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A Prospective Study of Patient with Ventral Hernia and its Laproscopic Management

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Abstract

Background: Ventral hernias pose a significant surgical challenge, with laparoscopic techniques emerging as a promising approach. This prospective observational study aimed to evaluate the demographics, clinical presentation, operative procedures, and outcomes of patients undergoing laparoscopic ventral hernia repair.

Methods: Forty-nine patients with ventral hernias were prospectively assessed from October 2020 to December 2022 at a tertiary care center. Demographic data, clinical presentation, operative details, and postoperative complications were recorded.

Results: The cohort comprised 65.3% females, with incisional hernias being the most common type (59.2%). Laparoscopic intraperitoneal onlay mesh repair was the primary operative procedure (93.87%). Intraoperative complications were infrequent (6.12%), with postoperative mobilization occurring primarily on day 1 (85.7%). Postoperative complications included chronic pain (8.16%), seroma (4.08%), and mesh infection (2.04%).

Conclusion: Laparoscopic ventral hernia repair demonstrated favorable outcomes in terms of operative procedures and postoperative mobilization. However, postoperative complications necessitate careful consideration and management. Further research is needed to refine surgical techniques and optimize long-term outcomes.

Keywords: Ventral Hernia, Laparoscopic Repair, Operative Procedure, Postoperative Complications.

Introduction

Ventral hernias pose a significant challenge in surgical practice, often leading to discomfort, impaired quality of life, and potential complications if left untreated. [1]These hernias occur when abdominal tissues protrude through a weakened area in the abdominal wall, resulting in a noticeable bulge or lump. While traditional open surgical repair has long been the standard treatment, laparoscopic techniques have emerged as a promising alternative offering several advantages.[2,3]

This prospective study aims to investigate the efficacy, safety, and outcomes of laparoscopic management in patients with ventral hernias. By conducting a thorough evaluation of this approach, we seek to contribute to the existing body of knowledge, potentially guiding clinical decision-making and improving patient care.[4,5]

The introduction of laparoscopic surgery revolutionized the field of hernia repair by offering minimally invasive procedures with reduced postoperative pain, shorter hospital stays, and quicker recovery times compared to

open surgery. However, despite these apparent benefits, further research is necessary to comprehensively assess the long-term outcomes and complications associated with laparoscopic ventral hernia repair.[6]

By prospectively collecting data and analyzing the results, we aim to provide valuable insights into the feasibility and effectiveness of laparoscopic management in this patient population.

Methodology

The present study was conducted as a prospective observational study at the outpatient department of Indira Gandhi Govt. Medical College and Hospital, Nagpur, within the Department of Surgery, from October 2020 to December 2022.

Patients diagnosed clinically and radiologically with ventral hernia were included in the study, provided their defect size was less than 12 cm in diameter. Patients with Koch's abdomen, complicated ventral hernias, those who did not give consent, pregnant women, individuals with cirrhosis of the liver with ascites, and patients with an ASA grade equal to or greater than 4 were excluded from the study. Additionally, patients with post-laparoscopic recurrent hernia were not considered eligible for inclusion.

Preoperative workup involved diagnostic investigations, including ultrasonography of the abdomen and pelvis to evaluate defect size and detect any complicated ventral hernias or other abdominal pathologies. CT abdomen scans were conducted for patients with recurrent hernias or large complicated hernias. Investigations for fitness included a complete blood count, random blood sugar, renal function test, serum electrolytes, bleeding time and clotting time, urine routine and microscopy, X-ray of the chest, and ECG.

Operative procedures comprised laparoscopic intraperitoneal onlay mesh repair using proceed mesh, laparoscopic fascial closure by intracorporeal suturing, application of titanium tacks for mesh fixation, and application of a cotton ball with an abdominal binder for six weeks postoperatively. Patients were operated on in the supine position under general anesthesia, with catheterization and nasogastric tube insertion performed prior to surgery. The defect was marked using a skin marking pen after painting and draping, with the surgeon and cameramen positioned on the left side of the patient and the monitor placed on the right side. A single dose of Ceftriaxone 1 gm was administered preoperatively. The Veress needle was inserted through the abdominal wall at the left palmar point, and pneumoperitoneum was created. The left palmar point below the left subcostal margin in the midclavicular line was utilized for 10 mm optical port insertion as the primary port, with two additional 5 mm ports placed on the left side to achieve ergonomic triangulation. Additional ports were utilized on the opposite side if necessary. Hernial contents were carefully reduced with dissection, and adhesiolysis was performed to reduce the risk of bowel perforation. If the defect was less than 4 cm, laparoscopic intracorporeal suturing was performed using Polypropylene suture no.1 round body material.

Results

During the time period provided, a total of 49 individuals were assessed after being a dmitted with a ventral hernia diagnosis prospectively.49 patient studied from which 65.3% (32) Female and 34.6 %(17) male. In our study, Out of 49 patient 32(65.3%) patient presented with swelling or bulge,10 (20.4%) patient presented with swelling with pain And 7 patient (14.2%) presented with swelling with symptom of irreducibility.In our study,

Out of 49patients, 29 patients(59.2%) had incisional hernias, 12 patient (24.4%) had umbilical hernias, 4

(12.2%) had epigastric hernias, and 1 patient (2.04%) had spigelian and 1 patient (2.04%) lumbar hernia.

In our study, out of 29 patient, 10 (34.4%) patient are obese,7 (24.1%) patient are suffering from type 2 diabetes melitus, 4 (13.7%) patients are known case of copd and 1 (3.4%) patient suffering from pt is pulmonary TB.

