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A CLINICAL STUDY ON VENTRAL HERNIAS AND ITS MANAGEMENT AT A TERTIARY CARE CENTER

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Abstract

Introduction: Any abnormal protrusion of the viscus or a portion of it through a weak spot in the anterior abdominal wall other than the femoral and inguinal regions is referred to as a ventral hernia. A hernia is also defined as an abnormal exit of tissue or an organ, such as the bowel, through the cavity wall where it usually resides. Hernias are divided into two categories depending on their visibility-a) External hernias include those visible from the outside, such as those in the inguinal, epigastric, femoral, and incisional hernias. b) Internal hernia that is not visible from the outside and can exist between two adjacent cavities, such as the abdomen and thorax, or which can herniate into a sub- compartment of a pre-existing cavity, such as a diaphragmatic hernia or a hiatus hernia.

Materials and methods: A hospital based-analytical cross-sectional study was conducted for a period of 2 years i.e., from 1st December' 2020 to 30th November' 2022 in the Department of General Surgery at Siddhartha Medical College and General Hospital, Vijayawada. During the study period of 24 months, about ninety four (94) patients with ventral hernias have attended the OPD of Department of Surgery. Among the 94 ventral hernia patients about 63 patients who were in accordance with inclusion criteria were considered. A purposive sampling method was used to select ventral hernia Patients who were between 18-70 years of age.

Results: The distribution of patients based on clinical types of ventral hernia, majority 49.2 p.c (31) of the patients were with paraumbilical hernia followed by epigastric hernia among 31.7 p.c (20) of the patients and 19 p.c (12) of the patients were with umbilical hernia respectively. majority 47.6 p.c (30) of the patients had only swelling followed by swelling with pain among 41.3 p.c (26) of the patients, 7.9 p.c (5) of the patients had swelling with irreducibility and 3.2 p.c (2) of the patients had swelling with intestinal obstruction.

Conclusion: The incidence of ventral hernias was more among females when compared to males. The operative procedure conducted through laparoscopy for ventral hernia repair gave more promising results than open ventral hernia repair in terms of decreased postoperative pain, complications, duration of hospital stay, and return to normal activity duration. In terms of cost-effectiveness, open hernia repair was more beneficial when compared to laparoscopic hernia repair. Still, due to government initiatives towards helping the poor through medical & surgical expenses, laparoscopic hernia repair was more advisable.

Key Words: abnormal protrusion, ventral hernias, laparoscopic hernia repair, umbilical hernia**.**

INTRODUCTION

Any abnormal protrusion of the viscus or a portion of it through a weak spot in the anterior abdominal wall other than the femoral and inguinal regions is referred to as a ventral hernia. A hernia is also defined as an abnormal exit of tissue or an organ, such as the bowel, through the cavity wall where it usually resides. Hernias are divided into two categories depending on their visibility - a) External hernias include those visible from the outside, such as those in the inguinal, epigastric, femoral, and incisional hernias. b) Internal hernia that is not visible from the outside and can exist between two adjacent cavities, such as the abdomen and thorax, or which can herniate into a sub- compartment of a pre-existing cavity, such as a diaphragmatic hernia or a hiatus hernia.[1]

A ventral hernia is a protrusion through the anterior abdominal wall fascia. These abnormalities can be classified either as spontaneous or acquired, as well as by the location on the abdominal wall. Umbilical hernias develop at the umbilicus, hypogastric hernias are uncommon spontaneous hernias that extend below the umbilicus in the midline, and epigastric hernias develop from the xiphoid process to the umbilicus. Incisional hernias are acquired hernias, which often develop following surgical incisions and are the expected long-term complication of abdominal surgery, that grow in 3-13% of laparotomy incisions.[2]

Abdominal ventral hernias are defects in the fascia of the abdominal wall that is non-inguinal and non-hiatal. There are over 350,000 ventral hernia procedures each year. General surgeons frequently perform surgery to fix these abdominal wall abnormalities.[3]

Surgery is often advised for people with an acceptable operative risk, symptomatic hernias, or elevated risk of hernia-related complications. They may impact an individual's quality of life, resulting in hospitalizations and, in extreme situations, even causing death.[4]

In the United States, 348,000 ventral hernia repairs were performed in 2006 at an estimated cost of $3.2 billion. Most of the costs are incurred due to postoperative problems or emergency repairs, placing a significant burden on the healthcare system. Patients who have had a midline

laparotomy have a 10% risk of having a hernia, those who have had a transverse muscle splitting incision have a 5% chance, and those who have had a laparoscopic repair have a less than 1% risk. Hernias of the abdominal wall are prevalent, with a prevalence of 1.7% for people of all ages and 4% for people over the age of 45. About 75% of abdominal wall hernias occur in inguinal regions, which have a lifetime risk of 27% in men and 3% in women.

