

VENTRAL HERNIA-A PROSPECTIVE STUDY OF HUNDERD SUBJECTS IN A TERTIARY HEALTH CARE

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Abstract

Background: Ventral hernias refer to musculo- fascial defects of the anterolateral abdominal wall through which intermittent or continuous protrusion of abdominal tissue or organs may occur. **Materials and Methods:** A total of 100 cases of ventral hernias were studied in the present prospective study done at Department of General Surgery, VSSIMSAR, Burla from December 2021 to November 2022. **Result:** The commonest ventral hernia was incisional hernia which accounts for 60% of all cases. The Male to female percentage distribution among ventral hernias was 30% to 70% and the maximum incidence was noted in the 4th decade. Use of prosthetic mesh has reduced the recurrence rate. In our series the wound complications were less. Moreover, there was no recurrence. Patients were followed up to 1 year. **Conclusion:** Good pre-operative evaluation and preparation; sound anatomical knowledge and meticulous attention to surgical details are the most important factors for prevention of postoperative complications.

INTRODUCTION

Ventral hernias occur through the anterior abdominal wall and represent defects in the parietal abdominal wall fascia and muscle through which intra-abdominal or pre-peritoneal contents can protrude.^[1] Ventral hernias may be congenital or acquired. Acquired hernias may develop via slow architectural deterioration of the muscular aponeuroses or they may develop from failed healing of an anterior abdominal wall incision (incisional hernia). Ventral hernia includes incisional hernias, paraumbilical hernia, umbilical hernia, epigastric hernia and spigelian hernia.^[2]

The overall incidence of ventral hernia is difficult to estimate. While many etiological factors have been implemented in the development of ventral hernia such as obesity, pregnancy, midline or other vertical abdominal incisions, use of absorbable suture, failure of suture to encompass adequate bites of strong tissue, older age, general debility, postoperative increase of abdominal pressure, steroid therapy, chemotherapy, wound infection and many others. Hence a detailed prospective trial is the need of time to resolve the controversies regarding etiology and management of ventral hernias. Commonly hernias do not require any special investigations to diagnose them. They are mostly clinically diagnosed; rarely

need investigations like ultrasound, computerized tomography to confirm the diagnosis.

The principles for ventral hernia repair include dissection and identification of all defects and repair with non-absorbable sutures placed in healthy tissue. Though many different approaches have been described for the repair, no single technique is satisfactory for all ventral hernias resulting in high failure rate and recurrence (20%-46%).^[3] Therefore, the type of repair should be well chosen as well as the materials and should be meticulously performed. With continued improvement of material and operative procedure, there is decreased morbidity and over all recurrence rates. High rate of recurrence compels the surgeons to change the technique used for repair and search for a better suture material and a better technique. Hence for a lasting repair other factors are to be taken into consideration which includes adequate preoperative preparation, anatomical dissection, repair without tension and use of well accepted, non-absorbable, nonirritant implants and effective post-operative management.

MATERIALS AND METHODS

Study Design: Prospective Study

Place of Study: Department of General Surgery, VSSIMSAR, Burla.

Duration of Study: December 2021 to November 2022.

Sample Size: A Total 100 cases were studied over the scheduled period.

Pre-operative Evaluation: Age, Gender, Height, Weight, BMI (body mass index), H/O Smoking, Hypertension & Diabetes, chronic cough, constipation, previous surgery. Routine blood investigations. Specific investigations: chest x-ray, abdominal USG, CT scan of abdomen in some cases. Intra-operative evaluation: Surgery was performed under general anaesthesia or spinal or epidural anaesthesia. Patients were NPO 8 hrs prior to surgery. Same premedication (IV antibiotic at the time of induction) and anaesthetic protocol were followed for all patients. Electrocardiography, peripheral O₂ saturation, non-invasive BP monitoring, heart rate were monitored. The patients were positioned according to the hernia site and the surgeon's comfort. Hernial defect was detected, contents reduced, defect was closed, adequate size mesh overlapping from the edge of the defect all around was selected & was fixed with prolene (2-0) suture. Laparoscopic mesh repair was done using the 3 port technique.

Post-operative evaluation: Post-operatively patients were evaluated for pain and analgesic requirement, return of bowel action, return to enteral feeding, return to normal daily activities, duration of hospital stay and for immediate and late complications. Early ambulation was encouraged and initiation of enteral feed was done within 12 hours. Patients were discharged within 5 to 7 days. Compression bandage was kept for 8 to 10 days; stapler removal was done on post-op day 7 or 8. Patients were followed up after discharge at 2 week, 1 month, 6 month and 1 year.

RESULTS AND DISCUSSION

The total number of cases studied in this series was 100 cases of ventral hernia admitted in Department of General Surgery, VSSIMSAR, Burla from December 2021 to November 2022.

