

## ORIGINAL RESEARCH

# Gaining Insights into Incisional Hernia: A Prospective Analytical Study on Epidemiology and Advanced Management Strategies

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## **ABSTRACT**

**Background:** A hernia is a condition where organs or a portion of organs protrude through an opening in the body cavity wall that should normally contain them. In the case of a ventral hernia, this protrusion occurs through the abdominal wall. An Incisional hernia (IH) is a specific type of ventral hernia that emerges through a surgical scar. Various studies have shown that individuals who have undergone abdominal surgeries have a 10% to 20% risk of developing an Incisional hernia (IH). **Methods:** This prospective study was conducted with a focus on patients who were admitted to the hospital for various types of hernias. The study involved a total of 140 cases, with 60 of them being individuals with incisional hernias and forming the study group. The patients admitted to the surgical wards across all surgical units underwent thorough examinations to assess abdominal wall defects and to identify any underlying causes and predisposing factors. **Results:** Throughout the course of our study, a total of 140 patients underwent hernia surgery, and among them, 60 cases were classified as incisional hernias. The most commonly observed type of hernia was the inguinal hernia, representing 41.46% of the cases, while incisional hernias accounted for 40% of the total cases. Less common types of hernias made up the remaining 18.34% of the cases examined. **Conclusion:** Research has demonstrated that mesh repair is more effective in preventing hernia recurrence when compared to anatomical repair, particularly for incisional hernias. Incisional hernias are more commonly observed in women than men, and this is often attributed to factors such as the weakening of the abdominal wall due to multiple pregnancies, an increased number of cesarean sections, and gynecological surgeries. To reduce the risk of incisional hernias, it is essential to use 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 occurs when viscera or a portion of viscera protrudes through an opening in the body cavity wall, whether it is a normal or abnormal opening<sup>1</sup>. Specifically, a ventral hernia refers to any hernia that emerges through the abdominal wall, while an Incisional hernia (IH) is a hernia that appears through a scar from a previous surgical procedure. Studies have indicated that individuals who have undergone 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 used, the patient's age and characteristics, any co-existing medical conditions, and the occurrence of post-operative complications.<sup>2</sup> It's worth noting that morbidly obese

patients are at a higher risk of developing IH. There are numerous risk factors contributing to the development of Incisional hernias (IH), encompassing factors related to both the patient and the surgeon. Incisional hernias can result from various risk factors, including those related to patients and surgeons. Patient-related risk factors include 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 encompass factors such as the choice of wound closure methods and suture materials.

Clinically, Incisional hernias manifest as a visible and palpable bulge that becomes apparent when the patient is in a standing position, often necessitating support or surgical repair<sup>3</sup>. With 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 significantly improved, approaching nearly 100 percent. Studies show 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.<sup>4</sup> Modern laparoscopic hernia repair techniques predominantly involve the intra-peritoneal inlay method, in which a mesh is placed within the abdominal cavity and secured in position using either a tagging device or trans-abdominal sutures. 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 aims to comprehensively assess various factors that contribute to the development of incisional hernias, analyze post-operative complications, evaluate different surgical repair methods, and investigate the outcomes associated with these techniques. It focuses on understanding the complexities of incisional hernias and the best approaches to manage and treat them effectively.

## MATERIALS AND METHODS

This prospective study was conducted with a focus on patients admitted to the hospital, specifically involving a total of 140 cases with various types of hernias who underwent surgical procedures. The study concentrated on 60 cases with incisional hernias, subjecting them to detailed examination and analysis. The inclusion criteria for this study involved individuals of both sexes who were 11 years of age or older and had developed incisional hernias subsequent to previous abdominal surgery. On the other hand, individuals below the age of 11 years and those with

hernias other than incisional hernias, such as inguinal or ventral hernias, were excluded from the study.

