

Original Research Article

A retrospective study of predisposing factors and management of incisional hernia in a tertiary care hospital

Pavani Yarra, Raghuveer C. Gogineni*, Chandana Kanuru, Hemasundar Kolli,
Manoj K.Thota, Shivananda Polisetty

Department of General Surgery, Dr. PSIMS and RF, Chinnaoutapalli, Gannavaram, Andhra Pradesh, India

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*Correspondence:

Dr. Raghuveer C. Gogineni,

E-mail: yarrapavani129@gmail.com

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ABSTRACT

Background: An incisional hernia is characterized as any defect in the abdominal wall, with or without a noticeable bulge, in the region of a postoperative scar, identifiable through clinical examination or imaging. This condition can be detected through clinical examination or imaging and affects approximately 10-20% of patients who undergo abdominal operations. Aims and objectives of the study was to evaluate various precipitating factors, clinical presentations, management and post-operative complications in patients with incisional hernia.

Methods: A retrospective study of 150 patients conducted at a tertiary care teaching hospital.

Results: In this study, incisional hernia was more common in obese, elderly, and female patients. The incidence was higher with Pfannenstiel incision followed by lower midline incisions. Incisional hernia was common between 1-5 years of index surgery and it was observed that more the risk factors and complications associated with index surgery, earlier was the onset of incisional hernia. Patients had a defect of size <4x4 cm were 58.66%. Open onlay mesh repair was done in 36.66% patients, preperitoneal mesh repair in 13.33%, retro rectus mesh repair in 13.33%, laparoscopic mesh repair in 28.66% and anatomical repair alone in 7.99% patients. Duration of laparoscopic surgery was longer compared to open. Most common post-operative complication was seroma (4.66%) followed by wound infection (2.66%).

Conclusions: Incisional hernias occur more in females as they commonly undergo lower abdominal surgeries. Subcutaneous suction drain decreased the incidence of post-operative wound complications.

Keywords: Incisional Hernia, Post-operative hernia, Scar hernia

INTRODUCTION

An incisional hernia is characterized as any defect in the abdominal wall, with or without a noticeable bulge, in the region of a postoperative scar, identifiable through clinical examination or imaging.¹ These hernias are unique in being the only abdominal wall hernias attributed to iatrogenic. Incisional hernias occur when the abdominal wall does not adequately close following a surgical procedure.² The occurrence of incisional hernias following a laparotomy incision is generally estimated to range from 10-20%, but can reach up to 69%, influenced

by factors such as the patient population, follow-up duration, suture material, and comorbid conditions.³ Factors that increase the likelihood of developing incisional hernias include obesity, advancing age, diabetes, persistent coughing, and infections at the surgical site after surgery.⁴ The treatment of incisional hernia has evolved over the years. Surgery is the mainstay treatment for symptomatic incisional hernias, utilizing a spectrum of techniques from traditional open procedures to laparoscopic methods, each presenting distinct benefits and factors to consider.⁵ This study seeks to assess the extent of the issue, analyze the different

factors influencing the development of incisional hernias, and establish agreement on the most efficient treatment strategies.

Aims and objectives

Aims and objectives was to study the precipitating factors; index surgery particulars; clinical presentation; type of incision; type of procedure and evaluate different management options and post-operative complications of incisional hernia.

METHODS

This is a retrospective study conducted over 150 adults (>18 years) of both genders who underwent incisional hernia repair for a period of 3 years in a Dr. PSIMS & RF tertiary care centre teaching hospital from March 2021 to April 2024.

Ethical clearance to conduct the study was taken from the Institutional Ethics committee (IEC).

Inclusion criteria

All the cases above 18 years who underwent incisional hernia repair in Dr. PSIMS & RF, Vijayawada were included.

Exclusion criteria

Patients less than 18 years of age; patients with missing or incomplete data relevant to the study variables (e.g., missing operative notes, incomplete follow-up records); patients who underwent concurrent surgeries for conditions unrelated to incisional hernia during the study period, as these might confound the outcomes of interest; patients managed conservatively (without surgery) for incisional hernia during the study period, as the study focuses on surgical outcomes were excluded.

