

Prevalence and pattern of inguinal hernia among adult patients attending a tertiary care teaching hospital

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Abstract

Problem: Universally, the inguinal hernias was documented for 75% of the overall abdominal hernias with a life time risk of 15 to 27% in males and 3% in the females. To identify the pattern and prevalence of inguinal hernia among adults at a tertiary care teaching hospital. **Materials and Methodology:** This investigation is carried out in the department of General Surgery in a tertiary care hospital of Central Tamilnadu. A proforma was prepared to collect a detailed history from the patients in order to identify the prevalence and pattern of inguinal hernia. Ninety three cases were included and studied. The results were recorded and evaluated. **Findings:** On analysis it was found that males are predominantly affected with inguinal hernia. Unilateral hernia was more prevalent. Commonly, inguinal hernia of right sided were more. Indirect Hernia was more predominant. The major risk factors were found to be moderate weight lifting over a long duration, thus it is considered as one of the major occupational diseases. The other contributing factors were found to be chronic cough, bronchial asthma, diabetes and smoking. **Conclusion:** Early recognition and intervention prevents complications, recognition of precipitating/ disposing factors helps to educate the patient towards prevention of recurrence, prevention of septic complications and prevention of early and late complications post-surgery.

Keywords: Inguinal hernia, Adults, Prevalence, Pattern

Introduction

Hernia is defined as the anomalous protrusion of viscous through the wall of cavity which normally contains it. This opening or orifice is a defect in the innermost layer, most commonly in the abdomen, which results in protrusion of its contents and leads to the occurrence of hernia which is an out pouching of the peritoneum. Among all the hernias reported abdominal wall hernias are most recurrently observed in practice accounting from 15 to 18% of all surgical procedures (Kamal and Robert, 2019; Sujan, 2018; Rahul and Ravindranath, 2016).

Abdominal wall hernias were observed in aponeurosis and fascia which are free of protecting support of striated muscle and these may be acquired via muscular atrophy, trauma and surgery. Therefore the most common sites of hernia are groin, umbilicus and linea alba (Balamaddaiah and Rammohan, 2016; Ayesha and Mohammed, 2016).

The protrusion of abdominal cavity and its contents through the inguinal canal is called inguinal hernia. It is the most common type of all abdominal wall hernias with more predominance in males (Sulaiman et al., 2018; Balram, 2016; Prabodh and Anal, 2017; Shengulwar, 2015) and mostly associated with ageing and strain of abdominal muscles. The duration threat of developing inguinal hernia is around 25% for men. The complications most commonly found in older aged individuals include incarceration, bowel obstruction and bowel strangulation (Lau et al., 2007).

Obstructed hernias are the most frequent root of intestinal obstruction in India (Junge et al., 2006). Even though easily manageable it can become life-threatening when complications arise. A reducible hernia is frequently a long standing condition and diagnosed clinically on the basis of signs and symptoms (John and Patrick, 2008; Mukesh et al., 2013).

Inguinal hernia can be congenital or acquired (Ein et al., 2006), unilateral or bilateral and may reoccur even after treatment (recurrent hernia) and risk of hernia recurrence increases from repair to repair. The recurrence rate after inguinal hernia repair is 3–8% (Basu et al., 2013). There has been an increasing rise in the number of septic complications even with the advancement in sterilization techniques. Different types of surgical repair offer different recurrence rate. Cure of inguinal hernia can only be brought by surgery (Gulzar et al., 2007).

Among genders, males predeominance with inguinal hernias when comparing with females (Sulaiman et al., 2018; Lau et al., 2007; Junge et al., 2006). Possible etiology include an open processus vaginalis and conditions which can raise intra-abdominal pressure, like chronic bronchitis or hyperplasia of the prostate (Ruhl and Everhart, 2007).

The well known risk causes and factors of the inguinal hernias was documented as heavy lighting of weights, increased abdominal pressure, obesity, pregnancy, pre-existing weakness of abdominal muscles, straining during defecation, etc. Development of inguinal hernia is closely associated with various factors like inheritance predominates, chronic constipation, Ehlers–Danlos syndrome, low body mass index, and prostatectomy (Raj and Susanta, 2018; Abdulmajed et al., 2017). By keeping the abovesaid review in mind, this study was conducted with the objective of identifying the pattern and prevalence of inguinal hernia among adults at a tertiary care teaching hospital in Central Tamilnadu.

