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Original Research Article

Clinical Presentations, Predisposing Factors and Methods Of Surgical Repair Of Ventral Hernias in Tertiary Teaching Hospital: A Prospective Study

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Abstract
Background: **A ventral hernia** is a protrusion of abdominal viscus through the anterior abdominal wall occurring at any site other than the inguinal and femoral areas and is a common problem encountered by surgeons. **Objective:** to know the clinical presentations of the ventral hernias, predisposing factors (risk factors) for the development of ventral hernias , different methods of surgical repair of the ventral hernias, complications following surgery and their follow-up. **Methods**: This was a prospective study was at Department of General Surgery, S S institute of Medical Sciences Davangere Karnataka between August 2020 and August 2021..**Results:** The youngest patient was 12 years old and the oldest was 76 years old. The mean age at presentation was 47 years. paraumbilical hernia (49%) was the most common variety followed by epigastric hernia (22%) and umbilical hernia (18%). Highest incidence is found in the 41-50 age group. Majority of the patients presented with swelling & Pain over& around the umbilicus or in the line of the scar of previous surgery. Paraumbilical hernia was the most common amongst the ventral hernias with an incidence of 46%. Of which, most occurred in infra-umbilical region. There is significant association between constipation smoking, obesity and occurrence of ventral hernia ($p<0.001$). 6% recurrence rate was observed after 1 year of follow up. Wound infection rate was 4%.3% with only repair and 1% with sublay repair.
Conclusions: Apart from recurrence, other postoperative complications like seroma formation and wound infection attributed largely to extensive dissection and tissue handling during hernia repair.8 In present study, there was slightly more chance of seroma formation in onlay group, which may be due to extensive tissue dissection and increased blood loss.

Keywords: Clinical Presentations, Predisposing Factors, Surgical Repair, Ventral Hernias

INTRODUCTION

A ventral hernia is a protrusion of abdominal viscus through the anterior abdominal wall occurring at any site other than the inguinal and femoral areas and is a common problem encountered by surgeons1. There are different modes of presentations of hernias such as incidental finding of bulging over the previous surgical scar or symptomatic with pain, vomiting, distension of abdomen, constipation i.e., signs and symptoms of intestinal obstruction. These defects can be categorized as spontaneous or acquired or by their location on the abdominal wall.Acquired hernias typically occur after surgical incisions and are therefore termed incisional

hernias. Epigastric, umbilical, paraumbilical and incisional hernia constitute the large number of patients whereas the other hernias are rarely seen and form a small amount.Incisional hernia is a common long-term complication of abdominal surgery and is estimated to occur in 3% to 13% of laparotomy incisions2. However, its incidence is greater than 23% in patients who have developed an infection in the laparotomy wound3.

Ventral hernia is a very common condition presenting to our hospital, so there was a need to study the disease with respect to the various presentations, to gauge the awareness levels of the patients coming to us and also to determine the best modality of treatment in our set-up.

Thus, the study is being done to know the clinical presentations of the ventral hernias, predisposing factors (risk factors) for the development of ventral hernias , different methods of surgical repair of the ventral hernias, complications following surgery and their follow-up.

METHODS

This was a prospective study done at our teaching hospital between August 2020 and August 2021 (12 months). A total number of 50 cases were included in the study. Patients with groin hernias, posterior abdominal wall hernias and those who did not undergo surgical intervention, who are not fit for surgery were excluded from the study. Ventral hernias included epigatric, incisional and umbilical hernias. Data collection included a detailed history and a thorough clinical examination. Patients underwent routine laboratory (CBC, LFT, KFT, BSL) and radiological investigations (Chest X-ray and USG). Patients were operated with suitable open surgical techniques and followed up for immediate post-operative complications. Data was entered in the proforma, tabulated and analyzed.

RESULTS

Ventral hernias comprised ~5% of the total number of 1,000 admissions to the surgical ward (from August 2020 - August 2021). In the present study, the youngest patient was 12 years old and the oldest was 76 years old. The mean age at presentation was 47 years. paraumbilical hernia (49%) was the most common variety followed by epigastric hernia (22%) and umbilical hernia (18%). Highest incidence is found in the 41-50 age group.

In our study, highest number of cases was found to be between 41-50 years of age and the mean age was 47 years. Out of 50 cases, 21 were males and 29 were females. Out of 21 males, 9 cases were of epigastric hernia. Out of 29 cases of ventral hernias in females, 20 cases were of paraumbilicalhernia, whereas the next most common type was umbilical hernia (9 cases).

Table 1: Age.

AGE	NO. OF PATIENTS	PERCENTAGE [%]
0-10	0	0
11-20	1	2
21-30	5	10
31-40	12	24
41-50	13	26
51-60	10	20
61-70	4	8
71-80	5	10

Table 2: Sex wise distribution

	INCIDENCE	PERCENTAGE[%]
MALE	21	42
FEMALE	29	58

Size of the defect

The size of the hernia defect at the time of presentation was as follows:

Table 3: Size of defect

Size of defect	No. of cases	Percentage [%]
<2cms	32	64
2-3cms	12	24
>3cms	6	12

It was found that the incidence of complications was more common in patients who presented with small to moderate sized defects because the narrow neck of the hernia sac would compress the contents leading to irreducibility, obstruction and strangulation.

Mode of presentation

- The complaints with which the patients presented in this study are as follows:

Table 4. Chief complaints.

COMPLAINT	NO. OF CASES	PERCENTAGE
Swelling with pain	27	54
Swelling	10	20
Swelling with irreducibility	13	26

Majority of the patients presented with swelling & Pain over& around the umbilicus or in the line of the scar of previous surgery.

