

# Management of Incisional Hernia by Preperitoneal Mesh Repair : A Prospective Study in Rural Population

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## ABSTRACT

*The incidence of incisional hernia in literature is 2- 11% following all laparotomies and it is a source of morbidity and requires high health care costs. This study was undertaken to assess the magnitude of various factors leading to development of this condition & to evaluate the technique of preperitoneal mesh repair of incisional hernias with regards to post operative complications, hospital stay and recurrences, if any. This was a prospective study of 100 cases of incisional hernia who attended our OPD from May 2008 to May 2010.*

*In the present study, preperitoneal mesh repair had excellent long-term results with minimal morbidity. Comparing other types of mesh repair, the preperitoneal mesh repair is the gold standard treatment for incisional hernia.*

*Key words: Incisional hernia, Preperitoneal, Mesh repair.*

## INTRODUCTION

Incisional hernia is the only hernia considered to be truly iatrogenic. Ian Aird defines incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of an operation or accidental wound. It occurs due to the failure of the lines of closure of abdominal wall following laparotomy.<sup>[1, 2]</sup> The incidence of incisional hernia in literature is 2- 11% following all laparotomies and it is a source of morbidity and requires high health care costs.<sup>[3]</sup>

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As a result of high recurrence rate in the repair of incisional hernia, various types of repairs have been used both anatomical and prosthetic. Surgical repair is difficult in cases of large abdominal defects, when the herniated viscera have “lost their right to reside” in the abdominal cavity. The results have been disappointing with a high incidence of recurrence of about 30-50% after anatomical repair<sup>[4]</sup> and 1.5-10% following prosthetic mesh repairs.<sup>[5]</sup> The introduction of prosthetics has revolutionized hernia surgery with the concept of tension free repair.

This study has been undertaken to assess the magnitude of various factors leading to development of this condition and to evaluate the technique of preperitoneal (sub lay) mesh repair for incisional hernias with regards to post operative complications, hospital stay and

recurrences, if any.

## **MATERIALS AND METHODS**

This is a prospective study of 100 patients of Incisional hernia who attended OPD of R. L. Jalappa Hospital from May 2008 to May 2010. Exclusion criteria included all complicated incisional hernias.

All patients were admitted through outpatient department (OPD). The epidemiological data i.e. the name, age, sex, medical record number, postal address and phone number were noted at the time of admission. The clinical features and their duration, time of initial operation and the interval between the first surgery and appearance of incisional hernia were recorded in the data.

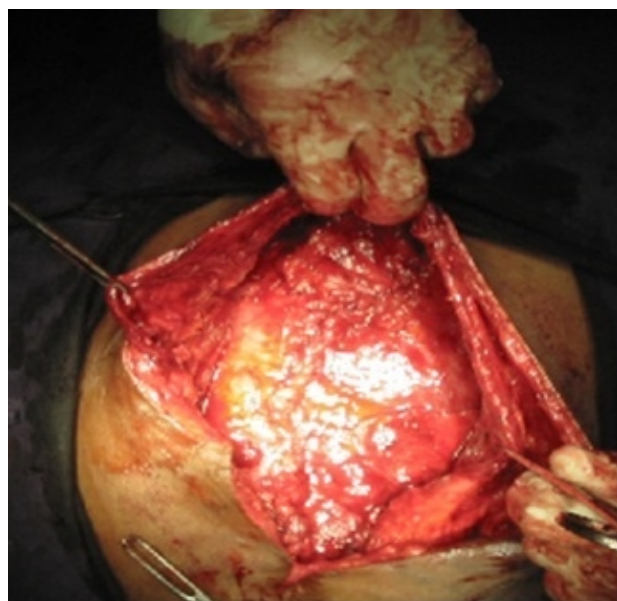
All patients were evaluated for systemic disease or precipitating cause. Patients who had hypertension, diabetes mellitus or cough were controlled preoperatively. Routine investigations were done for all patients.

A day prior to surgery informed consent was obtained from the patients after explaining all

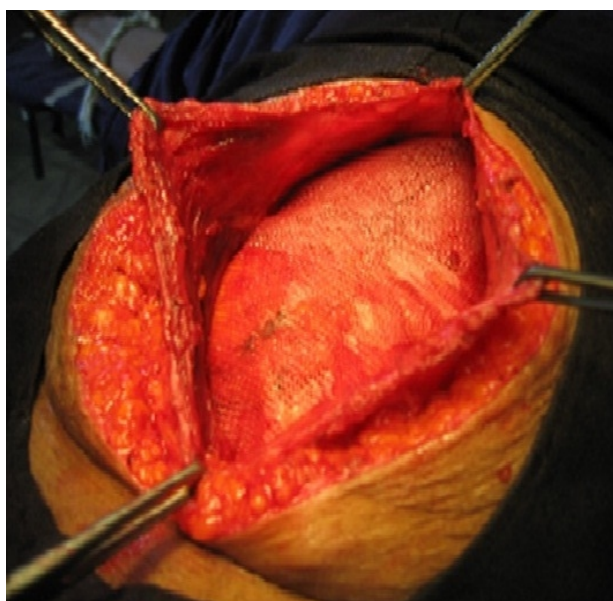
possible effects and complications of the procedure. All patients were given preoperative antibiotics. The procedure was done under general anaesthesia, spinal or epidural anaesthesia in supine position. In all cases, old operative scar was excised, generous skin incision was used to permit adequate exposure of hernial sac and defect.