Most patients have their hernias diagnosed easily because they usually manifest as an abdominal mass or swelling accompanied by symptoms such as pain, nausea, abdominal distension, constipation, and intestinal obstruction. Patients with a small hernia can have the procedure performed quickly with a postoperative result. However, patients with a large hernia have difficulty due to complications, including strangulation. Surgery is the ideal route for hernia treatment. Patients with obesity, a smoking habit, alcohol addiction, prostatitis, and intra-abdominal cancer had higher recurrence rates. [5]

AIM & OBJECTIVES

Primary objective (Aim):
To estimate the incidence of ventral hernias and their types.
Secondary objectives:
To study the clinical manifestation, pathophysiology, complications, and surgical management required for ventral hernia.

MATERIALS AND METHODS

Study Design: A hospital based-analytical cross-sectional study.
Period of Study: The study was conducted for a period of 2 years i.e., from 1st December' 2020 to 30th November' 2022.

Study Area: The study was done in the Department of General Surgery at Siddhartha Medical College and General Hospital, Vijayawada.

Study Population: During the study period of 24 months, about ninety four (94) patients with ventral hernias have attended the OPD of Department of Surgery. Among the 94 ventral hernia patients about 63 patients who were in accordance with inclusion criteria were considered.

Sampling Method: A purposive sampling method was used to select ventral hernia Patients who were between 18-70 years of age.

Inclusion Criteria:

- Patients who were between 18-70 years of age.
- Patients with uncomplicated ventral hernia (reducible hernias only).
- Those who gave informed consent to participate in the study.

Exclusion Criteria:

- Emergency surgery, peritonitis, bowel obstruction, strangulation, perforation patient unfit for surgery.
- Pre-existing surgical site skin infection.
- Multiple post-operative scars.
- Congenital abdominal wall weakness.
- Severe co-morbid conditions (uncontrolled ascites, severe cardiopulmonary disease).
- Recurrent hernias.
- Incisional hernias.
- Anemia.
- Those who were with cognitive disorders.

Ethical Committee Permission: Prior approval from Institutional Ethical Committee of Siddhartha Medical College and General Hospital, Vijayawada was obtained.

Consent: An informed consent was obtained from all the patients with ventral hernia vernacular language. They were informed regarding study details and complications that may occur during intra & post-operative period before obtaining the consent.

Procedure: All patients were examined clinically, and a ventral hernia diagnosis was made with ultrasonography (USG) abdomen and pelvic confirmation. For anesthetic examination, routine laboratory tests, X-rays, and ECGs were conducted. Pre-operative care included improving nutritional status, weight loss, treating respiratory infections, practicing breathing exercises, and quitting smoking and drinking. Before admitting the patient to surgery, an anesthesia examination was performed. For 12 hours before to surgery, the patient was kept nil per oral (NPO). Depending on the patient and anesthetist's decision, spinal or general anesthesia was administered. A single broad-spectrum antibiotic was administered before to surgery, and the same antibiotic was continued for three days after surgery. Later, mesh repair surgery, either open or laparoscopic, was undertaken. Analgesics such as injection diclofenac sodium-2ml and tablet paracetamol-750 mg were administered for 2 days after surgery, followed by SOS.

Post-Operative Care & Complication Management: During the post operative period, all patients were maintained supine, vital parameters were collected (blood pressure, pulse rate, oxygen saturation level, temperature), and pain, haemorrhage, seroma, paralytic ileus, hematoma, wound infection, and gaping were carefully monitored. A verbal graphic rating scale was used to assess pain. A wound infection could range from a simple discharge of pus from a single cutaneous stitch to a complex and invasive process needing hospitalisation and

intravenous antibiotics. Another complication is a subcutaneous hematoma caused by improper knots or cautery.

Discharge: All patients were discharged after they were considered fit to resume their normal daily activities. Patients were advised to return for routine checkups after 15 days, 1, 3, 6 months, and 1 and 2 years. Different patients were followed for varying lengths of time. Patients were recommended to return to their pre-hernia lifestyle, with the exception of heavy lifting. All were followed up on for post-operative pain, interference with daily living activities, analgesic use, and recurrence.

Data Collection: Data on the patients' personal information, anthropometric measurements, previous medical & surgical history, and any laboratory or radiological findings were obtained. Before the surgery, data was collected using a predesigned, pretested, and semi-structured proforma by a personal interview approach. Any complications or recurrences were noted during each follow-up consultation.

