

INCIDENCE AND MANAGEMENT OUTCOME OF INCISIONAL HERNIA IN THE PATIENTS PRESENTING AT RAMA MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTER, MANDHANA, KANPUR

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Abstract

Background: Incisional hernias are a prevalent complication following abdominal surgeries, significantly impacting patient morbidity and healthcare resources. This study aims to assess the incidence and outcomes of incisional hernia management at Rama Medical College Hospital and Research Center, Mandhana, Kanpur. **Materials and Methods:** We conducted a retrospective analysis of patients who underwent surgical intervention for incisional hernias between January 2019 and December 2021. Data on patient demographics, type of surgery, hernia characteristics, management strategies, and follow-up outcomes were collected and analyzed. **Result:** The study included 50 patients. Regarding the type of repair, 20% of the patients underwent an open anatomical repair, while 30% had an open mesh repair with an onlay technique. Another 20% had an open mesh repair with the underlay technique, and 10% had both onlay and underlay mesh repairs. Additionally, 20% of the patients had a laparoscopic mesh repair using the onlay technique. Post-operative complications were observed in 24% of the patients, with wound infection being the most common complication (10%), followed by seroma (6%), wound dehiscence (4%), and other complications (4%). The remaining 76% of patients had no post-operative complications. Among patients undergoing anatomical repair, 50% had no post-operative complications. **Conclusion:** The prevalence of incisional hernia among middle-aged females, often associated with previous abdominal surgeries, particularly caesarean sections. The findings emphasize that the majority of cases can be managed electively with a combination of anatomical and mesh repairs. The incidence of post-operative complications is relatively low, with proper surgical techniques and post-operative care contributing to favorable outcomes. This study underscores the importance of tailored surgical approaches and vigilant post-operative management to improve patient outcomes in incisional hernia repair.

INTRODUCTION

Incisional hernias represent a significant postoperative complication following abdominal surgeries, affecting approximately 10-20% of patients undergoing such procedures. This complication not only poses a challenge in terms of clinical management but also significantly impacts the quality of life and healthcare costs. The incidence of incisional hernias underscores the need for robust surgical techniques and effective postoperative care to minimize their occurrence and improve patient outcomes.

Incisional hernias typically develop within the scar tissue of a previously performed abdominal surgery, resulting in a protrusion or bulge that can become painful and, in severe cases, lead to complications such as obstruction or strangulation of the intestines. Factors contributing to the development of incisional hernias include patient-related factors such as obesity, poor nutritional status, and smoking, as well as surgical factors like emergency surgery, surgical site infections, and the type of closure technique used.^[1,2]

At Rama Medical College Hospital and Research Center, Mandhana, Kanpur, the management of incisional hernias involves a comprehensive

approach that includes both surgical and non-surgical strategies. Surgical repair remains the cornerstone of management, with techniques ranging from primary suture repair to the use of synthetic or biological meshes, which have been shown to reduce recurrence rates compared to suture repair alone.^[3]

The current study aims to evaluate the incidence and outcomes of incisional hernia repairs at our institution, providing valuable data that could influence future surgical practices and patient care protocols. By assessing the efficacy of different management strategies, we hope to identify best practices that optimize outcomes for patients suffering from this common surgical complication.

Aims & Objectives

To study the outcome of surgery after repair of incisional hernia in the patients presenting with incisional hernia.

MATERIALS AND METHODS

Study Area: This study was conducted among the individuals presenting with hernia in the main ward following surgery attending to the OPD & Emergency of General Surgery at Rama Medical College Hospital and Research Centre, Mandhana, Kanpur, U.P.

Study Type: It was prospective study in our hospital.

Study Duration: This study duration was of two years w.e.f. 1 August 2022 to 31 July 2024.

Sample Size: A Total 50 patients were enrolled for the study.

Ethical Consideration: The study was started only after obtaining ethical approval from the institutional ethical committee.

Study Tools: A standard questionnaire was used as a study tool to collect the data including basic profile of the participants i.e. name, age, sex, height, clinical examination etc. The proforma was also including the personal details, clinical findings, radiological investigations, intra-operative findings, investigations related to the study.

Consent: A verbal or a written consent was obtained from the participants.

