

A STUDY OF CLINICAL PROFILE IN INCISIONAL HERNIA AND THE ETIOLOGICAL FACTORS ASSOCIATED WITH INCISIONAL HERNIA

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ABSTRACT

Background: Incisional hernias are secondary ventral group of hernias developing at the site of post operative scars including laparoscopic port sites through a defect in the musculo-fascial layers of the abdominal wall. They are the second most common type of hernia. **Materials and Methods:** A total of 79 incisional hernia patients were studied for their clinical profile and followed up for 01 yr post surgery. **Result:** Preop obese, SSI, females and patients undergoing emergency surgeries had a higher incidence of incisional hernia. Imaging studies correlated well with intra-op defects. Onlay mesh hernioplasty yielded satisfactory results. **Conclusion:** Incisional hernias should be avoided with scrupulous techniques and good wound care to prevent SSIs. Onlay mesh hernioplasty yields satisfactory results.

INTRODUCTION

The word “Hernia” is derived from the Latin word for “rupture”.

Hernia are more common in the abdominal region, occurring at sites where aponeuroses and fascia are not covered by striated muscles.

Availability of newer techniques and better quality of materials are bound to decrease the incidence of incisional hernia.

MATERIALS AND METHODS

Study site: Tertiary level hospital

Study design: Prospective observational study

Study population: All adult patients with incisional hernia presenting to a tertiary care teaching hospital.

Sample size: Last 03 years hospital records showed on an average of 75 patients of incisional hernia being operated annually. A total of 79 patients presented to this centre with incisional hernia and were included in the study.

Inclusion Criteria: All adult patients with incisional hernia presenting to a tertiary care teaching hospital and willing to be a part of the study.

Exclusion Criteria: Nil

Approval from institutional ethical committee: Approval from the institutional ethical committee was taken before initiation of the study.

Consent: Patients were informed in the language of their understanding about the study and a well informed consent was taken.

Methodology: All patients giving consent to be a part of the study were enrolled. **Evaluation and management:** Detailed history related to index surgery, present illness and follow up post surgery for 01 year.

Statistical Analysis

The data on categorical variables is shown as n (% of cases) and the data on continuous variables is presented as Mean and Standard deviation (SD). The inter-group statistical comparison of distribution of categorical variables is done using Chi-Square test. The statistical agreement between two diagnostic methods is tested using Cohen-kappa technique. Results are shown in tabular or graphical format to visualize the statistically significant differences. In the entire study, the p-values less than 0.05 are considered to be statistically significant. All the hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). The entire data is statistically analyzed using Statistical Package for Social Sciences (SPSS ver21.0, IBM Corporation, USA) for MS Windows.^[1-3]

