

## Original Research Article

# A clinical study on ventral hernias in a tertiary care hospital

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### ABSTRACT

**Background:** Ventral hernias comprise the second most common hernia presentations in the surgical world. This study was undertaken to know the different clinical types, age incidence, predisposing factors for ventral hernia and also to study the post-operative results of different operative procedures.

**Methods:** 250 cases of abdominal wall hernias were studied during the period of 3.5 years from January 2013 to June 2016. Out of which 150 cases were studied retrospectively from January 2013 to December 2014 with the help of the case sheets available in the MRD. The prospective study was done from January 2015 to June 2016 in which each patient was evaluated separately and thoroughly and his surgery planned so as to obtain satisfactory results. 69.6% were incisional hernias following an operation. 8% patients had presented with complications like irreducibility, obstruction and strangulation. The presence of associated diseases, large hernia, poor condition of local tissue (muscle), all make the surgical management of ventral hernia a complex problem. Either anatomical repair or Mesh repair were undertaken for all patients in this study.

**Results:** Females were affected much more than the males. The proportion of females to males affected with ventral hernia was 5:1. Out of the three types of hernia that were studied only epigastric hernia showed more incidence in males whereas incisional and paraumbilical hernias were much more common in females. Most common age presentation was fourth and fifth decade. 92% of ventral hernias were uncomplicated at the time of presentation. In 100% of the cases swelling was the complaint followed by pain (18.8%). Previous surgery was the most common etiological factor in the development of ventral hernias (69.6%) followed by obesity (23.2%) In both groups mesh repair (63.6%) and anatomical repair (36.4%) there were no recurrences or deaths in the follow up period of 3 months.

**Conclusions:** Ventral hernias are common surgical complaints. Prevention is the better treatment in the form of meticulous dissection and proper post-operative care to avoid incisional hernias. Presence of ventral hernia is an indication for surgery even in presence of co-morbid conditions like ascites, COPD, BPH as these patients are more prone for complications and of course these conditions need proper addressal. Mesh repair has nowadays become the standard of care but the results of the surgery depends upon the expertise of the surgeon.

**Keywords:** Clinical study, Clinical study on ventral hernia, Hernia, Tertiary care hospital, Ventral hernia

### INTRODUCTION

Ventral hernia: All the hernias coming out through anterior abdominal wall.<sup>1</sup> The ventral hernias are frequently occurring surgical entities which may or may not be symptomatic. But they can be aesthetically

disturbing are diagnosed primarily by clinical examination.<sup>1</sup> In patients presenting to general surgery OPD having ventral hernias, the most common complaint for presentation is swelling while 2nd most common is pain over the swelling. These two complaints often bring the patient to a surgeon seeking for surgical treatment.

Investigations like ultrasound and computed tomography can be used to come to a diagnosis and any predisposing factors. While tension free repair is the core concept, the use of mesh has caused decrease in recurrence rates and recommended.<sup>2</sup>

In this study, I have made an attempt to study 250 cases of ventral hernia i.e. 150 cases retrospectively from January 2013 to December 2014 and 100 cases prospectively from January 2015 to June 2016, regarding their presentations, etiology and range of surgical options available at our institution.

## METHODS

250 cases of ventral hernias treated in the department of General surgery at a tertiary care hospital, Pondicherry from Jan 2013 to June 2016 (retrospective and prospective).

Collection of data available in MRD for retrospective study. Collection of data as per the case proforma for prospective study.

A patient with a diagnosis of ventral hernia, treated in the department of General Surgery at a tertiary care hospital in Pondicherry, during and before the course of the study.

The patients were taken up for surgery after written and informed consent. The findings were then recorded and the patients were monitored post-operatively. The patients were followed up for a period of 3 months after the surgery.

Data collected were analysed.

Percentages and graphs were used for the analysis and presentation of the collected data.

### Contents of the study

Distribution of various types of ventral hernias with respect to age and sex.

Common presenting symptoms of ventral hernias.

Types of incisions presenting in ventral hernias. Type of previous surgery resulting in ventral hernias. Types of ventral hernia repair.

Complications of ventral hernia surgery: seromas and surgical site infections.