IN our study, 3 (6.12%) patient had intraoperative haemorrhage and 1(2.04%) patient had iatrogenic hollow viscus perforation during adhesiolysis.

Table 1: Type of operative procedure

Type of surgery	No of patient	Percentage
Laproscopic intraperitoneal onlay mesh repair	46	93.87%
Laproscopic fascial closure by intracorporial suturing	3	6.12%
Total	49	100%

Out of 49 patient,42(85.7%) patient was mobilized on day 1 and 4(8.16%) patient was mobalized on day 2 And 3 (6.12%) patient was mobalized on day 3.

Table 2: Postoperative complication

	No. of patient	Percentage
Chronic Pain	4	8.16
Seroma	2	4.08%
Postoperative Bulging	2	4.08%
Port Site Infection	3	6.12%
Mesh Infection	1	2.O4%
Recurrence	1	2.04%

Discussion

The findings of this prospective study shed light on various aspects of ventral hernia management, particularly focusing on laparoscopic techniques and associated outcomes. The demographic distribution of patients in our study reflects a higher prevalence of ventral hernias among females, comprising 65.3% of the cohort, compared to males (34.6%). This gender disparity in hernia presentation is consistent with previous studies, which have attributed it to factors such as pregnancy, childbirth, and hormonal influences predisposing women to abdominal wall weakening and herniation.[7]

Among the patients assessed, the most common presenting symptom was a swelling or bulge, reported by 65.3% of individuals. This aligns with the typical clinical manifestation of ventral hernias and underscores the importance of recognizing such physical signs for timely diagnosis and intervention. Additionally, a significant proportion of patients (20.4%) presented with swelling accompanied by pain, highlighting the potential impact of hernias on patient discomfort and quality of life. Notably, a smaller subset of patients (14.2%) presented with symptoms of irreducibility, indicating the need for prompt surgical evaluation to prevent complications such as bowel incarceration or strangulation.[8]

Regarding hernia types, incisional hernias were the most prevalent in our study, accounting for 59.2% of cases, followed by umbilical hernias (24.4%) and epigastric hernias (12.2%). This distribution reflects the common etiologies of ventral hernias, with surgical incisions and abdominal wall weaknesses predisposing individuals to herniation at these sites. The identification of less common hernia types, such as spigelian and lumbar hernias, underscores the importance of comprehensive preoperative evaluation and tailored surgical approaches based on hernia characteristics.[9,10]

An intriguing aspect of our study is the association between patient comorbidities and hernia presentation. Among patients with incisional hernias, a notable proportion were obese (34.4%), highlighting the impact of obesity on abdominal wall integrity and hernia development. Furthermore, a considerable percentage of patients had comorbid conditions such as type 2 diabetes

mellitus (24.1%), COPD (13.7%), and pulmonary tuberculosis (3.4%), emphasizing the multifactorial nature of hernia pathogenesis and the importance of addressing underlying medical issues in surgical planning and postoperative care.[11]

Intraoperative complications were infrequent but noteworthy, with 6.12% of patients experiencing intraoperative hemorrhage and 2.04% suffering from iatrogenic hollow viscus perforation during adhesiolysis. While laparoscopic techniques offer advantages such as improved visualization and reduced tissue trauma, these complications underscore the importance of surgical expertise and vigilance during complex procedures, particularly in cases involving extensive adhesions or anatomical challenges.

The primary operative procedure employed in our study was laparoscopic intraperitoneal onlay mesh repair, performed in 93.87% of cases. This approach has gained popularity due to its minimally invasive nature and favorable outcomes in terms of recurrence rates and postoperative recovery. The relatively low utilization of laparoscopic fascial closure by intracorporeal suturing (6.12%) may reflect surgeon preference or patient-specific factors influencing surgical decision-making.

Postoperative mobilization is a crucial aspect of hernia management, aimed at promoting early ambulation and reducing the risk of complications such as deep vein thrombosis and respiratory compromise. In our study, the majority of patients (85.7%) were mobilized on the first postoperative day, highlighting the feasibility and safety of early ambulation following laparoscopic ventral hernia repair. However, a small subset of patients required delayed mobilization, emphasizing the need for individualized postoperative care based on patient tolerance and surgical complexity.

Postoperative complications, though relatively low in frequency, warrant attention due to their potential impact on patient outcomes and quality of life. Chronic pain was reported by 8.16% of patients, emphasizing the importance of thorough preoperative counseling and multimodal pain management strategies. Seroma formation, postoperative bulging, and port site infections were also observed in a subset of patients, underscoring the importance of meticulous surgical technique, perioperative antibiotics, and postoperative wound care protocols to minimize such complications.

Mesh infection and recurrence, though infrequent, represent significant concerns in hernia repair surgery. The observed incidence of mesh infection (2.04%) underscores the need for strict adherence to sterile techniques, proper mesh selection, and antibiotic prophylaxis to mitigate infectious risks. Similarly, the occurrence of hernia recurrence (2.04%) highlights the challenges in achieving durable repair outcomes, necessitating ongoing surveillance and refinement of surgical techniques to optimize long-term success rates.

Conclusion

In conclusion, our study provides valuable insights into the demographic characteristics, clinical presentation, surgical management, and outcomes of patients with ventral hernias undergoing laparoscopic repair. Despite the overall favorable outcomes observed, the identification of intraoperative complications and postoperative morbidities underscores the importance of meticulous surgical technique, patient selection, and perioperative care protocols to optimize treatment outcomes and minimize complications. Further research is warranted to elucidate optimal strategies for hernia prevention, management of complex cases, and long-term recurrence prevention.

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