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## A study of etiology, clinical presentation and management of incisional hernia

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### Abstract

**Background:** Incisional hernia is a common condition encountered by General surgeons. This study was undertaken to identify the etiology, clinical presentations, management and outcome of incisional hernia.

**Method:** An observational Prospective study of 40 patients with incisional hernia presented in surgery outpatient department at a tertiary care centre during period of one year were enrolled and analyzed.

**Results:** Incisional hernia was commonest in the fifth decade of life (32.5%) with female predominance (67.5%). Swelling (80%) at previous incision site is commonest clinical presentation followed by pain (20%). Majority cases had history of previous pelvic surgeries (62.5%) with Pfannenstiel incision was commonest incision (45%). Wound infection (37.5%) was a predominant risk factor and also diabetes mellitus (35%), hypertension (25%) and obesity (20%) act as predisposing factors for incisional hernia. Size of the hernia defect was less than 2 cm in (47.5%) of patients and more than 2 cm in (52.5%) patients. Incisional hernias repair were performed by open method by using mesh in (72.5%) and laparoscopic repair in (27.5%) patients. Patient with Laparoscopic hernia repair had less duration of hospital stay compared to open repair. Wound infection (12.5%) was the commonest postoperative complication followed by seroma formation and respiratory tract infection.

**Conclusion:** Wound infection is commonest predisposing factor and Swelling at previous scar is most common clinical presentation of incisional hernia. Mesh repair is most common procedure performed for incisional hernia. Patients with laparoscopic hernia repair had shorter hospital stay and early resumption to work.

**Keywords:** incisional hernia, wound infection, mesh repair, recurrence

### Introduction

Incisional hernia is a common complication of surgical intervention. Its incidence is 10-50% in laparotomy incisions and 1-5% in laparoscopic incisions [1, 2]. It is the result of failure of musculofascial tissue to heal in the early post-operative period. Highest incidence was observed in midline incisions however such hernias can occur after any type of abdominal wall incision [3]. Incisional hernia has multiple predisposing factors which include wound infection, Diabetes, postoperative abdominal distention, respiratory tract infection, anemia, obesity, and immunosuppression. These factors alone or in combination lead to development of incisional hernia. Other contributing factors for Incisional hernia are type of surgical procedure, surgical technique, suture material used and post operative events [4, 5]. Most common presentation is localized swelling and pain along previous incision scar. Recurrence rate after primary anatomical repair ranges from 20-40% [6]. Among various modalities are available for management of incisional hernia, mesh repair by open or laparoscopic method is common. Irrespective of technique used tension free approximation of musculofascial layer and use of prosthetic mesh minimizes recurrence. This study was undertaken to study etiology, clinical presentations, management options and outcome in patients with incisional hernia.

### Methods

This observational prospective study included patients who were presented with incisional hernia in surgery outpatient department at a tertiary care centre during period of one year. Total 40 Patients were selected based on following criteria.

Inclusion criteria: Age > 18 years.

Presence of incisional hernia.

Exclusion criteria: Age < 18 years.

Pregnancy.

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Incisional hernia with complication i.e. obstruction, strangulation.

A demographic data of patients along with details of previous surgery were recorded in case record form. Special attention was given to the indication of previous surgery, its nature (elective or emergency) details of the procedure, and post operative course. Complications such as wound infection, abdominal distention, respiratory tract infection, abdominal dehiscence were noted. Clinical examination and necessary investigations were noted. Ultrasonography (USG) of abdomen was done in all patients for measuring size of hernia defect and contents of hernia. Patients were posted for incisional hernia repair after fitness. Data regarding procedure, Intra-operative findings, duration of hospital stay and Post-operative complications were noted. All patients were followed up for at least one year. During follow up all patients underwent clinical examined, to rule out recurrence of incisional hernia repair and other complication.

**Results**

Among 40 cases of incisional hernias were enrolled, 13 were male and 27 were female. The male to female ratio was 1: 2.1. It was observed that incisional hernia was most common in fifth decade (32.5%) followed by the sixth decade (22.5%) [Table 1].

**Table 1:** Age distribution of patients

Age in years	No of patients	Percentage
<20	0	0%
20-29	5	12.5%
30-39	8	20%
40-49	13	32.5%
50-59	9	22.5%
≥60	5	12.5%
Total	40	100%

The mean age of patients was 44.98 years, ranged from 23-78 years. Swelling at previous incision site (80%) was most common clinical presentation followed by pain (20%) along with the swelling. The occurrence of incisional hernia after

emergency surgery was 57.5% compared to 42.5% after elective surgery. Lower segment cesarean section (LSCS) and abdominal hysterectomy were the most common surgeries (30% each) in patients who developed incisional hernia. Pfannenstiel incision was the most common incision (45%) followed by infraumbilical midline incision (32.5%), which developed incisional hernia [Table 2].