Sample size

Sample size of this study was one hundred and fifty (150).

Sampling

Patients were identified through electronic health records using diagnostic codes for incisional hernia (ICD-10 codes).

Data collection of the study was by using case sheet Proforma.

Study variables

Age, sex, clinical features, duration before presentation, risk factors, type of incision given in index surgery,

complications following index surgery, onset of symptoms after index surgery, type of surgery, complications.

Data management and statistical plan for evaluating the results

Data collected from electronic health records using diagnostic codes for incisional hernia (ICD-10 codes) in Dr. PSIMS & RF, Chinnaoutapalli.

Assessing patient demographics (age, sex), clinical features, duration before presentation; assessing risk factors and type of incision given in index surgery associated with incisional hernia; evaluate different management options and post-operative complications of incisional hernia

Statistical analysis will be carried out and all the observations and results will be evaluated to arrive at a conclusion.

RESULTS

One hundred and fifty (150) cases above 18 years who underwent incisional hernia repair in Dr. PSIMS & RF, Vijayawada, who were identified through electronic health records using diagnostic codes for incisional hernia (ICD-10 codes) were analyzed and the patients who met the criteria were included in the current study.

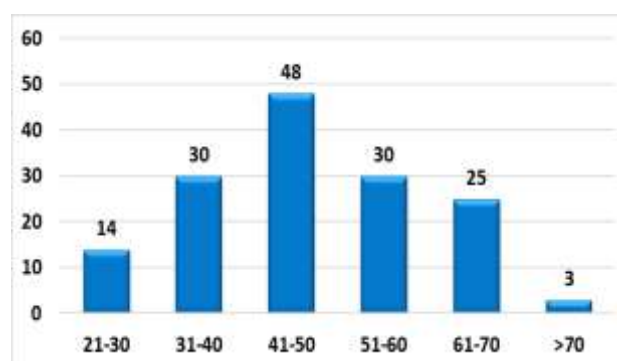


Figure 1: Age incidence.

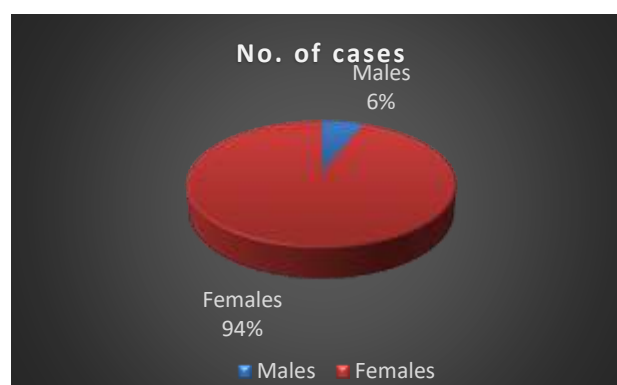


Figure 2: Sex distribution.

Out of 150 patients studied, age ranging from 21 to 78 years. The highest incidence was in 5th decade of life (32%).

There were 141 females (94%) and 9 males (6%).

Table 1: Clinical features.

Complaints	Number of patients	Percentage (%)
Swelling	64	42.66
Swelling+Pain	86	57.3

64 patients (42.66%) complained of reducible swelling while 86 patients (57.3%) complained of swelling associated with pain.

Table 2: Duration before presentation.

Duration in Years	Number of patients	%
Up to 2 years	46	30.66
2-5 years	58	38.66
6-10 years	38	25.3
>10 years	8	5.33

Duration of onset <5 years in 104 (69.3%) patients, while 46 (30.7%) patients had a course of >10 years.

Table 3: Risk factors for incisional hernia.

