to be important factor determining resection rate and subsequent morbidity and mortality. Postoperative complications are linked to the duration of hernia. Rai and Co-workers reported that shorter duration carried higher risk of strangulation, on the contrary in study conducted by Kulah et al, postoperative complications was encountered in patient with longer duration, which is similar to our study.[3,20] Wound infection and scrotal seroma was the commonest postoperative complication encountered in our study. Septicemia, and multi organ failure remains the serious complication. The mortality rate in our study is 2.5%, when compared to the study by Kulah et al in which the mortality rate was 1.9% in first 24 hours, 4.3% in 24-48 hours, later increased to 9% in more than 48 hours.[3] In the study conducted by Andrew the mortality rate was 1.4% in first 24 hours, later increased to 10% in more than 48 hours.[7] The mortality rate is usually due to function of advanced age and requirement for resection of necrotic bowel.

CONCLUSION

Complicated presentations of groin hernias like, incarceration, and strangulation are seen in low and middle socio-economic category of people who are hard-working and moderately working people than sedentary life and may be associated with chronic illness. Complicated presentations are seen more in elderly and older people and delayed presentation is also responsible for unfavourable outcome. Right-sided inguinal is more common in males; incarceration is commonly encountered in indirect type. Femoral hernia is common in females and incarceration is common. The cumulative risk of strangulation increases with time and type of hernias. Clinical diagnosis may be difficult as there are no definitive criteria to differentiate incarcerated hernia with viable contents from that of non-viable contents. The definitive diagnosis of strangulation can be made only at timely operation. Manual reduction of obstructed hernias should never be attempted because of the risk of perforation and other complications. The primary management of all incarcerated hernias is prompt surgical reduction and repair accompanied by aggressive pre and postoperative care. Transabdominal and preperitoneal approaches are used for reduction and repair of complicated groin hernia. In elderly patients, emergency hernia repair under local anaesthesia as age is a serious problem and they carry high risk of complications in the presence of co-existing disease. The mortality rate after repair of complicated hernias continues to be associated with advancing age and resection of the necrotic bowel.

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