**Table 2:** Type and site of incision of previous surgery

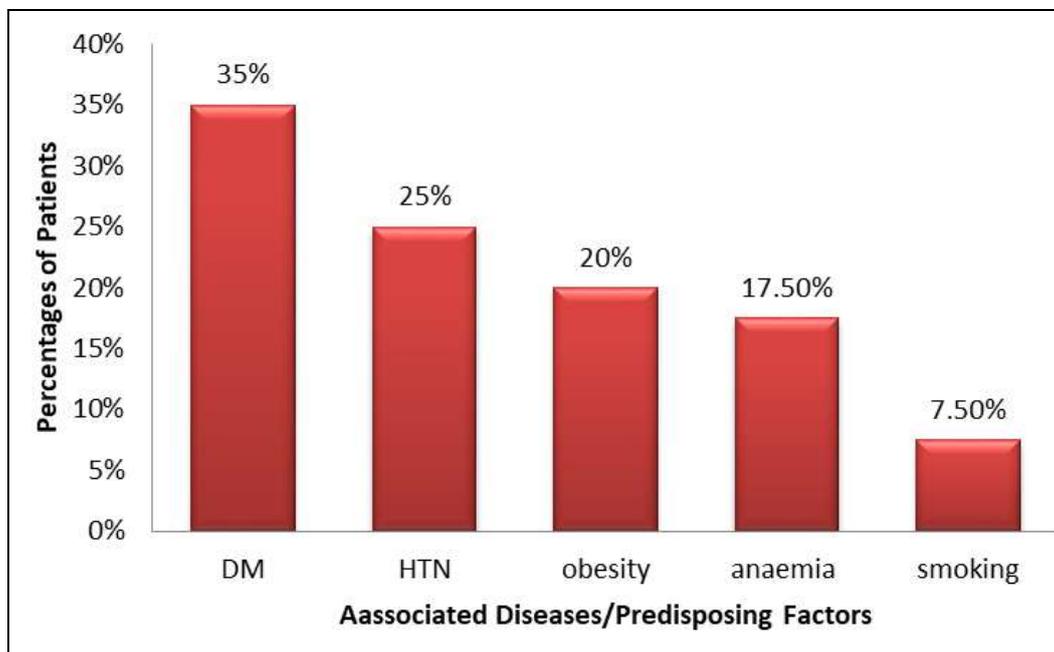
Type of surgery	Name of surgery	No. of cases	Percentage
Emergency Surgery	Laparotomy	9	22.5%
	Appendectomy	2	5%
	LSCS	12	30%
Elective Surgery	Hysterectomy	12	30%
	Cholecystectomy	4	10%
	Tubal ligation	1	2.5%
Site of incision	Type of incision	No. of cases	Percentages
Supra-umbilical	Midline	2	5%
	Right subcostal	4	10%
Infra-umbilical	Midline	13	32.5%
	McBurney's	2	5%
	Pfannenstiel	18	45%
	For Tubal ligation	1	2.5%

Wound infection (37.5%) was most common post-operative complication of previous surgery [Table 3].

