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A Study of Clinical Profile of Patients with Inguinal Hernia

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Abstract

Purpose: In India, the most common elective surgery is inguinal hernia repair, which consumes a significant amount of healthcare resources. The clinical profile of patients with inguinal hernia was investigated in this study.

Methods: This observational study was carried out at a tertiary care centre in northern India, with 60 patients attending the surgical outpatient department for inguinal hernia repair. After all, participants provided informed consent, demographic information, history, and clinical examinations were recorded.

Results: Among the 60 patients studied, the mean age of the studied cases was 44.87±14.34 years, with male predominance (85.0%). Alcohol consumption was the most common associated risk factor, present in 22 (36.7%), followed by smoking in 21 (35.0%), and hypertension in 16 (26.7%). The mean pain score was 2.96±0.60 at 0 hours, which significantly decreased to 2.0±0.65 at 12 hours and 1.55±0.64 at 24 hours. Further reductions were observed after 1 week (0.50±0.50) and after 1 month (0.13±0.34. By 3 months, the mean score was 0.0±0.0, indicating complete pain relief. The mean operative time for the patients was 48.4±6.94 minutes. The mean hospital stay was 4.93±1.57 days. There were no cases of recurrence or chronic pain after 3 months

Conclusion: Inguinal hernia is one of the most common conditions seen in general surgery clinics in male elderly patients. Hypertension, diabetes, alcohol, and smoking were also identified as risk factors. The most common clinical manifestation is inguinal swelling. Some of the patients experienced groin pain and swelling. Inguinal hernias on the right side are common, with the indirect type being more common. Surgery is the only way to treat an inguinal hernia.

Keywords: Elderly, Pain, risk factors, inguinal hernia.

Introduction

Inguinal hernia repair is the most commonly performed elective surgery in India. Hernia affects 15.0%-20.0% of the general population. The prevalence of inguinal hernia in India is estimated to be 1.5 to 2 million.[1,2] Inguinal hernia is more common in men than women. About 90.0% of inguinal hernia repairs are done in men, whereas 70.0% of femoral hernia repairs are performed in women. The estimated lifetime risk of inguinal hernia in men is 27.0% and 3.0% in women.[3] Prevalence of inguinal hernia is age dependent, and in males, it has a bimodal distribution curve, with the first peak in the first year of age and the second peak after the fourth decade of life.[4]

The aetiology of inguinal hernia in adults is multifactorial and influenced by occupational, environmental, and hereditary factors. Hypothetically, obesity should have been a high-risk factor for an inguinal hernia. But studies have shown the incidence of inguinal hernia decreased in overweight and obese patients.[5,6]

The most common symptom of an inguinal hernia is a groin lump that increases when standing and decreases/disappears when lying down. Only a small number of patients have reported groin pain or discomfort. Extra inguinal symptoms, such as altered bowel habits or urinary symptoms, may occur depending on the contents of the sac. In surgical emergencies, symptoms include irreducibility, intestinal obstruction, and strangulation of the contents, and should be treated as soon as possible. If there are groin pain symptoms, a history of reducibility is required.[7,8] Adult inguinal hernia is multifactorial, influenced by occupational, environmental, and hereditary factors. Obesity, in theory, should have been a high-risk factor for an inguinal hernia. However, studies have shown that the incidence of inguinal hernia is lower in overweight and obese patients.[9,10]

Smoking, the most common cause of pulmonary emphysema, evokes a neutrophil–macrophage response. Priming of these white cells and their 5-to-10-fold concentration in the lungs, with release of elastase and collagenase, destroys the parenchyma of the lung. It is proposed that the chronic inflammatory response in the lungs affects the circulating blood. Antiproteases and elastase in the bloodstream bring about destruction of the elastin and collagen of the rectus sheath and fascia transverses and so cause their attenuation and predispose to herniation.[11] This study was carried out to study the clinical profile of patients with inguinal hernia.

Methods

This cross-sectional observational study was conducted for 18 months in the Department of General Surgery at TS Misra Medical College, Lucknow. **Inclusion Criteria:** Adult patients (≥18 years) of both genders with inguinal hernia who provided informed consent were included

d. **Exclusion criteria:** Patients with recurrent inguinal hernia, physical/mental disorders, life-threatening illnesses, or previous surgery were excluded.

