CLINICAL STUDY AND MANAGEMENT OF INCISIONAL HERNIA

K. Jyothirmayi[1], A. Ravitheja[2], P. Chiranjeevi Reddy[3], Dushyanth[4]

[1]Assistant Professor, Department of General Surgery, Santhiram Medical College & General Hospital.
[2]Assistant Professor, Department of General Surgery, Santhiram Medical College & General Hospital.
[3]HOD & Professor, Department of General Surgery, Santhiram Medical College & General Hospital.
[4]2nd Year Post Graduate, Department of General Surgery, Santhiram Medical College & General Hospital.

ABSTRACT

Incisional hernia follows operations on the anterolateral abdominal wall. It is a diffuse extrusion of peritoneum and abdominal contents through a weak scar due to the failure of the lines of closure of the abdominal wall following laparotomy. The incidence of incisional hernia varies widely in different series published and is at least 10% as shown in longterm follow-up studies.

Clarification regarding the type of mesh and its positioning and operative methods of open surgery and laparoscopic repair needs to be addressed. In addition to surgical closure techniques, patient's risk factors also influence surgical outcome following wound closure.

RESULTS

Age, gender and risk factors such as diabetes, Hypertension, Anaemia, Obesity, COPD and Type of previous incision contribute to the development of primary and recurrent incisional hernia. Although complete prevention of development of incisional hernia is not possible, repair of hernia by replacement of simple suture technique with that of mesh reinforcement has shown better longterm results and patient satisfaction.

CONCLUSION

For management of incisional hernia, the available evidence has been favourable for good quality long term results with mesh repair techniques.

KEYWORDS

Incisional hernia, Pathophysiology, Mesh, Postoperative complications, Recurrence.

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INTRODUCTION: Incisional hernia follows operations on the anterolateral abdominal wall. It is a diffuse extrusion of peritoneum and abdominal contents through a weak scar due to the failure of the lines of closure of the abdominal wall following laparotomy. The incidence[1] of incisional hernia varies widely in different series published and is at least 10% as shown in longterm follow-up studies. It is closely related to the length of the post-operative follow-up period. It is the second most common[2] hernia after inguinal hernia and hence is a frequent surgical problem. Innumerable methods of repair have been described. The results of these repairs have varied not only for different methods but also for the same method in the hands of different surgeons. The fact that the results of no single method are entirely satisfactory shows prompt examination of factors existing at the time of preliminary laparotomy which predisposed to the formation of incisional hernia. Such factors if they exist at the time of hernia repair would also eventually lead to recurrence. The relevant factors studied were age and sex of the patient, initial incision, target organ of the primary surgery, previous post-operative wound complications, site and size of the defect, and other hernia related complications. Various factors[3] causing incisional hernia, its incidence, presentation, different operative techniques, their merits, and demerits were studied. Statistical comparison is made with other published reports. The idea behind this work is to emphasise, once again, the need for the prevention of this entirely iatrogenic complication. Prolene mesh[4] repair was particularly stressed upon as it is associated with least recurrence.

MATERIAL AND METHODS: A total of fifty patients who were admitted to surgical wards of Santhiram General Hospital, Nandyal during the period of 3 years from 2011 to 2014, diagnosed to have incisional hernia are included in this study and patients less than 15 years of age and incisional hernia in pregnant patients were excluded. All patients underwent thorough clinical examination and a detailed history and details of the earlier operation were asked for. All patients were evaluated for systemic disease or precipitating cause. Patients who had hypertension, diabetes mellitus or a cough were controlled preoperatively. Routine investigations were done for all patients including chest x-ray and ultrasonography of the abdomen. A day prior to surgery, preparation of the abdomen and genitalia was done. Overnight nil orally was advised and proctoclysis enema was advised once in night and once in morning the day of surgery. A nasogastric tube and Foley's catheter was passed and broad-spectrum antibiotics[5] were given to all patients before the procedure. The patient was explained