The observational study conducted with 250 patients.

### Inclusion criteria

All the patients diagnosed with ventral hernias (epigastric, para-umbilical, incisional, parastomal and

Spigelian) treated at tertiary care hospital during the course of study above the age of 18.

### Exclusion criteria

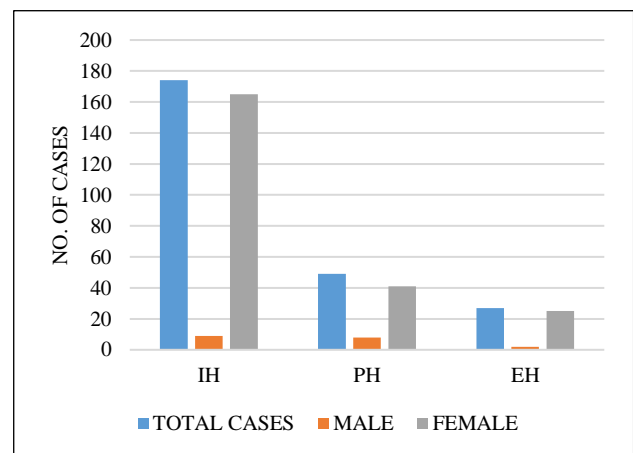
Patients diagnosed with inguinal hernias, femoral hernias.

Informed consent was taken from both patients and informants. Confidentiality of all information was assured and maintained. Subjects had the right to withdraw consent at any stage. Participation in the study had no effect on the treatment in any way. Patient was not financially supported for taking part in the study. Approval was taken from Ethical Committee.

## RESULTS

250 cases of ventral hernia 174 (69.6%) were incisional hernia, 49 (19.6%) were para-umbilical hernia and 27 (10.8%) were epigastric hernia.

The occurrence of ventral hernia is more common in females (83.2%). Among incisional hernia, out of 174 cases, 165 were females and 9 were males. Among 27 cases of epigastric hernia, 25 cases studied were male patients and 2 were female patients.<sup>3</sup> Out of 49 cases studied of paraumbilical hernia, 41 were females and 8 were males (Figure 1).



**Figure 1: Sex incidence of ventral hernias.**

The youngest patient with a ventral hernia was 21 years old and oldest was 65 years old.<sup>4</sup> The highest incidence of ventral hernia was noted in 4th decade that is 79 cases which amounted to 31.6% and the lowest incidence was in the 7th decade that is 5 cases which is 0.02%. Among incisional hernia, most cases were found in 4<sup>th</sup> and 5<sup>th</sup> decade (79 and 77 cases respectively - 45.4% and 44.25%) and 6<sup>th</sup> decade (59 cases) which amounted to 33.9% of all incisional hernia. In epigastric hernia, almost all cases were noted after 4<sup>th</sup> decade except one.<sup>5</sup> The paraumbilical hernias presented more in 3<sup>rd</sup> and 4<sup>th</sup> decade (24.48% and 36.73%) and lowest in 6<sup>th</sup> decade (18.36%). All 250 cases of ventral hernias presented with

a swelling (100%), 47 cases presented with pain (18.8%), 17 cases presented with irreducibility (6.8%) and 2 cases

presented with features of obstruction (0.8%) and 1 case with strangulation (0.4%) (Table 1 and Figure 2).

**Table 1: Clinical features of ventral hernia.**

Clinical features	Incisional hernia	Paraumbilical hernia	Epigastric hernia
Swelling	174 (100%)	49 (100%)	27 (100%)
Pain	33 (18.96%)	6 (12.24%)	8 (29.62%)
Irreducibility	12 (6.89%)	2 (4.08%)	3 (11.11%)
Irreducibility and obstruction	0	2 (4.08%)	0
Irreducibility, obstruction and strangulation	1 (0.57%)	0	0

**Table 2: Predisposing factors for ventral hernia.**

Predisposing factor	Number of patients	Percentage
Obesity	58	23.2
Multiparity	12	4.8
COPD	12	4.8
Past surgery	174	69.6
DM	24	9.6
HTN	31	12.4

100% of incisional hernias presented with swelling (174/174), 18.96% with pain (33/174), 6.89% presented with irreducibility (12/174) and 0.57% with strangulation (1/174).<sup>6</sup> Among paraumbilical hernias, 100% presented with swelling, 12.24% (6/49) with pain, 4.08% each with irreducibility and obstruction (2/49 each). Among epigastric hernias, 100% presented with swelling (27/27),

29.62% with pain (8/27) and 11.11% with irreducibility (3/27).