RESULTS

The findings obtained from the study is as under

1. Distribution of patients according to age, gender, occupation and tobacco consumption

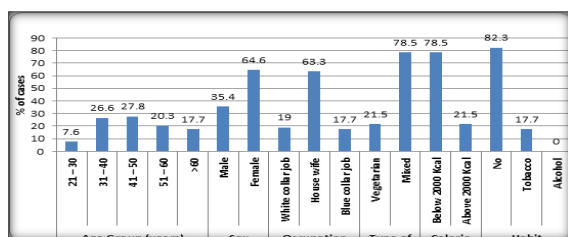


Figure 1: Demographic variables

3. Mode of Presentation

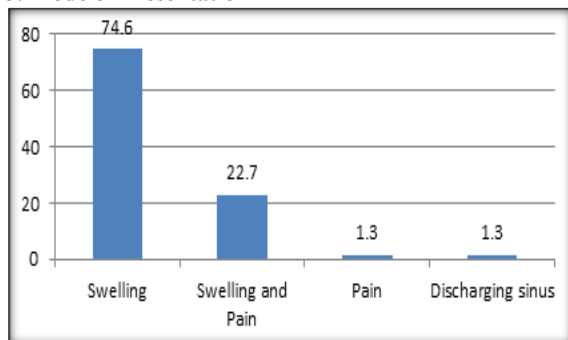


Figure 2: Modes of presentation

5. Clinical parameters

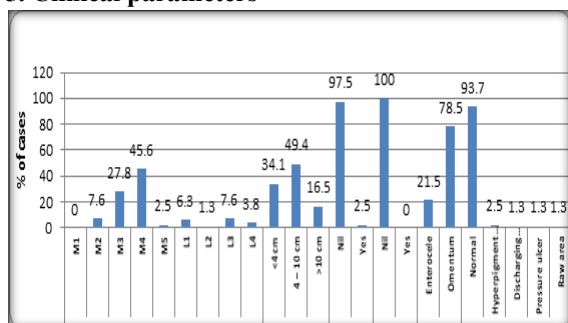


Figure 3: Clinical parameters

2. Previous comorbidities

Table 1: Comorbidities

History		No. of cases	% of cases
Major illness	Hypertension	17	21.5
	Diabetes	10	12.7
	Hypothyroidism	4	5.1
	CAD	5	6.3
	Others	10	12.7

The other major illnesses included 01 cases of carcinoma cervix and pancreas each along with 02 cases of cholelithiasis and 01 case of metabolic syndrome.

No case had a known congenital or hereditary disorder

4. Time of index surgery

Table 2: Index surgery parameters

History	category	No. of cases	%of cases
Time of Index Surgery	Day	67	84.8
	Night	12	15.2
Nature of Index Surgery	Elective	43	54.4
	Emergency	36	45.6
Duration	NA	47	59.5
	<2Hrs	12	15.2
	2 – 3 Hrs	16	20.3
	>3Hrs	4	5.1

6. Intra – op details

1. Defect size

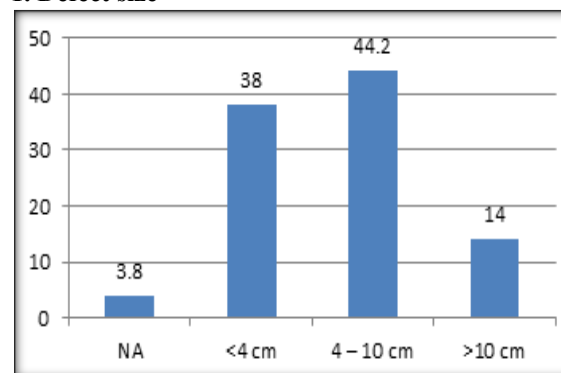


Figure 4: Intra-op defect size

2. Contents of the sac – 69.6 % of the cases had omentum content.

3. Intra-op complications

01 case of accidental jejunal perforation which was primarily repaired.

4. Type of mesh and sutures used

Polypropylene mesh used in 83.5%. in 10.5% Intraperitoneal Onlay Mesh was used. PDS was most commonly used to suture the rectus sheath.

Table 3: Duration of stay in hospital and development of SSIs following index surgery

Post op factors	Category	No. of patients	percentage
Post-op Stay	>5 days	48	60.8
	<5 days	31	39.2
SSI / Dehiscence	SSI	29	36.7
	No SSI	50	63.3
Secondary suturing	Yes	18	22.8
	No	61	77.2

Presentation with complications

Only 2 (2.5 %) patients presented with complications. One presented with acute obstruction while the other presented with chronic discharging sinus from the wound site.

7. Post op course**Table 4: Post-op course**

Post-op findings		No. of cases	% of cases
Duration of hospital stay	NA	3	3.8
	<7 days	60	75.9
	>7 days	16	20.3
Complications	NA	3	3.8
	No	69	87.3
	Discharge from wound	4	5.1
	Intestinal obstruction	1	1.3
	Urinary retention	1	1.3
	Mild paralytic ileus	1	1.3
	NA	3	3.8
SSI	No	69	87.3
	Grade 2	2	2.5
	Grade 3	1	1.3
	Grade 4	4	5.1
Antibiotics cover	NA	3	3.8
	1 – 7 days	71	89.9
	>7 days	5	6.3
Other procedures	NA	3	3.8
	No	73	92.4
	Yes	3	3.8