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Corresponding Author:
Dr. K. Jyothirmayi,
Assistant Professor, Department of General Surgery,
Santhiram Medical College & General Hospital, N.H-18, Nandyal.
E-mail: jyothipiscean@gmail.com
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about the effects and complications of the procedure. The procedure was done under general anaesthesia, spinal or epidural anaesthesia in supine position. In all cases, the old operative scar was excised, a generous skin incision was used to permit adequate exposure of hernial sac and defect. The sac was opened and contents were reduced after lysis of the adhesions. The anatomical repair[6] was done for all the cases in which rectus sheath could be approximated without tension. Mesh repair was used where rectus sheath could not be mobilised for tension-free repair. Prolene mesh[7] was placed and fixed with Prolene number 2-0 or 3-0 sutures (Fig. 5,6). Suction drains were laid on the mesh and brought out through separate stab wounds. Muscular aponeurotic structures repaired with Prolene number -1. In the postoperative period, nasogastric aspiration was done, second hourly in first 24 hours. The nasogastric tube was removed once the patient passed flatus. Foley's catheter was removed on postoperative day one. Suction drain was removed once the drainage falls to 25 to 30 cc. Antibiotics were continued for five days. Postoperatively, deep breathing exercises, movement of limbs in bed was advised as soon as patient recovered from anaesthesia. Early limited ambulation was done once the patient was able to bear the pain. Skin sutures removed on the 10th day and in few cases after the 10th day. At discharge, patients were advised to avoid carrying heavy weights and advised to wear an abdominal belt. Patients were reviewed after one month and three months in all cases and few cases up to two years. At review, symptoms were asked for and operative site examined for any recurrence. These cases were then analysed and results were compared with existing literature.

STATISTICS AND ANALYSIS: In the present study, the youngest patient was 25 years old and the oldest was 66 years old. The mean age in the present study is 38 years (Fig. 1). In the 21-30 years of age group, the incisional hernia was after lower segmental caesarean section and total abdominal hysterectomy in the majority of cases. While in 31-40 years age group, it was following total abdominal hysterectomy in the majority of cases.

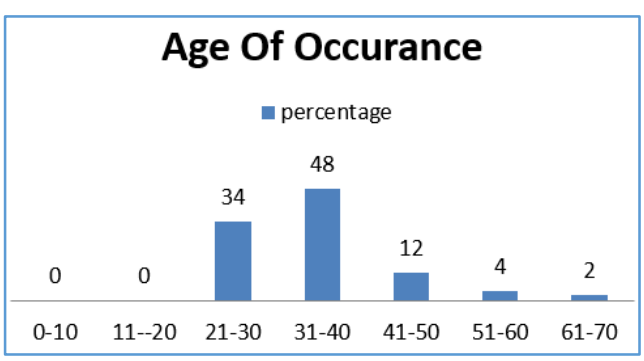

Figure 1

60% were manual labourers and 40% were housewives. Out of the 50 cases in this study, 4 are males and 46 are females. Out of 46 females, 40 cases underwent gynaecological and obstetrical operations.

6 were due to intestinal obstruction, peritonitis, hernia repair and incisional hernia repair. The incidence of incisional hernia is high in females because, in multiparous women, the following factors predispose to incisional hernia.

i. Stretching of anterior abdominal wall.
ii. Decreased tone of abdominal wall muscles.
iii. Replacement of collagen with elastic fibres.

In the present study (Fig 2), 80% of the incisional hernias occurred in subumbilical midline incisions.

Midline incisions developed incisional hernia in 75% of J.B.Shah Series and 72% of Parekh[8] et al series. A lower midline incision is more prone for herniation as posterior rectus sheath is deficient below the umbilicus.

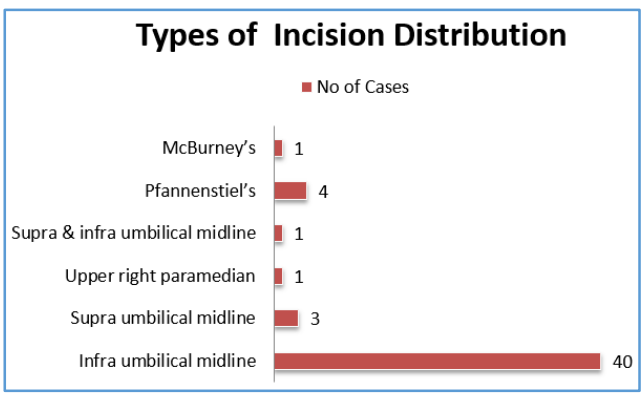

Figure 2

In the majority of the cases (Fig. 3), TAH was the previous operation which resulted in incisional hernia. In a view of 214 patients who had incisional hernia in Tees Hospital, Stockholm from 1970- 79, 30% of cases were due to gastric operations and 31% were due to previous gynaecological operations.

