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## Factors associated with incisional hernia in a tertiary level hospital: An observational study

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### Abstract

**Introduction:** Incisional hernia is one of the most common complications in visceral surgery requiring reoperation. Majority of incisional hernias are asymptomatic but some are associated with major morbidity and loss of time for productive employment and diminished quality of life

**Aims and Objectives:** The incidence of incisional hernia in and around this region to study the site of occurrence, age and sex incidence and to study the risk factors associated with development of incisional hernia

**Materials and Methods:** The present study was an observational study done for a period of 18 months carried out in 64 patients who came to surgery department of Mamata General Hospital with history of previous abdominal surgery and presenting with complaints of swelling per abdomen

**Results:** Overall incidence of incisional hernia was 29.7% in the study population. Females were found to be more affected in the study. Common presenting symptom was swelling in the lower abdomen at the previous scar site with cough impulse and reducibility, pain over the swelling. Factors that were found to be significantly associated with incisional hernia were anaemia, chronic cough, wound sepsis, thyroid disorder and obesity

**Conclusion:** Incisional hernia stands a major obstacle for many surgeons till date even though various techniques were evolved for abdominal closure. Most of the patients were females with mean age of 49 years. Factors that were found to be significantly associated with incisional hernia are anaemia, chronic cough, wound sepsis, thyroid disorder and Obesity.

**Keywords:** Incisional hernia, previous scar, re-surgery, associated factors

### Introduction

An incisional hernia is a herniation that occurs through a previously made incision in the abdominal wall, i.e. is from a previous surgical operation <sup>[1]</sup>. Incisional hernia formation is one of the most common complications in visceral surgery requiring operation <sup>[2]</sup>. It is estimated that at least 12-15% of abdominal surgeries lead to incisional hernia <sup>[3]</sup>. Incisional hernia is one of the most common complications of abdominal surgery with an estimated incidence ranging from 2 to 11%. Out of which 80-95% develop within 6 months to 3 years after surgery. An 8 to 29% of the incisional hernia are asymptomatic and remain unaccounted if patient is not examined. Wound infection, suture close technique and obesity are most important risk factors for development of incisional hernia <sup>[4]</sup>. Symptomatic incisional hernias are associated with reduced work time who are employed and increased morbidity and poor quality of life. Given the high cost for incisional hernia repair and disappointing recurrence rates up to 45% incisional hernia remains a challenge <sup>[5]</sup>.

The ideal method is it should be technically easy and free from complications of incisional hernia like persistent sinus and burst abdomen it should be comfortable to the patient and have a reasonable cosmetic scar <sup>[6]</sup>. Incisional hernias occur primarily as a result of high pressure on to the site and inadequate healing of previous incision. Patients with incisional hernia were 1.9 times more likely to have an SSI. They require a longer operative time and decreased body mass index <sup>[7]</sup>. Various factors involved in the development of incisional hernia these include age and anaemia which lead to tissue hypoxia, malnutrition, obesity, steroid therapy, radiotherapy and closer techniques of the previous procedures and complications especially sepsis and wound infection <sup>[8]</sup>. Patient related risk factors are history of smoking, obesity, pulmonary disease, prior abdominal surgery or surgical site infections. Malignant disease is frequently associated with incisional hernia.

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Oral anticoagulants by elevating the incidence of post-operative haematoma and wound infection seems to be risk factor for incisional hernia [9]. Jaundice is considered to be the risk factor for the development of incisional hernia. Experimental evidence suggest that obstructive jaundice decrease the strength of the wound and delays fibroplasia and angiogenesis [10].

This study on incisional hernias aims to understand their incidence, risk factors, and impact on patients' health and quality of life. It focuses on identifying patient-related risk factors, assessing the effectiveness and complications of current surgical techniques, and exploring preventative measures. Additionally, the study looks into the economic implications and seeks to improve treatment strategies, ultimately aiming to enhance patient outcomes and reduce healthcare costs associated with incisional hernias.

**Materials and Methods**

The observational study was carried out in the department of general surgery, Mamata General Hospital, Khammam, Telangana from November 2021 to November 2023 with a total of 64 patients admitted to surgical ward. Study was approved by institutional ethics committee and written informed consent was obtained from patients participating in the study

**Study Population**

Patients came with complaint of swelling over abdomen during the study period and subjected for abdominal examination and investigations that were positive were included in the study

**Inclusion Criteria**

- All patients with previous abdominal surgery
- Both males and females
- Patients with anaemia, obesity, thyroid disorder and diabetes mellitus
- Age >20 years

**Exclusion criteria**

- Age <20 years
- Recurrent incisional hernia
- Dense adhesions
- Not fit for surgery