8. Distribution of clinical and intra-op defect size**Table 5: Relation between clinical and imaging size of defect**

	Defect Size (Intra-op)						Cohen Kappa	P-value
	<4 cm		4 – 10 cm		>10 cm			
Defect size (Clinical)	n	%	n	%	n	%		
<4 cm	17	56.7	8	22.9	0	0	0.294	0.001***
4 – 10 cm	11	36.7	21	60	6	54.5		
>10 cm	2	6.6	6	17.1	5	45.5		
Total	30	100	35	100	11	100		

P-value by Chi-Square test. Statistical agreement is assessed by Cohen-Kappa Statistic. P-value<0.05 is considered to be statistically significant agreement. ***P-value<0.001.

The defect size by clinical examination is significantly associated with defect size by intra-op examination (P-value<0.001) with relatively smaller Cohen Kappa value of 0.294. There is relatively lesser agreement between clinical examination and the intra-op findings.

9. Distribution of radiological and intra-op defect size**Table 6: Imaging and intra op defect size**

	Defect Size (Intra-op)							
	<4 cm		4 – 10 cm		>10 cm		Cohen Kappa	P-value
Defect size (Radiological)	n	%	n	%	n	%		
<4 cm	13	92.9	7	30.4	1	14.3	0.557	0.001***
4 – 10 cm	1	7.1	15	65.2	2	28.6		
>10 cm	0	0	1	4.3	4	57.1		
Total	14	100	23	100	7	100		

P-value by Chi-Square test. Statistical agreement is assessed by Cohen-Kappa Statistic. P-value<0.05 is considered to be statistically significant agreement. ***P-value<0.001.

The defect size by radiological examination is significantly associated with defect size by intra-op examination (P-value<0.001) with relatively larger Cohen Kappa value of 0.557.

10. Distribution of clinical and radiological defect size

Table 7: Imaging and clinical defect size correlation

		Defect Size (Radiological)							
	<4 cm		4 – 10 cm		>10 cm		Cohen Kappa	P-value	
Defect size (Clinical)	n	%	n	%	n	%			
<4 cm	12	54.5	0	0	1	20	0.426	0.001***	
4 – 10 cm	10	45.5	14	77.8	1	20			
>10 cm	0	0	4	22.2	3	60			
Total	22	100	18	100	5	100			
P-value by Chi-Square test. Statistical agreement is assessed by Cohen-Kappa Statistic. P-value<0.05 is considered to be statistically significant agreement. ***P-value<0.001.									

P-value by Chi-Square test. Statistical agreement is assessed by Cohen-Kappa Statistic. P-value<0.05 is considered to be statistically significant agreement. ***P-value<0.001.

The defect size by clinical examination is significantly associated with defect size by radiological examination (P-value<0.001) with relatively moderate to large Cohen Kappa value of 0.426.

DISCUSSION

The incidence of incisional hernia reported by various sources stands at 2 – 20% (4). in a study by Sharath Kumar J G et al the incidence was reported to be 7.5% of all hernias being operated in a hospital.^[5]

In our study the age group, most commonly affected was 41 – 50 years, mean age of presenting, 47.1 years. The youngest was of 23 years and the oldest being 74 years. A study by Sharath Kumar J G et al the mean age was calculated to be around 45 years,^[5] whereas Ellis et al in their study noticed the mean age of 49.4 years.^[6]

There was a female preponderance in our study with female to male ratio being 1.8 : 1. Ellis et al reported a similar preponderance at 64.6% female population in their study. In other studies, J.B.Shah reported a female to male ratio of 1: 1.7.^[7] The preponderance of females in our setting could be due to-

1. Gynaecological procedures in past, undergoing abdominal wall closure with absorbable sutures.
2. Lax tone of the abdominal muscles in ladies.
3. Multiple pregnancies.
4. Lower midline incision.

As ladies were the predominant population in our study, the most common occupation was that of a home-maker. People performing hard labour contributed 17.7% of the population. The results of this study were in agreement with Sharath Kumar JG et al, who had reported a majority of their patients of incisional hernia to be housewives. This could be multifactorial as these patients had a history of multiple pregnancies, multiple surgical interventions and obesity.