In our series the incidence was 60% for Incisional hernia; 8% were umbilical hernia; 10% were paraumbilical hernia; 20% cases were epigastric hernia and 2% were spigelian hernia [Table 1], whereas In S.M. Bose series 175 cases of Ventral hernia were studied and the incidence was, Incisional hernia-62.86%, umbilical hernia 6.85%, Paraumbilical hernia 18.26% Epigastric hernia 12%, and Spigelian hernia – nil.^[4] In the present series 60 cases of incisional hernia were studied which accounted for 60% of total ventral hernia. This study compares well with the SM Bose series (1999) (62.86%) but is higher than the Isles series (1968) (43.15%) and the Mohan Rao series (1988) (30.65%).^[5]

The sex incidence was 70% females and 30% males; this clearly indicates that the incidence of Ventral hernia is more common in females than in males. In

S.M. Bose series, of the 175 patients, 79 (45.14%) were males and 96 (54.86%) were females.^[4] The sex ratio in this study was 1:2.3 which is in accordance with the ratio quoted in international literature. (Jain, Goyal et al – 1:2.3, Maingot Abdominal operations – 1:3).^[1]

The incidence in female patients is more because of the laxity of abdominal muscles due to multiple pregnancies. In males, the incidence of incisional hernia is rare as most of the operations are above the umbilicus and the integrity of the abdominal wall is good because of well-developed muscles and fascia. Male to female ratio of different type of hernias were given in [Table 1]. Female preponderance was seen in all other types of hernia except in umbilical hernia, in which male preponderance is seen. This is moreover substantiated by the fact that females were affected by umbilical hernia and paraumbilical hernia at a younger age and males much later.

The younger patient with the ventral hernia was female patient aged 21 years and oldest was a male patient aged 75 years with paraumbilical hernia. The highest incidence of ventral hernia was noted in the 4th decade that is 38 cases of ventral hernia and the lowest incidence was in the 6th and 7th decade that is 04 cases each. In S.M. Bose series the age range was 18 years to 76 years, with mean age of 44.96.^[4] This goes well with the present series. Maximum cases of incisional cases were found to be above 40 years. This compares well with the Obney series which found that the peak incidence of 62% of incisional hernias occurred in the age group of 40-70 years.

[Table 3] revealed clinical features of ventral hernia. Swelling was the presenting complaint in 100% of cases. Pain was complained by 34 patients. 16 patients presented with features of irreducibility with obstruction. Read and Yonder reported that 17% of incisional hernias were operated for strangulation and obstruction. The present series concurs well with that of Read and Yonder series. In most of umbilical hernia and paraumbilical hernia cases the chief presenting symptom was swelling and pain at the umbilical region. As stated in Nyhus and Condon. Hernia, this is due to the dragging of the omentum and constriction by the fibrous ring at the neck of the sac.^[6]

Complication of previous surgery was outlined in [Table 4]. Of the 100 patients, 60 patients were incisional hernias and had their previous surgery elsewhere. All details of previous surgery were therefore not available in these patients. However, in the final analysis wound infection at the time of primary surgery emerged as the commonest factor; chest infection and abdominal distension were the other significant factors found responsible for the development of incisional hernia. 70% of cases are following gynecological procedures and 30% of cases following general surgical procedures. Brenden Devlin stated that repeated wound in the same region or parallel to each other will often leads to the development of herniation. Almost 25% of the

patients in the Ponka's series had undergone more than one operation.^[7]

Types of hernia repair performed are outlined in [Table 5]. Among 100 cases of ventral hernias 36 underwent anatomical repair; the separation of all layers peritoneum, posterior rectus sheath, transverse abdominis, anterior rectus sheath and skin, reducing the inverted sac or excision of the hernial sac and the closure of all separated layers one by one, closure was done by prolene suture. 42 cases underwent onlay mesh repair, whereas 12 cases underwent sublay mesh repair. The position of mesh was based on the size of the hernial defect, no. of defects, abdominal muscle tone, age and general condition of the patient. However, 06 cases were managed by anterior component separation technique. The remaining 04 cases of epigastric hernia underwent laparoscopic repair. As shown in [Table 6], 30% patients mostly belonging to executive, clerical and sedentary worker could resume full activity by end of 2nd week and next 50 patients (50%) by end of 3rd week except rest 20% patients who were mostly labourers needed 6-8 weeks to resume full activity. Kingsworth (1995) has stated that patients who have

undergone the repair taken an average of 7 weeks off works.

[Table 7] revealed the lower incidence of post-operative complications in our series of 100 patients (only 16 patients) along with a zero recurrence status. All cases, except 06, were followed up to 1 year of post-operative period. Seroma was found in 04 cases, wound infection and skin necrosis each in 04 patients. Wound dehiscence, sinus formation and mesh foreign body reaction was nil. Seroma was drained. Wound infection was treated with antibiotics and regular dressings. Chronic pain was managed with pain killers and reassurance. Post-operative cough was present in 02 patient, the patients cough settled with chest physiotherapy and steroid inhalation. However, mortality was nil. Moreover, after 1 year of follow up period, reherniation was not found in any of the patients. Trupka (1998) observed that out of 66 ventral hernia repair local complication occurred in 12%, superficial wound infection in 7%, postoperative bleeding leading to re-operation in 3.2%, minor haemato-seroma in 3.2%.^[8] Kubo G. et al. (2002) observed that there was seroma in 6.6% patients.^[9] So our post-operative complication is low and comparable to the above authors.

