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Research Paper

Study of Demographics, Clinical Profile and Risk Factors of Inguinal Hernia: A Prospective Observational Study in a Tertiary Care Hospital MIMS, Mandya

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ABSTRACT	Manuscript Info.
<p>Introduction: Hernioplasty for inguinal hernia is the most commonly performed elective surgery draining significant healthcare resources.</p> <p>Aim of the study: This observational study was conducted at a tertiary care institute in MIMS Mandya to investigate the demographics, clinical profile, and risk factors of inguinal hernia.</p> <p>Methods and Materials; 55 individuals seeking correction for an inguinal hernia at the surgical outpatient department. All subjects gave their informed consent before the demographic information, medical history, and clinical assessment were documented. This was a prospective, single-center, observational study that was not randomised.</p> <p>Result: In our study, 22 patients (39%) were >50 years of age. 54 (97.27%) were males, and 1 (2.72%) were females. Male: Female ratio was 54:1. The preponderance of males was due to their involvement in more strenuous exercises and lifting weights and the anatomical differences between them. The main risk factor in the present study was lifting heavy weights 55%, followed by altered bowel habits 36.36% and respiratory disease (chronic obstructive airway disease). Smoking and diabetes were also associated as risk factors for the hernia. In this study, the most common side of hernia was on the right side, 63%, on the left, 33% and bilateral in 4% of patients. The indirect hernia was the most common type.</p> <p>Conclusion; An inguinal hernia is a surgical issue that frequently affects older men. Inguinal hernias on the right side are prevalent; the indirect variety occurs more frequently. Exercises involving heavy lifting and exertion were frequently identified as risk factors.</p>	<ul style="list-style-type: none"> ✓ ISSN No: 2584-184X ✓ Received: 25-07-2024 ✓ Accepted: 12-08-2024 ✓ Published: 16-10-2024 ✓ MRR:2(10):2024;01-05 ✓ ©2024, All Rights Reserved. ✓ Peer Review Process: Yes ✓ Plagiarism Checked: Yes
	<p style="text-align: center;">How To Cite</p> <p>Md Saqeeb, Murali Mohan R. Study of Demographics, Clinical Profile and Risk Factors of Inguinal Hernia: A Prospective Observational Study in a Tertiary Care Hospital MIMS, Mandya. Indian Journal of Modern Research and Reviews: 2024;2(10):01-05.</p>

KEYWORDS: Wireless Sensor Networks (WSNs), Anomaly Detection, Machine Learning, Real-time Analysis, Network Security, Threat Detection, Traffic Data Analysis.

1. INTRODUCTION

In India, the most common elective surgery is the treatment of inguinal hernias. 15% to 20% of the overall population suffers from a hernia. It is estimated that 1.5 to 2 million people in India suffer from inguinal hernias [1].

Men experience inguinal hernias more frequently than women. Men undergo about 90% of inguinal hernia procedures, whereas women undergo 70% of femoral hernia repairs. According to estimates, the lifetime risk of an inguinal hernia is 3% for women and 27% for males [2]. Inguinal hernia prevalence varies with age and in males has a bimodal distribution curve, peaking in the first year of life and again in the fourth decade [3, 4]. An inguinal hernia is five times more common in women than a femoral hernia, even though femoral hernias are more common in women overall.

For both men and women, the indirect inguinal hernia is the most prevalent subtype of groin hernia. In men, the ratio of indirect to direct hernias is 2:1 [4,5].

The traditional classification of hernias is indirect, direct, and femoral, depending on how the hernia and surrounding structures relate to each other. Within Hesselbach's triangle, direct hernias extend medially to the inferior epigastric arteries. Furthermore, indirect hernias are those that extend lateral to inferior epigastric veins via the deep ring. Femoral hernias appear as a protrusion lateral to the pubic tubercle and protrude through the femoral ring. The most widely used hernia categories are the Nyhus classification of groin hernia, the European Hernia Society's groin hernia classification, and Zollinger's unified classification of groin hernias. Numerous additional classification schemes have also been developed. An inguinal hernia most commonly manifests as a bulge in the groin that gets bigger when standing and gets smaller or disappears when lying down. Interestingly, very few patients report any groin pain or discomfort. The patient may experience extra inguinal symptoms, such as changed bowel habits or urine symptoms, depending on what is inside the sac. In cases of surgical emergencies, prompt intervention is recommended due to the presence of irreducibility, intestinal obstruction, and strangling of the contents. It is best to rule out any history of hernia issues. If there are signs of groin pain, a reducibility history is crucial [4,5].