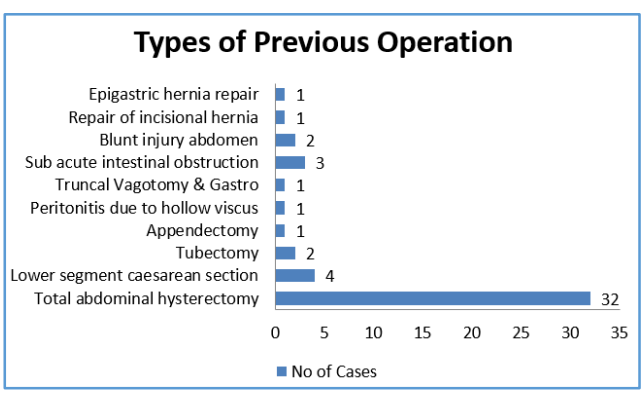

Figure 3

In the present study, 20% of incisional hernias were following emergency surgery, 80% are after elective surgery. 75% of males had incisional hernia following emergency surgery while females developed herniation in 78% cases following elective operations. This is nearer to the study of Parekh et al in 1983 who found that 72% of this series had undergone elective surgeries while 28% had emergency surgeries. But Bucknall et al 1982 and Ellis et al 1983 did not find any significant differences. The risk of

developing incisional hernia is more with emergency surgeries because of poor preoperative preparation of patient and predisposing factors like anaemia, COPD, local sepsis, obesity, diabetes, etc.,

There may not be time for meticulous technique and incidence of postoperative complications like COPD, wound infection may also be high. In the present study, the following postoperative complications were noted in previous surgery. It is found that multiple factors were present in the same patient and contributed to poor wound healing which could not withstand the raised intra-abdominal pressure later. Bucknall et al found 48% of wound infection in their study, out of which 7% developed incisional hernia. Ellis et al 1983 observed 23.15% of cases with wound infection. In the present study, the earliest hernia developed 1 month, while the late one appeared after 20 years following a TAH operation. In the present study, the majority of hernias (64%) occurred within one year. This is comparable with the results of the studies of Bucknall et al (1982) with 98% in 1st year and Parekh et al (1988) with 53.94% within 1 year. The process of wound healing and the laying down of collagen continues up to 1 year. Approximately, 80% of final wound strength is reached after 6 months. Thus, the integrity of the wound within six months is based on the suture material used, the suturing technique and mechanism of wound healing. Thus, interference with wound integrity within one year results in the maximum incidence of incisional hernias. The cause of late hernias is not clear, probably due to failure of collagen after some year to withstand intra-abdominal pressure. Majority of the patients presented with swelling in the line of the scar of previous surgery. It is found that the incidence of complications was more in patients who presented with small-to-moderate size defect of hernia because the narrow neck of hernial sac would compress the strangulation. Patients have been treated preoperatively to control diabetic status & hypertension and then posted to surgery. Constipation (Fig. 4) was found to be one of the major factors for precipitating incisional hernia even after a repair.

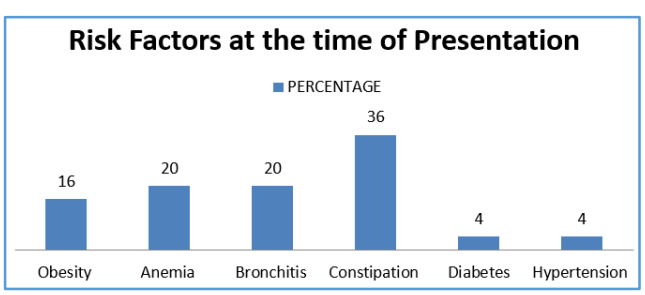

Figure 4

Mesh repair (Fig. 5, 6) was used where rectus sheath could not be mobilised for tension-free repair. The anatomical repair was done for all the cases in which rectus sheath could be approximated without tension. Thus, in this study Mesh repair was done in majority of cases. The majority of patients in this study are young or middle aged with the good or moderate tone of muscles. In this present study, the complications[9] occurred during the post-operative period are treated accordingly. No recurrence was noted after Prolene mesh repair technique.