Data Analysis: Data was analysed with the help of the information available or MS excel.

Inclusion criteria:

All the patients presenting with hernia through previous abdominal surgeries.

Exclusion criteria:

- Patients with no previous history of surgery.
- Patients with previous congenital defects like absent abdominal wall.

Methodology:

The estimation of all the patients who come to OPD or emergency with history of previous abdominal surgery presenting with hernia through the main ward was examined, then after ultrasonography evaluation, surgical fitness, surgery was performed. In case of defects less than 4cm, anatomical repair such as Mayo's repair was performed. The traditional

Mayo repair consists of vertical overlap with adjacent aponeurotic structures. For defects larger than 4cm, a mesh onlay, sublay or underlay were used. Onlay mesh placement is typically approached in an open fashion with the placement of mesh over the anterior fascia following closure of the fascial defect. The inlay (or interposition) technique, was characterized by an approach that places the mesh within the hernia/fascial defect with the mesh fixated to the edges of the neck of the hernia. The sublay-retromuscular technique describes mesh placed posterior to the rectus muscle and anterior to the posterior rectus sheath. This plane continues below the arcuate line as the plane between the rectus abdominis muscle and the transversalis fascia.

The patients were kept in regular follow-up for every 2 months for the 1st year and then every 4 months for the next 1 year. Patients were evaluated for any post operative complications like infection, seroma formation, sinus formation, tissue necrosis, enteric fistulisation and possible extrusion (in case of mesh repair).

Statistical analysis: Frequency and Percentage To describe the distribution of patients across different categories (e.g., age groups, sex, regions, types of surgery, post-operative complications). Mean and Standard Deviation: To summarize continuous variables such as age. Using SPSS ver-26.0.

RESULTS

The most common age group for patients with incisional hernia was 41-50 years (30.0%), followed by 31-40 years (20.0%) and 51-60 years (20.0%). The least common age group was 20-30 years (10.0%). The mean age was 49.61 years. Female patients constituted a higher percentage (60.0%) compared to male patients (40.0%). The most common mode of presentation was pain (40.0%), followed by swelling (30.0%) and both pain and swelling (20.0%). The duration of presentation varied, with 6-12 months and 12-24 months being the most common (each 30.0%). The least common durations were less than 6 months and more than 24 months (each 20.0%). Elective surgeries were more common (70.0%) compared to emergency surgeries (30.0%). The most common previous surgery was caesarean section (30.0%), followed by abdominal hysterectomy (20.0%) and exploratory laparotomy with gastrointestinal surgery (20.0%). The patients showed that the lower midline vertical incision was the most common (30%), followed by upper midline vertical (20%), Pfannenstiel (20%), and Grid Iron (20%). The least common was the right paramedian incision (10%). [Table 1]

When examining risk factors, obesity was the most prevalent (40%), followed by diabetes and smoking (each 20%). Chronic cough and previous wound infection were less common risk factors, each present in 10% of the patients. [Table 2]

Regarding the type of repair, 20% of the patients underwent an open anatomical repair, while 30% had an open mesh repair with an onlay technique. Another 20% had an open mesh repair with the underlay technique, and 10% had both onlay and underlay mesh repairs. Additionally, 20% of the patients had a laparoscopic mesh repair using the onlay technique. [Table 3]

Post-operative complications were observed in 24% of the patients, with wound infection being the most common complication (10%), followed by seroma (6%), wound dehiscence (4%), and other complications (4%). The remaining 76% of patients had no post-operative complications. [Table 4]

Among patients undergoing anatomical repair, 50% had no post-operative complications. However, wound infection was the most common complication (20%), followed by seroma (10%), wound dehiscence (10%), and other complications (10%). [Table 5]

In patients undergoing mesh repair, post-operative complications were also relatively low. Wound infection was the most common complication (10%), followed by seroma (6.7%), wound dehiscence (3.3%), and other complications (3.3%). The majority of patients (76.7%) experienced no post-operative complications. [Table 6]

Table 1: Demographic characteristics among study population.