Inguinal hernias can occur later in life in adults when they are typically regarded as acquired, or during the pediatric age range, when they are congenital. Congenital hernia etiopathogenesis has been linked to the persistence of the patent processus vaginalis (PPV). An inguinal hernia is not the direct result of PPV alone. Inguinal hernias are predisposed to by PPV as well as additional risk factors such as family history, tissue weakness, and rigorous activity [5].

The etiology of inguinal hernia in adults is multifactorial and influenced by occupational, both inherited and environmental variables. In theory, a high-risk factor for an inguinal hernia would have been obesity. Nonetheless, research has indicated that in people who are overweight or obese, the incidence of inguinal hernia has decreased [6,7].

This observational study was conducted at a tertiary-level institute in MIMS, Mandya on inguinal hernia patients subjected to surgery. Their clinical profile, demographics, and associated risk factors were recorded.

2. MATERIALS AND METHODS

Study Design: Prospective, single-centered, non-randomized, observational study.

Study site: Patient admitted to the tertiary care hospital Mims, Mandya

Study population: 55 Patients who visited the hospital with complaints of groin swelling with or without pain were included and subjected to surgery after obtaining informed consent and demographic details.

Inclusion criteria

1. All patients diagnosed with an inguinal hernia visited the surgical outpatient department.
2. Age \geq 18 years.

Exclusion criteria

1. Patients with physical or mental illnesses, as well as those with incarcerated hernias and recurring inguinal hernias.
2. Individuals who have cognitive impairment, those who take analgesics daily for any other ailment, and those who decline to participate in the study.
3. Participants who have had prior groin surgery will not be allowed to participate in this trial.

Patient details, such as name, age, sex, address, socio-economic status, and occupation were noted down. A detailed history was taken concerning the presenting complaint and the history of the present illness.

Comorbidities were noted down. Patients with pain in the groin preoperatively were noted, and their pain was assessed on a numerical rating scale of 1 to 10 using the visual analog score. Pain is graded into four categories depending upon the VAS scores as Nil = VAS score 0; Mild = VAS score 1-3; Moderate = VAS score 4-6; Severe = VAS score $>$ 6

Statistics

Descriptive statistics were used, where for nominal variables, numbers and percentages were used, while for numerical variables, the mean was calculated. The association between two nominal variables was tested by using the chi-square test. A p-value less than 0.05 was considered statistically significant.

3. RESULTS AND DISCUSSION

One hundred and ten patients who visited the surgical outpatient department for inguinal hernia repair were included in the study as per the inclusion and exclusion criteria.

Patient demographics

Age Distribution

In our study, 4 (6.36%) patients were less than 20 years of age, 12 patients (20.91%) of patients were between 21 and 30 years, 7(13.64%) patients were between 31 and 40 years of age, 11 (20%) were between 41 and 50 and 21 (39.09%) patients were >50 years. The mean age was 44±15 years. The patients in the study group ranged from 18 to 67 years. Figure 1 is a bar graph illustrating age distribution in percentage.

	Number of Patients	Percentage
< 20 years	4	6.36
21-30 years	12	20.91
31-40 years	7	13.64
41-50 years	11	20.00
> 50 years	21	39.09
Total	55	100%

