

Prevalence of Anterior Abdominal Wall Hernia and its Associated Risk Factors

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ABSTRACT

Introduction: Anterior abdominal wall hernia is very common surgical problem and millions of patients are affected each year. In developing countries they are not treated on priority basis because of their benign nature in general and due to economic reasons. Despite the frequency of this procedure the ideal prevalence, associated etiological factors, results, complications, recurrence are not same everywhere and it continues to be a challenge for the surgeons.

Aim: This study was done to find out prevalence of anterior abdominal wall hernia and its associated etiological factors.

Materials and Methods: This is a retrospective study was conducted in Padmashree Dr. DY Patil Medical

College and Hospital, Pune. Total 200 cases of anterior abdominal wall hernia excluding groin hernia were studied retrospectively. The data obtained from medical record section, and proformas were filled. The data analysis of the study was done by using statistical package for social science (SPSS) software version 17 for window.

Results: The result of the study has shown the prevalence as 42% Incisional hernia, 32% umbilical hernia, 17% paraumbilical hernia, 10% epigastric hernia. Obesity, Smoking, Cough and Diabetes were the common associated etiological factors for ventral hernia in our study.

Conclusion: This is a small number and single center study, a larger number and multicenter data would confer more generalized conclusion.

Keywords: Complications, Irreducible hernia, Protrusion

INTRODUCTION

Hernia is protrusion of a viscus or part of a viscus through an opening in the walls of its containing cavity. It is one of the most common operations being performed by general surgeons around the globe. They can be primary or recurrent; they may be reducible or irreducible. Irreducible hernias may be either incarcerated or they may be strangulated. The external abdominal hernia is the most common form [1].

Abdominal wall hernias present at different sites where aponeurosis and fascia are not covered by striated muscles i.e. inguinal, femoral, umbilical area, linea alba, lower portion of semilunar line, and sites of prior incisions. Umbilical hernias are congenital in origin and occur when the umbilical scar closes incompletely in the child or fails and stretches in later years in adult patient. Incidence in babies being 10-30%, most umbilical hernias that appear before the age of 6 months disappear spontaneously by 1 year of age. In adults the cause is usually acquired rather than congenital

and female to male ratio being 3:1 [2]. Most common ventral hernias are the incisional and para-umbilical hernias which constitute about 85% of the overall ventral abdominal hernias [3]. Epigastric and hypogastric hernias present in the linea alba above and below the umbilicus, respectively. They are an acquired defect and are often multiple in nature. Overall incidence being 3-5% and is more common in males by a ratio of 3:1 and is commonly diagnosed in middle age. Spigelian hernias occur when the abdominal contents protrude through a defect at the semilunar line. Paraumbilical hernias are five times more common in females than males and usually occur through the linea alba either above or below the umbilicus and not through the umbilical scar. These hernias usually sag downwards because of their size. Incisional hernia occurs as a result of failure of facial tissues to heal and close following laparotomy, mostly encountered with midline vertical and transverse incision, incidence of incisional hernia being 2-11% [4]. Associated risk factors can be weakness of abdominal wall which contributes to

hernia and increased abdominal pressure which can cause hernia. Contributing factors can be anatomical, congenital, connected with sex, age, weight loss, injury, postoperative scar, pregnancy etc. Causative factors can be hard physical activity, chronic cough, chronic constipation, obstructive uropathy, obesity, ascites etc.

In our study we have focused on determining the prevalence of different abdominal wall hernias excluding groin hernia and their various associated etiological factors.

MATERIALS AND METHODS

This retrospective study was performed on 200 cases of anterior abdominal wall hernia admitted during July 2009 to September 2013 at Department of General Surgery, Padmashree Dr. DY Patil Medical College Hospital and Research Center, Pimpri, Pune. Ethical committee approval was taken. Groin hernias were excluded from study. All Data for retrospective study was obtained from medical records department. The proformas were filled. The age and sex wise distribution and different types of anterior abdominal wall hernia were determined by registering all the patients in the study. All the patients were evaluated as per proforma to find out the associated etiological factors. Data analysis done by using SPSS (statistical package for the social science) software version 17 for window by using chi square test and other parameters number and percentage. The p-value of less than 0.05 was considered significant.