Method of Statistical Analysis: The collected data was entered in Microsoft Excel-2019, which was used for generating pie-charts, bar diagrams and tables. Data was represented in percentages & frequencies. Appropriate statistical tests were applied where necessary. Data analysis was done by using SPSS Version-25 software (trail version)**.**

RESULTS

TABLE-1: AGE DISTRIBUTION OF PATIENTS IN RELATION TO VENTRAL HERNIA

AGE GROUP	NUMBER OF PATIENTS	PERCENTAGE (%)
18-30 YEARS	01	1.6%
31-45 YEARS	37	58.7%
46-60 YEARS	25	39.7%
TOTAL	**63**	**100%**
MEAN±STANDARD DEVIATION OF AGE=42.9 ±7.65 YEARS		

CHART-1: DISTRIBUTION OF PATIENTS BASED ON AGE

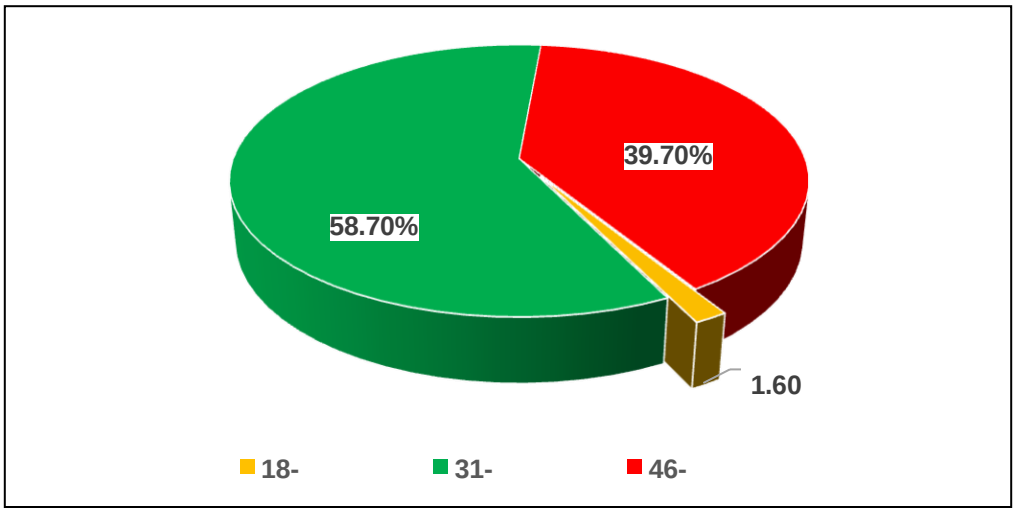

Table-1 & chart-1 shows the distribution of patients based on age, majority 60 p.c (30) of the patients were in the age group of 31-45 years followed by 46-60 years age group 38 p.c (19) and 2.0 p.c (01) patients were in the age group 18-30 years respectively. The mean age of the patients was 42.8 years with a standard deviation of 6.4 years respectively. The incidence of ventral hernia was more common in 31-45years age group (37 out of 63 patients were with ventral hernia).

TABLE-2: GENDER DISTRIBUTION OF PATIENTS IN RELATION TO VENTRAL HERNIA

GENDER	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS (%)
MALE	21	33.3%
FEMALE	42	66.7%
TOTAL	**63**	**100%**