Methodology:

All patients presenting with symptoms of inguinal hernia were subjected to a thorough clinical examination to confirm the diagnosis. The diagnosis was based on a detailed medical history and physical examination, confirmed by a consultant surgeon. A standardized, pretested, and coded questionnaire was utilized to collect the following information:

1. **Sociodemographic Data:** Age, sex, occupation, and socioeconomic status of each patient were recorded.
2. **Clinical Profile:** Information regarding the duration of hernia, the side affected, the extent of the hernia, reasons for delayed presentation, type (primary or recurrent), and the patient's medical and surgical history was obtained.
3. **Risk Factors:** Data regarding factors such as occupation, lifestyle, family history of hernia, and comorbid conditions were gathered to assess potential risk factors.
4. **Preoperative Evaluation:** Each patient underwent a preoperative evaluation, including the classification of the patient's condition according to the American Society of Anesthesiologists (ASA).
5. **Pain Assessment:** Pain in the groin region, if present, was assessed preoperatively using a visual analog scale (VAS), with scores categorized as Nil (VAS 0), Mild (VAS 1-3), Moderate (VAS 4-6), and Severe (VAS >6).

6. **Surgical and Postoperative Data:** Information on the type of surgery performed (open or laparoscopic repair), postoperative complications, length of hospital stay, and mortality was recorded.
7. **Postoperative Complications:** Any complications observed during the postoperative period, including infection, recurrence, and other surgical outcomes, were documented.

Data collection

Data were collected from patients' medical records and through interviews using the standardized questionnaire. This data included sociodemographic details, clinical features, risk factors, and surgical outcomes. Each patient's record was thoroughly reviewed to ensure the completeness and accuracy of data.

Quality Assurance

Data entry was conducted concurrently with data collection. To ensure data quality, cross-checking was performed by co-investigators at regular intervals. Any discrepancies were addressed immediately.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethics Committee of TS Misra Medical College & Hospital, Lucknow.

Statistical Analysis

Data were analyzed using Microsoft Excel 2019 and Epi Info version 26. Descriptive statistics were used to summarize demographic and clinical variables. Continuous variables were expressed as means and standard deviations, while categorical variables were represented as frequencies and percentages. Inferential statistics were applied using a chi-square test for categorical data and a t-test for continuous data. A p-value of <0.05 was considered statistically significant.

Results

Among the 60 patients studied, the majority, 19 (31.7%), were in the 51–60 years age group, followed by 14 (23.3%) in the 41–50 years group and 13 (21.7%) in the 31–40 years group. The mean age of the studied cases was 44.87±14.34 years. Among the 60 patients studied, 85.0% were male (n=51), while females accounted for 15.0% (n=9). Alcohol consumption was the most common associated risk factor, present in 22 (36.7%), followed by smoking in 21 (35.0%), hypertension in 16 (26.7%), chronic cough in 13 (21.7%), and diabetes in 12 (20.0%) of patients. The mean pain score was 2.96±0.60 at 0 hours, which significantly decreased to 2.0±0.65 at 12 hours (P<0.001) and 1.55±0.64 at 24 hours (P<0.001). Further reductions were observed after 1 week (0.50±0.50, P<0.001) and after 1 month (0.13±0.34, P<0.001). By 3 months, the mean score was 0.0±0.0, indicating complete pain relief. The mean operative time for the patients was 48.4±6.94 minutes. The mean hospital stay was 4.93±1.57 days. There were no cases of recurrence or chronic pain after 3 months.

Table 1: Hernia characteristics

Variables		**Number of patients (n=60)**	**Percentage**
Site of swelling	**Inguinal**	43	71.7%
	Inguinoscrotal	17	28.3%

Duration of Hernia	**<1 month**	7	11.7%
	1-6 months	29	48.3%
	6-12 months	15	25.0%
	>1 year	9	15.0%
Side of Hernia	**Right**	36	60.0%
	Left	18	30.0%
	Bilateral	6	10.0%
Type of Hernia	**Indirect**	39	65.0%
	Direct	21	35.0%

Table 2: VAS score comparison at different time intervals

VAS Score	Mean±SD	p-value
Pain at 0 hour	2.96±0.60	--
Pain at 12 hours	2.0±0.65	**<0.001**
Pain at 24 hours	1.55±0.64	**<0.001**
After 1 week	0.50±0.50	**<0.001**
After 1 month	0.13±0.34	**<0.001**
After 3 months	0.0±0.0	--

Table 3: Details of the studied patients based on operative time and hospital stays

Variables	Mean	SD
Operative time (minutes)	48.4	6.94
Hospital stays (days)	4.93	1.57

Discussion

Indirect inguinal hernia affects males 20 times more commonly than females. Direct inguinal hernia is rare in females.[12] Heavy work, especially lifting, puts a great strain on the abdominal muscles. If there is any underlying weakness, the appearance of hernia may coincide with strenuous physical effort. Hard labour workers, sportsmen, and weight lifters are more prone.

