Original Article

A Prospective Study To Assess Causes And Complications Of Incisional Hernia In Patients Coming To Vmkvmch

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DOI: 10.47750/pnr.2023.14.S02.61

Abstract

Introduction: Incisional hernia (IH) is defined as any abdominal wall defect with or without swelling in the area of a postoperative scar palpable by clinical examination or imaging. Every year there are approximately 4 million abdominal operations are being performed and the reported incidence of incisional hernia following abdominal surgery ranges from 11-20%. Unlike other abdominal wall hernias, which occur through anatomical points of weakness, incisional hernias occur through a weakness at the site of abdominal wall closure.

Materials and methods: A descriptive prospective observational study was conducted in Department of General Surgery, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital, Salem over a period from August 2021 to July 2022 with 102 patients included in the study. Observations were made with regard to duration and ease of operation, wound complications, mesh infections, hospital stay, morbidity and recurrence. Diagnosis was made with clinical examination, USG abdomen and X ray abdomen. All the patients were assessed preoperatively, intra-operatively and post-operatively, and the findings were recorded in a pre-structured proforma. Patients were evaluated in terms of age, gender, and Body Mass Index (BMI), mean operation time, length of hospital stay, pre-operative investigations, surgical technique, and post-operative complications.

Results: 56 cases affected with IH were males accounting to 54.9% cases. 46 cases out of 101 were females making about 45.1% of cases of IH. Male preponderance i.e. Male: Female ratio being 1.2:1 was seen in the study (Table 1). The most common cause of IH was post-operative wound infection (47%). The other causes were obesity (19%), improper rest (12%), COPD (16%), BHP (6%) etc. Some of the cases had got multiple etiological factors, but main causes are depicted in the chart.

Conclusion: Prevention of IH is to be taken care of, by avoiding infection during index operation with thorough peritoneal toileting, proper surgical techniques and appropriate antibiotics. Although laparoscopic mesh repair needs more operating time and skill, it has lesser blood loss, hospital stay and recurrence rate when compared to other procedures.

Key Words: Incisional hernia, mesh infections, hospital stay, morbidity and recurrence.

INTRODUCTION

Incisional hernia (IH) is defined as any abdominal wall defect with or without swelling in the area of a postoperative scar palpable by clinical examination or imaging.[1] Every year there are approximately 4 million abdominal operations are being performed and the reported incidence of incisional hernia following abdominal surgery ranges from 11-20%.

Unlike other abdominal wall hernias, which occur through anatomical points of weakness, incisional hernias occur through a weakness at the site of abdominal wall closure.[2]

The approximated tissues separate and abdominal organs mainly bowel bulge through the gap; which is covered from inside towards with peritoneum, scar tissue and skin.[3] Incisional hernias are serious surgical problems as they have an inordinate tendency to enlarge, are frequently formidable to repair and are usually accompanied by serious associated conditions.[4] It is a very common problem in the present day routine of a general surgeon and is associated with significant morbidity and mortality.

The rate of occurrence of incisional hernias was almost 10-20% after laparotomies. The incidence rate rises to 26% in those who develop wound infection.[5] Various risk factors have been identified to be responsible for the incidence of incisional hernia, including obesity and wound infection; other related factors comprise initial closure of fascia with catgut, drainage tube through the index incision, early wound dehiscence, anemia, immunosuppressant therapy, malnutrition, diabetes mellitus, jaundice and azotaemia.[6] Technique and suture length have also been concerned. Incidence of incisional hernia has also been attributed to the disruption of collagen metabolism at the microscopic level. Hence, tension free repairs are recommended.

MATERIALS AND METHODS

Study Design: A descriptive prospective observational study was conducted in Department of General Surgery, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital,Salem over a period from August 2021 to July 2022 with 102 patients included in the study.

Study location: Department of General Surgery, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital,Salem

Study duration: over a period of 1 year from August 2021 to July 2022.

Sample size: 102 patients included in the study.

Inclusion Criteria: Patients with age >15 years who had herniation at site of previous surgical scar were chosen for the study.