**Method of collection of data**

We took detailed history of previous surgery and duration of swelling per abdomen and duration of symptoms and history of smoking, constipation, and any history of malignancy and examination of abdomen done. As many authors say extensive investigations are not useful in the management in our study we have we have advised essential laboratory investigations like Haemoglobin, x ray erect abdomen and ultrasound abdomen and specific investigations were necessary

**Statistical analysis**

Data were collected and entered in to specific software SPSS. A p- value of less than 0.05 was considered statistically significant

**Results**

**Table 1:** Distribution of subjects according to age

Age group	Frequency	Percent (%)
20-29	2	3.1
30-39	4	6.3
40-49	29	45.3
50-59	18	28.1
60-69	10	15.6
70-79	1	1.6
Total	64	100.0

The distribution of age in study participants ranges from 20-79 years. The mean age of study participants were 49.41 years (95% CI is 47.055, 51.76) with a SD of 9.613 years. Majority of the study participants were 40-49 years of age group (45.3%) followed by 50-59 years of age group (28.1%)

**Table 2:** Distribution of subjects according to gender

Gender	Frequency	Percent (%)
Female	60	93.8
Male	4	6.2
Total	64	100

Majority of study participants were females (93.8%)

**Table 3:** Distribution of subjects according to type of incision

Type of incision	Frequency	Percent
Midline	20	31.3
Pfannenstiell	42	65.6
Right subcostal	2	3.1
Total	64	100

Among all type of incisional hernia is more common in Pfannenstiell incision which is 65.6%. Second more common in midline incisions which is of 31.3% least is in subcostal Incision

**Table 4:** Distribution of subjects according to Type 2 DM

Type 2 DM	Frequency	Percent
Yes	33	51.6
No	31	48.4
Total	64	100.0

Among 64 patients 33 patients have diabetes which accounts 51.6% of all cases with incisional hernia and 31 of 64 patients had no diabetes.

**Table 5:** Distribution of subjects according to Obesity

Types	Frequency	Percent
Normal	26	40.6
Overweight	38	59.4
Total	64	100.0

The distribution of obesity in study population ranges from 20-35kg sqmt. The mean BMI of study participants was 26.04 kg per sq meter with a SD of 3.855. More than half of them were that is 38 (59.4%) were overweight. In this study it was found that anaemia, chronic cough, wound sepsis, thyroid disorder and obesity were associated with incisional hernia

## Discussion

Incisional hernia is one of the most common complication following an abdominal surgery ranging from 10-20% of which majority develop within 6 months to 3 years following surgery. Our present study was done on 64 patients who came to the surgery department with history of previous abdominal surgery and presenting with complaint of swelling per abdomen. The statistics is however underestimated that most of the incisional hernias are asymptomatic unless physically examined.

The age group most commonly affected and treated in our group is 40-49 years the majority affected was found to be females which points out the high incidence of anaemia, thyroid disorders and obesity among females all of which have been found to be associated with incisional hernia. A study done by kumar SIG *et al* found that 30-60 years of age was most commonly affected and just like our present study females are found in the majority<sup>[11]</sup>.

Our present study shows significant association of incisional hernia with anaemia, chronic cough, thyroid disorder, wound sepsis and obesity as mentioned in the introduction of the present study, the type of incision is predisposing factor for incisional hernia. In our study the most commonly found type of incision is pfannenstiell incision which points out the incidence of incisional hernia in females undergoing LSCS. In a study done by Vishnu *et al.*, post-operative wound infection, cough, early return to work and post-operative straining were the most significant factors for incisional hernia<sup>[12]</sup>.

In a study done by Chavan *et al*, infra umbilical incision was the most common type of incision (73.3%) found in cases with incisional hernia<sup>[13]</sup>. In a study done by Murali U *et al* morbid obesity followed by hypertension was found to be most common factor associated with incisional hernia. In a study done by Mardi *et al* midline abdominal incisions were found to be more common in patients with incisional hernia<sup>[14]</sup>.

All the patients who were diagnosed with incisional hernia were evaluated with various investigations available in our hospital and for those diagnosed with incisional hernia were treated for the same by hernioplasty or anatomical repair. The study concludes that various factors contribute to the development of incisional hernia and also statistically analyses various factors possibly contributing to the post-operative complications which ultimately contributes to herniation.

The mean age group affected in our study was 40-49 years. Females are more affected than males in my study. Common presenting symptom is swelling in lower abdomen at the previous scar site with cough impulse, reducibility and pain over swelling. Factors that were found significantly associated with incisional hernia are anemia, chronic cough, wound sepsis, thyroid disorder and obesity

## Conclusion

In conclusion, our study underscores the multifactorial nature of incisional hernia development, highlighting the need for increased awareness, early diagnosis, and individualized treatment strategies. This can lead to better patient outcomes and potentially lower the incidence of this common postoperative complication.

## Conflict of Interest

Not available

## Financial Support

Not available

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### How to Cite This Article

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