A study by Lars Tue Sorensen, MD et al, had pointed out that smokers were at a 4-fold risk of developing incisional hernia.^[8] 17.7 % of the patients in this study gave history of daily consumption of tobacco. While in male gender smoking (beedis, cigarettes) were common, women mostly used chewing tobacco. Diabetes mellitus causes delayed wound healing is regarded as a risk factor for incisional hernia.^[9] In our study 12.7% of the patients had diabetes as a comorbidity. 6.3% of the patients in this study suffered from coronary artery disease.

In a study by Mingoli A et al, the incisional hernia developed in 18.1% of patients undergoing surgeries in emergency settings.^[10] The increased risk of

incisional hernia in an emergency setting is multifactorial.^[11] In our study including gynaecological and surgical emergencies we found a high percentage of emergency index surgeries (45.6%).

46.8% of the patients had a BMI of over 25Kg/M2. Findings were similar to Nanjappa et al which had 40% patients overweight.^[12]

51.9% had undergone gynaecological surgeries Ponka,^[13] in his study had found this to be at 36% while Goel and Dubey had noted an incidence of 28.76%.^[8] Jack Abrahamson states that lower abdominal incision apart from other causes is one of the factors which leads to an increase incisional hernia(14). 51.9% patients had midline infra-umbilical incision, comparable to A B Thakore et al.^[15]

Wound infection is considered as an independent risk factor in development of incisional hernia.^[16] Bose et al had reported a 53.3% rate. In our study 36.7% patients had a history of SSIs in their previous surgeries, of which a fifth of patients had to undergo secondary suturing. On clinical examination 45.6 % of the patients were found to have M4 (infra-umbilical defect inn midline) which which was in agreement with other studies, like A B Thakore et al, 67.1%,^[15] and Goel and Dubey 44.6%.^[8]

49.4% of the patients were found to have a defect measuring 4 – 10 cm in width. In a study by Suhas Kondreddy et al the most common defect size came out to be 20 sq cm.^[17]

Most commonly performed surgery was onlay mesh hernioplasty, which was 55% of the total. Preperitoneal and retrorectus repair was the second most common at 24.1%. Only 5.1 % underwent laparoscopic IPOM (Intra Peritoneal Onlay Mesh) repair.

Polypropylene mesh was the most commonly used mesh and was used in all onlay and preperitoneal repairs. Onlay placement of mesh is not recommended by many authors,^[9] however, in our study it returned a fair result. Post op stay in most of the cases, 75.9% was less than 07 days, while 89% of cases did not receive antibiotics for more than a week. 04 (5.1%) patients, who had undergone onlay mesh repair developed seroma formation. This was similar to Licheri et al at 11%.^[18] On follow up a maximum of 5 (6.3%) were found to have surgical site infections. One patient who had undergone Lap

IPOM (Intraperitoneal Onlay Mesh) repair returned 03 months later with intestinal obstruction.

CONCLUSION

In this study, incisional hernia was found to be most common in the age group of was that of 41 – 50 years.

There were fewer young patients.

Females were more affected in a ratio of 1.8:1.

Incisional hernia was more common in patients who had undergone gynaecological procedure and lower midline incisions.

Obesity was a common finding in patients with incisional hernia. Thus it is advisable to correct obesity before any elective abdominal procedure.

Surgical site infection post incisional hernia repair also predisposes a patient to recurrence.. Most patients underwent onlay mesh repair. Thus, onlay mesh hernioplasty cannot be ruled out as an obsolete method. Preperitoneal mesh placement yielded the best results with no incidence of wound infections, recurrence or mesh explanation.

Laparoscopic surgery has also been catching up in recent times.

Though imaging modalities is not always needed in incisional hernia, they have shown to have greater accuracy while measuring defect size. This may help in deciding the course of treatment. However, it is best advisable to use scrupulous surgical techniques to ensure that its incidence is best kept to a minimum – as we all know “prevention is better than cure”.

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