Materials and Methods

This is a prospective, observational and cross sectional study investigated in the Department of General Surgery in a tertiary care teaching hospital where the patients who are attending the outpatients and Inpatients department of hernia complications were included. A total of 100 cases were proposed initially to obtain the institutional approval related to ethical clearance (Ref: 636/TSRMMCH&RC/ ME-1/2019 IEC No:013 dated 17.07.2019). But due to the low prevalence of inguinal hernia in the particular region during the specified period of time, there was possible to 93 cases only.

The type of work was classified into mild, moderate and heavy based on the duration of work done by the patient and the load of work done by the patient. Patients who did their day to day activities were classified into the 'Mild' category. Patients who carried out their day to day activities along with weight lifting of a lesser duration and degree were classified into the 'Moderate' category. Patients whose profession requires significant weight lifting of a greater degree and duration were classified into 'Heavy' category.

Inguinal hernia confirmed by clinical examination with radiological evidence was the study population recruited. The clinical examinations including patients' examination with a suspected inguinal hernia, further examining the patient first in standing posture, demonstrate lump with cough impulse and then perform in lying posture for abdominal examination.

The radiological investigations including ultrasound scans of groin, CT scan, herniography and MRI of groin were recommended; but ultrasound scans of groin only done for all patients. The patients whose age groups above 14 years of both genders were included and patients who did not give consent are excluded from the study, pediatric patients and patients with recurrent hernia were excluded.

Consent in written form was collected from all the patients after explaining them about the details of the study, Further, socio-demographic, personal, clinical profile, sample collection, radiological investigations, surgical procedures and follow up details were documented in the approved case study proforma.

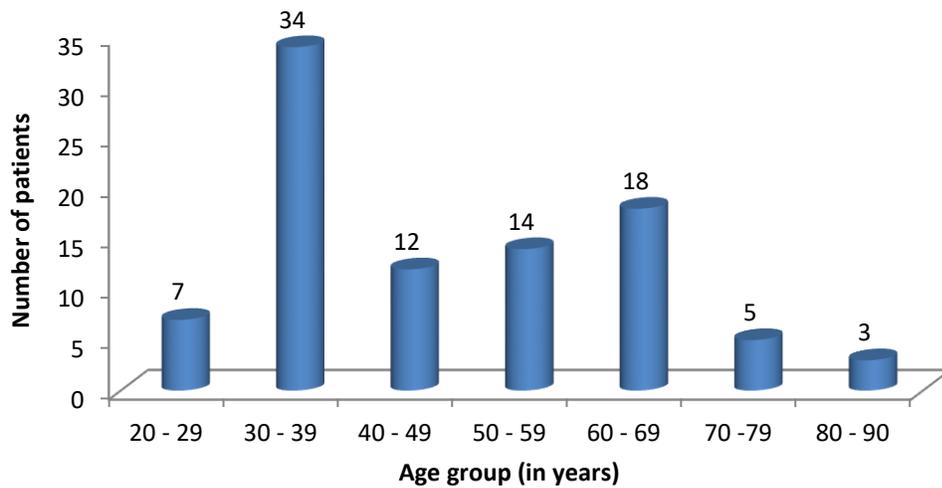
All quality control and special precautions were adopted and followed, to stick on the ethical values, strict confidentiality were maintained about the all the clinical and radiological findings of the patients. No

places the investigators disclose the patients' information. The data collected will be analyzed by descriptive statistics.

Results

This study provided the maximum outcome of understanding pattern and prevalence of hernia in the study area. Among 93 patients, 90 (96.8%) were males and 3 (3.2%) were females. While analyzing the age groups, it was observed that the highest incidence of inguinal hernia was observed between 30 and 39 years with 34 cases followed by 60 to 69 years with 18 cases (Figure 1). The mean age group of this study population is 47.61±16.44 whose coefficient of variance is 34.53. The determination of the work done by the patients were showed majority having a moderate work load (39; 41.9%); followed by mild (31; 33.3%).