Exclusion criteria:

1. Recurrent IH,

2. complicated IH that required emergency surgery,

3. on investigation found not to have IH,

4. Those who refused to give consent for study.

Observations were made with regard to duration and ease of operation, wound complications, mesh infections, hospital stay, morbidity and recurrence. Diagnosis was made with clinical examination, USG abdomen and X ray abdomen. All the patients were assessed preoperatively, intra-operatively and post-operatively, and the findings were recorded in a pre-structured proforma. Patients were evaluated in terms of age, gender, and Body Mass Index (BMI), mean operation time, length of hospital stay, pre-operative investigations, surgical technique, and post-operative complications. The patients underwent different surgical procedures like anatomic reconstruction, open hernioplasty or laparoscopic hernioplasty depending on size of defect, patient’s consent and expertise available. Patients were followed up to 1 year and recurrence was observed.

Statistical analysis: Descriptive statistics were expressed as means and standard deviations. This was done by using Chi-square test. Data were primarily analyzed descriptively & then by SPSS.

RESULTS

56 cases affected with IH were males accounting to 54.9% cases. 46 cases out of 101 were females making about 45.1% of cases of IH. Male preponderance i.e. Male: Female ratio being 1.2:1 was seen in the study (Table 1).

S.No	Gender	N	Percentage	P value
1	Male	56	54.9	
2	Female	46	45.1	0.001
3	Total	102	100	

Table 1: Gender distribution

The mean age of the study was 42.3 years. The youngest patient was 19 years of age and oldest being 73 years of age. Maximum number of patients in the study belonged to age group of 25 to 35 years (25.5%). Most of the study population was between 25 and 55 years (64.6%). Only 7.8% patients are above 65 years.

S.No	BMI	N	Percentage	P Value
1	<18	8	7.8	
2	18-24.9	36	35.3	
3	25-29.9	38	37.3	0.002
4	>30	20	19.6	

Table 2: Distribution of cases according to BMI

Majority of the patients with IH came under overweight group with BMI of 25-29.9 kg/m2 i.e., 38 out of 101 cases (37.3%). Only 35.3% patients came under normal group with BMI of 18-24.9 kg/m2. The number of cases with BMI 30 kg/m2 were 8 (7.8%) and 20 (19.6%) respectively. The mean BMI of patients with IH was 25.9 kg/m2 (Table 2).

S.No	etiology	Percentage	P value
1	Post-OP Wound Infection	47%	
2	Improper Rest	12%	
3	BHP	6%	0.001
4	Obesity	19%	
5	COPD/ Chronic Cough	16%	

Table 3: distribution of IH according to etiology

The most common cause of IH was post-operative wound infection (47%). The other causes were obesity (19%), improper rest (12%), COPD (16%), BHP (6%) etc. Some of the cases had got multiple etiological factors, but main causes are depicted in the chart.

S.No	Pathology	Incision	N	Percentage	P value
1	Duodenal perforation	Midline	28	27.4	
2	Volvulus	Midline	10	9.8	
3	Malignancy	Midline	16	15.6	

4	Caesarean section	Pfannenstiel incision	24	25.4	0.001
5	Open cholecystectomy	Subcostal	4	3.9	
6	Open appendectomy	McBurney‟s	4	3.9	
7	Lap cholecystectomy	Laparoscopic port site	4	3.9	
8	Lap appendectomy	Laparoscopic port site	2	1.9	
9	Iliopsoas abscess	Posterolateral transverse	4	3.9	
10	Whipple procedure	B/L subcostal	4	3.9	

Table 4: distribution of IH according to type of pathology

S.No	Type of management	N	Percentage	P Value
1	Suture repair	20	19.6	0.003
2	Open Mesh hernioplasty	60	58.8	
3	Laparoscopic mesh hernioplasty	16	15.6	
4	None	6	5.8	

Table 5: Distribution of IH according to type of management

S.No	Variables	Laparoscopic repair	Open mesh repair	P Value
1	Operating time	130 min	100 min	0.001
2	Blood loss	40 ml	100 ml	
3	Hospital Stay	5 days	8 days	

Table 6: Comparison between laparoscopic repair and open mesh repair

S.No	Type of repair	No of recurrence	%	P Value
1	Suture repair	6/20	30	0.001
2	Open mesh hernioplasty	2/60	3.3	
3	Lap mesh hernioplasty	0	0	

Table 7: Recurrence among different type of repairs

Recurrence with suture repair was 6 cases out of 20, which accounts to 30% of the cases operated by suture repair. Recurrence in open repair was 2 cases out of 6 making it to 3.3% of cases operated by open mesh repair and none case of recurrence was observed in laparoscopy mesh hernioplasty.

