ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2022; 8(11): 230-232
www.allresearchjournal.com
Received: 15-08-2022
Accepted: 22-09-2022

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A clinical study on groin hernias presenting as acute emergencies in a tertiary care hospital

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DOI: https://doi.org/10.22271/allresearch.2022.v8.i11d.10328

Abstract
Background: Inguinal hernias are the most common hernias encountered in the surgical practice. A small section of cases present to the emergency with certain complications at time of presentation. Complications like irreducibility, obstruction and strangulation occur which require immediate management. Aim of this study is to study groin hernias presenting as emergencies and their surgical management.
Materials and Methods: This study was a prospective observational study, conducted in the Department of General Surgery, Rangaraya Medical College and Hospital, during May 2021 to May 2022(1 Years). The study population is 50 patients.
Results: The incidence of hernia is more common in the age group consisting 60-70 years (34%). The incidence at the age group 51-60 years is 22%.The frequency of hernia in males is greater than females. Incidence in males is 98% and 2% in females. The duration of hernia before the acute episode is more common in the first year. Complications were more common on the right side than the left side. The common site of constriction is at the internal ring. The duration of hernia before the acute episode is more common in the first year. Complications were more common on the right side than the left side. The common site of constriction is at the internal ring. Pain is universal in all patients. Pain and irreducibility were present in the frequency of 50 patients. Constipation was found in 36 patients and fever was present in 16 cases respectively. Complications like obstruction which were present in 64% of cases. Pain and irreducibility were present in 22% of cases. Strangulation was seen in 14% of the cases. Optimum procedure done was herniorrhaphy in 84% of cases. Resection and anastomosis was done in 6% of the cases. Omentectomy was done in 3% of the cases.
Conclusion: The most common age group of presentation is 51 to 60 years. It is more common in male sex group. Pain and irreducibility were universal. The incidence of complications were common in the first year of presentation. The most common site of constriction is the deep ring followed by superficial and femoral canal. Pain and irreducibility were universal. Herniorrhaphy was done universally for all cases with resection and anastomosis of gangrenous bowel and omentectomy as adjunctive procedures.

Keywords: Hernia, obstruction, emergency, strangulation, femoral hernia, groin

Introduction
A hernia is defined as an abnormal protrusion of whole or part of the viscus from a normal or abnormal opening in the wall of its containing cavity. Weakness of the abdominal wall may cause hernia. In addition to such common conditions, the problem of development of complications arises. In a minority of patients with emergency hernia, a painful mass, irreducibility, or a minority with intestinal obstruction and delayed symptoms are known to exist which result in high morbidity and mortality. Complications that occur are inflammation of the contents of the sac, with or without strangulation, irreducibility, obstruction, and amyand hernia the contents of which is an inflamed appendix. Trapped tissue and blood vessels can lead to irreversible necrosis within hours. Studies are urgently needed to clarify the pattern and extent of complications that have occurred in our laboratory.

Aims and Objectives
1. To study about various acute surgical emergencies in groin hernia
2. To study complications
3. To study age and sex incidence

4. To study type of hernia presenting as emergency
5. To study site of constriction ring
6. To study side affected most
7. To study content of hernial sac
8. To study duration of hernia to complications
9. To study type of surgery done

Materials and Methods

This study was a prospective observational study, Conducted in the Department of General Surgery, Rangaraya Medical College and Hospital, during May 2021 to May 2022(1 Years). The study population is 50 patients.

Inclusion Criteria

- Age group:
  ≥18 years
- All adult patients with inguinal hernia

a) pain and features of irreducibility
b) Features suggestive of intestinal obstruction (abdominal pain, Abdominal distension, vomiting, constipation.
c) Strangulation (features suggestive of peritonitis)
d) Inflammatory hernia (features suggestive of bowel obstruction and scrotal skin inflammation and extreme tenderness on palpation) were classified as acute and included in this study.

Exclusion criteria

a) All pediatric populations<18 years.

50 patients were included in the study. Informed consent was obtained from all patients or their companions before or after surgery. Ethics committee approval was obtained prior to study initiation. All patients were examined from admission to discharge and followed up in the outpatient clinic. A detailed medical history was taken, laboratory tests were performed, and data were recorded. Blood tests and radiological tests, Chest radiographs, upright abdominal radiographs and ultrasonography of the abdomen, and clinical tests of the scrotum were performed. The surgical techniques used were as follows.

