

A study of the factors associated with inguinal hernia at tertiary health care centre

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Abstract

Background: Inguinal hernia is a common surgical problem, and the diagnosis is clinical and typical. Inguinal hernias account for 75% of abdominal wall hernias with a lifetime risk of 27% in men and 3% in women. Inguinal hernias are almost always symptomatic; and the only cure is surgery. Present study was aimed to study factors associated with inguinal hernia at tertiary health care center. **Material and Methods:** Present study was single-center, prospective, observational study, conducted in patients admitted as inguinal hernia confirmed intraoperatively. **Results:** During present study 245 patients underwent confirmed hernia repair. Majority of patients were from 31-40 years age group (36.33%) followed by 41-50 years age group (26.53%). 98.78% patients were male and only 3 patients were female. In present study side of hernia in majority of patients was right (51.84%) followed by left (32.24%) and bilateral (15.92%). On clinical examination majority of hernias were acquired (95.51%), incomplete (80%), indirect (83.27%), primary (97.55%), had Doughy and granular consistency (97.14%), reducible (82.04%) and cough impulse was present in 85.31% patients. In present study, common risk factors noted were lifting heavy objects (51.43%), smoking (37.14%), COPD (35.92%), chronic constipation (27.35%), alcoholism (20.82%), family history (11.84%), diabetes (8.98%) and benign hypertrophy of prostate (3.67%). Majority of patients were underwent elective hernia repair (96.33%) and open hernioplasty (91.84%). **Conclusion:** Male sex, age between 30-50 years, lifting heavy objects, smoking, COPD, chronic constipation, alcoholism and positive family history were risk factors noted in patients with inguinal hernia.

Keywords: Male sex, lifting heavy objects, smoking, inguinal hernia.

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INTRODUCTION

Inguinal hernia is a common surgical problem, and the diagnosis is clinical and typical. Patients often aware of their diagnosis because the condition is very common. Inguinal hernias account for 75% of abdominal wall hernias with a lifetime risk of 27% in men and 3% in women.¹ Inguinal hernias are almost always symptomatic;

and the only cure is surgery. A minority of patients are asymptomatic but even a watch and-wait approach in this group results in surgery in approximately 70% within 5 years.² Hernias can be congenital or acquired, complete or partial, external or internal, reducible or irreducible, direct or indirect. Certain factors have been implicated in the etiology of primary inguinal hernia. They include the presence of a patent process us vaginalis, failure of the shutter mechanism and altered metabolism of collagen connective tissue and the extracellular matrix.³ Furthermore, Patient-related factors found to be associated with inguinal hernia in adults include physical exertion and weight lifting, constipation, straining during urination, smoking, obesity, ageing, positive family history of hernia, chronic obstructive airway disease (COAD), muscle deficiency following previous appendectomy and abdominal surgery, pelvic fractures and trauma and connective tissue disease.^{4,5} Inguinal hernia repair is one of the most commonly performed surgical interventions,

owing to its lifetime incidence and a variety of successful treatment modalities. Present study was aimed to study factors associated with inguinal hernia at tertiary health care center.

MATERIAL AND METHODS

Present study was single-center, prospective, observational study, conducted in department of general surgery, at Department of General Surgery, Mahavir Institute of Medical Sciences, Vikarabad, India. Study duration was of 2 years (January 2019 to December 2020). Study was approved by institutional ethical committee.

Inclusion criteria: Patients admitted as inguinal hernia confirmed intraoperatively.

Exclusion criteria: Patients admitted as inguinal hernia, later diagnosis was changed due to radiological or intraoperative findings.

After obtaining informed consent from all the participants, demographic details were collected as age, gender, family

history, life style habits, nature of job, duration of swelling, cough, constipation and comorbidities. A thorough clinical examination was performed by the surgeon and the nature of the examination, privacy and confidentiality was explained to the patient.

Details of the hernia, such as the type of hernia, primary or recurrent were noted. The patient was palpated at each groin to observe if there was a visible and clearly palpable hernia, a palpable impulse or a previous operational scar. If there was no visible lump, the scrotum was invaginated by the little finger to reach the external ring, and the subject was asked to cough, in order to determine whether there was a palpable impulse. In cases of recurrent hernia time gap between present and the primary operation, nature of mesh used, time of recurrence and nature of the final repair were also noted.

Data was collected and compiled using Microsoft Excel, statistical analysis was done using descriptive statistics.

RESULTS

During present study 245 patients underwent confirmed hernia repair. Majority of patients were from 31-40 years age group (36.33%) followed by 41-50 years age group (26.53%). 98.78% patients were male and only 3 patients were female.

