

## ETIOLOGICAL FACTORS AND MANAGEMENT MODALITIES OF INCISIONAL HERNIA

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### **ABSTRACT**

Incisional hernia is considered as one of the most common complication after an abdominal surgery postoperatively and an important source of morbidity. This study analyses the various modes of presentation, etiopathogenesis, modalities of treatment and its outcome. It usually requires repair by using mesh; either open or laparoscopic methods. This study is carried out between September 2013 and September 2014; 50 patients with incisional hernia who admitted at our hospital to Department of general surgery are subjected to mesh repair or anatomical repair depending on surgeon choice and size of the defect. Data is collected and analysis is done by using statistical methods. Incisional hernia is found to be the second most common type of hernias next to inguinal hernia. Incidence of hernia is more common in females who underwent gynaecological procedures by lower or midline incisions. Incidence of incisional hernia is found to be more common between 30-50 years; with predominant risk factors being obesity, wound infection and wound disruption. Most of the patients presented with swelling within 5 years of previous surgery. Most common complications noted post operatively are being wound infection and seroma. Mesh repair results in less recurrence than anatomical repair for incisional hernia.

**Keywords:** Metabolic Syndrome, Gallstones, Prevalence

### **INTRODUCTION**

Incisional hernia is a protrusion of abdominal viscera through the site of previous operation or traumatic wound of the abdominal wall expect hernial site<sup>1</sup>. Earliest description about incisional hernia and its repair was in the first century AD by Celsus however no attempt to repair the defects were done till 19<sup>th</sup> century<sup>2</sup>. Even with the recent advances in surgery, anaesthesiology, antibiotics, suture materials, the incidence of incisional hernia has been reported at least 10%. Incidence may be higher than reported, since most of the cases are asymptomatic.

Abdominal incisions differ from other incisions in that the abdominal wall is subjected to variable pressure. Hence more physiological incisions should be preferred which produces less anatomical distortions. Among the abdominal incisions lower abdominal incisions are associated with highest incidences of incisional hernia. It is through this incisions most of the gynaecological operations are done. The pressure in the lower abdomen is more than upper abdomen and the posterior rectus sheath is deficient below the umbilicus and the stress and strain on the lower abdomen predispose for herniations. Increased intraabdominal pressure and wound infections are the most important causes. While repairing incisional hernia the surgeon should be careful and select the method of repair and the suture material to prevent further recurrence.

The technique of repair for abdominal incisional hernia is simple resuturing if the defect is small but it is associated with recurrence rate of 15- 20%. Cattell's repair, Manigot's keel repair<sup>3</sup> and shoelace darn repair<sup>4</sup>. Various Prosthetic grafts used for repair are nylon, polymer, polyester, polypropylene, polyglactyl, polydioxanone, polytetrafluoroethylene. Prosthetic mesh for hernia repair is started in 1958 after Usher reported his first experience. Since then polypropylene mesh is widely used for closure of defects in hernia with good results<sup>5</sup>. For patients with smaller defects who have undergone previous anatomical repair has resulted in wider defects with scarring. Hence to prevent such further recurrences prolene mesh had to be used.

### **OBJECTIVES**

1. To analyze various etiological factors of incisional hernia.
2. Distribution of cases in relation to age and sex.
3. Various types of incision taken for previous surgeries
4. Details of previous surgeries undergone
5. Various modalities in management of incisional hernia

1. The clinical study and management of incisional hernia of the abdominal wall was conducted at our hospital during years 2013-2015. Incisions used in previous surgery

| Type                     | Number of cases | Percentage |
|--------------------------|-----------------|------------|
| Infraumbilical (midline) | 40              | 80         |
| Supraumbilical (midline) | 6               | 12         |
| Right paramedian         | 2               | 4          |
| Pfannestiel              | 2               | 4          |

The commonest presenting symptom being swelling (68%) and pain (24%). Swelling was visible on Standing or Exertion. Most common predisposing factors include, Multiparity Obesity, Anaemia. 36 % of the patients were obese and 64% were of normal built.

92% of patients have underwent single previous surgery, Gynaecological conditions were the major cause for surgeries and majority of them being elective.

#### 1. Previous Surgical Procedures underwent by Cases in Study

| Surgical Procedure                      | No. of Cases | Percentage |
|-----------------------------------------|--------------|------------|
| Abdominal Hysterectomy                  | 13           | 26         |
| Tubectomy                               | 15           | 30         |
| Caesarean Section                       | 14           | 28         |
| Laparotomy for Acute Intussusceptions   | 01           | 02         |
| Laparotomy for Duodenal Perforation     | 4            | 8          |
| Laparotomy for Appendicular Perforation | 2            | 4          |
| Laparotomy for Epigastric Hernia        | 1            | 2          |

There was a high incidence of post operative complications after previous surgery, Wound infection was the main complication noted.

#### 2. Post Operative Complications in Previous Surgery

| Complications             | Number of cases | Percentage |
|---------------------------|-----------------|------------|
| Wound Infection           | 16              | 32         |
| Wound Disruption          | 8               | 16         |
| Post Operative Cough      | 12              | 24         |
| Post Operative Distension | 10              | 20         |
| None                      | 4               | 8          |

Usual time of appearance of incisional hernia is within 5yrs of previous surgeries in majority of cases and most of them were reducible spontaneously on lying down. Many of the cases had a defect of 5-8cms and 36 % of patients had poor abdominal tone (grading was done clinically. Patient with malgagnian bulge were considered with poor abdominal tone of muscles ) and only 5 cases (10%) were repaired by anatomical closure and rest of them were repaired with on layprolene mesh repair. 8 out of 50 patients had complications like wound infection , distension of abdomen and seroma formation as prolene being foreign material which induces tissue reaction. In postoperative follow up at the end of one month more than 90% of cases condition of the scar was healthy.