Figure 1: Age distribution of patients



Among the study population, 10 (10.7%) were found to be alcoholics, 19 (20.4%) were smokers. The history of diabetes and hypertension were documented among 19 (20.4%) and 12 (12.9%) patients respectively. On analysis, it was found that 7 (7.5%) patients each have a history of bronchial asthma and chronic cough where all are under treatment. Further, nine (9.7%) patients had constipation and 14 (15%) had micturition difficulties. The detailed description about the co-morbid state and risk factors of the patients included was depicted in table 1.

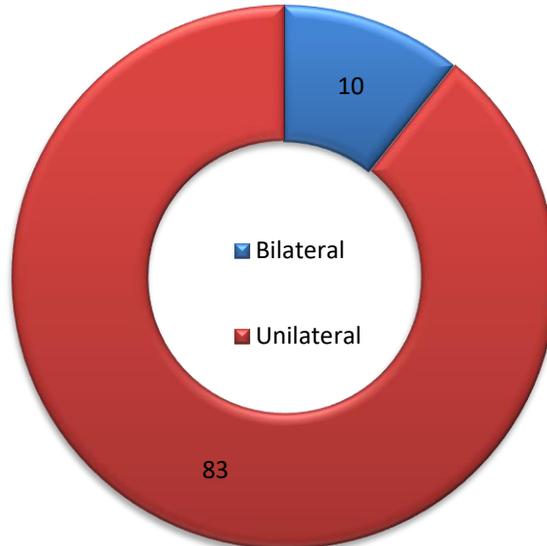
Table 1: Co-morbid status and risk factors

Parameters	Number of patients (n=93)	
	Yes	No
Chronic cough	7 (7.5)	86 (92.5)
Bronchial Asthma	7 (7.5)	86 (92.5)
Bowel Movement	9 (9.7)	84 (90.3)
Smoking	19 (20.4)	74 (79.6)
Previous Surgery	16 (17.2)	77 (82.8)
Alcoholism	10 (10.8)	83 (89.2)
Diabetes	19 (20.4)	74 (79.6)
Hypertension	12 (12.9)	81 (87.1)
Difficult in urination	14 (15.1)	79 (84.9)

[Figure in parenthesis denoted percentages]

In this population based study, it was found that 10 (10.7%) and 83 (89.3%) patients were bilateral inguinal and unilateral inguinal hernia respectively (Figure 2). This laterality analysis is not much involved in the observation of severity of the disease or surgical management.

Figure 2: Description of bilateral and unilateral inguinal hernia



Out of 83 unilateral cases, 29 (34.9%) were found to be left inguinal hernia and 54 (65.1%) were right inguinal hernia. While analyzing the pattern of inguinal hernia among all 93 cases, 32 (34.4%) were determined as direct inguinal hernia and 61 (65.6%) were indirect inguinal hernia. The history of previous hernia surgery was recorded with 7 (7.5%) patients indicated that the recurrent hernia also possible (Table 2).

Table 2: Pattern of inguinal hernia

Parameters	Number of patients	Percentage
Bilateral hernia	10	10.7
Unilateral hernia	83	89.3
Left hernia	29	34.9
Right hernia	54	65.1
Direct inguinal hernia	32	34.4
Indirect inguinal hernia	61	65.6
Previous history of hernia	7	7.5

Discussion

In this study, it was found that 96.7% were males and 3.2% were females compared to other studies reported an incidence of males are high with 96 and 93.2% (Pradeep et al., 2017; Vijayakumar and Alagarsamy, 2016). This male predominance could be due to anatomical variation and occupational differences amongst males and females (Sulaiman et al., 2018).

The predominantly affected age group is 30-39 followed by age group 60-69 compared to the reference studies where more patients were found between 31 and 60 years followed by 61 and 75 and the most common affected was 46 to 60 years following 30 to 45 years (Rahul and Ravindranath, 2016;

Balamaddaiah and Rammohan, 2016). This was in concordance with other studies where 42 to 50 years age group was the most common age group (Balram, 2016; Basu et al., 2013).