Anatomical sites

In the present study, Paraumbilicalhernia was the most common amongst the ventral hernias with an incidence of 46%. Of which, most occurred in infra-umbilical region.

Table 5: Anatomical site distribution

ANATOMICAL SITE	NO.
Paraumbilical Hernia – infraumbilical	18
Paraumbilical Hernia – supraumbilical	6
Umbilical Hernia	9
Epigastric hernia	11
Inciscional hernia	3

There is significant association between constipation smoking, obesity and occurrence of ventral hernia (p<0.001).Data analysis was done by using statistical package for social science (SPSS) software version 17 for windows by using chi square test and other parameters. The p-value of less than 0.05 was considered significant.

Duration of surgery

The mean total duration for surgery in sublay group was 75.4±9.23 minutes compared to 63.7±10.58 minutes in onlay group, which was statistically significant (p<0.05)

Table 6: Duration of surgery

TYPE OF REPAIR	OPERATIVE TIME (IN MINUTES)
Onlay	63.7
Sublay	75.4

Post operation stay and drain removal.

Suction drain was put in all cases. Mean drainage duration (4.8+0.99 days vs. 3.5+1.24 days) and was low in sublay group compared to onlay group which was statistically significant. Mean duration of hospital stay post operatively in sublay group was 4.2±1.51 days, whereas it was 6.7±1.46 days in onlay group, which was statistically significant.

Table 7: Post operation stay and drain removal.

	DURATION OF DRAIN (IN DAYS)	POSTOPERATIVE STAY (IN DAYS)
Onlay	4.8	6.7
Sublay	3.5	4.2

Post Op complications

In the present study, the following complications occurred during the post-operative period. Thus, in the present study, 6% recurrence rate was observed after 1 year of follow up. Wound infection rate was 4%.3% with onlayrepair and 1% with sublay repair.Two patients had marginal suture line necrosis but no wound or mesh infection; necrotic skin was excised and suturing was done.

Table 8: Post Operative complications

COMPLICATIONS	NO. OF PATIENTS
Seroma	3
Wound infection	2
Skin necrosis	2
Recurrence	3

DISCUSSION

The incidence of ventral hernia is higher in females because in multiparous women, the following factors predispose to hernia formation: stretching of anterior abdominal wall, decreased tone of abdominal wall muscles, replacement of collagen with elastic fibers. In our study, incisional hernia was the most common amongst the hernias, this is comparable to another Indian study4. However, Dabbas N et al did a retrospective study of 2389 patients and found that umbilical and paraumbilical hernias were the most common anterior abdominal wall hernia5. Malik AM et al, found maximum number of paraumbilical hernias (13%) followed by epigastric hernias and umbilical hernias6.

Constipation was found to be one of the major risk factors for interfering with wound healing and precipitating incisional hernia, even after a repair. This is comparable to the study of Ersoz et al of Department of Surgery, Ankara University of Medicine, Turkey7. Thestudy evaluated 109 recurrent incisional hernias and found that chronic constipation was the most prominent risk factor associated with late recurrence. In the present study, Incisional hernia was the most common amongst the ventral hernias with an incidence of 46%. Of the incisional hernias, most occurred in infra-umbilical midline incisions.

Infact, as per literature, the best position for inserting the material has not been conclusively established; but limited studies have shown that meshes implanted on the abdominal aponeurotic layer showed better and early incorporation (higher collagen deposition, capillary density and cell accumulation) and increased tensile strength reflecting tighter anchorage to the abdominal wall9,10. One European study has shown that onlay technique had significantly more complications as compared to sublay technique11. Thus, it can be safely said that based on above parameters, sublay is a better technique than onlay in terms of placement and overall decreased complications and morbidity12. There is paucity of literature but an experimental study has also shown superiority of sublay technique, based on different parameters.13 Even after long term follow up, recurrence rates around 10% are possible14.This is all the more

necessary as the world literature is scanty and there is great interest in hernia surgery using mesh these days.

CONCLUSION

In the present study of ventral hernias, 50 cases of ventral hernias that were admitted to Department of Surgery inour Teaching hospital from August 2020 to August 2021 were studied. Ventral hernia constituted 5% of all admissions to the surgical ward. The mean age was approximately 47 years. Paraumbilical Hernia was the most common variety. 54% of the patients presented with swelling with pain as the chief complaint. 20% of the patients presented with swelling as the chief complaint.Infra umbilical midline was the most common site for herniation in 36% of cases followed by Epigastric region in 22% of cases. Obesity and constipation were found to be the major predisposing risk factors. Seroma occurred in 6% of cases. Wound infection occurred in 4% of cases

The mean total time taken for the operation in ‘sublay’ group was 75.4±9.23 minutes, compared to 63.7±10.58 minutes in ‘onlay’ group; and was found to be statistically significant ($p<0.05$). The difference of time can be accounted due to more dissection time needed for creating preperitoneal space. Securing reasonable hemostasis is another burden on time. Ease of operation is largely subjective (surgeon factor being constant) and depends on individual surgeon's experience, exposure and planning, quality of assistance, conductive facilities like light, cautery, instruments quality and sutures etc.

Apart from recurrence, other postoperative complications like seroma formation and wound infection attributed largely to extensive dissection and tissue handling during hernia repair.8 In present study, there was slightly more chance of seroma formation in onlay group, which may be due to extensive tissue dissection and increased blood loss. Duration of hospital stay give us an indirect indication of degree of morbidity in terms of postoperative complications. The mean duration in sublay group was 4.2 days, compared to 6.7 days in onlay group; and were found to be statistically significant ($p<0.05$).On one year follow up, recurrence rate was found to be more in onlay group.

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