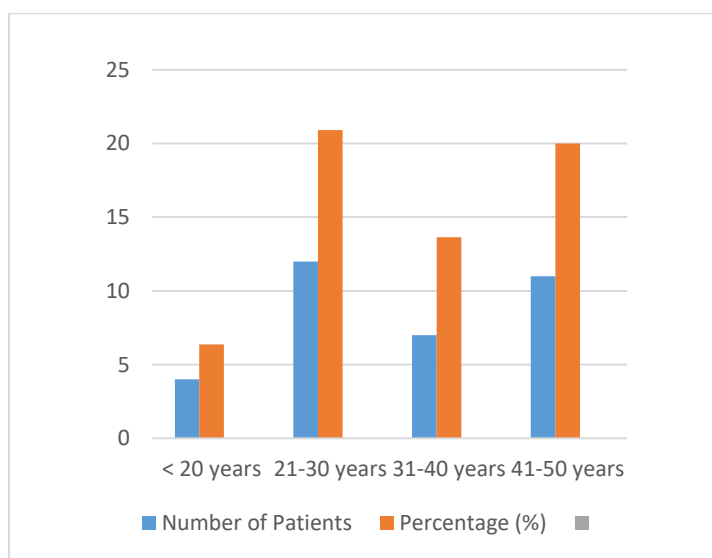


Fig 1: Bar Diagram Age Distribution

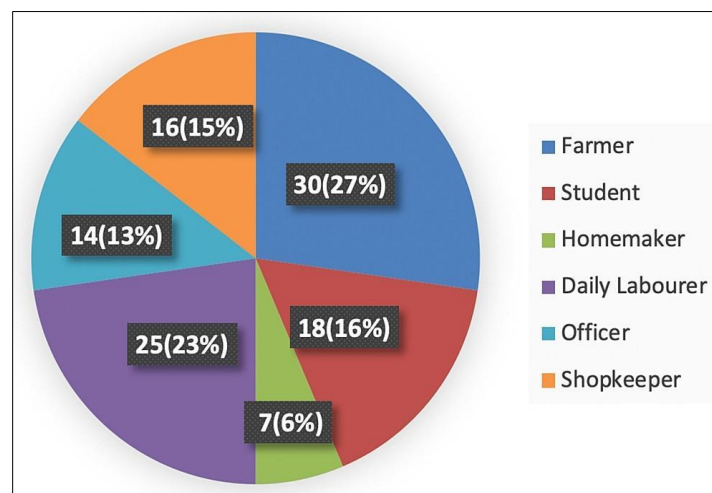


Fig 2: Pie chart showing the occupation of study participants in number and percentage

Risk Factors

The most common cause for the presence of hernia was lifting heavy objects in 28 (50%) and altered bowel movements; most of them had constipation, seen in 20 (36.36%) of the patients. 21(38.1%) had diabetes, and 22 (40.9%) had respiratory problems, mainly chronic obstructive pulmonary disease. 6 (10.9%) of the patients were alcoholics, and 26(47.27%) of them were smokers.

Clinical Profile

In this current study, swelling was the clinical presentation in all patients. Groin pain with swelling was seen in 35% of patients. The distribution of patients with pain associated with swelling was not significant as tested using the Pearson Chi-Square test (P value: 0.554). Table 1 shows the clinical presentation of the inguinal hernia.

Table 1: Clinical presentation of inguinal hernia

Symptoms	Number of Patients	Percentage
Swelling	55	100
Pain with swelling	20	35.45

Pre-Operative Pain VAS Score

Pre-operative pain VAS (visual analog scale) score was mild in 51% of patients and moderate in 49% of patients with pain. The distribution of patients with pain associated with swelling was not significant as tested using the Pearson Chi-Square test (P value: 0.554).

Table 2 shows the number and percentage of patients in each grade of pre-operative pain score VAS.

Table 2: Pre-operative pain score

Pre-operative Pain Score VAS (Visual Analog Scale)	Number of Patients	Percentage
Mild	10	51.28%
Moderate	9	48.71%
Total	19	100%

Hernia Characteristics

In this series, the most common side of hernia was on the right side in 35 patients (63%), on the left, in 19 patients (33%), and bilateral in 1 (3%) patient.

Type of Hernia

The most common type of hernia was indirect hernia in 33 (60%) patients, followed by a direct hernia in 17 (30%) and both in 5(10%). Table 3 shows the number of patients and their percentage for each type of hernia.

Table 3: Types Of Hernia and Number of Patients

Type of Hernia	Number of Patients
Indirect	33 (60%)
Direct	17 (30%)
Both	5 (10%)
Total	55

4. DISCUSSION

Patients were enrolled in the observational study in accordance with inclusion and exclusion criteria, and it was carried out in a tertiary care facility at MIMS Mandalya, Karnataka. All of the subjects gave their informed consent before their clinical and demographic information was collected.