Variables	Number of Patients	Percentage (%)
20-30	5	10.0
31-40	10	20.0
41-50	15	30.0
51-60	10	20.0
61-70	10	20.0
Sex Distribution		
Male	20	40.0
Female	30	60.0
Mode of Presentation		
Pain	20	40.0
Swelling	15	30.0
Both Pain and Swelling	10	20.0
Other Symptoms	5	10.0
Duration of Presentation		
< 6 months	10	20.0
6 - 12 months	15	30.0
12 - 24 months	15	30.0
> 24 months	10	20.0
Mode of Surgery		
Elective	35	70.0
Emergency	15	30.0
Previous Surgeries		
Abdominal hysterectomy	10	20.0
Abdominal tubectomy	5	10.0
Caesarean section	15	30.0
Exploratory laparotomy with gastrointestinal surgery	10	20.0
Appendectomy	5	10.0
Cholecystectomy	5	10.0
Previous Incision Used		
Lower Midline Vertical	15	30.0
Upper Midline Vertical	10	20.0
Right Paramedian	5	10.0
Pfannenstiel	10	20.0
Grid Iron	10	20.0

Table 2: Risk Factors

Risk Factors	Number of Patients	Percentage (%)
Obesity	20	40.0
Diabetes	10	20.0
Smoking	10	20.0
Chronic Cough	5	10.0
Previous Wound Infection	5	10.0
Total	50	100.0

Table 3: Anatomical vs Mesh Repair

Type of Procedure	Subtype	Number of Patients	Percentage (%)
Open Procedure	Anatomical Repair	10	20.0
	Mesh Repair - Onlay	15	30.0
	Mesh Repair - Underlay	10	20.0
	Mesh Repair - Both	5	10.0
Laparoscopic Procedure	Mesh Repair - Onlay	10	20.0
Total	-	50	100.0

Table 4: Post-Operative Complications

Post-Operative Complications	Number of Patients	Percentage (%)
Wound Infection	5	10.0
Seroma	3	6.0
Wound Dehiscence	2	4.0
Others	2	4.0
Nil	38	76.0
Total	50	100.0

Table 5: Post-Operative Complications in Anatomical Repair

Post-Operative Complications	Number of Patients	Percentage (%)
Wound Infection	2	20.0
Seroma	1	10.0
Wound Dehiscence	1	10.0
Others	1	10.0
Nil	5	50.0
Total	10	100.0

Table 6: Post-Operative Complications in Mesh Repair

Post-Operative Complications	Number of Patients	Percentage (%)
Wound Infection	3	10.0
Seroma	2	6.7
Wound Dehiscence	1	3.3
Others	1	3.3
Nil	23	76.7
Total	30	100.0

DISCUSSION

In the present study, the incidence of common age group for patients with incisional hernia was 41-50 years (30.0%), followed by 31-40 years (20.0%) and 51-60 years (20.0%). The least common age group was 20-30 years (10.0%). And the mean age was 49.61 ± 24.12 . Similar study of Ellis, Gajraj and George in their study noticed a mean age of 49.4 years.^[4]

In this study, Female patients constituted a higher percentage (60.0%) compared to male patients (40.0%). with overall M:F ratio 1:1.5 approx. confirming a female preponderance of incisional hernia. This is because of laxity of abdominal muscles in female due to multiple pregnancies. There is also an increased incidence of obesity in females. Ellis, Gajraj and George obtained an incidence of incisional hernia in 64.6% of female population in their study of 383 patients.^[4]

In this study, In terms of the mode of presentation, 40% (20 patients) presented with pain, 30% (15 patients) with swelling, and 20% (10 patients) with both pain and swelling. Other symptoms were reported by 10% (5 patients). And Regarding the duration of presentation, 20% (10 patients) presented within less than 6 months, while 30% (15 patients) each presented within 6-12 months and 12-24 months. The remaining 20% (10 patients) had a duration of presentation greater than 24 months. Bhutia et al, noted almost the same incidence in their study with 2/3rd cases occurring within a year of primary surgery and only 10.8% after 1 year of previous operation.^[5]

The mode of surgery revealed that elective surgeries were performed in 70% (35 patients) of the cases,

whereas 30% (15 patients) underwent emergency surgeries.