## DISCUSSION

Fifty cases of incisional hernia studied in our hospital and presented in the following study may not reflect all the aspects of incisional hernia because the study population is small and the follow up has been for a short period of time. The

incidence of incisional hernia had been quoted variously in different study but the incidence of our study conducted at our hospital during the study period of two years from September 2013 to September 2015 was 14.92 percent. But as said earlier the incidence of incisional hernia is much higher, because as majority of cases of incisional hernias are asymptomatic and is usually missed. Johnson et al, in 1892 noted 13% of incisional hernia in 223 laparotomies 6 months after operation. Rodney Maingot states that incisional hernias constitute 10 percent of the hernias operated upon and Zimmerman and Anson state that they constitute 1.7 percent of all hernia.

While the maximum age of incidence in our study is 31-50 years. Gajraj, Ellis and George noticed

49.4 years as their mean age of incidence. Carlson et al, in their study found that many patients with incisional hernia were between 25-90 years. The oldest patient in our study was 70 years and the youngest was 21 years.

In this study among 50 cases presented, 7 were men and 43 cases were women with female to male ratio being 6:1 approximately. According to Regnadet al<sup>6</sup>, incisional hernia was found at the sex ratio of 5:1. Gajraj, Ellis and George<sup>7</sup> obtained an incidence of 64.6 percent in their study of 383 patients.

While Bose<sup>8</sup> reported that swelling was the presenting complaint in 100 % of cases in his study, in our study 68 percent of the patients presented with swelling 24 percent presented with vague pain and abdominal discomfort. Obesity was associated with 3 fold increase in herniation in Bucknall et al study (34% of patients), in our study 24% of the patients were obese. In our study 58 % of the patients developed incisional hernia after elective surgery and 42 % following emergency surgery. This is comparable with the studies done by Bucknall et al, where they reported that there is no significant difference in occurrence of incisional hernia following elective or emergency surgeries.

As midline incisions remain most versatile incisions and frequently used in trauma, haemorrhage and peritonitis. Specific anatomical considerations suggest that vertical midline incisions have a more risk of a postoperative incisional hernia, one reason being transverse orientation of linea alba which are cut vertically and sutures are placed in between the fibres and the other reason being higher intraperitoneal pressure in the lower abdomen. The occurrence of incisional hernia following surgeries underwent for gynaecological problems is seen in 84% of the patients. Ponka noted 36 % incidence in patients following gynaecological procedures and Goel and Dubey<sup>9</sup> noted 28.76 % incidence. 80 % of cases in our study who developed incisional hernia had a scar in lower abdomen in midline. Goel and Dubey noted that lower abdominal incisions are the commonest site of incisional hernia and found lower midline scar in 44.6 % patients. A.B Thakore et al, found lower midline incisions in 67.1 % of cases.

Wound infections are found in 32 % of the patients as the post operative complications in our study. Bucknall et al, in their study noted 48.8 % of the cases had wound infections following their previous surgery. 53.63 % of the patients had history of wound infection in the study done by Bose et al and they concluded wound infection as the commonest precipitating factor for developing incisional hernia. Thomas A Santora et al believes that size of the fascial defect and appearance of the fascia should dictate the selection of the most appropriate method of hernia repair. 34 % of the patients had defect measuring between 5-8 cms and hence almost 90% of the patients in our study underwent on lay technique and around 5 % underwent anatomical repairs without mesh placement. Preoperatively the obese patients were asked to reduce their weight. The abdominal exercises were advised to increase the tone of the abdominal muscles. Diabetics were controlled with insulin and hypertension was controlled. The abdomen was closed with suction drains. Foley's catheter was put to decompress the bladder throughout the operation and was removed on the second day. Broad spectrum antibiotics were used and drain was removed on the 4<sup>th</sup> or 5<sup>th</sup> day.

At the end of one month of follow up 90 % of the patients had healthy wounds, 6% developed stitch abscess and 4% developed stitch sinuses. Stitch abscess was drained under local anaesthesia and in cases with stitch sinuses, stitches removed after exploration under local anaesthesia and sinuses healed. In no case there was rejection of mesh. Shumpelick et al<sup>10</sup>, found recurrence in 7 % of the patients following mesh repair and Koller et al<sup>11</sup>, found recurrences in 13 % of the patients following mesh repair. Usher reported zero recurrence in 45 patients. Hence cases need to be followed up for longer periods to be able to meaningfully comment on the problem of recurrence related to the type of incisional hernia repair.

In spite of problems the patients were followed up for a period of 6 months to one and half year. The follow up period being very strong, it is difficult to comment about recurrences. However, there was no recurrence with prolene mesh repair during the brief follow up.

Except for the cost, the results of prolene mesh repair were excellent.

## CONCLUSIONS

Incisional hernia is common avoidable iatrogenic malady. Though mortality was minimum the morbidity is sufficient enough to incapacitate the patient to some extent. For incisional hernia with larger defects and maximum scarring prolene mesh repair is best. For recurrent incisional hernia prolene offers excellent results and offers long life protection. Proper preoperative management of the patients, meticulous surgical technique and

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