Most common predisposing factor for ventral hernias is previous surgery followed by obesity (Table 2).

**Table 3: Type of previous surgery in incisional hernia.**

Nature of surgery	Number and percentage	Type of incision
Tubectomy	37 (21.26%)	Lower midline
Hysterectomy	11 (6.32%)	Lower midline
Lower segment caesarean section	58 (33.33%)	Lower midline
Lower segment caesarean section	48 (27.58%)	Pfannenstiel
Exploratory laparotomy	20 (11.49%)	Lower midline + upper midline

**Table 4: Complications of ventral hernia surgery.**

Complication	Incisional hernia	Paraumbilical hernia	Epigastric hernia	Percentage
Seroma	12	2	3	6.8
Surgical site infection	7	1	2	4

**Table 5: Comparison of type of incision through which incisional hernia occurs.**

Type of incision	Present series	
	N	%
Lower midline	106	60.91
Pfannenstiel	48	27.58
Lower + upper midline	20	11.49

Most common surgeries that result into incisional hernia are gynecological surgeries (88.51%). The most common procedure in that regard is lower segment caesarean section (60.91%). The most common incisions resulting into ventral hernia are infraumbilical (88.51%) (Table 3).

The most common type of repair was mesh repair (63.6%) while anatomical repair was done in 36.4% cases. The overall percentage of complications were 27 cases (10.8%). Seroma was relatively more common (6.8%) than surgical site infection (4%). The recurrence

rates could not be studied due to short period of follow up (3 months) (Table 4).

## DISCUSSION

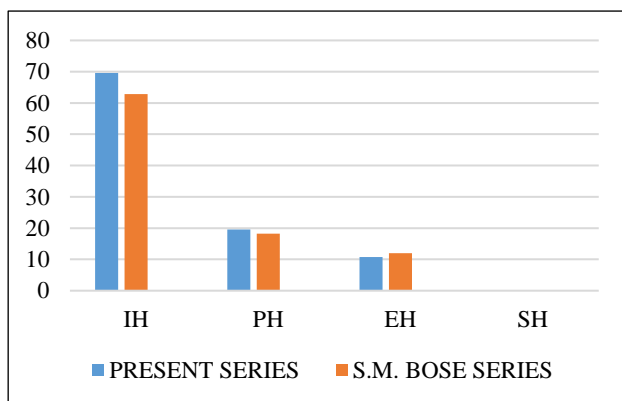
This present study has been compared to other series of similar nature. 250 cases of ventral hernia were taken up for this study which was done between January 2013 to June 2016.

This present study of 250 cases of ventral hernia had 174/250 (69.6%) of incisional hernia, 49/250 (19.6%) of paraumbilical hernia, 27/250 (10.8%) of epigastric hernia. There were no cases of Spigelian hernia or divarication of recti among the 250 cases.

In comparing with a study by S.M. Bose series, 44 of 175 cases 110 were incisional hernia (62.86%), 12 were umbilical hernias (6.85%), 32 cases were para-umbilical hernias (18.28%) and 21 cases were epigastric hernia (12.0%).<sup>3</sup>

The incidence of the different types of ventral hernia matches with that of the SM Bose study. There was no case of spigelian, divarication of recti in both the studies.

18.8% presented with pain in present study and 24% in S.M. BOSE series, 6.8% presented with irreducibility while 18.85% in S.M. Bose series.<sup>3</sup> 1.2% presented with obstruction or strangulation while 7.42 % in S.M. Bose series. Thus, compares well with S.M. Bose series.



**Figure 3: Percentage comparison between the present series and Bose SM series of clinical types of ventral hernia.**

In the present series 27 cases of epigastric hernia were studied which accounted to 10.8% of all ventral hernias.