The sac was opened and contents were reduced after lysis of the adhesions. The excess sac was excised; peritoneum was closed with absorbable synthetic suture. Adequate preperitoneal plane was prepared between the posterior rectus sheath and peritoneum (Fig1). Mesh was placed and fixed with prolene number 2-0 or 3-0 sutures (Fig 2). Suction drains were laid on the mesh and brought out through separate stab wounds. Muscular aponeurotic structures repaired with prolene number 1. Skin was closed after insertion of suction drain in subcutaneous plane.

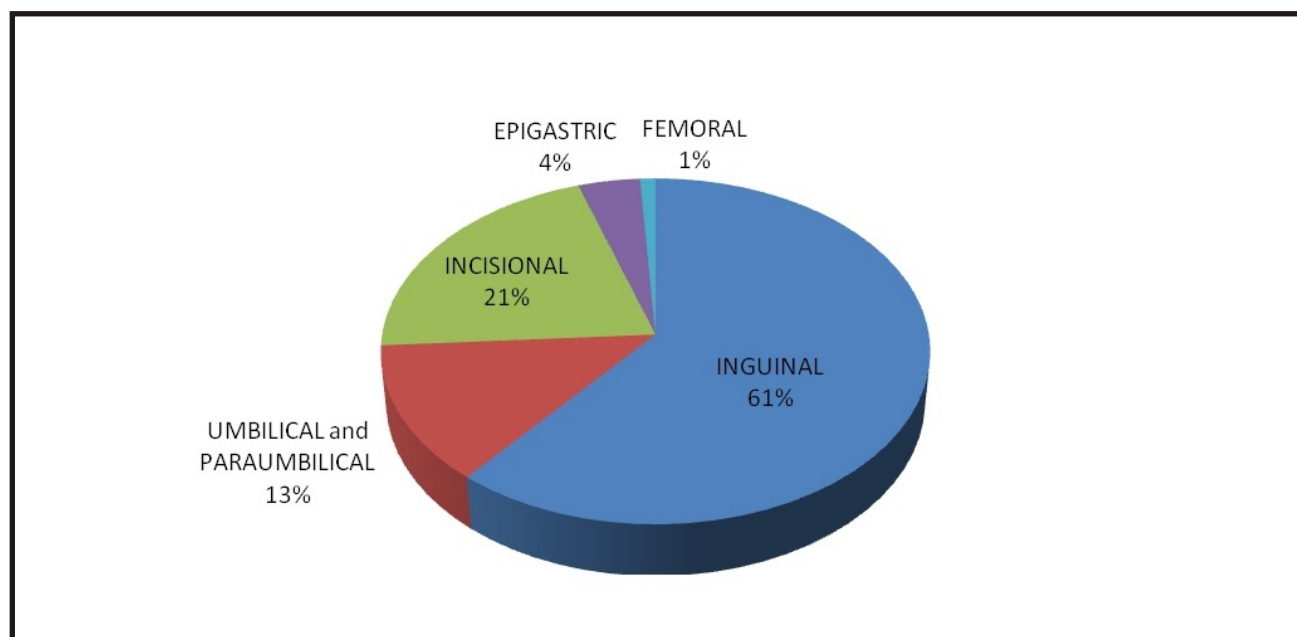
Suction drain was removed once the drainage was less than 25 to 30 cc. Antibiotics were continued for three days. Postoperatively, deep