Risk factors	Cases	%
No comorbidities	68	45.33
Obesity	37	24.66
Diabetes mellitus	19	12.66
Copd	12	8
Constipation	4	2.66
Strenuous exercise	6	4
Lifting heavy weights	6	4
Alcohol	2	1.33
Smoking	3	2

Most common risk factor associated with incisional hernia is obesity (24.66%) followed by diabetes mellitus (12.66%).

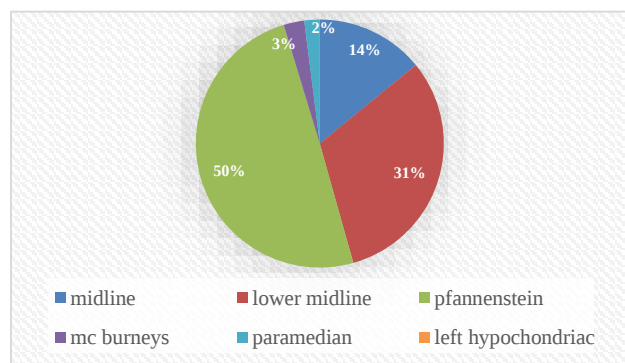


Figure 3: Type of incision given in index surgery.

The incidence was higher following obstetric and gynecological operations, Pfannenstiel incision (49.33%) followed by lower midline incisions (31.33%).

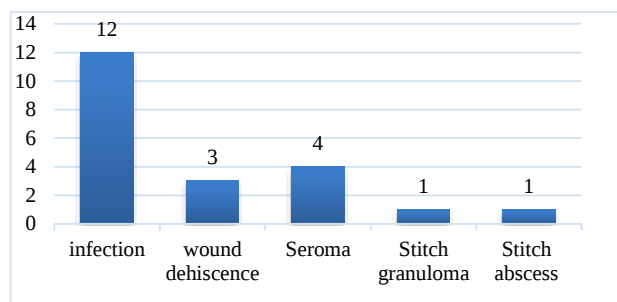


Figure 4: Complications following index surgery.

In our study, infection is the most common complication following the index surgery.

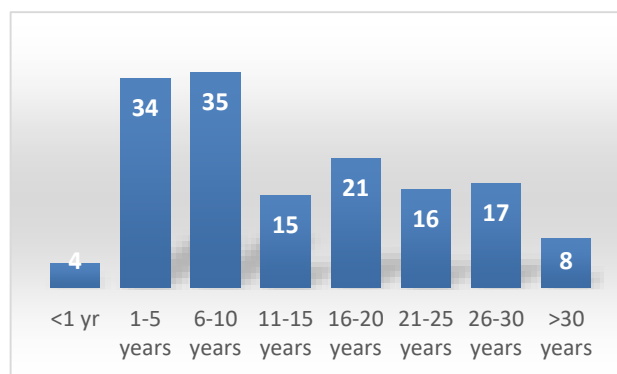


Figure 5: Onset of symptoms after index surgery.

4 patients noticed hernia within 1 year of index surgery. In this study, 13 patients developed recurrent incisional hernia, while 1 patient developed re-recurrent incisional hernia. 88 patients (58.66%) having size of the defect less than 4×4 cm.

Table 4: Type of surgery with its duration.

Type of surgery	Cases	%
Herniorrhaphy	12	8
Onlay	55	36.66
Retrorectus	20	13.33
Preperitoneal	20	13.33
Laparoscopic (IPOM)	43	28.66

In our study, most of the cases underwent onlay mesh repair (36.66%) followed by laparoscopic mesh repair (28.66%).

In our study, seroma being the most common complication following incisional hernia repair. In onlay surgery, seroma is the most frequent complication, whereas infection is commonly associated with

retrorectus repair. Laparoscopic mesh repair often results in persistent pain and hematoma.