DISCUSSION

Abdominal incisional hernia is very common clinically with an incidence of 3% to 20.6%. Infection of the incision will increase the rate of hernia up to 23%. Abdominal incisional hernia will lead to splitting the fascia layer and

formation of abdominal wall mass for intra-abdominal tissues or organs sticking out from split, which will severely affect patient life. However, different area has different incidence. In our study conducted in a tertiary care hospital of the eastern India, 101 cases of IH in 2 years were found excluding the recurrent cases, complicated cases and those unwilling to be included in study. This study shows male preponderance with 54.9% compared to the other studies Zhang et al. Kurmann et al showed 72.5% males in laparoscopic group and 67.5% in open group. The mean age of our study is 42.3 years, 47% being between 25-45 years of age. Only about 7.8% patients were above 65 years of age. In Zhang et al the mean age of the study was 45.5. Kurmann et al showed mean age of study in the laparoscopic group is 63 and open group is 63.5 years. Roland et al studied the mean age of patients in the suture repair group is 63 and Mesh repair group is 57 years.[7]

Muscle fibre strength can prevent the occurrence of IH and it is mainly provided by the nutrition and proper exercise. Obesity is said to be one of the causes for IH. In this study 19.6% patients are obese and mostly are men, while 7.8% were underweight. Midline incision leads to maximum number of IH cases (52.9%) in this study and Pfannenstiel incision contributes 25.4% of the cases. Subcostal IH are generally rare, as abdominal muscles can prevent from herniation. But in this study two cases of IH were observed after subcostal incision (open cholecystectomy). Mc Burney‟s incision accounts for 3.9% of IH in our study and laparoscopic port site IH occurred in 3 cases (5.9%). Purushotham et al showed 80% of IH cases after previous lower midline incision and 11.5% after upper midline incision. Mc Burney‟s incision also leads to 8.5% IH according to their study.[8]

In this study emergency surgery caused the greatest number of IH (88.2%) and elective surgery caused only 11.8% IH. Purushotham et al showed emergency surgery resulted 57% case of IH, while elective surgery in 43% cases. Since emergency surgeries were done without preoperative preparations, it may lead to post-operative complications like wound infections, which is the most common etiology for IH. Size of the hernia is also important in deciding the treatment.[9]

In this study 37% cases having the size of the defect more than 4 cm and 35% cases having size of defect two to four cm, while 28% cases have defect less than two cm. Kurmann et al showed that in laparoscopic group 1.5% cases were in size less than 4 cm, 47.8% cases in 4 to 10 cm and 36.2% cases more than 10 cm, while in open repair group 8.9% were in size less than 4 cm, 30.4% between 4 to 10 cm and 19.6% were more than 10 cm.[10]

Duodenal perforation causing peritonitis during primary surgery was responsible for the greatest number of IH cases (27.4%) followed by obstetric gynae surgery (25.4%), malignancy (15.6%) and volvulus (9.8%). Open cholecystectomy, lap cholecystectomy, open appendectomy, lap appendectomy and others also contributed to causation of IH.

CONCLUSION

Incisional hernia is one of the commonest complications of abdominal surgeries, especially when done in emergency. Most common etiology of IH in this study was previous surgery wound infections with 47.1%. Other causes are obesity, COPD, BPH and improper rest. On comparing different management techniques for IH, inlay laparoscopic mesh repair needs more operating time and skill compared to open mesh repair and suture repair. But laparoscopic repair had lesser blood loss and hospital stay in this study. Recurrence of IH was more seen in suture repair, while it was nil in laparoscopic repairs after one year of follow up.

Prevention of IH is to be taken care of, by avoiding infection during index operation with thorough peritoneal toileting, proper surgical techniques and appropriate antibiotics. Laparoscopic mesh repair needs more operating time and skill as compared to open mesh repair and suture repair, but has a lesser blood loss, hospital stay and recurrence rate.

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