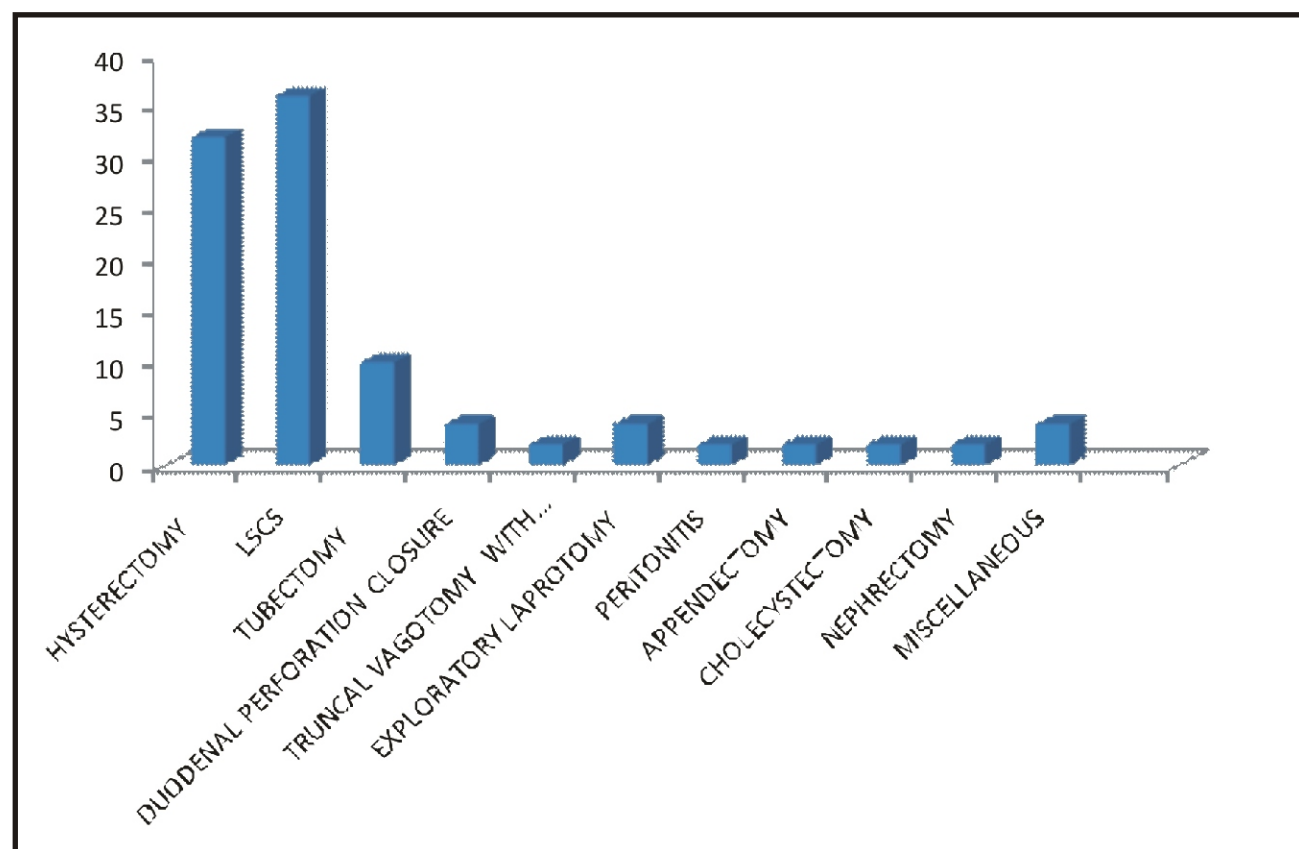
**Fig 1: Preperitoneal Plane Being Prepared**



**Fig 2: Preperitoneal Mesh Repair**



**Fig 3: Incidence of various hernias**



**Fig 4: Incidence of previous surgeries**

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 7th day and in few cases after 10th day. At discharge, patients were advised to avoid carrying heavy weights and advised to wear 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 analyzed and results were compared with existing literature.

## **OBSERVATION AND RESULTS**

A prospective clinical study consisting of 100 patients with incisional hernia who have undergone preperitoneal mesh repair is undertaken to investigate the role of preperitoneal mesh repair and its postoperative complications. The following are the analytical results of all the cases and conclusion drawn from them.

Out of 470 cases of hernias operated at our hospital between May 2008 to May 2010, 60% constitute Inguinal hernia, 13% constitute Umbilical and Para umbilical hernias, 21% constitute Incisional hernia, 5% constitute Epigastric hernia, 1% constitute Femoral hernia (Fig 3).

In the study of 100 cases, incidence of incisional hernia is more common in females as compared to males. Incidence of incisional hernia is more common in 30-60 years age group. This is comparable with that of N. Anantha Krishnan et

al and Goel and Dubey studies.<sup>[6]</sup>

All patients presented with history of swelling of which 18 cases also presented with history of pain. On examination, swelling was reducible in 90 cases (90%) and irreducible in 10 cases (10%). We had approximately, 30% of cases with early onset of incisional hernia (within one year), 70% of cases had late onset of incisional hernia > 1 year. 50 patients had hernia defect which measured up to 24 sqcms. 40 patients had defects between 24-40 sqcms. Only 10 patients had defects more than 40 sqcms. Detailed history was taken from the patients regarding the type of operation they had undergone. In present study, 78% of Incisional hernia cases were following obstetric and gynaecological operations. Among which LSCS was the most common operation followed by hysterectomy. The GI surgeries account for 22% which includes exploratory laparotomy for intestinal obstruction, duodenal perforation, GJ and peritonitis (Fig 4).