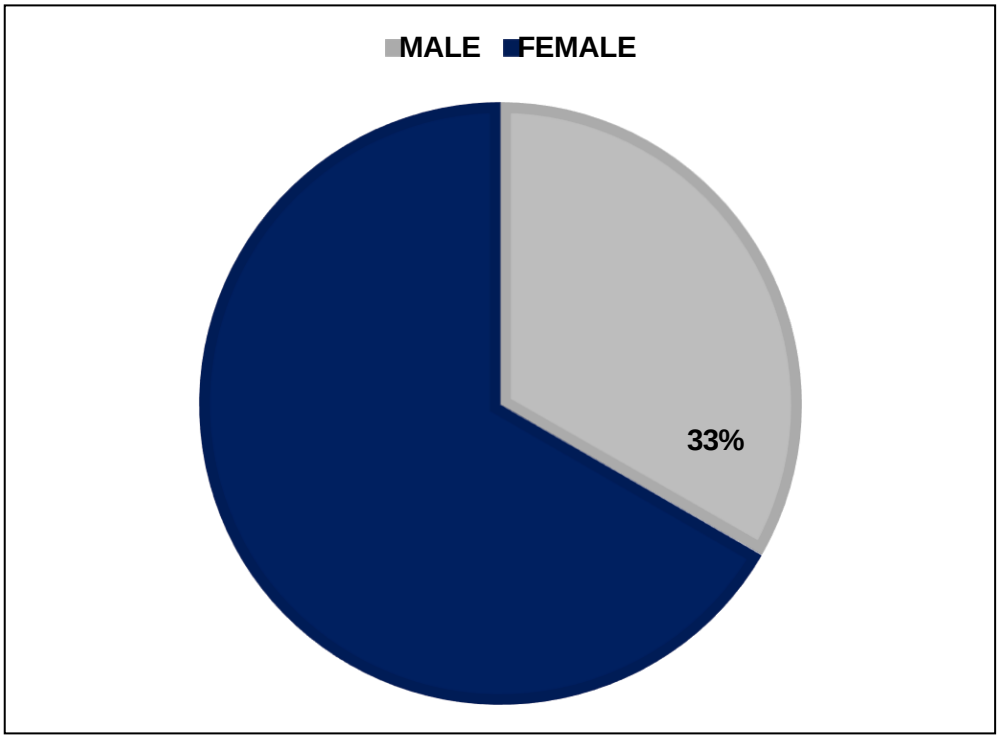

CHART-2: GENDER DISTRIBUTION

Table-2 and chart-2 shows the distribution of patients based on gender, majority 66.7 p.c (42) of the patients were females and 33.3 p.c (21) patients were males respectively. The incidence of ventral hernia was more common among females (42 out of 63 patients were with ventral hernia).

TABLE-3: DISTRIBUTION OF PATIENTS BASED ON CLINICAL TYPES OF VENTRAL HERNIA

TYPE OF VENTRAL HERNIA	NUMBER OF PATIENTS	PERCENTAGE (%)
EPIGATRIC HERNIA	20	31.7%
UMBILICAL HERNIA	12	19%
PARAUMBILICA LHERNIA	31	49.2%
TOTAL	**63**	**100%**

CHART-3: VENTRAL HERNIA CLINICAL TYPES

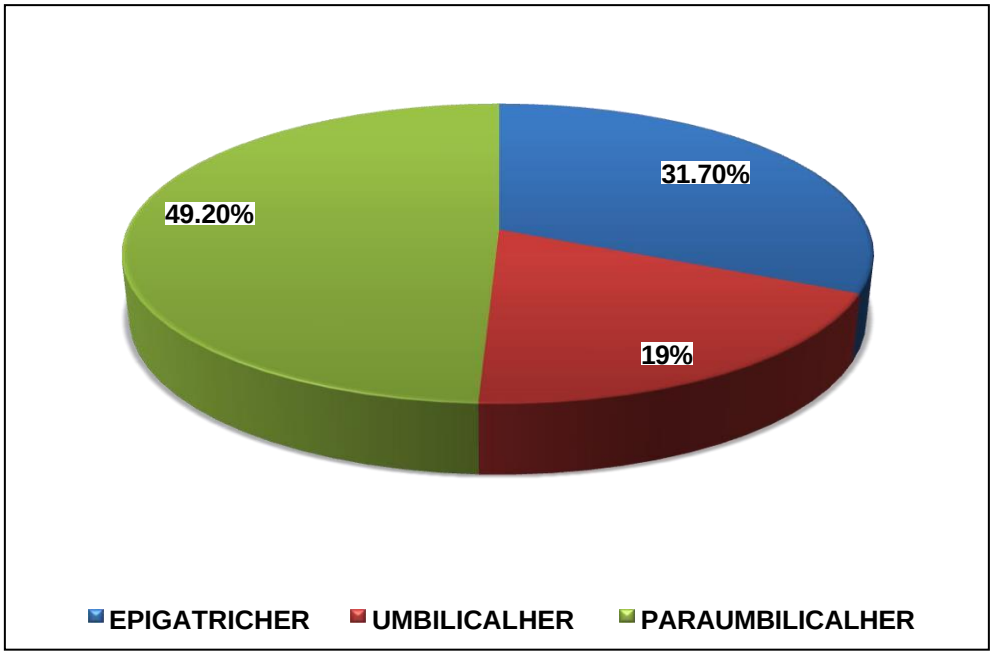

Table-3 and chart-3 shows the distribution of patients based on clinical types of ventral hernia, majority 49.2 p.c (31) of the patients were with paraumbilical hernia followed by epigastric hernia among 31.7 p.c (20) of the patients and 19 p.c (12) of the patients were with umbilical hernia respectively.

TABLE-4: DISTRIBUTION OF PATIENTS BASED ON CLINICAL MANIFESTATIONS

CLINICAL MANIFESTATIONS	NUMBER OF PATIENTS	PERCENTAGE (%)
SWELLING	30	47.6%
SWELLING WITH PAIN	26	41.3%
SWELLING WITH IRREDUCIBILITY	5	7.9%
SWELLING WITH INTESTINAL OBSTRUCTION	2	3.2%