Many times, hernia is due to disease-causing weakness of the anterior abdominal wall, like obesity, previous lower abdominal operations, ascites, and Malgaigne's bulges. Certain diseases lead to an increase in abdominal pressure, such as prostatic enlargement, stricture urethra, chronic cough, and chronic smoking. It should be remembered that the appearance of a hernia in an adult may be a sign of intra-abdominal malignancy.[13]

The present study was carried out to study the clinical profile of patients with inguinal hernia. In this study, among 60 patients, the majority, 19 (31.7%), were in the 51–60 years age group with a mean age of 47.87±14.34 years and male predominance (85.0%). Our findings were comparable to the findings of **Pradhan K et al,[14]** who reported that nineteen (19.4%) patients were between the ages of 41 and 50, and thirty-nine (39.8%) patients were over the age of 50. The average age was 43±14 years. 96.0% of patients were males, and another 4.0% of patients were females. Male: Female ratio was 24:1. Similarly, **Sachin HG et al[15]** reported that the mean age was calculated to be 52.7 years, and a maximum number of the patients (40.0%) belong to the age group of 41-60 years. Likewise, **Santhosh Urs KS and Rao KD[16]**

reported that sixty patients were included in the study, out of which 59 were male patients (98.33%) and only one female patient (1.67%). The overall mean age of presentation was 45.86±15.64 years. According to **Gawale S, and Rathod N,**[17] the majority of the patients were in the age group of >50 - 54.76% followed by 40-50- 23.80%, 30-40-11.90%, 20-30-7.14%, and 10-20- 2.38%. The majority of the patients were Male, i.e. 76.19%, followed by females, 23.81%. **Sanjay P, Woodward A,**[18] and **Salcedo-Wasicek MC et al**[19], in different studies, have also observed that lateral inguinal hernias were more likely to occur among patients with heavy work.

In the present study, alcohol consumption was the most common associated risk factor, present in 22 (36.7%), followed by smoking in 21 (35.0%), hypertension in 16 (26.7%), chronic cough in 13 (21.7%) and diabetes in 12 (20.0%) of patients. The most common site of swelling was inguinal, observed in 43 patients (71.7%). The remaining 17 patients (28.3%) presented with inguinoscrotal swelling. The most common duration of hernia was 1-6 months, observed in 29 patients (48.3%). The right-sided hernia was observed in 36 patients (60.0%). Left-sided hernias were present in 18 patients (30.0%), and 6 patients (10.0%) had bilateral hernias. Our findings were supported by **Sachin HG et al**[15]**,** who reported that the most common associated co-morbidity was HTN, present in 6 cases, accounting for 13.3%, followed by constipation, 8.9%. **Santhosh Urs KS and Rao KD**[16] reported that 70.0% of the cases presented with the swelling confined to the inguinal region, whereas the remaining 30.0% presented with an Inguinoscrotal swelling. 50.0% of the cases enrolled in this study presented with a swelling within a duration of 1 to 6 months of its onset. Around 23.0% came within 6 to 12 months, and around 17.0% presented after 1 year of the onset of swelling. **Gawale S, and Rathod N**[17] reported that the majority of the patients had a hernia to the Left - 42.86%, followed by the Right -33.33%, and on both sides - 23.81%. This was also seen in **Nordback I**[20] study, where out of 469 patients, 207 were right-sided, 146 were left-sided, and 116 were bilateral. Similarly, in the study by **Gulzar MR et al**[21], 64 of 100 patients had right-sided inguinal hernia. **Garba ES**[22] from Nigeria conducted a survey and discovered that right inguinal hernias were more common than left, with a 1.7:1 ratio. In **Shivakumar, Chandrashekar Naik G**[23] study, most patients presented with 6 months to 1 year of illness, followed by 6 months. Most of the patients were smokers, heavy, strenuous workers. Obstructive symptoms chronic cough, prostatism, were present. In a study, **Bhola Singh et al**[24] reported that almost 56.0% of the cases studied presented with a swelling within a period of 6 months to 1 year.