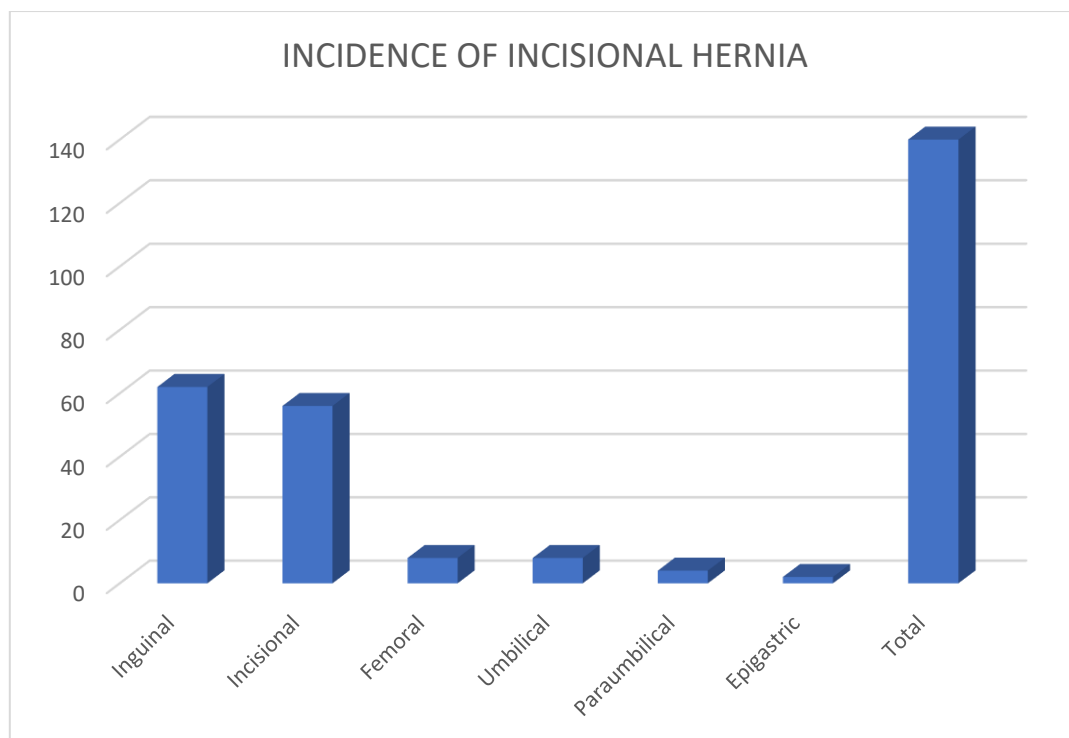
During the course of this study, patients admitted to various surgical wards within different surgical units underwent comprehensive examinations to evaluate abdominal wall defects and identify any underlying causes and predisposing factors. This thorough assessment involved collecting detailed case histories and conducting comprehensive clinical examinations to ascertain both the type and the root cause of the hernia. All necessary investigations were performed following a predefined protocol. Subsequent to meticulous physical examinations of each patient, clinical diagnoses were established, taking into consideration any associated etiological and predisposing factors. The choice of the most suitable repair method for each case was made on an individual basis, considering the specific surgical requirements<sup>5</sup>. A total of 60 cases underwent surgical procedures, and these patients were carefully prepared preoperatively to ensure their medical fitness for the surgery. Comprehensive monitoring was carried out for both immediate and late postoperative complications. The gathered data was then subjected to analysis to identify predisposing factors, assess the benefits of different operative techniques, evaluate complications that occurred, underscore the significance of post-operative care, and determine the outcomes of the various surgical procedures performed.

## RESULTS

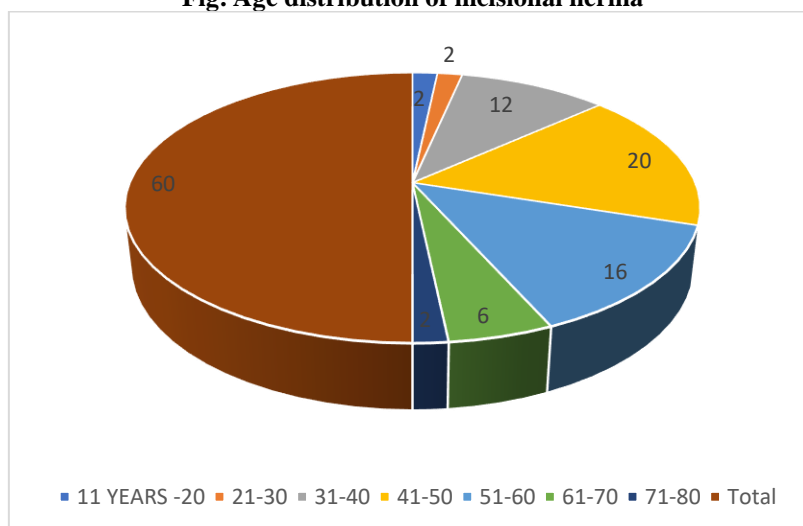
Throughout the study, a total of 140 patients underwent hernia surgery, with 60 of these cases classified as incisional hernias. The most common type of hernia observed was inguinal hernia, accounting for 41.66% of the cases, while incisional hernias made up 40% of the cases. The remaining cases were composed of less common hernia types, representing 18.34% of the total cases included in the study.

**Table 1: Incidence of incisional hernia**

Type	No of classes
Inguinal	62
Incisional	56
Femoral	8
Umbilical	8
Paraumbilical	4
Epigastric	2
Total	140

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

Age	No of classes
11-20	2
21-30	2
31-40	12
41-50	20
51-60	16
61-70	6
71-80	2
Total	60

**Fig: Age distribution of incisional hernia**

In our study, we found that the infraumbilical midline incision was the most commonly used type of incision, representing 43.33% of cases, which was more frequent than other incision types. Postoperative complications from previous surgeries were also

observed, with wound infection occurring in 18% of cases and wound dehiscence in 32% of cases, making them the more common complications among the cases we studied. Interestingly, only 12 cases were repaired using the anatomical repair approach, while

the majority of cases were addressed through onlay mesh repair. Among the 60 cases studied, 30 experienced complications, and the most prevalent complication was wound seroma, accounting for 20% of cases<sup>6</sup>. It's worth noting that wound seroma was found to be more common in cases repaired with Prolene mesh compared to anatomical repair.