Modified Basina's repair method

Conjoint tendon is approximated with the posterior free border of the inguinal ligament using interrupted nylon sutures. Transversalis fascia is not opened. Deep ring is narrowed (Lytle's repair). Relaxing incision on the rectus sheath reduces tension in hernioplasty. Patients who needed resuscitation were originally successfully revived. Following immediate surgery, resuscitation procedures included intestinal decompression, intravenous fluids to address electrolyte imbalance, rectify dehydration, and guarantee adequate urine output. Antibiotics were given to all patients prior to surgery, and they were kept up for four days afterward. The study's findings were later examined and presented in this paper.

Results

The incidence of hernia is more common in the age group consisting 60-70 years (34%). The incidence at the age group 51-60 years is 22%. The frequency of hernia in males is greater than females. Incidence in males is 98% and 2% in females respectively.

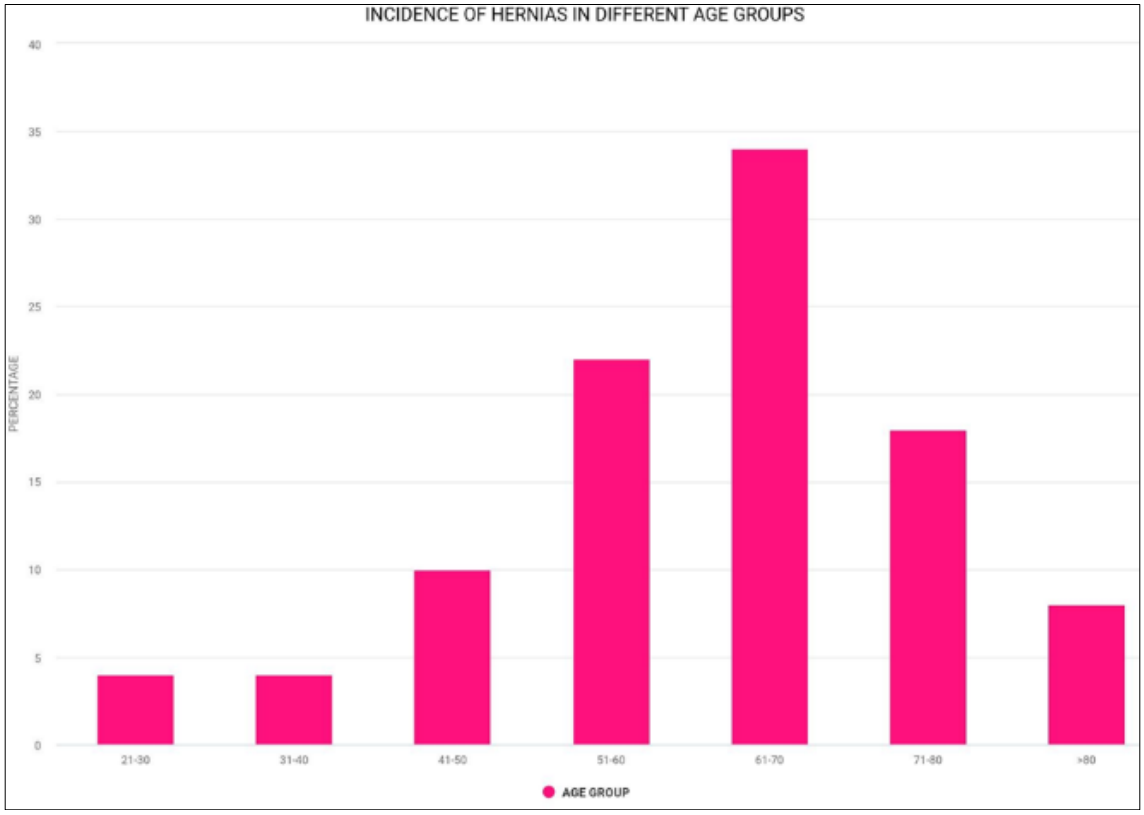

Fig 1: Incidence of hernia in different age groups

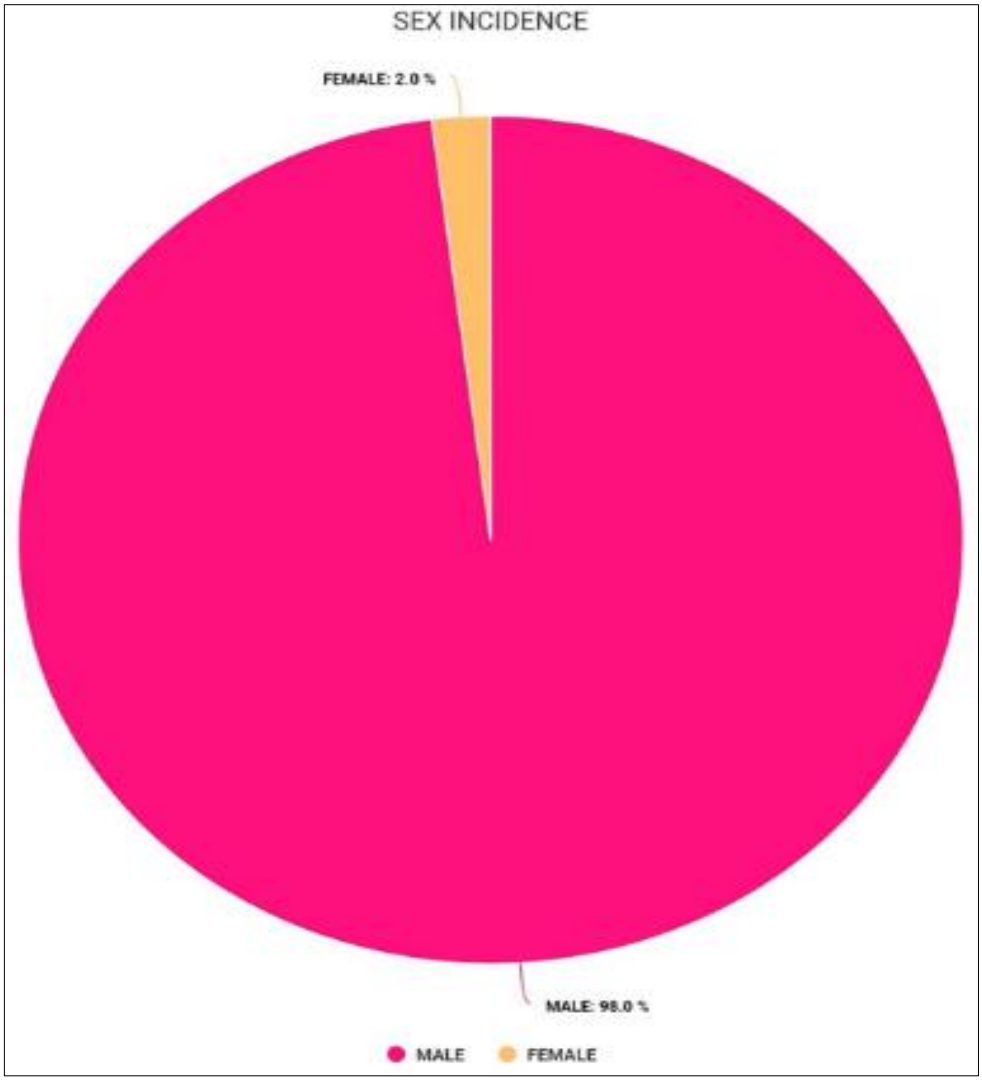

Fig 2: Sex incidence

Table 1: Incidence of symptoms in patients

Symptoms	Frequency	Percentage
Pain	50	100%
Irreducibility	46	92%
Vomiting	36	72%
Abdominal distension	37	74%
Constipation	31	62%
Fever	16	32%

Table 2: Duration of hernia and the frequency of onset of complications

Duration	Frequency	Percentage
First year	28	56%
Second year	22	44%
Third year	6	12%
More than four years	4	8%

