

Presentation and Outcome of Strangulated External Abdominal Hernias

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ABSTRACT

OBJECTIVE: To study the presentation, morbidity and mortality associated with strangulated external abdominal hernias.

STUDY DESIGN: A retrospective analysis of data.

PLACE AND DURATION: Surgical Unit-1 Ghulam Mohammad Maher Medical College Hospital Sukkur. January 2007 to December 2008.

METHODS: Records of 85 patients who underwent emergency surgery for strangulated external abdominal hernia in a teaching hospital were analyzed for age, sex, type of hernia (inguinal, femoral, umbilical, Incisional), duration of symptoms, past history, medical and surgical history, investigations, contents of hernial sac, surgical procedure, length of hospital stay, complications and mortality.

RESULTS: Sixty-one (71.8%) patients were males and 24 (28.2%) were females. Age of patients ranged from 16 to 90 years and mean age was 52 years. There were 50 (58.9%) Inguinal hernias, 22 (25.9%) Para-umbilical hernias, 9 (10.5%) Incisional hernias, and 4 (4.7%) femoral hernias. Twenty-three percent of patients presented after 48 hours of onset of symptoms. Coexisting diseases were present in 24.4% patients. Gut resection was done in 15 (17.6%) patients and stoma formation required in 9 (10.6%) patients. The morbidity and mortality rates were 29.1% and 8.3% respectively. The mortality was related to old age with coexisting medical illnesses and late hospitalization.

CONCLUSION: There is high morbidity and mortality associated with emergency surgery of strangulated external abdominal hernias, which was related to late presentation leading to subsequent bowel gangrene, misdiagnosis, old age, and associated medical illnesses.

KEY WORDS: Strangulated external hernia, Inguinal hernia, Para umbilical hernia, Morbidity, Mortality.

INTRODUCTION

Hernia by definition is protrusion of a viscus or part of viscus through an abnormal opening in the wall of its containing cavity. The common types of external abdominal hernias are; inguinal (75%), umbilical (15%) and femoral (8.5%). The rare forms comprise 1.5 percent, excluding Incisional hernia.¹ Incisional hernias develop in 3.8-11.5% of patients after abdominal surgery.²⁻³ In United States approximately 96% of groin hernias are inguinal and 4% are femoral. The male to female ratio is 9:1 for inguinal hernias and 1:3 for femoral hernias.⁴ Hernia is called strangulated when blood supply of its contents is compromised. Gangrene may occur as early as 5-6 hours after the onset of first symptoms. The precipitating cause of obstruction and strangulation is usually unknown but is presumably some event which forces more abdominal viscera into the sac that can be easily returned.⁵ Obstructed external hernias, are the commonest cause of mechanical bowel obstruction and are asso-

ciated with significant morbidity and mortality; with indirect inguinal hernia accounting for most (80.1%) hernias.⁶

Abdominal surgical emergencies are potentially serious and life-threatening conditions for elderly patients. External strangulated hernias, which are generally preventable, are the second most common surgical emergencies in elderly patients.⁷ At the same time, surgeons should continue their aggressive attitude towards elective repair of any and all abdominal hernias, which continue to account for about 15 percent of all cases of small intestinal obstruction and still remain the most common cause of strangulation.⁸ In spite of much research and improvements in pre- and post-operative care, strangulated external hernia still remains the commonest cause of death in the practice of emergency surgery.⁹

The significant and unacceptable morbidity and mortality associated with surgery for strangulated hernias may be avoided by advocating for elective repair of

these hernias before strangulation occur.¹⁰ The diagnosis of strangulated femoral hernia still presents a challenge to all clinicians, general practitioners, surgeons and physicians alike.

This study was conducted to document the modes of presentation, morbidity and mortality in emergency cases of external abdominal hernia so that the preventable factors may be outlined, which may help out to decrease its rate of complications and casualties.

MATERIALS AND METHODS

A retrospective review of all the patients admitted between January 2007 and December 2008 in Surgical Unit-1 Ghulam Mohammad Maher Medical College Hospital Sukkur, with strangulated external abdominal hernia was done. Records of these patients were analyzed for age, sex, type of hernia (inguinal, femoral, umbilical, incisional), duration of symptoms, past history medical and surgical history, investigations done, contents of hernial sac, surgical procedure, length of hospital stay, complications and mortality. Baseline investigations including complete blood count, urine detailed report, random blood sugar, blood urea, serum electrolytes were conducted in all patients. Plain X-ray abdomen erect/supine, chest X-ray and ultrasound were done in selected patients. Standard pre-operative preparation of patients included intravenous fluid resuscitation, gastrointestinal decompression by nasogastric tube, antibiotics covering gram positive, negative and anaerobic organisms. Three patients, who presented with abdominal pain and vomiting, having no prior history of hernia and remained misdiagnosed till they developed signs of peritonitis. They underwent laparotomy and diagnosed as neglected cases of strangulated femoral hernia. They were also included in study. Those patients who left hospital against medical advice without surgery were not included in study.

