

# A Study of Incidence of Different Types of Groin Hernias in Adults

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## Abstract

**Introduction:** Inguinal hernia is one of the most common surgical pathologies. Research studies on clinical factors predisposing a person for the development of inguinal hernia, however, remain scarce.

**Aim:** This study aims to study the incidence and causes of different types of groin hernias in adults and to observe and analyze the complications of hernia repair.

**Materials and Methods:** A total of 157 cases of groin hernias which were treated in the Department of Surgery, Tirunelveli Medical College Hospital, Tirunelveli, were studied.

**Results:** About 97.4% were inguinal hernias and 2.52% were of femoral type. About 6.4% were recurrent hernias. Groin hernias are 20 times more common in men than women. The incidence of femoral hernias in female is 28.6%, whereas in men it is only 1.33%. About 21% of cases were seen in the age group between 41 and 50 years. Majority of groin hernias were managed by modified Bassini method (73.65%).

**Conclusion:** Groin hernias are 20 times more common in men than women. The incidence of groin hernias in women is 4.46%. The ratio of direct-to-indirect inguinal hernias in men is about 1:3. No case of direct hernia was seen in females.

**Key words:** Bilateral inguinal hernia, Inguinal hernia, Pantaloon hernia, Risk factors

## INTRODUCTION

Hernia is an ancient malady as old as man himself. Abdominal wall hernias are common, with a prevalence of 1.7% for all ages and 4% for those aged over 45 years. Inguinal hernias account for 75% of abdominal wall hernias, with a lifetime risk of 27% in men and 3% in women.<sup>[1]</sup> Repair of inguinal hernia is one of the most common operations in general surgery, with rates ranging from 10 per 100,000 of the population in the United Kingdom to 28 per 100,000 in the United States.<sup>[2]</sup> In 2001-2, about 70,000 inguinal hernia repairs (62,969 primary, 4939 recurrent) were done in England, requiring more than 100,000 hospital bed days. About

95% of patients presenting to primary care are male, and in men, the incidence rises from 11 per 10,000 person-years aged 16–24 years to 200 per 10,000 person-years aged 75 years or above.<sup>[3]</sup> Obstructed hernias are the most common cause of intestinal obstruction in India, whereas adhesions are the cause in the west. Although appears innocuous most of the time, it can become life-threatening when it is complicated. Cure of inguinal hernia can only be brought by surgery.<sup>[4,5]</sup> The surgical repair of inguinal hernia has undergone a series of changes like that of surgery to cure peptic ulcer. The surgical repair was revolutionized when Bassini in 1887 described his technique. Basically, Bassini regarded the posterior wall of the inguinal canal as the weak structure to be repaired. It is well known that he did this by joining the medial part of the arch of the conjoint tendon, to the inguinal ligament. Since then, many modifications have taken place and being practiced. The fact that they are a large variety of operations suggests that many of the questions of both pathophysiology and management of this condition remains unanswered.<sup>[6,7]</sup>

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## Aims

This study aims to study the incidence and causes of different types of groin hernias in adults and to observe and analyze the complications of hernia repair.

## MATERIALS AND METHODS

About 157 cases of groin hernias which were treated in the Department of Surgery, Tirunelveli Medical College Hospital, Tirunelveli, were studied. Detailed clinical evaluation, i.e., the duration of illness, precipitating factors, and presenting symptoms with necessary investigations toward the causes were undertaken. In complicated cases, the risk factors for surgery were studied. Emergency surgery was performed for all the cases of obstructed and strangulated groin hernias after resuscitation and uncomplicated hernias were managed electively. All recurrent groin hernias were analyzed separately in terms of incidence, type, and probable cause of recurrence.

## RESULTS

Among the 157 cases studied, about 153 cases were inguinal hernias and 4 cases of femoral hernias. Among the 153 cases of inguinal hernias, 143 cases were primary hernias and 10 cases were recurrent hernias. All cases of femoral hernias were of primary type. Of 143 cases of primary inguinal hernias, 105 cases were indirect type, 36 cases were direct, 3 cases were of pantaloon, and remaining one was an interstitial variety [Table 1].

All cases of groin hernias above 12 years of age were included in our study. The youngest patient was 13 years; the oldest among the patients was 78 years old. Maximum number of cases belonged to the fifth decade constituting 21% of the total. In the series studied, inguinal hernias were seen predominantly in males, and there is no different with regard to the sex in femoral hernia [Table 2].

