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## Incisional Hernia: Clinical profile and risk factors

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ABSTRACT

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#### **INTRODUCTION**

The Incisional Hernia is the result of failure of lines of closure of abdominal wall following surgery. Incisional Hernia is the second most type of hernia after inguinal hernia owing to rapid increase in number of abdominal operations performed. Ellis et al reported that incidence of Incisional Hernia after major abdominal surgery is 5-10% even at the best centres. It reaches 10% or more with prolonged follow up. Most of them presenting within one year of initial surgery and upto 80% within two years.<sup>1</sup> Abrahamson<sup>2</sup> reported that many factors singly or in various combinations, may cause failure of wound to heal satisfactorily and may lead to the development of a post opeartive incisional hernia. Transverse incisions are associated with fewer complications and there is lower incidence of Incisional Hernia after transverse copmpared with vertical laprotomy.<sup>3</sup> Absorbable sutures should not be used for closure of laprotomy wounds. Abrahamson<sup>4</sup> reported that layered closure are followed by greater incidence of postoperative hernias that are wound closed by single layer mass closure technique. Rubio<sup>5</sup> reported that mass closure with a continuous heavy monofilament polyamide or polypropylene as a single thread or in the form of a commercialy available loop is associated with decreased incidence of incisional

hernia. The general conditions of patients influences the rate of post operative ventral hernia . The factors include age, generalized wasting, malnutrtion, starvation, hypoproteinemia, malignant disease, anaemia, diabetes mellitus, liver failure, ascites, prolonged steroid therapy, immunosupressive therapy and alcoholism.<sup>4</sup> Postopeartive complication increase the incidence of postoperative hernias . these includes prolonged post operative paralytic ileus, intestinal obstruction and chest complications such as chronic obstructive disease. bronchopneumonia, lung emohysema and asthma. The incidence of Incisional Hernia is about 5-11% in developed countries but the incidence might be very high in developing countries like India due to malnutrition and increased rate of infection.<sup>8</sup>

Risk factors for incisional hernias

PATIENT RELATED FACTORS:	Age> 60 years	
	Gender- Female	
	BMI- >25kg per metre square	
	Straining factor-obstructive uropathy, constipation	

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	Comorbidities-Diabetes , immunosuppression, Chronic liver disease.
SURGERY RELATED FACTORS:	Emergency operations, bowel surgery, stoma Abdominal aortic aneurysm, relaparotomy.
	Technique and suture material used , wound Infections, operative time
BIOLOGICAL FACTORS :	Collagen and metalloprotein synthesis Smoking Nutritional deficiencies

#### MEDTHODS

The present study included patients admitted in various surgical wards of Pt. B.D. Sharma PGIMS, Rohtak.

A total of 50 patients were included in the present study and their profile was studied and evaluated for the risk factors involved in the formation of incisional hernia.

## **Inclusion Criteria**

1. All patients with incisional hernia between  $\geq 14$  to 70 years.

2. Patients operated initially in elective and emergency operation theatre.

## **Exclusion Criteria**

1. Strangulated and incarcerated incisional hernia.

2. Recurrent incisional hernia.

## Method of collection of data

Data was collected from a specially designed case Proforma pertaining recording to patient's particulars. On admission detailed history regarding time of appearance and duration of swelling after index surgery, pain, indication of previous surgery History recorded. of post operative was complications at that time like wound infection, wound dehiscence occurred during previous surgery was recorded from the patient in the proforma. We also take history of cough, constipation, prostatism in males, steroid therapy and smoking status. Height and the weight of patient was measured for calculation of body mass index. We inquired about patients medication, past medical history and chronic medical condition. Before start of study written informed consent was obtained in local vernacular in each patients.

#### **Treatment protocol**

Patients was managed according to a standard protocol. All study patients was admitted in the Department of Surgery. All necessary investigations was completed and further treatment initiated.

The epidemiological characteristics including the patient's age, gender, duration of symptoms was noted. The presenting symptoms and signs such as pain, tenderness was noted. Vitals of the patients (Pulse, Blood Pressure, Respiratory Rate, Temperature) was recorded. A thorough examination of the patients will be performed.

Necessary investigations were carried out such as haemoglobin, bleeding time, clotting time, total leucocyte count, differential leucocyte count, platelet count, Blood Urea, Blood Sugar, Serum Electrolytes, Chest X-Ray, ultrasound abdomen and thorax.