Midline lower abdominal incisions was used in 74% , upper midline abdominal incisions in 8%, Pfannestiel incisions in 12%, Mc Burney's in 2%, Transverse incision in 4% of patients was used.

In present study, there were no postoperative complications in 86% of cases. Only 2% had wound infection, 10% had seroma and 2% had deep vein thrombosis. No recurrence was seen in any case in a 24 months follow up period.

## **DISCUSSION**

Hernia recurrence is distressing to the patient and embarrassing to surgeon. Nowadays tension free repair using prosthetic mesh has decreased the recurrence to negligible. Despite excellent

results, increased risk of infection with implantation of a foreign body and cost factor still exist. Primary tissue repair is associated with high unacceptable recurrence rate. But nowadays tension free mesh repair is the ideal technique for hernia repair.

In the present study, age ranged from 25 years to 70 years and with peak incidence seen in 31 to 40 years age group (42%). There is a female preponderance noticed with 88%. In Bhutia WT et al study, the female: male ratio was 3:1.5 with female preponderance 84%.<sup>[8]</sup>

In this study, all patients presented with history of swelling, followed by abdominal pain in 18 %cases. In our series, reducible hernia accounted for 90% and 10% of cases had irreducible hernia. We had approximately 30% of cases with early onset of incisional hernia (within one year of previous surgery) whereas 70% of cases had late onset of incisional hernia (> 1 year of previous surgery), of which 28% of cases presented with > 10 years.

In our present study, over 78% of cases occurred following obstetrics and gynaecological operations, and around 22% of cases following general surgical operations. Of 100 cases, 32% of cases had hysterectomy, 26% of cases tubectomy, 20% of cases LSCS, 12% of cases laparotomy and procedure, 2% of cases appendicectomy, 4% of cases had undergone umbilical hernia and 4% of cases had recurrent incisional hernia, who had undergone anatomical repair.

In the present study, 12 patients (12%) had undergone more than one surgery and 4 patients (4%) 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, 74% of cases developed incisional hernia through lower midline incision, 12% through Pfannenstiel incision, 8% through upper midline incision, 4% through transverse incision and 2% through McBurney's incision.

In the present study, postoperative wound infection occurred in 26 cases (26%), which healed by secondary intention. In Ponka series, it accounts for 24%. Bucknell, Cox and Ellis, in their study 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.<sup>[9]</sup> Prevention of wound sepsis is therefore a prime objective in all abdominal operations.

Associated risk factors are diabetes mellitus (16%). Obesity (20%), grand multi para(10%) and COPD (4%). In the present study, we encountered 14% of cases with postoperative complications of which 2% of cases with postoperative wound infection, seroma in 10% of cases and deep vein thrombosis in 2% of cases. There were no postoperative complications in 86% of cases.

Postoperative complications were less in the present study (14%) when compared with other mesh repair techniques by Leber et al which was 48%. Postoperative ileus ( $p=0.047$ ) and recurrence rate ( $p=0.002$ ) are significantly less in the present study when compared to Leber et al study. But seroma is significantly ( $p=0.046$ ) more in the present study compared to Leber et al study.<sup>[10]</sup>



Wound infection was noticed in 7%, seroma 14% and chronic pain 7%, whereas, in the present study, wound infection was 2%, seroma 10% and DVT 2%. In comparison with underlay mesh repair by Antonie Hamy et al, wound infection was noticed in 14% of cases, recurrence rate was 3% and death in 0.6% of cases.<sup>[11]</sup>

In our study, most of the hospital stay was 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 with  $p=0.103$  and duration of hospital stay after surgery also increased when the risk factors are present with  $p=0.390$ .

In the present study, we had followed up all the patients after discharge for 15 days, 1 month, 3 months and few cases up to 24 months of duration. There was no 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. de Vries Relingh TS et al reported a recurrence rate of incisional hernia following different techniques of mesh repair as follows: on lay technique 28.3%, inlay technique 44%, and underlay technique 12%.<sup>[12]</sup> Macharias A et al reported a recurrence rate of incisional hernia following on lay mesh repair with 9% of cases.<sup>[13]</sup> Antonie Hamy et al reported a recurrence rate of incisional hernia following underlay mesh repair with 3.1% of cases.

## **CONCLUSION**

In the present study, preperitoneal mesh repair had excellent long-term results with minimal morbidity & recurrence rates. Preperitoneal

mesh repair is safer and is the procedure of choice for complex multirecurrent incisional hernia. Therefore our study affirms that preperitoneal mesh repair is the ideal repair technique and highly recommended for large incisional hernias.

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