Of 157 cases, 7 cases were female patients. In them, the incidence increased sharply after 50 years of age with the maximum number of cases in the seventh decade.

Of 157 cases, only 16 (10%) cases were found to have predisposing diseases. Benign hypertrophy of the prostate in 6 cases and pulmonary tuberculosis in the other 6 cases, chronic obstructive pulmonary disease was found in 4 cases.

Among the 157 cases, only 20 cases presented with complications, the others as groin swellings. In them, about one-third of the patients had dull aching abdominal pain.

In the 20 cases, 10 presented with features of intestinal obstruction, 9 with irreducibility, and the remaining one with strangulation.

Apart from groin swellings, 15 cases (9.57%) were found to be associated with an additional problem in the scrotum and abdomen, necessitating additional surgical attention to those problems. About 7 cases were found to have undescended testis on the same side of hernia and all of them were of indirect type. Hydrocele was associated with 4 cases, whereas atrophic testis, varicocele, lipoma of the cord, and seminoma were found in 1 case each [Table 3].

A total of 148 cases were operated under regional, 2 cases each under epidural and general anesthesia. 5 cases were operated in local anesthesia.

The breakup figures of the various types of repair followed in our institution are given in the table. In our series, there

**Table 1: Distribution of cases**

Type of hernia	Number of cases
Inguinal	
Primary	
Direct	36
Indirect	103
Pantaloon	3
Interstitial	1
Recurrent	
Direct	7
Indirect	3
Femoral	
Primary	4
Recurrent	-

**Table 2: Age and sex distribution**

Age group (years)	Male	Female	Total
Up to 20	16	-	16
21-30	22	-	22
31-40	27	2	29
41-50	33	-	33
51-60	30	1	31
61-70	17	4	21
71-80	5	-	5
Above 80	-	-	-
Total	150	7	157

**Table 3: Associated problems**

Problem	Number of cases (%)
Undescended testis	7 (4.46)
Hydrocele	4 (2.55)
Atrophic testis	1 (0.64)
Varicocele	1 (0.64)
Lipoma of the cord	1 (0.64)
Seminoma in undescended testis	1 (0.64)
Total	15 (9.57)

were 18 cases of bilateral inguinal hernias. 10 patients underwent simultaneous repair and 8 sequential repair. In the 167 repairs, modified Bassini repair was performed in 123 cases, McVay in 22, properitoneal mesh repair in 8, Shouldice in 3, Halsted and properitoneal tissue repair in 2 each, and herniotomy alone in 4 cases. Combined prosthetic tissue repair was done in 3 cases [Table 4].

There were 4 cases femoral hernia; all are primary constituting about 2.55%. All the four patients were above 50 years of age. In a male aged 60 years, it presented as obstructed hernia. All the 4 cases had undergone Lotheissen-McVay repair. In our series, there were 10 cases of sliding hernias, 3 pantaloon hernias, 2 giant hernias, and an interstitial hernia. During the period of study, there were 10 cases of recurrent hernia (6.4%). The recurrences were seen only in men and majority of them recurred in the age groups between 31 and 60. The younger patient was 34 years old, while the oldest patient was 77 years old. Of 10 cases, 7 cases hernia recurred after 2 years of repair and in 3 within 2 years. These were 7 cases of direct inguinal hernias and 3 were indirect type. Among the direct type, 4 cases were Type I, 2 cases Type II, and 1 case of Type III recurrence.

An attempt was made to study the probable causes of recurrence. Details of previous surgery were known in 3 cases only. Excessive tension at the line was observed in 6 cases of direct hernias. In all the 3 cases of indirect hernias, the internal ring was found widened or torn. In only 1 case, the posterior inguinal canal was found damaged necessitating the use of prosthesis.

**Table 4: Repair methods adopted**

Method of repair	Number of repairs
Pure tissue repair	
Modified Bassini	123
McVay	22
Shouldice	3
Halsted	2
Properitoneal	2
Herniotomy alone	4
Prosthetic repair	
Properitoneal mesh	8
Combined	
Modified Bassini with onlay mesh	3

**Table 5: Repair adopted**

Method	Number of cases
Modified Bassini	5
Properitoneal mesh	2
McVay	1
Halsted	1
Combined: Tissue–prosthetic repair	1
Total	10

Excluding all precipitating causes, different method of repair was adopted according to the defect size and tissue strength and anatomical impediments. Modified Bassini repair was used in 5 cases, properitoneal mesh repair in 2 cases, and the other 3 by McVay, Halsted and combined tissue–prosthetic repair [Table 5].