Figure 5

Figure 6

DISCUSSION: In present study, age ranged from 20 years to 70 years and with peak incidence in 31 to 40 age group (42%), mean age was around 45 years. There is a female preponderance noticed with 92%. In this study all patients are presented with history of swelling followed by of which 18 cases presented with history of pain. Most of cases in our series, it was reducible hernia (90%) and with 10% of cases has irreducible hernia. We had approximately 64% of cases with early onset of incisional hernia (within one year of previous surgery) whereas 36% of cases had late onset of incisional hernia (> 1 year of previous surgery), of which 4% of cases presented with > 10 years. In present study, over 76% of cases occurred following obstetrics and gynaecological operations, and around 24% of cases following general surgical operations. Of 50 cases, 64% of cases had hysterectomy, 4% of cases tubectomy, 8% of cases LSCS, 18% of cases laparotomy and procedure, 2% of cases appendicectomy, 2% of cases had undergone Epigastric hernia repair and 2% of cases had recurrent incisional hernia, who had undergone anatomical repair. In present study, 6 patients (12%) had undergone more than one surgery and one patient (2%) had already been operated for incisional hernia by anatomical repair. Repeated wounds in the same region or just parallel to each other will often lead to development of herniation as shown by Ponka series. In this study, 80% of cases developed incisional hernia through lower midline incision, 8% through Pfannensteil incision, 6% through upper midline incision, 2%

through upper right paramedian incision, 2% through McBurney's incision, 2% through supra & infra umbilical midline incision. In present study, postoperative wound infection was occurred in 23 cases (46%), which healed by secondary intention. Bucknell, Cox and Ellis in their of 1129 laparotomy closures, found that 48% of their patients with incisional hernia had previous wound infection and those with wound infection developed hernias almost four times more often. Prevention of wound sepsis is therefore a prime objective in all abdominal operations. Associated risk factors like diabetes mellitus (16%). Obesity (20%), grand multi para (10%), COPD (4%) seen. In the present study, we encountered 18% of cases with postoperative complications of which 12% of cases with postoperative wound infection, seroma in 4% of cases and recurrence in 2% of cases. There was no postoperative complications in 82% of cases. Postoperative complications was less in present study (18%) when compared with other mesh repair techniques by Leber et al which was 48%. Postoperative ileus and recurrence rate are significantly less in the present study when compared to Leber et al study. But seroma is significantly more in present study compared to Leber et al study. In our study, the most of the hospital stay spent in preoperative workup and in the treatment of associated medical illness, if any, to reach the normal parameters for safe surgery. Total duration of hospital stay is increased when risk factors are present and duration of hospital stay after surgery also increased when the risk factors are present. In present study, we had followed up all the patients after discharge for 15 days, 1 month, 3 months and few cases upto 16 months of duration. There was 2% recurrence of incisional hernia noticed in the present study. Luidendi JK et al reported a recurrence rate of 46% with suture repair technique and 23% with mesh repair technique.

SUMMARY AND CONCLUSIONS: In the present study of management of incisional hernia, 50 cases that were admitted from 2011 to 2014 in Santhiram General Hospital, Nandyal was studied. It was the second most common hernia after inguinal hernia. The male-female ratio was 1: 16. The mean age of patients was 38 years. In the 21-30 years age group, it was post Lower Segment Caesarean Section and post Total Abdominal Hysterectomy. In the 31 - 40 age group, it was following Total Abdominal Hysterectomy. 68% of the patients presented with swelling as main complaint. 8% of patients presented with intestinal obstruction. Infraumbilical midline incision was the commonest site for herniation in 80% of cases. 80% of females with elective operation presented with incisional hernia. 75% of males with emergency operation presented with incisional hernia. 76% of cases of incisional hernias were following gynaecological and obstetric operations (LSCS, Tubectomy, and TAH.). Wound infection was the major factor leading to incisional hernia. Obesity, anaemia & constipation were the other factors which precipitated incisional hernia. 64% of cases presented within one year following previous surgery. 32% of cases were with large defect[10] of more than 5"X5". Small defects < 2" presented early with complications. Prolene mesh repair was done in 80% of cases and anatomical repair was done in 20% of cases. Wound infection occurred in 12% of cases, 2% recurrence occurred with anatomical repair within 4 months. Good long term results with incisional hernia repair depends on the surgical techniques used, patient associated factors and the choice of mesh material used.

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