CHART-4: CLINICAL MANIFESTATIONS IN VENTRAL HERNIA

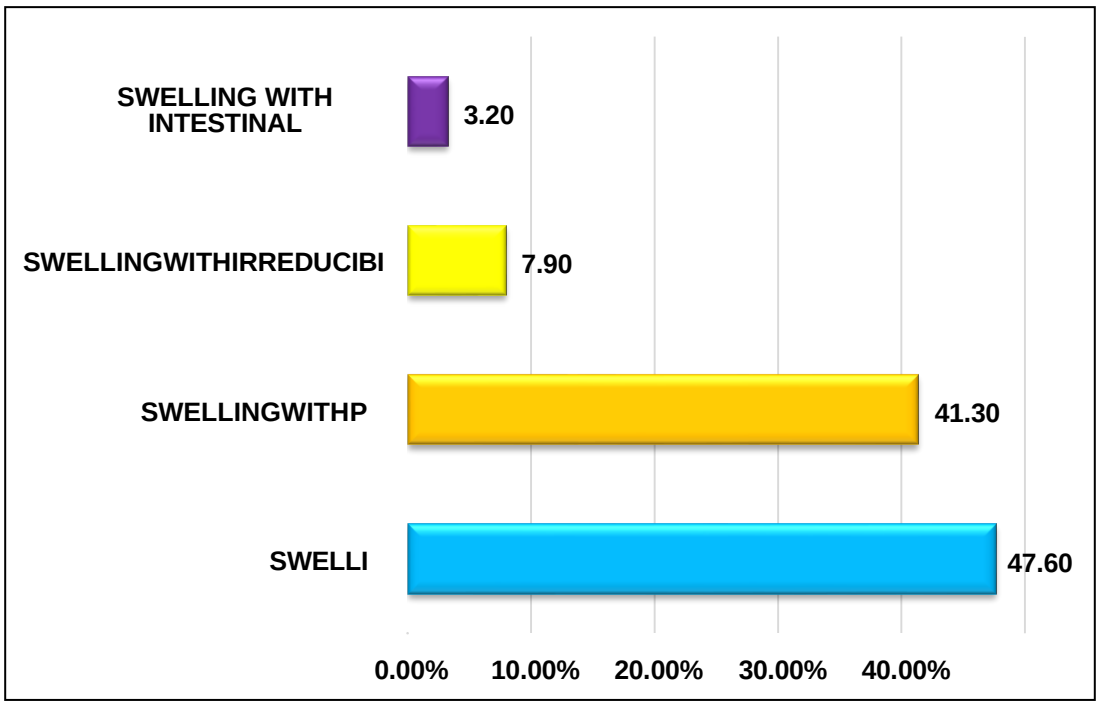

Table-4 and chart-4 shows the distribution of patients based on clinical manifestations, majority 47.6 p.c (30) of the patients had only swelling followed by swelling with pain among 41.3 p.c (26) of the patients, 7.9 p.c (5) of the patients had swelling with irreducibility and 3.2 p.c (2) of the patients had swelling with intestinal obstruction.

TABLE-5: DISTRIBUTION OF PATIENTS BASED ON SIZE OF DEFECT

SIZE OF DEFECT	NUMBER OF PATIENTS	PERCENTAGE (%)
<2 centimeters	30	47.6
2-3 centimeters	26	41.3

>3 centimeters	7	11.1
Total	**63**	**100%**

CHART-5: SIZE OF DEFECT

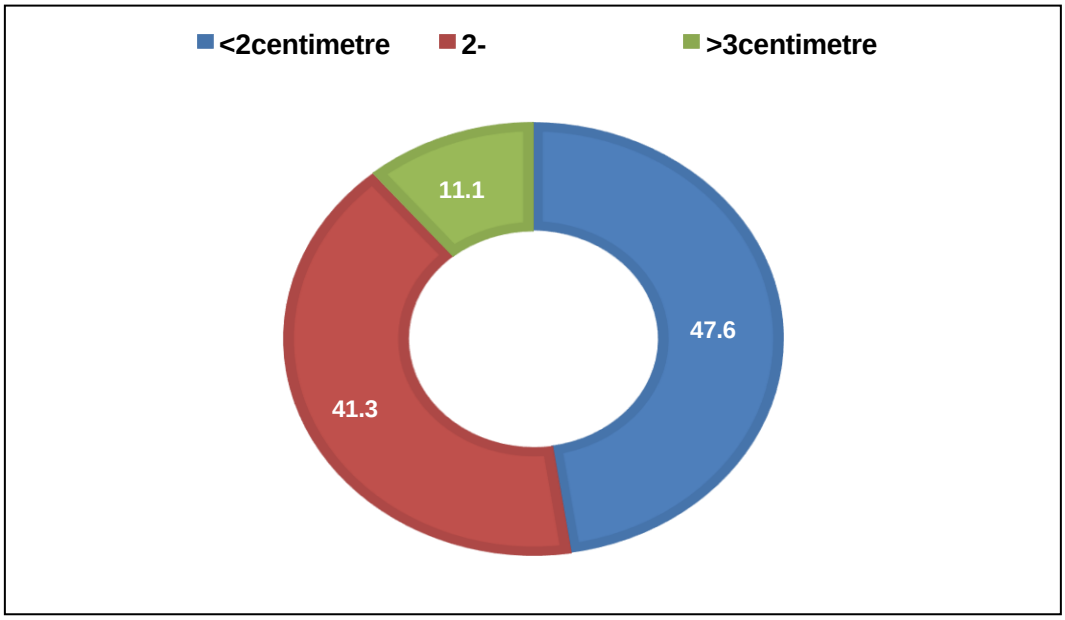

Table-5 and chart-5 shows the distribution of patients based on size of the defect in the anterior abdominal wall, majority 47.6 p.c (26) of the patients had a defect size of <2 centimeters followed by defect size of 2-3 centimeters among 41.3 p.c (26) of he patients and 11.1 p.c (7) of the patients had a defect size of >3 centimeters respectively.

