



A RETROSPECTIVE STUDY ON INGUINAL AND INCISIONAL HERNIA IN SOUTHERN COASTAL REGION POPULATION OF INDIA

General Surgery

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ABSTRACT

Background: Our study mainly focused on prevalence rate of hernia in southern coastal region population of India. **Objectives:** 1]To know the prevalence of hernia through Occupational, 2]type of hernia, 3]patient's clinical presentation for the hernia, 4]Prophylactic antibiotics treatment, 5]Post operative complications. **Material and Methods:** Our study was conducted in Government Medical College and Hospital, Nagapattinam, Tamil Nadu. Study duration: 2Months(January 2024- February 2024). **Result :** In our study males patients were predominantly affected, In age wise distribution 51-60 years age category people were affected in inguinal hernia and 41-50 years age category in incisional hernia, The patients in our study were classified according to their occupation and the result revealed the mostly affected patient category was fisherman. Patients affected with indirect inguinal hernia was higher in count. Most of the patient experienced swelling followed by pain as clinical symptoms. Cefotaxime was the highly prescribed prophylactic antibiotic. Seroma was the mostly caused post operative complication. **Conclusion :** our study concludes the rate of prevalence in higher in male population and increasing in age can be main cause of hernia formation and inguinal hernia is predominantly higher than incisional hernia.

KEYWORDS

Inguinal hernia, Incisional hernia, Prevalence rate, coastal region

INTRODUCTION

A hernia is the bulging of part of the contents of the abdominal cavity through a weakness in the abdominal wall.

Despite the abdominal wall's intricate shape, the only natural weak points caused by insufficient muscle strength are the lumbar triangles and the posterior wall of the inguinal Canal. Many structures move into and out of the abdominal cavity, causing weakness that might contribute to hernia formation. The most common example is males' inguinal canal, which runs from the abdomen to the scrotum upon birth. This canal (the round ligament in females) contains the testicular artery, veins, and vas. The resulting weakening causes an indirect or lateral-type inguinal hernia. In adult surgery, 80% of hernia procedures are for inguinal hernias. The evolutionary benefit of testicular descent must balance the risk of herniation. Other examples are: oesophagus → hiatus hernia, femoral vessels → femoral hernia, obturator nerve → obturator hernia, sciatic nerve → sciatic hernia.

An inguinal hernia (indirect) can also emerge as a result of the processus vaginalis failing to close during development. As the testis lowers, it draws a peritoneal tube with it. This tube should naturally fibrose and obliterate, but it frequently fails to fibrose, allowing a hernia to develop. Recent research has demonstrated that calcitonin gene-related peptide and hepatocyte growth factor regulate the closure of the ductus, suggesting the potential of a hormonal origin of hernia formation. Inability of consistent growth could end up in abdominal wall compromising. Examples include diaphragmatic, umbilical, and epigastric hernias. Muscles that should connect throughout development fail to establish strong unions, resulting in hernia formation at birth or later in life.

Herniation at the umbilicus includes two components: weakness caused by fetal tissues flowing through the abdominal wall and developmental failure of closure.

The risk of inguinal hernia is related to the anatomy of the pelvis, which is higher in people with a larger and shorter pelvis. Sharp trauma

may cause weakness in the abdominal muscles. This is most usually caused after abdominal surgery, but it can also occur after a stabbing. Even after perfect wound healing, a surgical scar retains just 70% of its original muscular power. This lack of strength can cause hernias in at least 10% of surgical incisions. Smaller laparoscopic port-site incisions have a 1% hernia rate. Increased usage of this surgical method should result in

Muscle damage caused by severe trauma or tear of the abdominal muscles requires tremendous effort and is uncommon. An unexpected appearance of a rectus muscle mass could be a rectus sheath haematoma, which can be driven by trauma but is more commonly caused by excessive anticoagulant medication.

Primary muscular pathology and neurological disorders can cause muscle weakness, which can seem to the surgeon as a 'hernia'.

Pathophysiology of Hernia

A healthy abdominal wall is sufficiently sturdy to cope with significant abdominal pressure and prevent a hernia. Herniation has been linked to high pressures from constipation, prostatic symptoms, excessive coughing in respiratory disease, and obesity. However, studies have found that hernias are no more common in Olympic weight lifters than in the general population, implying that high pressure is not a primary cause of hernias. Many patients will notice a hernia as a result of severe straining.

There is good evidence that hernia is a 'collagen illness' caused by a genetic imbalance in collagen types. This is backed by histology evidence and a connection around hernia and other collagen-related illnesses, such as aortic aneurysm.