12 patients (20.9%) were between the ages of 21 and 30 in our study, 11 patients (20.00%) were between the ages of 41 and 50, and 21 patients (39%), were older than 50. It was 44±15 years old on average. This was consistent with research by de Goede B, which found that the age group most affected was that of those over 50 [6]. Ruhl CE's study yielded similar conclusions, indicating that males in their 40s to 59s were more likely to experience hernias [7]. Moreover, Sayanna and Basu's findings [8,9] demonstrated that hernias were more common in elderly adults who had been above 50.

54 patients (97.27%) and 1 patient (2.72%) were male and female respectively in the current study. 54:1 was the male-to-female ratio. The results of this study are consistent with previous research, which found that 90.2% of patients with inguinal hernias were male and 9.8% were female [10]. Burcharth J. likewise reported a prevalence of males over females in their study. Similar results were also reported by Ruhl *et al.*, [7]. Males are more likely than females to have hernias, according to Lau H *et al.*, [11].

The theory behind the pathogenesis of hernias is that a weak abdominal wall is impacted by elevated abdominal pressure, or a mechanical force [12]. The primary risk factor in this study was shown to be labor-intensive work and hard lifting (55%), with changed bowel habits coming in second (36.36%). Diabetes and smoking were two more risk factors linked to the hernia. Similar to this, Sharma's study found that 52.4% of patients experienced hernias as a result of lifting large objects [12]. A similar connection of risk factors was also noted in research by Constance Erin and Kumar [7,13,14].

In this study, indirect hernias accounted for 60% of cases; direct hernias followed in 30% of cases, and 10% of patients had both types. Additionally, 63% of patients in this study had a right hernia, compared to 33% on the left and 4% of patients had a bilateral hernia. This was also observed in Nordback research, in which 207 of the 469 patients were right-sided, 146 were left-sided, and 116 were bilateral [15]. In a similar vein, 64 of the 100 patients in the Gulzar *et al.*, research exhibited right-sided inguinal hernias [16]. After conducting a survey, Garba ES from Nigeria found that right inguinal hernias were more common than left 1.7:1.

The most frequent clinical manifestation in the current investigation was oedema. Fifty-five of the patients showed up with groin swelling at the surgery clinic. This is consistent with

research by Jenkins JT, which found that the most typical clinical manifestation was groin swelling [17]. In 35% of the patients, there was groin pain and swelling. Of all the patients experiencing swelling-related discomfort, 51% reported mild pain and 49% reported moderate pain. Patients with inguinal hernias reported mild to severe pain, which was also noted by Page B *et al.*, and other observers [18-20].

According to our study, the majority of patients who were involved were farmers (27%), followed by labourers (23%), students (16%), shopkeepers/vendors (16%), officers (13%), and homemakers (6%). It was noted that the male preponderance was caused by their greater participation in physically demanding activities, their lifting of weights, and the anatomical distinctions between the sexes. The same findings, which showed that the greatest risk factor for male fishermen was excessive weight lifting, were also published by Rao G in 2015 [20, 21].

Limitations of the study can be ascribed to the limited sample size, which is insufficient to reflect a true picture of the disease. Hence, more multicentric studies with large sample sizes correlating aetiological or risk factors are recommended. Also, these type of studies needs to be conducted in different geographical areas so that they can be helpful for future studies in the prediction of the prevalence of inguinal hernias. To be useful for future research in the prediction of the occurrence of inguinal hernias, these kinds of studies also need to be carried out in a variety of geographical locations.

5. CONCLUSION

Among the senior male patient population encountered in general surgery clinics, inguinal hernias are among the most prevalent conditions. Farmers and labourers were among the occupations most commonly impacted, as hard lifting and intense exercise are two of the risk factors for inguinal hernias that are most commonly involved. Smoking, respiratory conditions such as chronic obstructive pulmonary disease, and altered bowel movements (constipation) were also identified as risk factors. The most typical clinical presenting style is inguinal oedema. Some of the patients had groin pain and oedema. Few individuals required analgesics since the pain was classified as mild to moderate on the VAS. There were more indirect hernias than direct ones. Bilateral inguinal hernias were the least prevalent, but right-sided hernias were more common than left-sided ones. Surgery is the only effective treatment for inguinal hernias.

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