Table 1: Clinical types and sex distribution of study subjects

| Type of ventral hernia | No. of cases | Male | Female |
|------------------------|--------------|------|--------|
| Incisional Hernia | 60 | 16 | 44 |
| Umbelical hernia | 08 | 06 | 02 |
| Para-umbelical hernia | 10 | 04 | 06 |
| Epigastric hernia | 20 | 04 | 16 |
| Spigelian hernia | 02 | 00 | 02 |

Table 2: Age distribution Type of ventral hernia

| Type of ventral hernia | 21-30 Yrs | | 31-40 Yrs | | 41-50 Yrs | | 51-60 Yrs | | 61-70 Yrs | | 71-80 Yrs | |
|------------------------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Incisional Hernia | 06 | 02 | 08 | 24 | 00 | 16 | 00 | 02 | 00 | 00 | 02 | 00 |
| Epigastric hernia | 00 | 00 | 00 | 02 | 02 | 10 | 02 | 00 | 00 | 04 | 00 | 00 |
| Umbelical hernia | 02 | 02 | 00 | 00 | 04 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| Para-umbelical hernia | 00 | 00 | 00 | 00 | 02 | 04 | 00 | 02 | 00 | 00 | 02 | 00 |
| Spigelian hernia | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 02 | 00 | 00 | 00 | 00 |

Table 3: clinical features of ventral hernia

| Presenting symptoms | Number (n = 100) | Percentage (%) |
|-------------------------------|------------------|----------------|
| Swelling | 100 | 100 |
| Pain | 34 | 34 |
| Vomiting | 18 | 18 |
| Irreducibility | 16 | 16 |
| Obstruction and Strangulation | 06 | 06 |

Table 4: Complications of Previous surgeries

| Complications of previous surgeries | Number (n=60) | Percentage(%) |
|-------------------------------------|---------------|---------------|
| Wound sepsis | 20 | 33.3 |
| Chronic Cough | 10 | 16.7 |
| Constipation | 00 | 00 |
| No definite cause | 06 | 10 |
| Combined wound sepsis and cough | 10 | 16.7 |
| Paralytic Ileus | 02 | 3.33 |

Table 5: Treatment of various types of hernia

| Type of repair | Incisional Hernia | Umbelical hernia | Para-umbelical hernia | Epigastric hernia | Spigelian hernia |
|---|-------------------|------------------|-----------------------|-------------------|------------------|
| Anatomic repair | 12 | 04 | 04 | 16 | 00 |
| Onlay mesh repair | 30 | 04 | 06 | 00 | 02 |
| Sub-lay mesh repair | 12 | 00 | 00 | 00 | 00 |
| Anterior compartment separation technique | 06 | 00 | 00 | 00 | 00 |
| Laparoscopic repair | 00 | 00 | 00 | 04 | 00 |

Table 6: Return to active life

| Post-operative period | No. of cases(n=100) | Percentage(%) |
|-----------------------|---------------------|---------------|
| 2 weeks | 30 | 30 |
| 3 weeks | 50 | 50 |
| 6-8 weeks | 20 | 20 |

Table 7: Follow-up status

| Post-operative complications | Follow-up status | | | |
|------------------------------|------------------|----------|----------|--------|
| | 2 weeks | 1 months | 6 months | 1 year |
| Residual pain | 02 | 02 | 00 | 00 |
| Seroma | 04 | 00 | 00 | 00 |
| Wound infection | 04 | 00 | 00 | 00 |
| Skin infection | 04 | 00 | 00 | 00 |
| Wound dehiscence | 00 | 00 | 00 | 00 |
| Sinus formation | 00 | 00 | 00 | 00 |
| Pulmonary complication | 02 | 00 | 00 | 00 |
| Mesh foreign body reaction | 00 | 00 | 00 | 00 |
| None | 58 | 58 | 58 | 58 |
| Lost to follow-up | 06 | 06 | 06 | 06 |
| Re-herniation | 00 | 00 | 00 | 00 |
| Mortality | 00 | 00 | 00 | 00 |

CONCLUSION

Ventral Hernia is a fairly common disease, which a surgeon comes across during his practice. Hernia recurrence is distressing to patient and embarrassing to surgeons. Good pre-operative evaluation and preparation; sound anatomical knowledge and meticulous attention to surgical details are the most important factors for prevention of postoperative complications and recurrence of hernia. In view of limited period follow up and a small sample size was not in a position to comment on recurrence rates, but when proper surgical procedures are adopted along with preoperative correction of co-morbid factors, results will always be excellent.

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