TABLE-6: DISTRIBUTION OF PATIENTS BASED ON BODY MASS INDEX

BODY MASS INDEX (kg/m^2)	NUMBER OF PATIENTS	PERCENTAGE (%)
<18.5- UNDER WEIGHT	12	19%
18.5–24.9- NORMAL	33	52.4%
25.0–29.9- OVER WEIGHT	12	19%
≥30-OBESE	06	9.5%
TOTAL	**63**	**100%**

Table-6 shows the distribution of patients based on BMI, majority 52.4 p.c (33) of the patients were with normal BMI followed by 19 p.c (12) of the patients with under weight & over weight

each, and 9.5 p.c (6) of the patients were obese.

TABLE-7: DISTRIBUTION OF PATIENTS BASED ON RISK FACTORS OF VENTRAL HERNIA

RISK FACTORS	NUMBER OF PATIENTS	PERCENTAGE (%)
Obesity	6	9.5
Anemia	6	9.5
Smoking	6	9.5
Constipation	21	33.3%
Diabetes	8	12.7%
Hypertension	13	20.6%
Benign prostate hypertrophy	6	9.5%

Table-7 shows the distribution of the patients based on risk factors of ventral hernia, majority 33.3 p.c had constipation followed by 20.6 p.c (13) of the patients had HTN, 12.7 p.c (8) had diabetes, and 9.5 p.c (6) each had BPH, obesity, anemia, harmful habit of smoking.

TABLE-8: DISTRIBUTION OF PATIENTS BASED ON OPERATIVE PROCEDURE

OPERATIVE PROCEDURE	NUMBER OF PATIENTS	PERCENTAGE (%)
Open hernia repair	39	61.9%
Laparoscopic hernia repair	24	38.1%
TOTAL	**63**	**100%**

Table-8 shows the distribution of the patients based on type of operative procedures, majority 61.9 p.c (39) of the patients had received open hernia repair and 38.1 p.c of the patients had received laparoscopic hernia repair respectively.

TABLE-9: DISTRIBUTION OF PATIENTS BASED ON DURATION OF CLINICAL HISTORY IN RELATION TO OPERATIVE PROCEDUE

CLINICAL HISTORY DURATION	LAPAROSCOPIC HERNIA REPAIR	OPEN HERNIA REPAIR
<1 YEAR	4(20.5%)	8(20.5%)

1 To 2 YEARS	10(33.3%)	13(33.3%)
3 To 4 YEARS	5(17.9%)	7(17.9%)
>4 YEARS	5(28.2%)	11(28.2%)

Table 9 shows the distribution of patients based on duration of clinical history in relation to operative procedure, majority 33.3 p.c of the patients in open & laproscopic hernia repair group had clinical history duration of 1-2 years, 28.2 p.c of the patients in open & laproscopic hernia repair group had clinical history duration of >4years, 20.5p.c of the patients in open & laproscopic hernia repair group had clinical history duration of <1 year, and17.9 p.c of the patients in laparoscopic hernia repair group had clinical history duration of 3-4 years.

TABLE-10: DISTRIBUTION OF THE PATIENTS BASED ON POST-OPERATIVE DURATION

POST-OPERATIVE DURATION	NUMBER OF PATIENTS	PERCENTAGE (%)
≤24 Hours	52	82.5%
>24 Hours	11	17.5%
Total	**63**	**100%**

Table-10 shows the distribution of the patients based post-operative duration, majority 82.5 p.c (52) of the patients had post-operative duration of less than Or equal to 24 hours and 17.5 p.c (11) of the patients had post-operative duration of greater than 24 hours respectively.

TABLE-11: DISTRIBUTION OF THE PATIENTS BASED ON POST-OPERATIVE HOSPITAL STAY

POST-OPERATIVE HOSPITAL STAY (IN DAYS)	NUMBER OF PATIENTS	PERCENTAGE (%)
≤3 DAYS	6	9.5%
4 TO 6 DAYS	48	76.2%
≥7 DAYS	9	14.3%
Total	**63**	**100%**
MEAN ± S.D = 5.36 ± 1.64 DAYS		

Table-11 shows the distribution of patients based on the post-operative hospital stay, majority 76.2 p.c (48) of the patients stayed for 4-6days followed by 14.3p.c(9) stayed for ≥7days and 9.5 p.c (6) of the patients stayed for ≤3 days respectively.