**Table 3:** Post-operative complications of previous surgery

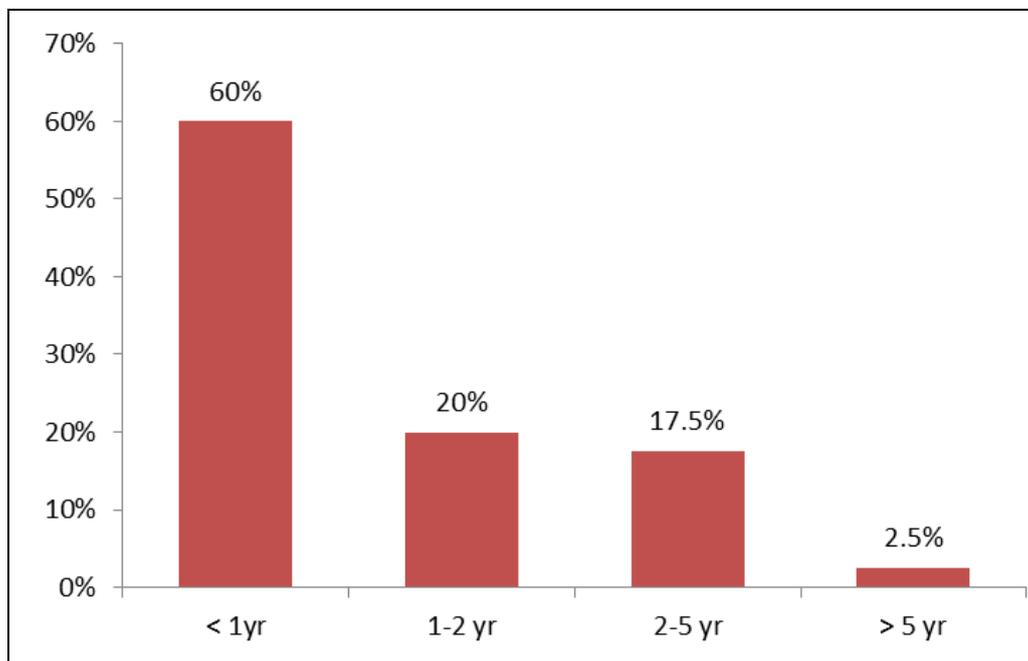
Post-operative complication	No of patients	Percentage
Wound infection	15	37.5%
Seroma formation	6	15%
Urinary retention	2	5%
Cough	6	15%
Constipation	2	5%
Miscellaneous	9	22.5%

Among 27 female patients, (59.25%) patients of incisional hernia were multiparous. Other predisposing factors for incisional hernia like diabetes mellitus (35%), hypertension (25%), obesity (20%), and anemia (17.50%) [Chart 1].



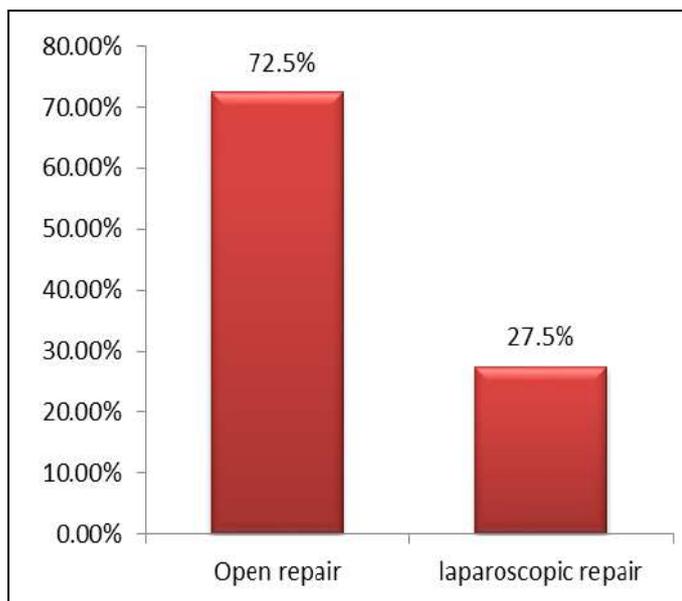
**Chart 1:** Associated predisposing factors

In majority of patients (60%) onset of symptoms was within first year after previous surgery [Chart 2].



**Chart 2:** Interval between previous surgery and onset of incisional hernia

On USG 19 Patients (47.5%) had defect of size less than 2 cm and 21 patients (52.5%) had defect of size more than 2 cm. Incisional hernias repair were performed by open method with onlay mesh repair in 29 patients (72.5%) and by laparoscopy with pre-peritoneal mesh placemen in 11 patients (27.5%) [Chart 3].



**Chart 3:** Type of surgery for incisional hernia repair

In Post-operative period of incisional hernia repair wound infection was commonest complication (12.5%) followed by seroma formation (10%) and respiratory tract infection (7.5%). Majority of patients (62.5%) were admitted for 7-14 days. However 11 patients (27.5%) who underwent laparoscopic incisional hernia repair had a hospital stay of less than 7 days. During the follow up among 40 patients 1 patient lost follow up after 6 months. No postoperative mortality noted in our study, none of the 39 patients developed recurrence in follow up period of one year postoperatively. [Table 4].