RESULTS

We reviewed 85 patients who underwent emergency surgery for strangulated external abdominal hernias. Mean age of patients was 52 years, with a range of 16-90 years. There were 61 (71.8%) males and 24 (28.2%) females. Out of 85 patients, inguinal hernia was present in 50 (58.9%) patients (all males), para-umbilical hernia in 22 (25.9%) patients (15 females and 7 males), incisional hernia in 9 (10.5%) patients (4 male and 5 female), and femoral hernia in 4 (4.7%) patients (all females). Seventy-eight (91.8%) patients presented with hernia which was irreducible, painful and increased in size. Seven (8.3%) patients pre-

sented with peritonitis due to gut perforation out of which two had incisional hernia, two had para-umbilical hernia and three had no external evidence of strangulated hernia and were diagnosed on exploratory laparotomy as neglected cases of strangulated femoral hernia. The duration of symptoms at presentation is shown in **Table I**. The time elapsed between the onset of strangulation symptoms and presentation of patient was quite variable. The shortest duration was 12 hours while longest one was 144 hours.

Frequencies with which various abdominal contents were seen in strangulated hernial sac and their viability status (**Table II**).

All the patients were surgically explored; 78 through an appropriate incision according to type of hernia and 7 patients who presented with peritonitis, required formal laparotomy. In two patients, who were among those presented after 48 hours, on initial exploration strangulated small intestine was labeled viable but patient developed faecal fistula on 5th post-operative day and exploratory laparotomy was done which revealed perforation at antimesenteric border of small intestine. **Table III** shows different operative procedures done. The incidence of non-viability of gut was directly related to duration of symptoms. Hernial sac contents were viable in all patients who presented within 24 hours. Four (13.4%) out of 30 patients, who presented between 24 and 48 hours, required gut resection. The rate of gut resection was 83.4% and 100% in those who came in hospital after 48 hours and 72 hours respectively.

The hospital stay of patients with viable sac contents and no post operative complications was 3-4 days. Patients who underwent gut resection and anastomosis or laparotomy had a prolonged hospital stay (8-35 days).

Twenty-eight patients (29.1%) developed different postoperative complications shown in **Figure I**.

There were 7 (8.3%) deaths in our study and mortality rate was 8.3%. Factors associated with mortality were late presentation at hospital (after 48 hours of strangulation symptoms), old age, associated co-morbid illnesses, nonviability of gut and postoperative septicemia. Duration of symptoms, old age and associated medical illnesses turned out to be most important determinants of subsequent mortality. Nineteen (22.4%) patients had important associated co-morbid illnesses; diabetes mellitus and hypertension in 8 (9.5%), chronic obstructive airway disease in 5 (5.8%), ischemic heart disease in 4 (4.7%) and bronchial asthma in 2 (2.4%) patients.

TABLE I: TIME INTERVAL BETWEEN ONSET OF SYMPTOMS AND PRESENTATION

Time of Presentation	No. of patients	Percentage
12 to 24 hours	32	37.7
25 to 48 hours	30	35.3
49 to 72 hours	18	21.2
After 72 hours	5	5.8

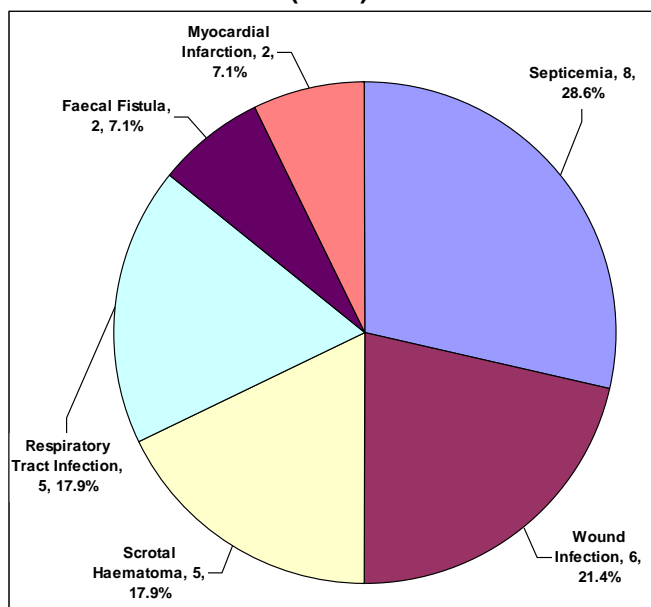
TABLE II: CONTENTS OF HERNIAL SAC AND THEIR VIABILITY STATUS

Content of hernia sac	No. of patients	Viable	Non viable
Small intestine	63 (74.1%)	48 (56.5%)	15 (17.7%)
Omentum	15 (17.7%)	8 (9.4%)	07 (8.2%)
Colon	07 (8.3%)	05 (5.8%)	02 (2.4%)

TABLE III: OPERATIVE PROCEDURES

Name of procedure	No. of patients	Percentage
Resection and anastomosis	15	17.7
Omentectomy	7	8.3
Ileostomy	7	8.3
Colostomy	2	2.4

FIGURE I: POSTOPERATIVE COMPLICATIONS (n=28)



DISCUSSION

Hernia is common condition affecting both men and women since time immemorial. The overall incidence of hernia itself and the incidence of its complications especially strangulation is difficult to establish even in the developed countries.¹¹ Despite universal acceptance of the value of elective hernia repair, many patients present with strangulation, which is associated with significant morbidity and mortality. True incidence can only be calculated if population at risk is known.