TABLE-12: DISTRIBUTION OF PATIENTS BASED ON POST-OPERATIVE PAIN

POST-OPERATIVE PAIN	NUMBER OF PATIENTS	PERCENTAGE (%)
MILD	19	30.2%
MODERATE	20	31.7%
SEVERE	24	38.1%

Table-12 shows the distribution of patients based on post operative pain, majority 38.1 p.c (24) of the patients had severe post-operative pain followed by 31.7 p.c (20) of the patients had moderate post-operative pain and 30.2 p.c (19) of the patients had moderate post-operative pain.

TABLE-13: DISTRIBUTION OF PATIENTS BASED ON POST-OPERATIVE COMPLICATIONS

POST-OPERATIVE COMPLICATIONS	PRESENT	ABSENT
ILEUS	11 (17.5%)	52(82.5%)
SEROMA	8 (12.7%)	55(87.3%)
INFECTION	6 (9.5%)	57 (9.5%)
LOWER LOBE PNEUMONIA	8 (12.7%)	55(87.3%)

Table-13 shows the post-operative complications among patients, majority 17.5p.c (11) of the patients had ileus, followed by12.7 p.c with seroma & gasping, and 9.5 p.c (6) with infection.

TABLE-14: RETURN TO REGULAR ACTIVITIES VS TYPE OF OPERATIVE PROCEDURE

LAPAROSCOPIC HERNIA REPAIR	OPEN HERNIA REPAIR
25.54±3.06	24.92±3.03

Table-14 shows the distribution of patients based on return to regular activities (in days) in relation to type of operative procedure, among the patients who had undergone laparoscopic hernia repair surgery returned to regular activities in 25.5 days while the patients who had undergone open hernia repair surgery returned to regular activities in 24.9 days respectively.

TABLE-15: HOSPITAL STAY & NPO STATUS DURATION VS OPERATIVE PROCEDURE

PARAMETER	LAPAROSCOPIC HERNIA REPAIR	OPEN HERNIA REPAIR
HOSPITAL STAY DURATION (DAYS)	5.50±1.44	5.28±1.78
NPO STATUS DURATION (DAYS)	1.10±0.31	1.2± 0.41

Table-15 shows the distribution of patients based on hospital stay duration (in days) in relation to type of operative procedure, among the patients who had undergone laparoscopic hernia repair surgery stayed in the hospital for 5.5 days. While the patients who had undergone open hernia repair surgery stayed in the hospital for 5.2 days respectively. The distribution of patients based on NPO status duration (in hours) in relation to type of operative procedure, among the patients who had under gone laparoscopic hernia repair surgery NPO status was for 1.1 days while the patients who had undergone open hernia repair surgery NPO status was for 1.2 days respectively.

The cost of laparoscopic hernia repair surgery was 7 times higher than open hernia repair surgery. This was mainly due to the expensiveness of synthetic mesh and the mesh fixation device which was used in laparoscopic surgery.

DISCUSSION

A total number of sixty-three ventral hernia patients were included in the study during the study period of two years from 1st December 2020 to 30th November 2022. The study was done in the Department of Surgery of Siddhartha Medical College and General Hospital, Vijayawada, Andhra Pradesh. A purposive sampling method was used to select ventral hernia patients who were in accordance with inclusion criteria.

1. AGE

In the present study, majority 60 p.c of the patients were in the age group of 31-45 years followed by 46-60 years age group 38 p.c and 2.0 p.c patients were in the age group 18-30 years respectively. The mean age of the patients was 42.8 years with a standard deviation of 6.4 years respectively.
In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015, the youngest patient was 8 years old and the oldest was 74 years old. The mean age of the patients was reported to be 41 years. Jaykar R D *et al.* study results were similar to the present study results in terms of age.

In the study titled A clinical study and different modalities of management of ventral hernias conducted by Lavanya S *et al.* in the year 2017, about 62 p.c cases were between the age range of 21-60 years with majority in the age group of 31-40 year. Lavanya S *et al.* study results were similar to the present study results in terms of age.[6]

2. GENDER
In the present study, majority 66.7 p.c of the patients were females and 33.3 p.c patients were males respectively. The incidence of ventral hernia was more common among females (42 out of 63 patients were with ventral hernia).

In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015, about 33 patients were females and 17 patients were males. Jaykar R D *et al.* study results were similar to the present study results in terms of gender.

In the study titled A clinical study and different modalities of management of ventral hernias conducted by Lavanya S *et al.* in the year 2017, the overall female to male ratio was approximately 2:1, with 66 p.c females and 34 p.c male patient. Lavanya S *et al.* study results were similar to the present study results in terms of gender. [7]

3. TYPE OF VENTRAL HERNIA
In the present study, majority 49.2 p.c of the patients were with paraumbilical hernia followed by epigastric hernia among 31.7 p.c of the patients and 19 p.c of the patients were with umbilical hernia respectively.