The incidence of epigastric hernia in the present series is comparable with that of the M. Mohan Rao series and is slightly lower than S.M. Bose series.<sup>4</sup> In this study of 27 cases of epigastric hernia, 25 cases were males (92.59%) and 2 cases (7.41%) were females. The maximum age incidence was between 31-65 that is 100% of all cases were found between 31 and 65 years of age.

Pain was a presenting complaint in 29.62% of cases, swelling was a presenting complaint in 100% of cases. Irreducibility was noted in 11.11% of cases. There were no features of obstruction or strangulation in any of the cases studied. Pain may be due to herniation through a small defect.<sup>7</sup>

Among 27 cases of epigastric hernia 12 were treated with anatomical repair and 15 cases underwent anatomical repair with mesh repair.<sup>8</sup> During the follow up period of 3 months none of the patients had recurrence.

The follow up period was very short (3 months), the recurrence rates cannot be commented upon.

Out of 250 cases 49 cases were paraumbilical hernia which Contributed to 19.6% of total ventral hernias studied. This concurs well with S.M. Bose series where paraumbilical hernia contributed to 18.28% of all ventral hernias.<sup>9</sup> Male to female ratio in the present study was 1:5 where as in Nyhus series.<sup>10</sup> It is 1:3 and Sidley series it is 1:2. In the present series female predominance was seen. There was equal distribution of cases in the 2nd, 3rd, 4th, 5th and 6th decades. All cases of paraumbilical hernia presented with a swelling 49/49 (100%), 6/49 (12.24%) with pain, 2/49 (4.08%) with irreducibility and 2 cases (4.08%) with irreducibility & obstruction. 41 cases of umbilical hernia underwent anatomical repair and 8 cases underwent mesh repair. All 49 cases were followed up with no recurrence noted in the follow up period of 3 months. 41 cases of umbilical hernia underwent anatomical repair and 8 cases underwent mesh repair. All 49 cases were followed up with no recurrence noted in the follow up period of 3 months.

In the present series 174 cases of incisional hernia were studied which accounted for 69.6% of total ventral hernia. This study compares well with the S.M. Bose series (62.86%) but is higher than the Mohan Rao series (30.65%).<sup>11</sup> The highest incidence was seen in the 4th and 5th decade (34.48% and 30.45% respectively) and all the cases were found in the age group of 21 - 61 years (100%). Whereas Obney series 46 found that the peak incidence of 62% of incisional hernias occurred in the age group of 40-70 years.

In this present series, female predominance was noted. This concurs well with the Akman Series and Siedel series. Swelling was the presenting complaint in 100% of incisional hernia cases. Pain was complained by 18.96% of patients. 6.89% presented with features of irreducibility and 0.57% presented with features of obstruction and strangulation. Read and yonder series<sup>5</sup> reported that 17% of incisional hernias were operated for strangulation and obstruction.

Gynecological procedures were the major contributing procedures for incisional hernia in the present series contributing to almost 88.5% of all cases followed by explorative laparotomy 11.5%. This concurs well with

that of the S.M. Bose series as the highest number of gynecological procedures are done in the infra umbilical region.

In the present series 136 cases (88.31%) of incisional hernia were treated with anatomical mesh repair, 18 cases (11.69%) with anatomical repair while in S.M. Bose series 1999, 32.57% patients underwent mesh repair and majority i.e. 55.42% patients underwent anatomical repair.<sup>12</sup> Post-operative wound infection was noticed in 27 (10.8%) cases. This is slightly higher when compared to Lewis series (4%) and Usher series (6%). The wound infection was treated with appropriate antibiotics.

## CONCLUSION

The commonest ventral hernia was incisional hernia and among previous operative procedures which resulted in incisional hernia were gynecological procedures. Good pre-operative evaluation and preparation; sound anatomical knowledge and meticulous attention to surgical detail are the most important factors for prevention of post-operative complications and recurrence of hernia. In view of limited period follow up, I was not in a position to comment on recurrence rates, but when proper surgical procedures are adopted along with pre-operative correction of co-morbid factors, results will always be excellent.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

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