

Spectrum of frequency, prevalence and risk factors of abdominal wall hernias: A prospective study

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Abstract- A hernia occurs when a sac with peritoneal lining protrudes above the abdominal muscles' aponeurotic sheath. All genders and ages are susceptible to abdominal wall hernia, which is a highly prevalent surgical ailment. The objective of this study is to present the spectrum profile of abdominal wall hernias along with their prevalence, frequency, and risk factors. **Methodology:** This is a cross-sectional prospective study based on a single center. The case files of the patients who have undergone hernia repair from January 2021 to June 2021 were reviewed. The data were analyzed using Microsoft excel. **Results-** A total of 160 patients have undergone hernia repair including 120 male and 40 female patients and the age group of 41- 60 years is more predominant. Their frequency is in the order of inguinal 57.5%, followed by incisional 13.12%, umbilical 11.8%, para umbilical 10%, and epigastric hernia 7.5%. Comorbid illness is seen in 53.1 % of the population and previous abdominal history is the most common risk factor in 20.6% of the patients. **Conclusion-** Abdominal wall hernia repair is a prevailing surgical procedure worldwide. The frequency of different types of hernias in our study population was inguinal, incisional, umbilical, and para-umbilical, followed by epigastric hernias, which in comparison to other studies represents an evolving spectrum over time. Educating the general public, early-stage diagnosis and provision of medical support are the prominent aspects in preventing further complications of abdominal wall hernias.

Keywords – Hernia repair surgery, Abdominal wall hernias, Prevalence

I. INTRODUCTION

A hernia occurs when a sac with a peritoneal lining protrudes above the abdominal muscles' aponeurotic sheath. Abdominal hernias develop when the load-bearing layers of muscles, fascia, and tendons lose their ability to support tissue shape and function. Surgical wound complication or primary fascial disease is the biological cause. Extracellular and cellular molecular matrix abnormalities happen in both situations [1]. All genders and ages are susceptible to abdominal wall hernia, which is a highly prevalent surgical ailment. Over 20 million hernias are estimated to require surgery each year, across the globe [2]. Symptoms of an abdominal wall hernia may be absent or nonspecific, alternating between episodes of mild abdominal discomfort and severe periumbilical pain and nausea [3]. Some people have no symptoms, but most are diagnosed with a hernia during medical check-ups. Hernias frequently occur in the upper thigh, groin, navel, and abdomen. Umbilical, inguinal, and Hiatal hernias are frequent forms, with inguinal hernia being the most prevalent. The inability of the abdominal wall to close completely, and abdominal trauma are the main causes. Pregnancy, constipation, weight gain, a persistent cough, and lifting weights are typical risk factors [4].

The study's primary goal is to present the clinical characteristics of abdominal wall hernias, as well as their prevalence, frequency, and associated risk factors.

II. METHODOLOGY

Study type –

A single center-based prospective study.

Study location –

Tertiary care hospital, Eluru, India.

Study tool –

A data collection form was designed and used which includes patient demographics, past medical history, surgical history, type of hernia, and social background of all the patients who have undergone hernia 2.4 repair during the study period.

Study population and Source of data –

160 patients are observed and interviewed. The study includes the patients who have undergone hernia repair surgery in the study setting over a period of 6 months i.e. from January 2021 to June 2021.

Statistical analysis –

A Microsoft Excel spreadsheet is used to assemble the data once it is separated and exported the results as percentages and frequency, and the information is presented in tables.

III. RESULTS

Over a period of 6 months, 160 cases of abdominal wall hernias were observed in the hospital.

TABLE – 1 Demographic distribution of the Patients

Age [in years]	Sex		Total	PREVALENCE RATE
	Male	Female		
<20	3	0	3	1.87%
21 – 40	27	6	33	20.62%
41-60	47	31	78	48.75%
61-80	41	3	44	27.5%
>80	2	0	2	1.25%
Total	120	40	160	100%

With 31 female and 47 male patients, it was found that a significant amount of the patients were between the age of 41 and 60 years. [Table 1]

TABLE - 2 Distribution of the Patients in accordance to their type of hernia

Type of hernia	Male	Female	Percentage	Ratio
Inguinal hernia	92	0	57.5%	92 : 0
Umbilical hernia	9	10	11.8%	47.36 : 52.63
Para umbilical hernia	7	9	10%	43.75 : 56.25
Epigastric hernia	4	8	7.5%	33.33 : 66.66
Incisional hernia	8	13	13.12%	38.09 : 61.90

Inguinal hernias were the most commonly observed among 57.5% of the population followed by an incisional hernia in 13.12% in both males and females. Epigastric hernias were the least common type observed in about 7.5% of the subjects. [Table 2]