In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015, incisional hernia was the most common variety observed among 44 p.c of the patients followed by umbilical hernia among 32 p.c of the patients and epigastric hernia among 10 p.c of the patients. Jaykar R D *et al.* study results were not similar to the present study results in terms of ventral hernia type.[8]

4. CLINICAL MANIFESTATIONS OF VENTRAL HERNIA

In the present study, majority 47.6 p.c of the patients had only swelling followed by swelling with pain among 41.3 p.c of the patients, 7.9 p.c of the patients had swelling with irreducibility and 3.2 p.c of the patients had swelling with intestinal obstruction.

In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015, majority 64 p.c of the patients had only swelling followed by swelling with pain among 20 p.c of the patients, 12 p.c of the patients had swelling with irreducibility and 4 p.c of the patients had swelling with intestinal obstruction.

5. SIZE OF DEFECT

In the present study, majority 47.6 p.c of the patients had a defect size of <2 centimeters followed by defect size of 2-3 centimeters among 41.3 p.c of the patients and 11.1 p.c of the patients had a defect size of >3 centimeters respectively In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015, majority 64 p.c of the patients had a defect size of less than 2 centimeters followed by defect size of 2-3 centimeters among 24 p.c of the patients and 12 p.c of the patients had a defect size of greater than 3 centimeters. Jaykar R D*et al.* study results were similar to the present study results in terms of defect size in ventral hernia.

6. RISK FACTORS OF VENTRAL HERNIA

In the present study, majority 33.3 p.c had constipation followed by 20.6 p.c of the patients had HTN, 12.7 p.c had diabetes, and 9.5 p.c each had BPH, obesity, anemia, harmful habit of smoking.

In the study titled A clinical study of ventral hernia conducted by Jaykar R D *et al.* in the year 2015 reported that patients were treated preoperatively and after control of diabetes & hypertension they were posted for surgery. Constipation was found to be one of the major risk factors for interfering with wound healing and precipitating incisional hernia, even after a repair. Majority 34 p.c of the patients had constipation followed by 8 p.c of the patients had diabetes, 12 p.c of the patients each had BPH, 16 p.c of the patients had a harmful habit of smoking, 16 p.c of the patients had obesity and only 6 p.c of the patients had anemia. Jaykar R D *et al.* study results were similar to the present study results in terms of risk factors in ventral hernia. [9]

9. NPO STATUS DURATION VS OPERATIVE PROCEDURE

In the present study, among the patients who had undergone laparoscopic hernia repair surgery NPO status was for 1.1 days while the patients who had undergone open hernia repair surgery NPO status was for 1.2 days respectively.

In the study titled Outcome of laparoscopic ventral hernia repair in correlation with obesity, type of hernia, and hernia size conducted by Raftopoulos I *et al.*62 in the year 2002, it was reported that length of NPO status was 10 hours in laparoscopic hernia repair group and 55.38 hours in open hernia repair group.

7. BODY MASS INDEX (BMI) IN VENTRAL HERNIA

In the present study, majority 52.4 p.c of the patients were with normal BMI followed by 19 p.c of the patients with underweight & over weight each, and 9.5 p.c of the patients were obese. In the study titled Risk factors for surgical complications in ventral hernia repair conducted by Mikael Lindmark *et al.* in the year 2014, it was reported that the median BMI was 29 kg/m2. Majority of the patients were overweight.

8. OPERATIVE PROCEDURE IN VENTRAL HERNIA

In the present study, majority 61.9 p.c of the patients had received open hernia repair and 38.1 p.c of the patients had received laparoscopic hernia repair respectively.

In the study titled A clinical study and different modalities of management of ventral hernias conducted by Lavanya S *et al.* in the year 2017, it was reported that both open and laparoscopic, anatomical and mesh repairs were performed. Majority 54 p.c of the patients were treated with mesh repair, in which 81 p.c were on-lay and 19 p.c were in-lay. Laparoscopic repair was done in 26 p.c of the cases. Anatomical repair was done in 20 p.c of the cases which included simple suturing in 12 p.c of the patients, Mayo's repair in 6 p.c of the patients, Shoelace darn repair in 2 p.c of the patients. Over all about 74 p.c of the patients received open.[10]

CONCLUSION

The incidence of ventral hernias was more among females when compared to males. The operative procedure conducted through laparoscopy for ventral hernia repair gave more promising results than open ventral hernia repair in terms of decreased postoperative pain, complications, duration of hospital stay, and return to normal activity duration. In terms of cost-effectiveness, open hernia repair was more beneficial when compared to laparoscopic hernia repair. Still, due to government initiatives towards helping the poor through medical & surgical expenses, laparoscopic hernia repair was more advisable.

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