

**ORIGINAL ARTICLE****Insights into Incisional Hernia: A Prospective Analytical Study on Epidemiology and Advanced Management Strategies**<sup>1</sup>Amit Agrawal, <sup>2</sup>Motilal, <sup>3</sup>Ajit Kumar Verma<sup>1</sup>Assistant Professor, Department of General Surgery, Gold Field Institute of Medical Sciences, Faridabad, Haryana, India;<sup>2</sup>Associate Professor, Department of General Surgery, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India;<sup>3</sup>Associate Professor, Santosh College of Occupational Therapy, India**ABSTRACT:**

**Background:** A hernia occurs when viscera, or a portion of viscera, pushes through either a regular or an irregular opening in the wall of the body cavity that normally contains it<sup>1</sup>. Specifically, a ventral hernia refers to any hernia that protrudes through the abdominal wall, while an Incisional hernia (IH) is one that emerges through a surgical scar. Numerous studies indicate that individuals who undergo abdominal surgeries face a 10% to 20% probability of developing an Incisional hernia (IH). **Methods:** This is a prospective study that focused on patients who were admitted to the hospital. A total of 70 cases involving various types of hernias were operated on during this study. Specifically, 30 cases of incisional hernias were part of the study group. In this series, patients who were admitted to surgical wards across all surgical units were carefully examined to evaluate abdominal wall defects, as well as to identify any underlying causes and predisposing factors<sup>2</sup>. Following the comprehensive physical examinations of the patients, clinical diagnoses were established, which also encompassed identifying any associated etiological and predisposing factors. **Results:** During the duration of our study, a total of 70 patients underwent hernia surgery, with 30 of these cases being incisional hernias. The most prevalent type of hernia observed was inguinal hernia, making up 41.46% of cases, while incisional hernias accounted for 40% of the cases. Other less common types of hernias constituted 18.34% of the total cases examined. **Conclusion:** Mesh repair has been shown to be more effective in preventing hernia recurrence compared to anatomical repair for incisional hernias. Incisional hernias are more frequently observed in women than men, primarily due to abdominal wall weakening as a result of multiple pregnancies, an increased number of cesarean sections, and gynecological surgeries. To minimize the occurrence of incisional hernias, it is crucial to employ a sterile aseptic technique during surgery and administer appropriate pre-operative antibiotics.

**Keywords:** ventral hernia, Incisional hernia, multiple pregnancies, gynaecological surgeries.

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**INTRODUCTION**

A hernia is characterized by the protrusion of viscera or a portion of viscera through an opening, whether normal or abnormal, in the wall of its enclosing cavity<sup>3</sup>. Specifically, a ventral hernia pertains to any hernia that protrudes through the abdominal wall, whereas an Incisional hernia (IH) is a hernia that emerges through a scar from a prior surgical operation. Studies have revealed that individuals who undergo abdominal surgeries face a risk ranging from 10% to 20% of developing Incisional hernia (IH). The incidence of IH is influenced by several factors, including the type of surgery, the underlying disease or pathology, the duration of the surgical procedure, the surgical technique employed, the patient's age and characteristics, any co-existing medical conditions, and the occurrence of post-operative complications. Notably, morbidly obese patients are at a higher risk of developing IH. Numerous risk factors contribute to the development of Incisional hernias (IH), encompassing both patient-related and surgeon-related factors. Among the significant patient-related

risk factors are obesity, chronic lung diseases, type 2 diabetes, male gender, advanced age, smoking, malnutrition, steroid use, chemotherapy, anemia, collagen vascular disorders, and the occurrence of wound infections, among others. Surgeon-related risk factors include factors such as the choice of wound closure methods and suture materials. Clinically, Incisional hernias are characterized as "a visible and palpable bulge that becomes apparent when the patient is in a standing position, often requiring either support or surgical repair. With the advancements in safe anesthesia, antibiotic use, closed suction drainage, the utilization of prosthetic mesh, access to transfusion facilities, improved knowledge of fluid therapy, and enhanced preoperative and postoperative care, the cure rate for hernia repair has approached nearly 100 percent. Studies indicate that the primary indications for surgery are typically pain and an increase in the size of the hernia. Additionally, in certain cases, surgery may be necessary to address issues such as obstruction, strangulation, and the development of trophic ulcers. Contemporary

laparoscopic hernia repair techniques predominantly involve the intra-peritoneal inlay method, wherein a mesh is placed within the abdominal cavity and secured in position using either a tagging device or trans-abdominal sutures<sup>4</sup>. There is also a growing adoption of the Totally Extra-Peritoneal (TEP) repair method and its extended view variation, which are gaining popularity in surgical practice.

The current study seeks to evaluate and analyze several factors contributing to the development of incisional hernias, post-operative complications, various surgical repair approaches, and the outcomes associated with these techniques.

### MATERIAL AND METHODS

This study is designed as a prospective investigation, and it focuses on a group of patients who were admitted to the hospital. A total of 70 cases involving different types of hernias underwent surgical procedures. Within this group, 30 cases with incisional hernias were specifically included in the study for detailed examination and analysis.

The inclusion criteria for this study encompassed individuals of both sexes who were 10 years of age or older and had presented with incisional hernias following previous abdominal surgery. The exclusion criteria for this study involved individuals below the age of 10 years and those who presented with hernias other than incisional hernias, such as inguinal or ventral hernias.