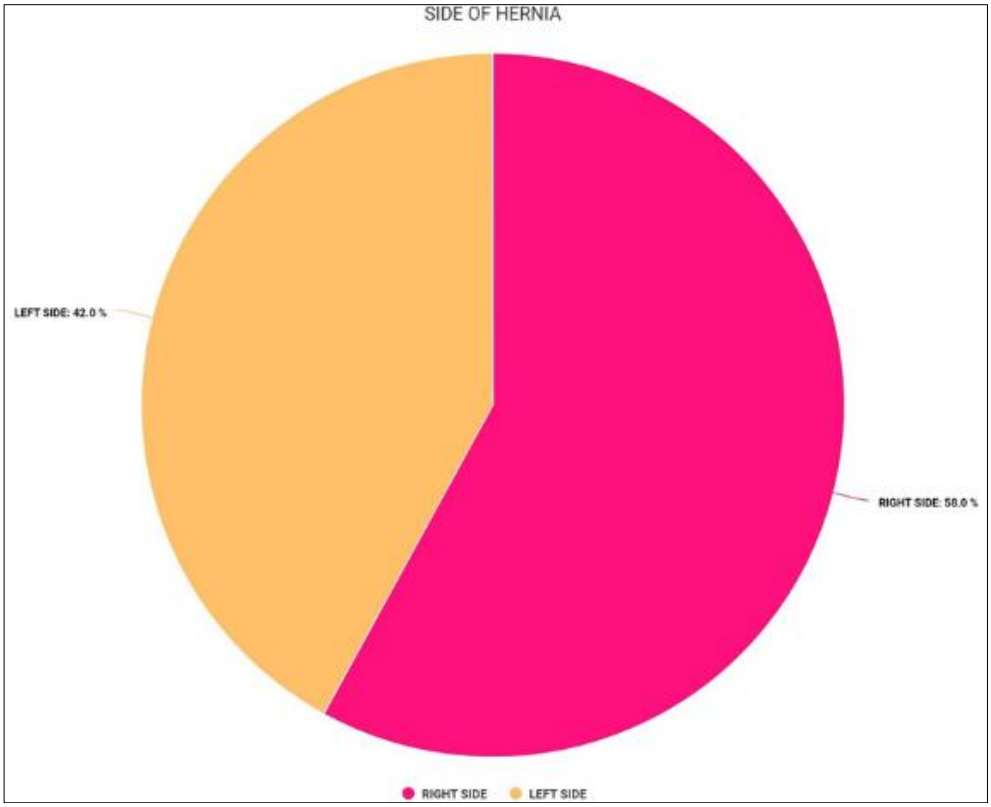

Fig 3: Incidence of Right And Left Sided Hernias

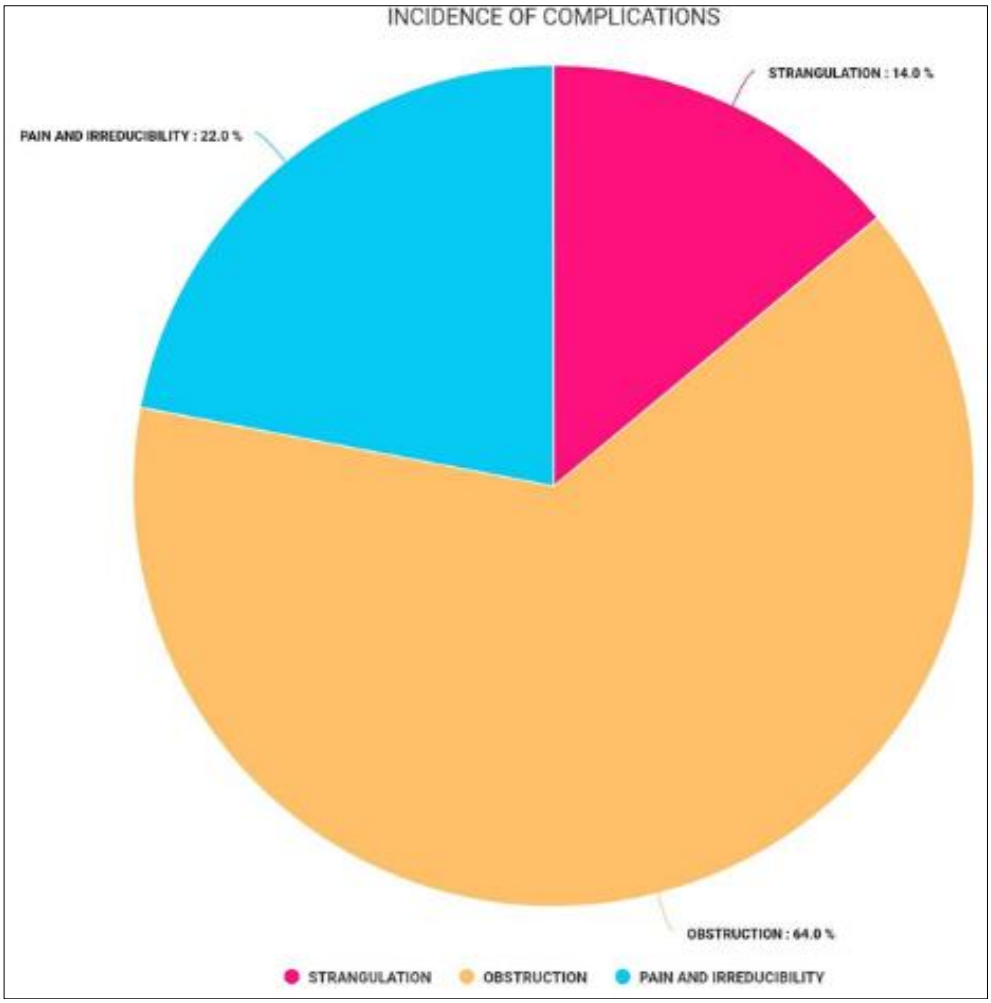

Fig 4: Incidence of complications in hernia

Table 3: Ideal procedure done for complicated hernia

Procedure	Frequency	Percentage
Herniorrhaphy	42	84%
Resection and anastomosis	32	64%
Omentectomy	5	10%

The duration of hernia before the acute episode is more common in the first year. Complications were more common on the right side than the left side. The common site of constriction is at the internal ring.

Pain is universal in all patients. Pain and irreducibility were present in the frequency of 50 patients. Constipation was found in 36 patients and fever was present in 16 cases respectively.

Complications like obstruction which were present in 64% of cases. Pain and irreducibility were present in 22% of cases. Strangulation was seen in 14% of the cases.

Optimum procedure done was herniorrhaphy in 84% of cases. Resection and anastomosis was done in 6% of the cases. Omentectomy was done in 3% of the cases.

Discussion

Out of 406 cases admitted in the institute, only 50 cases had acute emergencies at the time of presentation. In a study by Paolo *et al*. the incidence of acute hernias is 10%. In a study done by Bay Nielsen and colleagues, the incidence of acute emergencies among groin hernias is about 4% [8]. The most common age of presentation is 60-70 years. In this study the incidence in males is more common than in females.

According to standard literature, men are more likely to have acute groin hernias than women, which is presumably related to men's higher groin hernia incidence. According to Andrews *et al*. and Mc Entree *et al*., men were more likely than women to have complex groin hernias [20, 21]. According to a study by Shakya *et al*., men experience acute groin hernias with an incidence rate of 88.5% compared to 11.5% in women [11]. The current study is in line with other investigations. The vulnerability of the genders to the various types of hernias varies due to anatomical variances. Compared to men, women have a broader pelvis and a smaller angle between the Cooper's ligament and the inguinal ligament.