Table 1: Age and gender wise distribution

Characteristic	No. of cases (n=245)	Percentage
Age group (yrs)		
0-20	19	7.76%
21-30	55	22.45%
31-40	89	36.33%
41-50	65	26.53%
51-60	10	4.08%
>60	7	2.86%
Gender		
Male	242	98.78%
Female	3	1.22%
BMI (Mean±SD)	25.43±4.28 kg/m ²	

In present study side of hernia in majority of patients was right (51.84 %) followed by left (32.24 %) and bilateral (15.92 %). On clinical examination majority of hernias were acquired (95.51 %), incomplete (80 %), indirect (83.27%), primary (97.55 %), had Doughy and granular consistency (97.14 %), reducible (82.04 %) and cough impulse was present in 85.31% patients.

Table 2: Clinical characteristics

Clinical characteristics	No. of cases (n=245)	Percentage
Side of hernia		
Right	127	51.84%
Left	79	32.24%
Bilateral	39	15.92%
Type of hernia		
Congenital	11	4.49%
Acquired	234	95.51%
Complete (inguinoscrotal)	49	20.00%
Incomplete	196	80.00%
Direct	41	16.73%
Indirect	204	83.27%

Both (pantaloons hernia)	1	0.41%
Occurrence of hernia		0.00%
Primary	239	97.55%
Recurrence	6	2.45%
Consistency of hernia		0.00%
Doughy and granular	238	97.14%
Tense and tender (strangulated)	7	2.86%
Cough impulse		0.00%
Present	209	85.31%
Absent	36	14.69%
Reducibility of swelling		0.00%
Reducible	201	82.04%
Irreducible	44	17.96%

In present study, common risk factors noted were lifting heavy objects (51.43 %), smoking (37.14 %), COPD (35.92 %), chronic constipation (27.35 %), alcoholism (20.82 %), family history (11.84 %), diabetes (8.98 %) and benign hypertrophy of prostate (3.67 %).

Table 3: Risk factors

Risk factors	No. of cases (n=245)	Percentage
Lifting heavy objects	126	51.43%
Smoking	91	37.14%
COPD	88	35.92%
Chronic constipation	67	27.35%
Alcoholism	51	20.82%
Family history	29	11.84%
Diabetes	22	8.98%
Benign hypertrophy of prostate	9	3.67%
Unknown	40	16.33%

Majority of patients were underwent elective hernia repair (96.33 %) and open hernioplasty (91.84 %).

Table 4: Surgical characteristics

Surgical characteristics	No. of cases (n=245)	Percentage
Timing of operation		
Elective hernia repair	236	96.33%
Emergency hernia repair	9	3.67%
Operative treatment		
Open Herniotomy	8	3.27%
Open Herniorrhaphy	12	4.90%
Open Hernioplasty	225	91.84%

DISCUSSION

Groin hernias account for over 3/4th of all abdominal wall hernias, and with a life-time risk of developing inguinal hernias being over 25% in men, indicating that one quarter of all men face the odds of developing an abdominal hernia.⁶ Primary inguinal hernias are most commonly of the indirect variety, whereas recurrent hernias tend to be of the direct kind.⁷ Diagnosis of inguinal hernia is made by clinical examination in standing and lying down position with inspection of appearance of groin swelling and cough impulse. Ultrasonography is usually indicated in patients with a recurrent hernia or suspected hydrocele, when the diagnosis is uncertain, or if there are surgical complications. Early diagnosis and elective repair are a safe and effective strategy for patients of all ages that avoid incarceration, strangulation and their complications. In this

study, male patients out-numbered female patients, the reason for the male predominance may be the inherent weakness of the abdominal wall where the spermatic cord passes through the inguinal canal, which consistent with the results of other studies.^{8,9} In the study by Balram *et al.*¹⁰ where the right-side hernia was the commonest. 6.9% of the patient in his study showed bilateral hernia, The cause for the right-side predominance was said to be due to late fall down of the testis and more frequent failure of closure of right processes vaginalis. Similar findings were noted in present study. Kalicharan B¹¹ studied 180 adult patients of inguinal hernia and maximum patients were of age group 31-40yrs (40%) and minimum (10%) were of age group 20-30yrs. Primary hernia was present in 80.55% and recurrent hernia was present in 19.44%. Period of swelling was less than one year for majority (48.88%) of the