In this study, patients who were admitted to surgical wards across all surgical units underwent a comprehensive examination to assess abdominal wall defects, as well as to identify etiological and predisposing factors<sup>5</sup>. This assessment involved taking detailed case histories and conducting thorough clinical examinations to determine both the type and underlying cause of the hernia. Necessary investigations were carried out according to a predetermined protocol. Following a meticulous physical examination of each patient, a clinical diagnosis was established, which also took into account any associated etiological and predisposing factors.

The decision regarding the appropriate method of repair was made on an individual basis for each case, taking into consideration the surgical need. Thirty cases ultimately underwent surgery, and these patients were prepared preoperatively to ensure their medical fitness for the surgical procedure. All cases were closely monitored for both immediate and late postoperative complications. The collected data was subsequently analyzed to identify predisposing factors, evaluate the advantages of different operative techniques, assess complications that arose, emphasize the importance of post-operative care, and determine the outcomes of the various surgical procedures performed.

### RESULTS

During the duration of our study, a total of 70 patients underwent surgery for various types of hernias, with 30 cases being attributed to incisional hernias. Inguinal hernias were the most prevalent type, accounting for 41.66% of the cases, while incisional hernias were the next most common at 40%. The remaining cases consisted of rare types of hernias, making up 18.34% of the total cases studied.

**Table 1: Incidence of incisional hernia**

Type	No of classes	Percentage
Inguinal	31	42.66
Incisional	28	40
Femoral	4	4
Umbilical	4	5.33
Paraumbilical	2	6.66
Epigastric	1	1.33
Total	75	100

**Table 2: Age distribution of incisional hernia**

Age	No of classes	Percentage
10-20	1	3.33
21-30	1	3.33
31-40	6	20
41-50	10	33.33
51-60	8	26.66
61-70	3	10
71-80	1	3.33
Total	30	100

In our study, we observed that the infraumbilical midline incision was the most frequently used type of incision, accounting for 43.33% of cases, surpassing other incision types<sup>6</sup>. Postoperative complications following previous surgeries were also noted, with wound infection occurring in 18% of cases and wound dehiscence in 32% of cases, making them the more common complications.

Interestingly, only 6 cases were repaired using the anatomical repair approach, whereas the majority of cases were addressed through onlay mesh repair. Among the 30 cases we studied, 15 experienced complications, and the most prevalent complication was wound seroma, accounting for 20% of cases. Notably, wound seroma was found to be more common in cases repaired with Prolene mesh compared to anatomical repair.

**Table 3: Incision Used in Previous Surgeries**

Type	No of cases	Percentage
Infraumbilical	13	43.33
Supraumbilical	7	23.33
Mid Midline	2	6.66
Right paramedian	2	6.66
Pfannenstiel	6	20
Total	30	100

## DISCUSSION

In our study, the incidence of Incisional hernia was found to be 40%, making it the second most common type of hernia observed, with inguinal hernia being slightly more prevalent at 41.66%. This incidence rate is notably higher than the range of 11-20% reported in a study conducted by Mutwali et al<sup>7</sup>. It's important to highlight that Incisional hernia remains a relatively common complication, and this occurrence can be attributed to a combination of patient-related and wound-related factors, despite the implementation of sound surgical techniques by skilled surgeons. Khaira H.S. et al. reported that among 35 patients, 6 developed seroma formation, and only 1 had wound infection. Tulaskar et al.'s study indicated that out of their participants, 14% experienced surgical site infection, 6.25% had seroma formation, and 3.1% had wound gaping.

In the current study, four different methods were employed for incisional hernia repair, with polypropylene mesh repair being the most common (63% of patients), followed by laparoscopic hernia repair (17%), the double breasting method (12%), and anatomical repair (8%). Notably, there were no reported recurrences during the 18-month follow-up period<sup>8</sup>.

In line with these findings, Usher reported a 0% recurrence rate in 48 patients who underwent polypropylene mesh repair. On the other hand, Jacobus W. A. et al. reported a 10-year cumulative recurrence rate of 63% in anatomical repair and 32% in mesh repair, suggesting that the choice of repair method significantly impacts the recurrence rate. The majority of studies, including Jenkins' study of 154 patients, recommend mesh repair as a superior option for reducing the recurrence of hernias compared to anatomical repair.

## CONCLUSION

Incisional hernias are more frequently observed in women than in men due to the weakening of the

abdominal wall, often caused by factors such as multiple pregnancies, an increased number of cesarean sections, and gynecological surgeries. Infraumbilical midline incisions should be reserved for surgeries where access to the lower abdomen and pelvic organs is essential. To mitigate the occurrence of incisional hernias, it is imperative to maintain a sterile aseptic technique during surgery and employ appropriate pre-operative antibiotics. The use of suction drains is recommended for both anatomical and mesh repairs to reduce post-operative complications, including seroma, wound infection, and wound gaping, thereby decreasing the likelihood of incisional hernia recurrence. Research suggests that mesh repair yields a lower recurrence rate compared to anatomical repair, making mesh repair the preferred choice. In cases of recurrent incisional hernias, laparoscopic hernia repair should be considered as the primary treatment option.

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