

Study of the Clinico - Demographic Profile of Inguinal Hernia and the Risk Factors Associated With Inguinal Hernia in the Regional Population of a South Indian City

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Abstract: Abdominal wall hernias are frequently encountered in surgical practice accounting for 15% - 18% of all surgical procedures. Worldwide, more than 20 millions hernias are operated per year. Lifetime risk of developing inguinal hernia is 15% - 27% in men and 3% in women. A hospital based cross sectional study was conducted on 100 patients availing treatment at a tertiary care hospital of North Karnataka, India. The study participants were aged above 18 years who presented to the Department of Surgery with uncomplicated hernia. Individuals having congenital hernia, recurrent hernia, complicated hernia like obstructed hernia and strangulated hernia were excluded. In our study 99% were males. The most predominant age group affected was 40 – 60 years which constituted 50% of the cohort. Inguinal hernia presented in the right groin in 58% cases, in left groin in 37% and was bilateral in 5% patients. Indirect hernia was seen in 78% of our cases and direct hernia in 22%. Among the risk factors contributing to the development of hernia, lifting heavy weight was an important risk determined as majority (72%) of our patients reported having to lift heavy weights as their work profile. This was followed by presence of other co morbidities (23%) such as diabetes mellitus, COPD, hypertension and old age (18%). The spectrum of inguinal hernias is more or less constant throughout the world despite having differences in educational, economic and social status. Early diagnosis, easily accessible health facilities and health education are important to prevent complications.

Keywords: Hernia, Inguinal Region, Risk factors, indirect hernia, Groin swelling.

INTRODUCTION

Hernia as defined by Astley Cooper in 1804 is “A protrusion of any viscus from its proper cavity. The protruded parts are generally contained in a sac like structure, formed by the membrane with which the cavity is naturally lined.” The word hernia is derived from the Latin word for “Rupture”. Hippocrates used the Greek word “Hernios” for a bud or bulge to describe abdominal hernias. Statues of this era portray this condition [1].

Abdominal wall hernias are frequently encountered in surgical practice accounting for 15% - 18% of all surgical procedures [2, 3]. There are about 500,000 cases of abdominal hernia that are reported every year [4]. Lifetime risk of developing inguinal hernia is 15% - 27% in men and 3% in women [5]. Although males are affected more commonly (7:1), the incidence of femoral hernia is four times higher in females [6].

A hernia occurs when an organ of the body pushes itself through an opening in the muscle or tissue that is supposed to hold it in place. This type of hernia is most common in the abdominal region. This opening or the orifice is a defect in the innermost layer of the abdomen and the hernia is out pouch of the peritoneum. Abdominal wall hernias only occur in certain areas namely, where aponeurosis and fascia are devoid of the protecting support of striated muscle. These may be acquired through muscular atrophy, surgery or trauma. Therefore the common sites of hernia include the groin, umbilicus and the linea Alba [7].

The most common symptoms of a hernia include a swelling in the groin, heavy feeling in the abdomen, and discomfort in the abdomen regions, especially when coughing, lifting or bending over. However, symptoms may not appear in some people and they will only realize that they have this condition during medical checkups [8]. The time a hernia takes to develop depends on its causes, which relate to muscle weakness and strain. Common causes include chronic

coughing, damage from an injury or through surgery, and the inability of the wall of the abdomen to close properly [9]. The main risk factors of hernia include pregnancy, weight lifting, constipation, and weight gain.

Although several hypotheses regarding the etiology of inguinal hernia have been proposed, large-scale data on the occurrence of inguinal hernia may provide further understanding to the pathophysiology of inguinal hernia development. This study was conducted with the intention of identifying the various types of inguinal hernia observed in our area as well as their clinical presentation and risk factors.

METHODOLOGY

Study design and population

A hospital based cross sectional study was conducted on patients availing treatment at a tertiary care hospital of north Karnataka. The study participants were adults aged above 18 years who presented to the Department of Surgery with uncomplicated hernia. Individuals having congenital hernia, recurrent hernia, complicated hernia like obstructed hernia and strangulated hernia were excluded.

Sample size and sampling method: 100 subjects were enrolled using convenient sampling.

Methodology

A pretested semi structured questionnaire was used for data collection. Informed consent was taken from the participants prior to enrolment. These patients were screened to detect any condition requiring exclusion or that might have had a substantial effect on the surgical treatment. The data regarding the general information, clinical details of the patient was collected. The patients were also evaluated for any risk factors

which predisposed the development of hernia. All the patients were then treated by Lichtenstein Tension Free Mesh Repair.

Statistical analysis

The data collected was entered into Microsoft excel and analysed using SPSS 17 software, Chi square test for the proportion and other appropriate statistical tests were applied.

Ethical Clearance

Ethical clearance been obtained from our institution prior to study. Study was done on patients with inguinal hernia, after taking the informed/written consent from each patient.