According to our study people who had a history of moderate weight lifting for longer periods of time were more susceptible to inguinal hernia when compared with the reference study where the probable cause of high prevalence of inguinal hernia is stated to be due strenuous activities (Rahul and Ravindranath, 2016), and the main risk factor is closely associated with inguinal hernias which was likely to be found by heavy object lifting. Our study also highlighted the previous record of heavy object lifting was more prone in developing inguinal hernias. In the study among 198 cases, about half of the men were found to be doing strenuous jobs (Balram, 2016).

When social behavior was analyzed it was found that the incidence of smoking was 20.43% and that of alcohol consumption was 10.75% when compared to other study where smoking is said to be a contributory cause for development of inguinal hernia and was seen in 23.23% of people (Fitzjibbons et al., 2013; Zendejas et al., 2013). In chronic smokers, the development of inguinal hernias is due to defective connective tissue metabolism (Mebula and Chalya, 2012).

When the medical history of the people was analysed it was found that about 20.43% people were diabetic and 12.90% people were hypertensive when compared with the study showed diabetes was also another common reasons for hernia occurrence with the incidence of 31.6% for diabetes (Balamaddaiah and Rammohan, 2016).

On further analysis of medical history it was found that people showed an incidence of 7.52% for bronchial asthma and 7.52% for chronic cough when compared where the chronic cough is said to be one of the causes of increase in abdominal pressure which may contribute to the development of inguinal hernia and chronic cough was noted in 10.61% patients (Shengulwar, 2015; Sarosi et al., 2011; Osifo and Amusan, 2010).

On analysis of surgical history of patients it was found that 17.20% had previous surgical history on comparison with other papers which state different types of surgical repair offer different recurrence rate, proctectomy 17 also being a risk factor along with pregnancy. On analyzing personal history it was found that 9.67% had bowel disturbances when compared with improper bowel movements mostly which was constipation was seen in 99 (46.7%) of the patients (Balamaddaiah and Rammohan, 2016; Shengulwar, 2015).

In our study, the pattern and prevalence of inguinal hernia for bilateral hernia was found to be 10.75% and unilateral is 89.24% in comparison to the study resulted with unilateral hernia whereas bilateral hernia was observed in 5% patients. While analyzing the unilateral hernias, right side was prevalent when comparing to left. A study also reported right sided hernias to be more prominent than the left side (Rahul and Ravindranath, 2016). Interestingly it was found that 70% as right sided and 46 and 59% were indirect and direct inguinal hernias respectively. Another study reported a total of 62.3% of the inguinal hernias was found on the right side.

The prevalence of hernia was higher on the right side as compared to left and 6.9% cases were found to be bilateral. The right side domination of the hernia might be due to the late fall down of the right testis and more frequent failure of closure of right processes vaginalis.

According to our study it was found that indirect inguinal hernia was more prevalent 65.59% compared to direct inguinal hernia 34.40% in comparison to the study where it was found that indirect hernias are more common below 50 years of age than direct but direct hernia pre- dominates as the age advances which may be attributed to physiological wear and tear of fibro muscular tissues, prostatic hypertrophy and comorbid illnesses (Rahul and Ravindranath, 2016).

A study reported that inguinal hernia was associated with geriatrics, high BMI, greater height, intense cough or rural residence (Osifo and Amusal, 2010). Family history was also considered as the major factor contributing to occurrence of hernia in patients. This was concurred by other studies predicted hernia if a family member previously had it (Lau et al., 2007; Junge et al., 2006).

Conclusion

From the study conducted we concluded that inguinal hernia is more predominant in males (96.8%) than females (3.2%). Unilateral hernia (89.2%) is more common than bilateral hernia (10.7%). Right sided inguinal hernia (58.1%) is more predominant than left sided inguinal hernia (31.18%). Indirect inguinal hernia was found to be more prevalent with a percentage of 65.6% and direct inguinal hernia was found to be 34.4%

The major risk factor for the development of inguinal hernia was found to be moderate weight-lifting with a majority of (41.9%). The other contributing factors were found to be chronic cough (7.5%), bronchial asthma (7.5%), diabetes (20.4%) and smoking.

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