RESULTS

Most common variety of hernia in our study is incisional (41%) followed by umbilical (32%), paraumbilical (17%) and epigastric (10%). There is an increased incidence of anterior abdominal wall hernia between 3rd to 6th decade of life. Highest number is found to be between 41-50 years of age. Umbilical hernia had a preponderance for male sex (M:F- 1.5:1) whereas, Incisional for female sex (F:M- 2.3:1). There is significant association between hernia and sex as $p < 0.001$ [Table/Fig-1-3].

There is significant association between smoking, alcohol, obesity and hernia as $p < 0.001$ and not significant association between diabetes, cough, previous operation, others and hernia as $p > 0.05$. Smoking (19.5%), obesity (21.5%) and

Type of Hernia	Number	Percentage (%)
Incisional Hernia	82	41
Umbilical Hernia	64	32
Paraumbilical Hernia	34	17
Epigastric Hernia	20	10
Total	200	100

[Table/Fig-1]: Prevalence of hernias.

Age (years)	Umbilical	Paraumbilical	Incisional	Epigastric	Total
0-10	1	-	-	-	1
11-20	2	-	-	-	2
21-30	7	3	7	2	19
31-40	16	8	18	1	43
41-50	19	9	21	3	52
51-60	13	9	21	5	48
61-70	5	5	12	8	30
71-80	1	-	3	1	5
Total	64	34	82	20	200

[Table/Fig-2]: Age wise distribution.

Hernia	Male	Female	Total
Incisional	28 (25.68%)	54 (59.34%)	82
Umbilical	42 (38.53%)	22 (24.17%)	64
Paraumbilical	25 (22.93%)	9 (9.89%)	34
Epigastric	14 (12.84%)	6 (6.59%)	20
Total	109 (54.5%)	91 (45.5%)	200

[Table/Fig-3]: Sex wise distribution.

Chi-square = 23.80, $p < 0.001$

diabetes (17%) were the main risk factors for development of hernias [Table/Fig-4].

DISCUSSION

Anterior abdominal wall hernias are a familiar surgical problem. Millions of patients are affected each year, in incidence it is second only to inguinal hernias, accounting for 25-35% of all hernias. Hence, revisiting its frequency distribution and associated risk factors are very important from patient and teaching learning point of view. Ventral hernias usually are incisional and primary defects in the abdominal fascia, which can cause umbilical, epigastric, or spigelian hernias [1]. 80% or more of ventral hernias are incisional hernias in adults that surgeons repair. Post laparotomy frequency of Incisional hernias is 2% to 11% and increases substantially when certain risk factors for postoperative Incisional hernia, such as a wound infection or obesity, are present.

Hernias commonly cause pain and are distressing to patients more aesthetically. These concerns, and the risk of incarceration, are the most common reasons patients seek surgical repair of hernias. As the number of patients in this study is 200 it will not reflect the true prevalence of ventral hernias in DYPMCH.

In our study Incisional hernia constituted for 41%, umbilical hernias 32%, Paraumbilical 17% and Epigastric 10% of all hernias whereas Babar Sultan et al., [5] found maximum numbers of paraumbilical hernias followed by umbilical and

Etiology	Hernia					χ^2 - value	p- value
	Umbilical	Para umbilical	Incisional	Epigastric	Total		
Smoking	20 (51.58)	12 (30.75)	1	6 (15.38)	39 (19.5)	29.89	<0.001
Alcohol	11 (61.11)	7 (38.88)	0	0	18 (9)	20.71	<0.001
Diabetes	13 (38.23)	4 (11.76)	14 (41.17)	3	34 (17)	1.21	>0.05
Cough	7 (31.8)	4 (18.18)	20 (58.82)	3	34 (17)	5.56	>0.05
Previous operation	0	0	82 (100)	0	82 (41)	-	-
Obesity	16 (37.20)	15 (34.88)	8 (18.6)	4	43 (21.5)	17.49	<0.001
Others	9 (42.85)	6	5	1	21 (10.5)	5.06	>0.05

[Table/Fig-4]: Distribution according to etiology.

incisional hernias also there was male (92.83%) dominance over females (7.62%) which corresponds to our study.