patients, while the least of them had swelling for more than 2 years (13.88%). The most common side where the hernia was observed was on the right side (44.44%). The most common cause for the presence of hernia was lifting heavy objects (22.22%). Hernia due to heavy object lifting was common in a similar study by Kumar R *et al.*,¹² 48.8% had hernia due to lifting heavy objects, with smoking habits and chronic cough being the other common risk factors. In a study of S. Vijayakumar *et al.*,¹³ the main risk factor associated with inguinal hernias was found to be heavy object lifting especially in the industrial workers. Rao SS *et al.*,¹⁴ studied 61 patients, most of them were men (91.8%) with a mean age of 45.02 ± 22.87 years, married (77.05%) and farmer (37.7%) by occupation. All the patients of inguinal hernia presented with the complaints of lump above the inguinal crease and three-fourth of these patients had complaints of pain (73.77%) and had predominantly right-sided hernia. More than half of the patients had one of the signs of obstruction at the time of presentation of which crease in pain was the most common (52.46%). Most of the patients presented late to the hospital due to the lack of awareness of the disease. The most common operative procedure done was open hernioplasty (Lichtenstein's procedure) in 61.67% patients followed by herniotomy (18.33%) and herniorrhaphy (modified Bassini's procedure) in 13.33% patients. Similar findings were noted in present study. Balamaddaiah G¹⁵ studied 212 patients, 79.2% patients were males and 20.8% were females and the commonest age group was 31-60 years. 74.5% of the cases were primary inguinal hernia while 25.5% were recurrent hernia. Period of swelling was less than one year for majority of the patients, while the least of them had swelling for more than 2 years. The most common cause for the presence of hernia was lifting heavy objects in 52.4% and improper bowel movements (46.7%). In a hospital based cross sectional study of 100 patients, Shivanagouda YM¹⁶ noted that 99% were males. The most predominant age group affected was 40 – 60 years (50%). 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%). Early diagnosis, easily accessible health facilities and health education are important to prevent complications. Malviya V.K *et al.*,¹⁷ conducted a retrospective study in 411 operated patients of inguinal hernia. Highest number of patients belongs to 41-60 years age group (42.8%). 94.6% were male and 5.3%

were female patients. Risk factors included benign prostate hypertrophy (37.9%), chronic cough (18.5%), heavy weight lifting (33.6%), chronic constipation (13.6%), abdominal wall muscle weakness due to older age (24.8%) and previous appendectomy (0.7%). Less common risk factors are positive family history (15.6%), smoking (30.6%), obesity (21.2%) and pregnancy (0.4%). 69.8% patients presented as indirect, 28.2% as direct inguinal hernia and 1.2% as both variety. 67.6% patient presented as right inguinal hernia followed by left (29.2%) and bilateral (3.2%) respectively. Elective operation (94.4%) is more common than emergency operation (5.6%). Open hernioplasty (96.6%) was the most common procedure, while open herniotomy was procedure of choice for pediatric patients (0.7%). Similar findings were noted in present study. Padmasree G¹⁸ studied 53 obstructed inguinal hernia patients were evaluated and found that, incarceration was the commonest complication seen in 92.45% of cases followed by strangulation (7.54%). The most common content was small bowel followed by omentum (52.8% and 35.8% respectively). Viable bowel was seen 88.67% of cases. Bowel resection and end-to-end anastomosis was done in all cases of non-viable bowel. The commonest post-operative complication encountered in the study was wound infection (9.43%) and scrotal seroma (9.43%) and mortality was observed in two patients (3.7%) and the causes of death were sepsis and acute respiratory distress syndrome. Shankar H *et al.*,¹⁹ studied 200 consecutive patients of abdominal wall hernia, female sex ($p < 0.05$), obesity ($p = 0.022$), and smoking and alcohol consumption ($p = 0.002$) led to a prolonged hospital stay. Patients with incisional hernias ($p < 0.05$), American Society of Anesthesiologists (ASA) class of two or more ($p = 0.002$), complicated hernia ($p = 0.007$), emergency surgeries ($p = 0.002$), general anesthesia ($p = 0.001$), longer duration of surgery (> 60 minutes, $p < 0.05$), usage of drain ($p < 0.05$), and surgical site infection (SSI, $p = 0.001$) were significantly associated with increased length of hospital stay. Incorrect surgical technique is likely the most important reason for recurrence after primary IH repair. Within this broad category of poor surgical technique are included: lack of mesh overlap, improper mesh choice, lack of proper mesh fixation, amongst others.²⁰

CONCLUSION

Male sex, age between 30-50 years, lifting heavy objects, smoking, COPD, chronic constipation, alcoholism and positive family history were risk factors noted in patients with inguinal hernia.

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