**Table 4:** Duration of hospital stay and recurrence rate

Hospital stay in days	No of cases		Total (%)
	Open repair	Laparoscopic repair	
<7 days	-	11	27.5%
7-14 days	25	-	62.5%
14-21 days	4	-	10%
Recurrence at 1 year	Open repair	Laparoscopic repair	Total (%)
	Present	0	0
Absent	30	9	97.5%
Lost follow up	1	0	2.5%
Total	31	9	100%

**Table 5:** Comparison between open and laparoscopic incisional hernia repair

Parameters	Outcome	Open repair	Laparoscopic repair	P value
Hospital stay	Mean Days	9.96±3.98	5.22±0.44	<0.05
	Recurrence	Present	0	0
	Absent	31	9	

Duration of hospital stay was significantly low in patients undergoing laparoscopic incisional hernia repair compare to open method. [Table 5] However to comment on recurrence rate large no of sample size and prolong duration of follow up is required, which was limitation of our study.

**Discussion**

This prospective study was conducted at department of general surgery in tertiary care institute over period of one year. In present study, most of the patients with incisional hernia had reported in fifth decade with mean age of the patient was 44.98 years which is comparable with the other studies [7, 8]. Increased incidence above the age of 40 years may be attributed to gradual decrease in abdominal muscle tone with the increasing age. (67.5%) of patients were females, with males to female ratio of 1:2.1. Similar finding reported in previous studies [9]. The female preponderance in the occurrence of incisional hernia is probably

due to laxity of abdominal wall in females due to repeated pregnancy. Anemia, hypoproteinemia, lack of post-operative rest, early return to work are other factors which give rise to an increased incidence of incisional hernia in females. Swelling at previous operative site (80%) is commonest clinical presentation followed by pain at the site of hernia; this is correlated with the study done by Degloorkar *et al.* [9]. Pfannenstiel incision (45%) was the most common incision of the previous surgery followed by infra-umbilical midline incision (32.5%) which developed incisional hernia. In majority of patients site of old scar was infra-umbilical (85%) and only (15%) had supra-umbilical incisional hernia, this is comparable with the Parekh *et al.* [10]. 62.5% of the incisional hernias were followed by operations on the female pelvic organs which is comparable with the previous studies [3,7]. The increased incidence of incisional hernia in female undergoing pelvic surgery can be attributed to position of the scar in weak infra-umbilical portion and poor muscle tone in females. Out of 40 patients, 15 patients (37.5%) had history of post operative wound infection, which may lead to incisional hernia. Infection can therefore be regarded as the most important risk factor for incisional hernia in this series, which is correlated with previous studies [1]. Also 6 patients (15%) had respiratory tract infection, 2 patients (5%) had urinary retention and 2 patients (5%) had constipation in the post-operative period of previous surgery. These factors lead to increase in the intra-abdominal pressure resulting in a weakness of scar. Incisional hernias were presented within first year in (60%), within second year in (80%) and after 5 years in (2.5%) of patients after previous surgery. Similar findings were reported by Bhamre *et al.* in their study [11]. Systemic diseases like diabetes mellitus (35%), hypertension (25%), obesity (20%) and anemia (17.5%) act as predisposing factors for incisional hernia due to increased chances of wound infection in these patients. Out of 27 female patients, 16 (59.25%) were multiparous; this finding is comparable to findings of George *et al.* [6]. Multiparous women has high incidence of incisional hernia. In most Indian women, repeated pregnancies within short period probably lead to laxity and poor abdominal wall muscle tone. In 11 patients laparoscopic hernia repair was performed and in 29 patients open repair with onlay mesh was done. In postoperative period 5 patients (12.5%) had surgical site infection, 4 patients (10%) had seroma formation and 3 patients (7.5%) had respiratory tract infection. These findings are correlated with the earlier studies [12]. Patients with laparoscopic incisional hernia repair had shorter hospital stay and early resumption to work as compared to open repair. During the study period, there was no mortality and none of patients showed recurrence in one year follow up period, which is comparable with the study done by Jenna *et al.* [7]. However, Patients will need to be followed up for prolong periods to be able to meaningfully comment on recurrence rate.

### Conclusion

From our study we conclude that, incisional hernia is common in the fifth decade with high incidence in females compare to males. Swelling at previous incision site was commonest clinical presentation followed by pain in incisional hernia patients. Wound infection was commonest risk factor for incisional hernia. Previous history of pelvic surgeries is commonly associated with incisional hernia. The duration of hospital stay was significantly lower in patients with laparoscopic incisional hernia repair compared to open hernia repair. Surgical site infection was commonest post operative complication of incisional hernia repair followed by seroma formation and

respiratory tract infection. Even though no recurrence were noted over one year follow up, prolong follow is necessary to conclude recurrence rate of incisional hernia repair.

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