Females have narrower Hesselbach's triangle. The internal inguinal ring is made narrower by Hesselbach's triangles and the round ligament because they are smaller in diameter than the spermatic cord. Though it is believed that all of these variables reduce women's vulnerability to groin hernias, women are proportionally more likely to acquire femoral hernias due to their musculo-aponeurotic attachments.

Although the proportional likelihood of strangulation is substantially higher in femoral hernia than in inguinal hernia, problems in inguinal hernia are seen far more frequently than in any other kind of hernia, according to Mackenzie *et al* [22]. In 50% of the cases, there is a very significant risk of strangulation at the time of presentation.

Strangulation or intestinal blockage are 10 times more likely to occur in cases of femoral hernias. Due to the anatomical design of the hernia rings that the hernia sac travels through, femoral hernias are known to complicate more frequently than inguinal ones. Direct inguinal hernias lack a clearly defined hernial ring, whereas femoral hernias feature tight, unyielding hernial rings. 12.31% of inguinal hernia complications were found in the current investigation. According to Gallegos *et al*., 3 to 5% of inguinal hernia cases result in complications [15].

In 10 series, the proportion of femoral hernias with strangulation as the initial symptom averages 36% compared to fewer than 10% of indirect inguinal hernias. A cumulative chance of strangulation of 22% at 1 month and 45% (confidence interval 23 to 67%) at 21 months was determined by Gallegos *et al*., who studied the records of 37 patients with femoral hernias, including 12 who were strangled [15]. When compared to inguinal hernias, these rates are noticeably greater. Acute femoral hernias that appear as strangulation are more common than inguinal hernias in the current study (14.3% vs. 9.2%).

In the current study, acute hernia incidence is higher in the first year (56%) after diagnosis and then declines over time. According to Galleos *et al*., the risk of groin hernia complications is greatest in the first three months because of the tight ring [15]. Later ring yielding increases, resulting in a reduction in complexity.

Right-sided groin hernias in the current study had a higher rate of problems than left-sided hernias, with a ratio of complications in right-sided hernias to left sided groin hernias by a factor of 4:1.