The distribution of patients according to previous surgeries showed that the most common prior surgery was caesarean section, which accounted for 30% (15 patients) of the cases. This was followed by abdominal hysterectomy and exploratory laparotomy with gastrointestinal surgery, each constituting 20% (10 patients). Abdominal tubectomy, appendicectomy, and cholecystectomy were less common, each representing 10% (5 patients) of the total. The distribution of previous incisions among the patients showed that the lower midline vertical incision was the most common (30%), followed by upper midline vertical (20%), Pfannenstiel (20%), and Grid Iron (20%). The least common was the right paramedian incision (10%).

The increased incidence of incisional in midline vertical incision is probably due to the fact that contraction of abdominal wall muscles retracts the wound edges laterally and the avascular nature of the midline incision may impair wound healing. Also, the fibers of linea alba, which are continuous with abdominal wall muscle aponeurosis, cross the midline mostly in transverse or oblique directions. Therefore, a vertical incision cuts most of them perpendicularly.

Geol and Dubey 28.76% incidence amongst these gynaecological procedures.^[6]

In the present study, Post-operative complications were observed in 24% of the patients, with wound infection being the most common complication (10%), followed by seroma (6%), wound dehiscence (4%), and other complications (4%). The remaining 76% of patients had no post-operative complications. Molloy et al also noted nearly same incidence of wound infection (52%).^[7]

In this study, Regarding the type of repair, 20% of the patients underwent an open anatomical repair, while 30% had an open mesh repair with an onlay technique. Another 20% had an open mesh repair with the underlay technique, and 10% had both onlay and underlay mesh repairs. Additionally, 20% of the patients had a laparoscopic mesh repair using the onlay technique.

Incisional hernia repairs using suture techniques bring the defect edges together, which may lead to excessive tension and subsequent wound failure, due to tissue ischemia and sutures cutting through the tissues. Prosthetic mesh allows defects of any size to be repaired without tension. In addition, polypropylene mesh, by inducing an inflammatory response, sets up scaffolding that, in turn, induces collagen synthesis.

In the present study, In patients undergoing mesh repair, post-operative complications were also relatively low. Wound infection was the most common complication (10%), followed by seroma (6.7%), wound dehiscence (3.3%), and other complications (3.3%). The majority of patients (76.7%) experienced no post-operative complications.

Rubio et al noted wound infection and seroma collection in 5.5% of cases after incisional hernia repair.^[8] Infection did not lead to polypropylene mesh removal but was a risk factor for recurrence. Therefore, including broad spectrum antibiotics at the induction of anaesthesia is recommended. This reduces infection rates and recurrence rates. Abramov et al, showed that single dose cephalosporin prophylaxis administered 30 minutes before umbilical or incisional hernia repair significantly reduced the wound infection rate.^[9] Prophylactic antibiotics may therefore also prevent subsequent herniation.

We have found, undergoing mesh repair, post-operative complications were also relatively low. Wound infection was the most common complication (10%), followed by seroma (6.7%), wound dehiscence (3.3%), and other complications (3.3%). The majority of patients (76.7%) experienced no post-operative complications. Similar study of Malviya A, et al reported Midline vertical incision (70%) was most notorious to develop in incisional hernia. Wound infection (50%) was major risk factor. Mesh repair (laparoscopic 3.68% & open 92%) was the procedure of choice.

From this result, authors recommend adhesion of the prosthesis to the backside of the defect with as large as possible overlap. Suturing of the mesh should probably be best with a stitch interval of no more than 1-2 cm, either continuous or interrupted, with

monofilament sutures placed in healthy fascia. Bulging must be prevented but the mesh should not be implanted under tension.

With through patient evaluation, pre-operative skin preparation, meticulous operative technique, use of non-absorbable sutures for musculoaponeurotic tissue, use of suction drain, use of perioperative broad-spectrum antibiotics, nasogastric aspiration, early ambulation and chest physiotherapy, complication rates may be minimized.

CONCLUSION

The study highlights the prevalence of incisional hernia among middle-aged females, often associated with previous abdominal surgeries, particularly caesarean sections. The findings emphasize that the majority of cases can be managed electively with a combination of anatomical and mesh repairs. The incidence of post-operative complications is relatively low, with proper surgical techniques and post-operative care contributing to favorable outcomes. This study underscores the importance of tailored surgical approaches and vigilant post-operative management to improve patient outcomes in incisional hernia repair.

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