## 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.

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. Other studies have also reported varying rates of complications, such as seroma formation and surgical site infections, in patients undergoing hernia repair.

These findings underscore the significance of considering both patient-specific factors and surgical methods in the development of Incisional hernias, as well as the importance of continued research to improve outcomes and minimize the incidence of such complications.

In the current study, a diverse array of techniques was employed to address incisional hernias, with polypropylene mesh repair being the most frequently utilized method, accounting for approximately 63% of the patients. This approach involves reinforcing the abdominal wall with a synthetic mesh to provide additional support and prevent hernia recurrence. The success of this method in our study, as evidenced by the absence of reported recurrences during the 18-month follow-up period, underscores its efficacy in the management of incisional hernias.

Laparoscopic hernia repair was another notable technique, utilized in approximately 17% of the cases. This minimally invasive approach involves the insertion of a laparoscope and specialized instruments through small incisions to repair the hernia. Although less common in our study, its application demonstrates the versatility of surgical options available for incisional hernia repair. The double breasting method, employed in approximately 12% of cases, is a technique that involves folding and suturing the layers of the abdominal wall to reinforce its integrity. This method can be particularly effective in select cases, contributing to the overall diversity of approaches in hernia repair. Anatomical repair, employed in about 8% of patients, focuses on the precise reconstruction of the abdominal wall in its natural anatomical position<sup>7</sup>. While less commonly used, it remains an important option for specific situations. Crucially, the absence of reported

recurrences during the 18-month follow-up period is a positive outcome that suggests the effectiveness of these repair techniques in preventing hernia recurrence. However, it is imperative to continue monitoring and evaluating long-term outcomes to ensure the durability and success of these repair methods, providing patients with the best possible outcomes in the management of incisional hernias. This study serves as a valuable contribution to the understanding and treatment of incisional hernias, helping to guide clinical practice and improve patient care.

These findings align with previous research in the field of hernia repair. Usher's study, which reported a 0% recurrence rate in 48 patients who underwent polypropylene mesh repair, underscores the effectiveness of this approach in preventing hernia recurrence. Mesh repair, as observed in multiple studies, continues to demonstrate its superiority in reducing the risk of hernia recurrence when compared to anatomical repair.

However, it's important to note that the choice of repair method plays a significant role in determining the recurrence rate, as highlighted by Jacobus W. A. et al.'s<sup>8</sup> study, which reported a 10-year cumulative recurrence rate of 63% in anatomical repair and 32% in mesh repair. These statistics emphasize the importance of selecting the most appropriate repair technique to ensure the best outcomes for patients. Furthermore, the consensus among many studies, including Jenkins' investigation involving 150 patients, supports the preference for mesh repair as a superior option for minimizing hernia recurrence when compared to anatomical repair. The body of evidence in favor of mesh repair continues to grow, guiding clinical practice and providing valuable insights for healthcare professionals and patients alike. These findings collectively contribute to the advancement of surgical techniques and the improvement of patient care, ultimately enhancing the quality of life for individuals who require hernia repair procedures.

## CONCLUSION

Incisional hernias tend to be more prevalent among women compared to men. This is often attributed to the weakening of the abdominal wall, which can result from factors such as multiple pregnancies, an increased number of cesarean sections, and gynecological surgeries. It is advisable to reserve infraumbilical midline incisions for surgical procedures that necessitate access to the lower abdomen and pelvic organs. To reduce the likelihood of incisional hernias, it is crucial to maintain a sterile aseptic technique during surgery and administer appropriate pre-operative antibiotics. The use of suction drains is recommended for both anatomical and mesh repairs to minimize post-operative complications, including seroma, wound infection, and wound gaping, thereby lowering the risk of

incisional hernia recurrence. Research indicates that mesh repair tends to result in a lower recurrence rate compared to anatomical repair, making it the preferred choice in most cases. In instances of recurrent incisional hernias, laparoscopic hernia repair should be considered as the primary treatment option.

## REFERENCES

1. Korenkov M, Paul A, Sauerland S, et al. Classification and surgical treatment of incisional hernia. *Langenbeck's Arch Surg* 2001;386(1):65-73.
2. Williams NS, Bulstrode CJ, Oconnell PR. Bailey and Love's Short practice of surgery. Abdominal wall hernia. 25th edn. UK: Hodder Arnold Publisher 2008: p. 986-9.
3. Sanders DL, Kingsnorth AN. The modern management of incisional hernias. *BMJ* 2012;344:e2843
4. Anthony T, Bergen PC, Kim LT, et al. Factors affecting recurrence following incisional herniorrhaphy. *World J Surg* 2000;24(1):95-101.
5. Dixon CF. Repair of incisional hernia. *Surg Gynecol Obstet* 1929;48:700-1.
6. Usher FC. Hernia repair with knitted polypropylene mesh. *Surg Gynecol Obstet* 1963;117:239-40.
7. Bucknall TE, Cox PJ, Ellis H. Burst abdomen and incisional hernia: a prospective study of 1129 major laparotomies. *Br Med J* 1982;284(6320):931-3.
8. Ellis H, Gajraj H, George CD. Incisional hernias: When do they occur? *Br J Surg* 1983;70(5):290-1.