Preoperatively, various techniques were adopted to prevent further recurrence. As the suture line tension was found to be most important factor producing recurrence, muscle sliding relaxing incision was used in 6 cases, to make the conjoint tendon to come close to the inguinal ligament. Hypertrophied cremaster muscle was excised in 3 cases. Prosthetic repair was used in 3 cases. In both the cases of properitoneal mesh repair, Redivac suction drain was used for first 48 h.

In about one-fifth of the cases, varied complications from spinal headache to ileus were seen. Of the complications listed below [Table 6], wound complications were found in 13 cases and scrotal complications in 6 cases. They settled down in course of time.

There were 2 cases of early recurrence postherniorrhaphy hydrocele was noted in 3 cases, neuropraxia and traumatic orchitis in 2 cases each. One patient died 1 month after herniorrhaphy due to mesenteric vascular thrombosis (Table 7).

**Table 6: Complications**

Complications	Number of cases
Wound complications	
Wound infection	10
Neuropraxia	3
Scrotal and testicular	
Scrotal edema	4
Traumatic orchitis	2
Urinary tract	
Urinary retention	2
Bladder injury	
Gastrointestinal	
Hiccough	2
Hematemesis	2
Ileus	1
Anesthetic complications	
Postspinal headache	4
Pulmonary	
LRI	2

**Table 7: Groin hernias repair: Late complications**

Complication	Number of cases (%)
Recurrence	2 (1.27)
Late complications	
Hydrocele	3 (1.91)
Neuropraxia	2 (1.27)
Traumatic orchitis	2 (1.27)
Death	1 (0.64)

## DISCUSSION

In the 10 cases of recurrent hernia (6.4%), none were noticed in women. Of 150 cases of groin hernia, in men, 148 cases were inguinal hernias and only 2 cases were of femoral hernia. Of 7 cases found in females, 5 cases were inguinal hernia and 2 cases were of femoral hernias. Maximum number of groin hernias were seen in the age group between 41 and 50 years contributing to 21%. As per the study by Gupta and Rohatgi,<sup>[8]</sup> 96% inguinal hernias were in males and 4% were females. Children <12 years were included in this study. Study by Charles *et al.*<sup>[9]</sup> shows that 93.2% of all inguinal hernia cases were males, 6.7% were females. M:F = 13.7:1.

In our series, there were 10 cases of recurrent hernia (6.4%). The recurrences were seen only in men and majority of them were recorded in the age groups between 31 and 60. The incidence of recurrent hernia after primary repair of a groin hernia varies from 1% in specialized centers to 30% in general surveys. During the premesh era, it was estimated that primary inguinal hernia repairs had a 10%–30% recurrence rate and that the rate was 35% for recurrent hernia repairs.<sup>[10]</sup> The Shouldice repair has been the only tissue repair with an extremely low recurrence rate of 2.2%.<sup>[11]</sup>

Complicated hernias are fraught with increased mortality with and without operative management. The choice of technique depends on several factors including the type of hernia, anesthetic considerations, cost, period of post-operative disability, and the surgeon's expertise.<sup>[12-15]</sup> In the primary management of all complicated hernias from surgical reduction and repair accompanied by aggressive pre- and post-operative care is suggested. Elective repair should be deferred in case of advancing age and in case in which groin hernia may be difficult to diagnosis. Transabdominal and preperitoneal approach of surgical procedures are used for reduction and repair of complicated groin hernias.

## CONCLUSION

Groin hernias are 20 times more common in men than women. The incidence of groin hernias in women is

4.46%. The ratio of direct-to-indirect inguinal hernias in men is about 1:3. No case of direct hernia was seen in females. Patients with no attendant comorbidities with asymptomatic inguinal hernia at presentation should be offered hernia repair. About 21% of cases were seen in the age group between 41 and 50 years, the reason being the physical strain in this age group aggravating the existing precipitating factors and opening the processes vaginalis sac which is undergoing obliteration. The incidence of complicated hernia is coming down due to the greater awareness of mortality and morbidity in complicated cases.

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