## Statistical analysis

At the end of the study, the data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program. Descriptive statistics included computation of percentages, frequencies, means and standard deviations.

## DISCUSSION

50 cases of incisional hernia, were admitted and were studied for risk factors. The statistical data and analysis of the cases studied for Incisional Hernia during this period presented are in this study.Incidence of incisional hernia was highest in the age group ranging from 41-50 years. It was more common in females than in males with a ratio of approximately 2.3:1 respectively. Most of the patients presented with swelling (100%) with pain (76%). Most of the incisional hernia cases were obese having mean BMI of 30.76. Most of the incisional

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Hernia are reducible (88%). The other major risk factors were previous history of Diabetes Mellitus (58%) and COPD (22%). There is no role of sero positivity in development of incisional hernia. Smoking come out to be one of the most important factor (78%) were smokers. Incisional hernia was more common in patient with previous history of laparotomy (34%) and gynecological operations (24%). The incisional hernia was more common in Midline vertical incision (40%). Wound infection during previous post operative period(50%) was found to be an important risk factor in developing incisional hernia.Decrease muscle tone from previous surgery was the most important risk factor.

#### CONCLUSION

Of all the hernia encounter incisional hernia is the most frustrating and difficult to treat. These hernias enlarge over time and leaves to pain bowel obstruction and strangulation. So we can decrease the incidence of incisional hernia by modifying various surgical, patients related, surgeons risk factor involved in the development of incisional hernia. In this study of 50 cases of incisional hernia it was found that older age, female sex, obesity, smoking, wound infection, comorbidities, incision site, type of surgery all these factors increases the risk of development of the incisional hernia. We can decrease this risk by modifying various factor in preoperative as well as in post operative period.

#### RESULTS

The factors causing incisional hernias can be preventable. Patients in age group of 40-60 years found to have highest incident of incisional hernia, with female to male ratio of  $2.3:1^{6,7}$ .

Swelling as the main presenting complain. Patients having BMI >30 have more chances of incisional hernia  $(46\%)^8$ . Diabetes is the most common cause among chronic illness $(58\%)^9$ .

Incisional hernia was more common in patient with previous history of midline vertical laparotomy (48%). Wound infection remains the most popular risk factor associated with wound dehiscence<sup>10,11</sup>.

#### Table 1: Incidence of age in our study

Age Group	Frequency	Percent
<30	2	4.0

31-40	8	16.0
41-50	14	28.0
51-60	14	28.0
61-70	9	18.0
>71	3	6.0
Total	50	100.0
mean±SD	51.44±12.2	



Table 2: Incidence of gender in our study

Sex	Frequency	Percent
F	35	70.0
М	15	30.0
Total	50	100.0



Table 3: Incidence of presenting complaints in ourstudy

		Frequency	Percent
Swelling	Y	50	100.0
Pain	N	12	24
T unit	Y	38	76



#### Table 4: Incidence of BMI range in our study

	Frequency	Percent
≤18.5	0	0
18.5-24.9	4	8.0
24.9-29.9	23	46.0
>30	23	46.0
Total	50	100.0



Table 5: Incidence of Chronic Illness in our study

	Frequency	Percent
TB	18	36
Diabetes	29	58
COPD	2	4
CHF	2	4
Asthma	9	18
Thyroid	7	14



 Table 6: Incidence of habits (smoking/alcohol) in our study

	Frequency	Percent
Smoke	39	78
Alcohol	10	20



Table 7: Incidence of previous surgery in ourstudy

	Frequency	Percent
Cessarian	3	6.0
cholecystectomy	10	20
hysterectomy	11	22
ileostomy closure	2	4.0
laparotomy	15	30
meshplasty	7	14
resection anastomosis	1	2.0
Subtotal abdominal hysterectomy	1	2.0
Total	50	100.0



 Table 8: Incidence of type of surgery in our study

	Frequency	Percent
Elective surgery	33	66
Emergency surgery	17	34



#### Table 9: Incidence of type of incision in our study

	Frequency	Percent
Midline vertical	24	48.0
Pfannenstiel	9	18.0
Supraumbilical/Subcostal transverse	17	34.0
Total	50	100.0



 Table 10: Incidence of wound dehiscence in our study

	Frequency	Percent
Ν	25	50.0
Y	25	50.0
Total	50	100.0

# Table 11: Incidence of Inflammatory signs in ourstudy

	Frequency	Percent
Ν	19	38.0
Y	31	62.0
Total	50	100.0

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