Arshad M Malik et al., [6] found maximum number of paraumbilical hernias (13%) followed by incisional and epigastric also male preponderance was seen overall.

Natalie Dabbas et al., [7] in their study suggested frequency of different hernias in decreasing frequency as umbilical followed by epigastric, incisional and paraumbilical hernias.

The overall sex ratio distribution ventral hernias showed that 48.5% were male patients and 39.5% female patients, however with respect to Incisional hernias female to male ratio was 2.3:1 (54 female patients (59.34%) and 28 males (25.68%). Incisional hernias preponderance in female could be due to relatively high frequency of employing lower midline incisions, notoriously prone for herniation in women who undergo surgery for pelvic organ pathology.

With respect to umbilical, paraumbilical and epigastric hernias male preponderance was seen [42(38.5%), 25(22.9%) and 14(14%) male each and 22(24.17%), 9(9.89%) and 6(6.59%) females respectively] making a ratio of 1.5:1, 2.4:1 and 2:1 respectively. Affected patients usually presented in 3rd, 4th and 5th decades. Umbilical hernia had a preponderance for male sex (M:F- 1.5:1) whereas, incisional for female sex (F:M- 2.3:1). There is significant association between hernia and sex as $p < 0.001$. Study by Salameh JR et al., [8] showed that epigastric hernias are common in men with a male to female ratio of 3:1 and the age of presentation is 3rd to 5th decade and a fall after 6th decade, which corresponds to our study. Textbooks quote incidence of umbilical hernias more in women but our results were contrasting to that. Natalie Dabbas et al., [7] did a retrospective study of 2389 patients and found that men underwent umbilical and paraumbilical hernia repair twice as compared to women, which corresponds to our study.

Buckminster Farrow et al., [9] did a retrospective analysis of open umbilical hernia repair between October 2003 to September 2007 and found that 98% of the patients were male with mean age of presentation being 55.2 years and

65 patients underwent mesh plasty whereas 87 patients underwent suture repair which is comparable to our study.

Majority of the patients who underwent gynecological procedures (60.97%) namely LACS (35.36%) and hysterectomy (25.60%) developed incisional hernia through lower midline incisions. 39.02% of the patients who underwent laparotomy for surgical procedure developed Incisional hernia.

Study by Rios A et al., has given the percentages of various incisions through which hernia has occurred namely Infraumbilical (36%), supraumbilical (16%), supraumbilical with infraumbilical (15%) and paraumbilical (15%), which corresponds to our study [10].

Toms PA et al., has said incisional hernia are more common following midline incision through the relatively avascular line and are less common following transverse incision, especially where muscle splitting approaches are been used [11].

Diabetes mellitus, obesity, alcoholism, smoking have been associated with high percentage of post-operative hernias [12]. In our study obesity constituted (21.5%), Smoking (19.5%), diabetes (17%), cough (17%) and alcohol (9%) in development of hernias. There is significant association between smoking, alcohol, obesity and hernia as $p < 0.001$ and not significant association between diabetes, cough, previous operation, others and hernia as $p > 0.05$. In a study by Rios A et al., [10] said that 19.9% were diabetic, 9.3% were obese and 3.7 % were immune suppressed.

CONCLUSION

Our study indicate prevalence of ventral hernias in decreasing frequency is incisional (41%), umbilical (32%), paraumbilical (17%) and epigastric (10%). Most of the patients presented between 3rd to 6th decades of life. Male dominance was seen in umbilical hernia and female in incisional hernias. Obesity, smoking, cough and diabetes were implicated as the common etiological factors for the development of ventral hernias. As the number of patients in our study is 200, it indicates frequency distribution of ventral hernias associated

risk factors in DYPMCH. However larger multicenter studies are required to suggest true prevalence.

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