RESULTS

The present study included 100 patients of inguinal hernia, 99% among them were males. The most predominant age group affected was 40 – 60 years which constituted 50% of the cohort. Majority of the patients were Hindu (89%) and belonged to lower socio economic class. The occupation of 62% cases was farming, 10% were manual labourers, 4 were tailors, 12 % were businessmen and others belonged to clerical work categories. Inguinal hernia presented in the right groin in 58% cases, in left groin in 37% and was bilateral in 5% patients. Indirect hernia was seen in 78% of our cases and direct hernia in 22%. The clinical presentations and examination findings have been summarised in the table 2. Among the risk factors contributing to the development of hernia, lifting heavy weight was an important risk determined as majority (72%) of our patients reported having to lift heavy weights as their work profile. This was followed by presence of other co morbidities (23%) such as diabetes mellitus, COPD, hypertension and old age (18%).

Table-1: Demographic characteristics of the cases

Demographic characteristic	Percentage	
Age (in years)	20 – 40	33
	41 – 50	24
	51 – 60	25
	61 – 70	16
	71 - 80	2
Gender	Male	99
	Female	1
Duration of symptoms	Less than 1 year	58
	1 – 2 years	28
	2 – 3 years	4
	3- 5 years	8
	More than 5 years	2
Associated co-morbidities	Diabetes mellitus	5
	Hypertension	14
	TB / Asthma / COPD	3
Similar complaints in past	Yes	5

Table-2: Clinical examination findings of the patients

Extension	Inguinal	45
	Inguino- scrotum	55
Reducibility	Manual	16
	Spontaneous	82
	Not reducible	2
Pain	Present	20
Site of pain	Groin	14
	Scrotum	2
	Inguino-scrotal	9
	No pain	75
Shape	Pyriiform	76
	Globular	24
Cough impulse	Present	100
Visible peristalsis	Present	10
Tenderness	Present	19
Contents of the sac	Intestine	55
	Omentum	44
	Others	0

Table-3: Risk factors implicated in development of hernia

Risk factors	Number
Family history	1
Lifting heavy weights	72
COPD	3
Bowel disturbance	2
Old age	18
Comorbidities	23

DISCUSSION

Being a commonly performed general surgical operation, abdominal wall hernia comprises a significant proportion of total surgical work load in most of the centres. Al-though it has been reported to constitute 15% - 18% of total surgical operations but a slightly higher prevalence in present study area may be due to rural population having agriculture as main profession. Lifting heavy weights, old age may be the other contributory factors. Inguinal hernia constituted 78% of total abdominal wall hernias which is in accordance with literature [10-12].

In our study male patients' outnumbered females. It may be due to the trend that males are more involved in strenuous work in agriculture while females are predominantly entitled the household works. This is supported by other studies by Prabodh Bansal & Anil Mongia [13] who also observed male predominance, 87.7% of the males were involved and concluded that this male predominance could be due to anatomical variation and occupational differences amongst males and females. In a study conducted by Balram [14] to determine the predominance of inguinal hernia in Bundelkhand district, he also found that males were more frequently affected than females and the age group of 41-50 years was more susceptible to inguinal hernia. As per the study by D.K. Gupta *et al.* [15], 96% inguinal hernias were in males and 4% were females.

Study by Charles N.R *et al.* [16], shows that 93.2% of all inguinal hernia cases were males, 6.7% were females.

Inguinal hernia is twice more common on right side (58%) in our study, this may be due to late descend of right testis and more frequent failure of closure of right processus vaginalis. Shams Nadeem Alam *et al.* [17], also made the observation that 65.35% inguinal hernias were right sided, 30.47% were left sided and 4% were bilateral. Indirect inguinal hernias accounted for 60.3% and direct inguinal hernias were seen in 39.7% cases. Bin Bisher Saeed A *et al.* [18], evaluated inguinal hernias and found that 70.8% were right sided, 33.3% were left sided, 45.8% were indirect inguinal hernias, and 58.3% were direct inguinal hernias.

Most of the patients (58 %) had swelling for less than a year before they came to the OPD. This was in accordance to a study by Kumar *et al.* and Balamaddaiah G *et al.* [19, 20] wherein 68% and 57.1% of the patients had swelling for less than 1 year. This is because most of the patients do not seek medical attention till the pain or discomforts limit their daily activity. In most of the cases, the hernia is reducible i.e. pushed back into the abdomen when lying down or putting pressure on it. In some cases irreducible hernia occur which cause complications such as obstruction, incarceration and strangulation.

The main risk factor in present study was lifting of heavy weights (72 %) followed by old age which accounted for 18% of the cases. Smoking and diabetes were other common reasons for hernia. Hernia due to heavy object lifting was common in a similar study by Kumar R *et al.* [19], 48.8% and Balamaddaiah G *et al.* [20], 52.4% had hernia due to lifting heavy objects, with smoking habits and chronic cough being the other common risk factors. These factors increase the abdominal pressure during cough or straining, which further increase the risk of inguinal hernia. A study in USA reported that inguinal hernia was associated with older age, obesity, greater height, chronic cough or rural residence. [21]

CONCLUSION

The study shows a predominance of males over females in the middle age group in the incidence of primary and recurrent inguinal hernia. Right side occurrence is more common and the main risk factors are straining or lifting heavy objects.

The spectrum of inguinal hernias is more or less constant throughout the world despite having differences in educational, economic and social status. Early diagnosis, easily accessible health facilities and health education are important to prevent complications.

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