Incidence of different hernias in our study is comparable to other studies done world wide. Kulah B¹² and coworkers encountered 75.5% cases of inguinal hernia and 12.5% cases of umbilical hernia, which concur with our study. In a study by Davies M et al, out of 55 patients 39 presented with strangulation in which 19 patients were of inguinal hernia, 10 of para-umbilical, 5 of incisional and 5 of femoral hernia.¹³ A recent study from Spain¹⁴ show figures which differ from our findings. They enrolled 230 adult patients in which femoral hernias were more (77) than those of inguinal hernias (70).

Strangulation of hernia can occur at any age. The mean age in our study was 52 years. In a recent study Kulah B et al have reported mean age of 55.1 year.¹² Andrews has reported a peak incidence of strangulation between 40 and 70 years.¹⁵ A French study has noted 80% of patients who presented with strangulated inguinal hernia were below 45 years of age.¹⁶

In the present study, 50 patients who presented with strangulated inguinal hernia were males and all four femoral hernia patients were females. In a study of 50 patients of strangulated inguinal hernia by Abbas MH, only 1 patient found to be female.¹⁷ In a study from United Kingdom all patients with strangulated femoral hernia were females.¹⁸

Duration of strangulation symptoms at presentation was quite variable, shortest being 12 hours and longest 144 hours (6 days). In a study Abbas MH¹⁷ has reported a longest duration at presentation of 240 hours (10 days). Heys SD¹⁸ has reported a delay of 3 to 5 days. Another Western series shows a delay of 1 to 8 days with 30% having duration of symptoms for more than 24 hours.¹⁹ It is a common practice in our part of the world that patients are consulting quacks due to illiteracy and poverty and coming very late for surgical consultation to hospital.

Patients in whom there was no external evidence of hernia or hernia remained misdiagnosed, there was significant delay to appropriate management. This caused significant morbidity and mortality.

Gut (both small and large) as content of hernial sac was encountered in 70 out of 85 patients and it was non-viable in 24 (28.2%) cases. All contents of hernial sac were viable in patients who presented within 24

hours. This observation concurs with that noted by Bowesman who did not see gut non-viability in patients presenting within 24 hours.²⁰ The rate of gut resection increased as duration of strangulation symptoms increased. It was 13.4%, 83.4%, 100% in those presented after 24 hours, 48 hours, 72 hours respectively. Andrews¹³ has reported a gut resection rate of 27% in patients who presented after 48 hours of strangulation. This differs from our finding. Another study shows gut resection rate of 51% after 48 hours of strangulation.²¹

All the patients were surgically explored through an appropriate incision according to type of hernia except 7 which were via formal laparotomy and two patients required re-exploration by laparotomy incision for faecal fistula. Patients who required re-exploration, the decision of gut viability on initial exploration was made by trainees. In a study from Sudan²², out of 64 patients, 52 were explored through hernia incision and 12 via formal laparotomy. In this study laparotomy rate for hernia is double than in our series. In a study Alimoglu O et al have reported exploration for hernia by laparotomy in 4 out of 83 cases.²³

Twenty-eight (29.1%) patients developed different postoperative complications. This study has demonstrated that the complication rate of emergency repair of strangulated hernias is high which concurs with reported by Perez et al¹⁴ (37.8%) and Malek S et al²⁴ (31%). Alvarez JA²⁵ in 2004 has reported a morbidity rate of 41.5% which is quite higher than our study.

This study has demonstrated a mortality rate of 8.3%. All the patients who died (7 out of 85) in this study were above 50 years of age and majority of them had coexisting diseases. A recent study from United Kingdom has reported a mortality rate of 13% with a mean age of 79 years.²⁴ A Spanish study reported mortality figure of 3.4% at mean age of 70 years.²⁵ In a fresh study from Sudan a mortality rate of 6.25% is observed. Hancock has reported a mortality rate of 5.4% at mean age of 43 years rising to 11.5% at a mean age of 66 years.²⁶

CONCLUSION AND RECOMMENDATIONS

There is significant morbidity and mortality associated with emergency surgery of strangulated hernias so elective repair should be performed whenever possible. This morbidity and mortality is related to late presentation, misdiagnosis, old age, and associated medical illnesses. It must be emphasized that in all the patients with abdominal pain and vomiting, a thorough examination of the hernial orifices must be carried out. However, even a tender lump is not found in groin, diagnosis of strangulated femoral hernia should be considered if delayed and hence potentially serious complications are to be avoided.

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