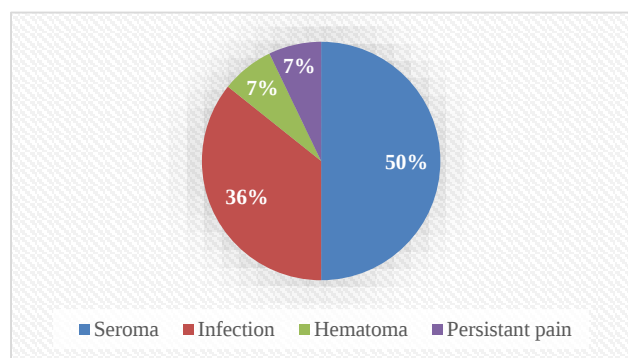


Figure 6: Complications following incisional hernia repair.

DISCUSSION

Incisional hernia has higher incidence between the age group of 41-50 yrs (32%). A study done by Kondareddy et al, reported the highest incidence of incisional hernia between the age group of 41-50 years which is similar to this study.⁶ Incisional hernia is more common in females (94%) than males (6%) with a ratio of 15:1 respectively. A study done by Shukla et al a total number of 47 patients in which 7 were male and 40 were female which is similar to this study. 64 patients (42.66%) presented with reducible swelling and 86 patients (57.3%) presented with swelling along with pain.¹ Obesity (24.66%) is the most common risk factor followed by diabetes mellitus (12.66%), lifting heavy weights (4%), COPD (8%), strenuous exercise (4%), constipation (2.66%), alcohol (1.33%), smoking (2%). A study published by Saunderland et al reported that patients undergoing incisional hernia repair experienced a recurrence rate of 11% in their study population with obesity as the only significant contributing factor for recurrence even when controlled for other factors such as age, gender, size, and surgical technique which was observed similar to this study.⁷ The higher incidence of incisional hernias associated with Pfannenstiel incisions (49.33%), commonly used in gynecological surgeries, may be explained by factors such as elevated intra-abdominal hydrostatic pressure in the lower abdomen compared to the upper abdomen when in an upright position—specifically, 20 cm of water versus 8 cm of water—and the absence of a posterior rectus sheath below the arcuate line. A study done by Wijk et al and Nick et al states that Pfannenstiel incision has the highest incidence of incisional hernia compared with midline laparotomy incision which is similar to this study.^{8,9} In a study by Ali et al, it was reported that out of 1924 patients, thirty-four individuals (1.76%) developed incisional hernia within 6 to 24 months, which contrasts with our findings.¹⁰ This discrepancy could be attributed to differences in their clinical experience. Most patients observed the development of incisional hernias between 1

to 5 years after the initial surgery, and the presence of risk factors or post-surgical complications appeared to shorten the time interval between the initial surgery and the onset of incisional hernia. Additionally, 88 patients (58.66%) had a hernia defect size less than 4x4 cm. According to Santora et al, the choice of hernia repair method should be guided by the size of the fascial defect and the condition of the fascia itself.¹¹ Onlay mesh repair was employed as the preferred technique for addressing incisional hernias. A study done by Misra et al, states that laparoscopic mesh repair was better than open mesh repair in terms of pain, faster recovery, cosmetic reasons but similar recurrence rates and complications which differs from this study.¹² Seroma (50%) as post-operative complication was noticed in the incisional hernia patients in which onlay mesh repair was done. Lall et al reported that 6 out of 35 patients developed seroma formation, and 1 out of 35 patients experienced wound infection, findings that closely mirrored those observed in our study.¹³

CONCLUSION

Incisional hernia is the second most common hernia following inguinal hernia. It was found to be more common in the obese, elderly (5th decade) female patients. Most of the patients presented with a reducible swelling involving a post-operative scar. The incidence was higher following lower abdominal incisions (Pfannenstiel) with patients who underwent gynecological Operations. Meticulous aseptic technique and careful closure of the abdominal wound is necessary to prevent incisional hernia. Complications and recurrence rates can be minimized with thorough patient evaluation, pre-operative skin preparation, meticulous operative technique, use of non-absorbable sutures for musculoaponeurotic tissue, use of suction drain, use of peri-operative broad-spectrum antibiotics, use of abdominal binder, early ambulation and chest physiotherapy, life style changes and avoiding straining following abdominal surgery.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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