TABLE - 3 Site- wise distribution of inguinal hernias

Type	Number of patients
Right Direct	13
Right Indirect	31
Left Direct	27
Left Indirect	19
Bilateral	2

Among the 92 inguinal hernia patients, the Right indirect hernia is mostly observed i.e. in 31 patients followed by the Left direct hernia in 27 patients. [Table 3]

TABLE - 4 Comorbid illness

Disease	Number of patients	Prevalence rate
Hypertension	33	20.62%
Diabetes Mellitus	39	24.37%
Cerebral vascular accident	2	1.25%
Chronic respiratory illness	7	4.375%
Coronary artery disease	4	2.5%
TOTAL	85	53.12%5

Table 4 presents that 53.1% of the patients had a comorbid illness and the remaining 46.9% were without any underlying disease. Diabetes mellitus and Hypertension were most commonly observed.

TABLE – 5 Distribution of the Patients on basis of risk factors

Risk factor	No of patients	Prevalence rate
Pregnancy without LSCS	28	17.5%
Surgical history	33	20.62%
Excessive physical activity	24	15%
Obesity	20	12.5%
Recurrence of hernia	4	2.5%
Family history of hernia	5	3.125%

TOTAL	114
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Table 5 represents the list of risk factors considered that might lead to abdominal wall hernia due to excessive stress in the abdominal region.

IV. DISCUSSION

An abdominal wall hernia mainly occurs in the bulging of an organ or an internal part through a weakness or opening of the abdominal region. These are common among both males and females. In this study, we have collected the case reports and history of all 160 patients who have undergone hernia repair during the study period. Findings of our study state that males and females were in the ratio of 3:1, which can be correlated to a study by M. Sangwan et al. in India where females were outnumbered by males. It can be observed that hernia is more prevalent in males than females, which might be due to excessive physical activity as the study population was mostly rural [5]. All of the study population was within the age limit of 18 to 83 years. Our research population suggests that the age range of 41 to 60 is where hernias are most prevalent. The frequency of different types of hernia in our study population is in the order of inguinal 57.5%, followed by incisional 13.12%, umbilical 11.8%, para umbilical 10%, and epigastric hernia 7.5%. Our results can be correlated to those of M. Sangwan et al., where the frequency is in the increasing number of the inguinal, para umbilical, umbilical, epigastric, incisional, obturator, and femoral hernias [5]. In a similar study conducted by Rao G et.al. the frequency is as follows: lingual hernias at 21.8%, incisional hernias at 15.7%, para-umbilical hernias at 13.7%, followed by umbilical hernias at 11.7% [6]. Incisional, umbilical, and para-umbilical hernias were more common in females in this study. According to literature from the United States, women are five times more likely to develop para-umbilical and umbilical hernias than males, suggesting that pregnancy is a significant causative component [7]. Inguinal hernia constituted 57.5% of the total study population and is more common on the left side than on the right, while the literature states the opposite, that it is more common on the right as a result of late descent of the right testis [8]. In our study population, the incidence of indirect hernias is higher than that of direct hernias, whereas, for M. Sangwan et al., direct hernias are more common [5]. Comorbidities were observed in 53.1% of all study participants, with diabetes and hypertension occurring more frequently. Seven patients had a chronic respiratory disease, three of whom reported chronic cough, which could predispose them to develop hernias due to the pressure in the abdominal cavity. As presented in Table 5, a few risk factors are considered criteria for hernia development in the population of the current investigation, which includes pregnancy, surgical history, obesity, excessive physical activity, recurrence, and family history of hernia. In our study, 20.6% of patients had a history of abdominal surgery, whereas, in a comparative study carried out in Saudi Arabia, it was 23.9% [4]. 12.5% of the population, as determined by our survey, is obese. This increases the risk of developing a hernia. One piece of literature has shown that obesity is the most prevalent risk factor for developing hernias, and obese people are more likely to have a recurrence [9].

Our study attempted to present the basic data on risk factors and the spectrum of abdominal wall hernias in a small scale of population. All the patients in our study underwent hernia repair successfully without any post-surgical complications.

V. CONCLUSION

Abdominal hernia repair is a prevailing surgical procedure worldwide. These are predominant among the age between 41 to 60 years and among men. The frequency of different types of hernias in our study population was inguinal, incisional, umbilical, and para-umbilical, followed by epigastric hernias, which in comparison to other studies represents an evolving spectrum over time. Educating the general public, early-stage diagnosis and provision of medical support are the prominent aspects in preventing further complications of abdominal wall hernias.

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