Hernias are more likely during pregnancy due to hormonally induced laxity of the pelvic ligaments. It is also more prevalent in the elderly due to degenerative weakness of the muscles and fibrous tissues. A recent Swedish study found that inguinal hernias are less common in obese persons, with hernia risk adversely connected to body mass

index (BMI), contrary to popular perception. Hernias are more common among smokers.

Principle in Abdominal Hernia

An abdominal wall hernia consists of two key components: a wall defect and content, which is tissue that has been driven outside through the defect. An incisional hernia, for example, could cause complete muscular paralysis. It could also be in fascia, such an epigastric hernia through the linea alba. It may include a bone component, such as a femoral hernia. The weakness in the wall is typically the narrowest region of the hernia, which spreads into the subcutaneous fat outside the muscle. The imperfection varies in size, ranging from very little to extremely huge. The precise cause of the defect is critical to determining the likelihood of hernia problems. A minor defect with solid walls retains the content and prevents it from easily migrating in and out of the defect, raising the possibility of problems.

The hernia's contents may be primarily tissue from the extraperitoneal region, such as fat in an epigastric hernia or the urinary bladder in a straight inguinal hernia. However, if such a hernia enlarges, the peritoneum, as well as intraperitoneal structures such as the intestine or omentum, may be pushed into the hernia subsequently; a'sliding kind' of inguinal hernia is a notable example.

More typically, when the peritoneum is directly deep to the abdominal wall weakness, pressure drives it through the defect and into the subcutaneous tissues. The'sac' of peritoneum permits bowel and omentum to pass through the defect. In most situations, the intraperitoneal organs can easily move in and out of the hernia, a'reducible' hernia; however, if adhesions form or the defect is small, the bowel can become stuck and unable to return to the main peritoneal cavity, a 'irreducible' hernia, with a high risk of subsequent complications. The 'neck of the sac' refers to the sac's narrowest portion, located at the abdominal wall defect.

When tissue gets entangled inside a hernia, it is in a limited space. The narrow neck functions as a constriction ring, limiting venous return and raising pressure within the hernia. The resulting tension causes discomfort and tenderness. If the hernia involves bowel, it can become 'obstructed', either partially or completely. If the pressure rises sufficiently, arterial blood is unable to enter the hernia, causing the contents to become ischemic and potentially infarct. The hernia is then considered to have strangulated. The bowel wall perforates, allowing contaminated, poisonous bowel content to enter the tissues and eventually return to the peritoneal cavity.

In some cases (such as Richter's hernia), only a portion of the intestinal wall penetrates the hernia. This could be modest, difficult, or even impossible to detect clinically. Even if there is no intestinal obstruction, the gut wall can become necrotic and perforate, posing a serious risk of death. Femoral hernia may present in this way frequently, with diagnostic delay and considerable risk to the patient.

MATERIALANDMETHODS

Study Type: Cross-sectional retrospective study
Sample Size: 89 Patients
Place of Study: Government Medical College and Hospital, Nagapattinam, Tamil Nadu.
Study Duration: 2Months(January 2024- February 2024).

Data Source: For the study, patients at Government Medical College and Hospital were given comprehensive data. To get the patient's information, a well-thought-out data collection form was created. Data on the patient's demographics, occupation, types of hernias, clinical presentation, and antibiotics prescribed for prophylactic treatment, post operative complication were obtained through patient's case documents.

RESULT

Demographical data					
SEX	Inguinal Hernia		Incisional Hernia		P- Value (Chi-square test)
	No. Of Patients (n= 57)	Percentage (%)	No. Of Patients (n= 32)	Percentage (%)	
Male	51	89.5%	22	68.8%	0.021*
Female	06	10.5%	10	31.2%	

In our study males were predominantly higher than females in both inguinal and incisional hernia with 89.5% and 68.8% rate

Age wise distribution			
Age in years	Inguinal hernia (n=57)%	Incisional hernia (n=32)%	Total (n=89)
0-10	3(5.2%)	1(3.1%)	4(4.4%)
11-20	2(3.5%)	2(6.3%)	4(4.4%)
21-30	5(8.7%)	1(3.1%)	6(6.7%)
31-40	11(19.2%)	6(18.9%)	17(19%)
41-50	7(12.4%)	8(25%)	14(15.7%)
51-60	15(26.5%)	7(21.8%)	23(25.8%)
>60	14(24.5%)	7(21.8%)	21(23.5%)

In age wise distribution 51-60 years age category people were higher with the rate of 15(26.5%) in inguinal hernia and 41-50 years age category in incisional hernia with the rate of 8(25%).

Occupational details		
Occupation	Numbers	Percentage
Fisherman	37	32.93%
Farmer	29	25.81%
Daily wager	13	11.57%
Student	7	6.23%
Others	3	2.67%

The patients in our study were classified according to their occupation and the result revealed the mostly affected patient category was fisherman with rate of 37(32.93%).