80% of the right-side hernias in our cases were right-sided, and 20% of hernias are on the left. Hernias on the right side are more common. Compared to left sided hernias for complications. No matter how complex, groin hernias always occur on the right side. The physiological foundation for this could be in the small bowel's attachment. Bowel loops connected to the right of the mesentery and midline can stay in the right groin more readily than the ones to the left. The sigmoid colon's tamponading action on the left femoral canal is regarded to be the primary reason why right-sided femoral hernias predominate. The current study is in line with all of the earlier studies. All of the inguinal hernia instances in the current investigation were of the indirect variety. Standard literature states that the deep ring is the most typical site of constriction. Constriction at the level of the deep ring is more frequent than the external ring in the current study as well (71.4% vs. 25.7%). Direct hernias are less complicated more often than indirect hernias. Inguinal hernias that are caused directly have a 10% lower risk of strangulation than those that are caused indirectly. Frankau *et al* study found that only 14 of 559 direct hernias had problems, compared to 559 indirect hernias. Similar results were found in a research by Williams *et al*, where problems were seen in 43 indirect hernias but just 5 direct hernias. 20 In the current study, patients with omentum in 25.7% of cases and small bowel in 74.3% of cases had the most prevalent contents. The most frequent component of inguinal hernias, according to Amos *et al*. and Goyal *et al*., is the small bowel, followed by the omentum [23, 24]. The anatomical structure involved and the viability of the complex hernial sac depend on the contents of the sac. They came to the conclusion that the viability of the contents was severely impacted by long periods of

irreducibility (or a delay in the groin hernia's manifestation). According to Shakya *et al* studies small bowel is most frequently seen inside hernia sacs [11]. All of the previously stated research is consistent with the current investigation. No matter whether the case was clean or contaminated, all 50 patients in our study underwent herniorrhaphy using the Modified Basina's repair approach because of the increased success rate. Several studies have proposed this style of management, and the purpose of our study is in agreement with the studies listed below. Rives *et al* suggested no matter how clean the liquid, he advised against using the prosthetic materials [24]. Pans *et al* and others prohibited the usage of prosthetic material in the management of strangulated inguinal hernia [26]. However, recent theories suggest that hernioplasty could be done in some circumstances. The use of prostheses must only be used in situations when the viability of the intestine is guaranteed and the procedure is performed in an aseptic environment, according to Stoppa *et al*. and Stoppa and Warlaumont, who elucidated on this topic [27]. The use of a prosthesis should only be used in situations where the viability of the intestine is guaranteed and the operation is performed in an aseptic environment. According to Wysocki A. *et al*., the incidence of complications related to the use of monofilament polypropylene mesh in emergency hernia operations was minimal in their series [28]. In the present study, post-operative complications were observed in 20% cases with the most common complication being wound infection in 11.4% patients, followed by death in 5.7% patients and seroma in 2.8% patients. Mortality was reported in 2 patients. Both patients were males, between 60 and 69 years, presented with strangulation and gangrenous bowel, underwent resection and anastomosis and herniorrhaphy, both hypertensive and diabetic. Mortality was due to sepsis in one patient and ARDS in another. According to John Jenkins *et al*, the incidence of postoperative complications varies between 1% and 7% with the most common complication being wound infection [29]. Shakya *et al*, reported an incidence of 33.33% with most common complication being wound infection in 12.69% patients [11]. McEntee *et al*, reported an overall incidence of post-operative complications as 19.6%.8 the present study is consistent with the above-mentioned studies [21].

In their case series, Adesunkanmi *et al*. reported a death rate of 2.7%. According to John T. Jenkins *et al* 7% of patients who underwent acute groin surgery died. According to Andrews, 37% of patients with complicated groin hernias died [29]. The overall mortality rate, according to McEntee and colleagues, was 10.4% [21]. 13.4% mortality was recorded by Nesterenko [30]. In their series, Haapaniemi *et al*. reported a death rate of 7%. Most of the research cited above is compatible with the current investigation [6].

Coexisting illnesses and the viability of the hernia contents had an impact on mortality. This was in line with a Dunphy research that claimed that old age with its associated medical issues were a significant contributor to the high mortality rate in difficult hernias.

Conclusion

The most common age group of presentation is 51 to 60 years. It is more common in male sex group. Pain and irreducibility were universal. The incidence of complications were common in the first year of presentation. The most common site of constriction is the deep ring followed by superficial and femoral canal. Pain and irreducibility were universal. Herniorrhaphy was done universally for all cases with resection and anastomosis of gangrenous bowel and omentectomy as adjunctive procedures.

Acknowledgements

Funding: No funding sources.

Conflict of interest: none

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