In our study, the most common type of hernia was indirect, observed in 39 patients (65.0%). The remaining 21 patients (35.0%) had direct hernias. The majority had a right-sided indirect hernia, 27 (45.0%), followed by left-sided indirect hernia, 12 (20.0%), right-sided direct hernia, 9 (15.0%), bilateral direct hernia, 6 (10.0%), and left-sided direct hernia, 6 (10.0%). No cases of bilateral indirect hernia were observed. Our findings were consistent with the findings of **Pradhan K et al**[14] who reported that in 66 (60.0%) of patients, the most common type of hernia was an indirect hernia, followed by a direct hernia in 33 (30.0%), and both in 11 patients (10.0%). According to **Sachin HG et al**[15] more than half of the patients presented with a hernia on the right side (51.1%), followed by left (40.0%). Bilateral hernias were 8.9 %. In their study, indirect hernias (57.7%) were found to be more common as compared to than direct hernias (42.2%). **Santhosh Urs KS and Rao KD**[16] reported that 71.67% of the total cases in the study were indirect inguinal hernias, whereas the remaining 28.33% were direct ones. **Gawale S, and Rathod N**[17] depicted that the majority of the patients were having Indirect hernia - 64.28%, followed by Direct hernia, i.e., 35.72% followed by.

In the present study, the mean pain score was 2.96±0.60 at 0 hours, which significantly decreased to 2.0±0.65 at 12 hours (P<0.001) and 1.55±0.64 at 24 hours (P<0.001). Further reductions were observed after 1 week (0.50±0.50, P<0.001) and after 1 month (0.13±0.34, P<0.001). When comparing these findings to the clinical profile of inguinal hernia patients, it is evident that effective pain management is crucial in the postoperative period. The rapid decrease in pain scores suggests that the treatment protocol, possibly including tension-free hernioplasty under local anesthesia, is effective in providing pain relief. This aligns with the general clinical profile where patients often experience significant discomfort initially, but with appropriate surgical intervention and pain management, their pain levels decrease substantially over time. These results highlight the importance of timely and effective pain management strategies in improving patient outcomes and quality of life post-surgery. The significant reduction in pain scores also underscores the efficacy of the surgical techniques and postoperative care protocols used in the study.
In the present study, the mean operative time for the patients was 48.4 minutes with a standard deviation of 6.94 minutes. The mean hospital stay was 4.93 days, with a standard deviation of 1.57 days. According to **Shah PC et al**[25] the shortest duration of surgery was 50 minutes which was for right side direct inguinal hernia. The longest duration of surgery was 100 minutes which was for bilateral indirect inguinal hernia. The average duration of surgery was 85.4 minutes. Maximum surgeries (40.0%) were completed between 70-90 minutes. Most of the patients were discharged between 3 to 5 days. A similar study done by **Hemmant M and Ali E,**[26] the mean period of hospital stay was 2.2 days, and the mean operative time was 54 minutes (30-75 min range). In another study done by **Durgama T et al**[27] mean period of hospital stay was 3.5 days, and the mean operative time was 52 minutes.

Limitations of the study

The study's limitations can be attributed to the small sample size, which is insufficient to reflect a true picture of the disease. As a result, more multicentric studies with large sample sizes that correlate with aetiological or risk factors are advised. Furthermore, these types of studies should be conducted in different geographical areas so that they can be used in future studies to predict the prevalence of inguinal hernias.

Conclusion

Inguinal hernia is one of the most common conditions seen in general surgery clinics in male elderly patients. Farmers and labourers were frequently affected, as heavy weight lifting and strenuous exercises are among the most frequently involved risk factors for inguinal hernia. Hypertension, diabetes, alcohol, and smoking were also identified as risk factors. The most common clinical manifestation is inguinal swelling. Some of the patients experienced groin pain and swelling. On the VAS, the pain was mild to moderate, and only a few patients required analgesics. Indirect hernias were more common than direct hernias. Right-sided hernias were more common than left-sided hernias, and bilateral inguinal hernias were the least common. Surgery is the only way to treat an inguinal hernia.

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