The type of hernia in which patient's mostly affected in study population				
S/No	Types pf hernia	No. of patients (n=89)		Total (n=89)
		Male	Female	
1	Inguinal hernia	51	6	57
	Direct	14	2	16
	Indirect	32	4	36
	Bilateral	4	1	5
2	Incisional	22	10	32

Our study result revealed the mostly affected type of hernia is indirect inguinal hernia with rate of 36 patients combining male and female patients followed by incisional hernia with rate of 32 patients combined.

patient's clinical presentation for the hernia			
Hernia	Sign & symptoms	No. of patients	Total
Inguinal hernia	Swelling	29	51%
	Swelling & pain	24	43%
	Pain	13	21.4%
	Vomiting	9	15.2%
	Constipation	8	14%
	Dehydration	10	17%
	Urinary irritation	6	10%
Incisional hernia	Swelling	17	52%
	Swelling & pain	15	45%
	Pain	11	33%
	Vomiting	4	12%
	Constipation	5	16.5%
	Dehydration	3	11%
	Urinary irritation	6	18%

In our study most patient were presented with swelling in both inguinal and incisional with the rate of 29(51%)and 17(52%).

Prophylactic antibiotics treatment				
DRUGS	Inguinal Hernia		Incisional Hernia	
	No of patients n=57	Percentage (%)	No of patients n=32	Percentage (%)
cefotaxime	43	75%	23	72%
ceftriaxone	20	35%	12	37.5%
ciprofloxacin	4	7%	3	9%
cephalexin	27	47.3%	22	68%
metronidazole	18	31.5%	17	54.5%
norfloxacin	8	14%	4	13.6%
gentamycin	3	5.26%	1	4.5%
amikacin	2	3.5%	1	4.5%
azithromycin	3	5.26%	3	9%

Our study results reveals the different coarse of antibiotics prescribed to patients for prophylactic treatment in that cefotaxime higher in rate which is 43(75%) inguinal hernia and 23(72%) in incisional hernia and

least prescribed was amikacin with rate of 2(3.5%) in inguinal and 1(4.5%) in incisional hernia.

Post operative complications				
Complications	Inguinal Hernia		Incisional Hernia	
	No of patients (n=57)	Percentage (%)	No of patients (n=32)	Percentage (%)
Wound infection	8	14.03%	7	22%
Mesh migration	7	12.2%	2	6.2%
Wound dehiscence	3	5.2%	1	3%
Seroma	18	31.5%	17	53%
None	21	36.8%	5	16%

In our study post operative complication data shows seroma with the rate 18(31.5%) in inguinal hernia and 17(53%) in incisional hernia.

DISCUSSION

The research population consisted of 89 participants. Out of 57(89.5%) patients, 51 people with inguinal hernias were male, and 6(10.5%) were female. Of which 32 patients with incisional hernias, 22(68.8%) were male and 10(31.2%) were female. When comparing the types of hernia in each gender, rate of incidence in male were higher than female. One of the main factors that causes hernias is age. The abdominal wall becomes weaker with aging. Approximately 40 is the typical age of occurrence. 51-60 was shown to be the most common type of inguinal hernia and 41-50 in incisional hernia in our analysis. According to this study, indirect inguinal hernias are the most common type, followed by direct hernia. Due to the existence of the groin canal, males are more likely to suffer from indirect inguinal hernias. Most individuals with inguinal hernias had the defect located on the left side of the abdomen. It brings to mind the structure of the groin canal, which is on the lower left side of the abdomen. Swelling is the most commonly observed clinical sign in both types of hernias. Our study revealed fishery people were mostly affected with the high rate of prevalence followed by farmers. Many people experienced of swelling and pain. Infections are more frequent in the surgical patients. The use of antibiotics in the pre and post phase of surgery is mandatory. The commonly prescribed prophylactic antibiotic was intravenous cefotaxime and metronidazole in which some cases the alternative for cefotaxime is intravenous ceftriaxone and tablet cephalaxine. Cephalosporins and nitroimidazoles are recommended due to its broad spectrum of activity. Despite the use of drugs like antibiotics some patients may develop complications. This is due to a series of factors. In this study population a large number of patients reported to post-operative complications in which higher number of reported seroma (cutaneous access) which is most common post surgical complication followed by surgical site infection and mesh migration.

CONCLUSION

Our study concludes there is lack of patient education and awareness about the complication and also minimal rest in the post surgical period. Patient from this specific regional setting present only after the complication. There was no mortality in our study population. Early diagnosis, easily accessible health care facilities and health education is crucial to prevent further complication.

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Conflict Of Interest

The authors declare that there is no conflict of interest.

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