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### Original Article

## Prospective study for assessment of Incisional hernia and its outcome following anatomical repair and polypropylene mesh repair.

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#### ABSTRACT

Incisional hernia represents one of the most frequent complication of abdominal surgery. The incidence is probably under estimated. The pathogenesis is complex and not fully understood, implying a patient-related factors ( multiparity, obesity, age) as well as technical factors, including among others wound infection, suture material, and types of incisions used. This study was to assess the incidence and aetiopathology of incisional hernia and to compare the management which includes anatomical repair and mesh repair. 40 cases of incisional hernia admitted to chigateri hospital and bapuji hospital, davangere were studied in period between September 2005 to August 2007. Incisional hernia constitute 11.8% of all hernias with maximum age incidence being 30-40 years. Higher incidence is among multiparous and obese females with other predisposing factors like chronic cough and diabetes. Most occurring within 5 years of initial operation majority of incisional hernia were infraumbilical. Surgery was considered among all patients after pre operative management. Among anatomical repair two had recurrence. Mesh repair didn't had any recurrence within 2 years of follow-up. Conclusion: incisional hernia is an avoidable iatrogenic malady. Proper preoperative preparations, meticulous surgical technique and post operative care go a long way in preventing occurrence of hernia. Surgery is the only treatment. Except for cost, polypropylene mesh repair offers excellent results with regard to recurrence of hernia.

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### 1. Introduction

Incisional hernia is the one that develops in a scar of surgical incision. It may be a small, even insignificant bulge through the wound. It may be large unsightly and uncomfortable also[1]. Incisional hernia represent one of the most frequent complications of elective or emergency laparotomy, which requires re-laparotomy. Sometimes it happens so, where the remedy becomes worse than the cause itself. The patient who undergoes surgery for relatively a minor surgical probe end in complicated hernia.

Incisional hernia occurs approximately in 2-11% of patients subjected to abdominal operation. Risk factors frequently associated with development of incisional hernia include mainly post-operative wound infection. Others include age of the patient, sex, obesity, pulmonary infection, technique, and type of incision used[2]. About 2/3rd occurs in first 5 years and at least another 3rd appears 5-10 years of operation[3].

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Among the incisions, lower abdominal incisions are associated with higher incidence of incisional hernia. Through this incision most of the gynaecological operations are done. Comparably, lower abdominal pressure is more and posterior rectus sheath is deficient below the umbilicus. Adding to this post-operative wound infection predispose to herniation. Complication of hernia include, its progression to large size causing cosmetic disfigurement, patient discomfort, strangulation of abdominal contents in small defect hernias. In large hernias intestinal obstruction is due to adhesion to hernial orifice and hernial sac. Incisional hernias with small defects are usually repaired by simple re suturing. Commonly practiced anatomical repairs are Shoelace darn repair[4], Cattells repair and Maingot's Keel repair[5]. Suture materials like nylon, polymer, polytetrafluoroethylene, polyester, polypropylene, polyglactyl, polydaxanone have improved the results of anatomical repair. Use of prosthetic mesh using non absorbable sutures to cover wide defects in incisional hernia has given excellent results.

## 2. METHODOLOGY :

The prospective study done in Department of surgery, chigateri general hospital and bapuji hospital, davangere for a period from September 2005 to august 2007. During this period, 339 operations were carried out for various abdominal hernias. among 339 patients 40 were operated for incisional hernia.

In this series, the patients who were admitted in surgical wards were examined to assess tissue defects, aetiology, precipitating factors etc., any associated conditions were identified and treated preoperatively. A detailed case history, clinical examination and necessary investigations were carried out according to proforma. After detailed physical examinations of patients, clinical diagnosis was established including the associated aetiological, precipitating and predisposing factors.

Final decision was made for every case regarding the method of repair depending on the need of the case. 40 cases underwent operation; the patients were prepared preoperatively and made medically fit to withstand the procedure.

All cases were analysed to find out the advantages of various operative technique, need of good postoperative care and result of operations. A comparative study was made between mesh repair and anatomical repair. 18 cases underwent anatomical repair and other 22 selected for mesh repair. Descriptive statistics was used for analyzing the data and chi square test was used to find out the significance wherever necessary ( $P < 0.05$ .)

## 3. RESULTS:

During the study period 40 patients were operated for incisional hernia. Maximum number of cases were in middle age group 20 to 50 years, youngest being 21 and eldest 65 years. Found to be more common in females in ratio 5:1. 45% are manual laborers. Commonest symptom is swelling (92.5%) and pain (42.5%) intermittent, colicky. there was a case of obstruction and was managed by immediate surgical intervention.

Multiparity, obesity and anemia, were the most relevant finding. chronic bronchitis, asthma, diabetes and other were less common factors(table:1). Out of 40 patients, 38 had single and 2 had two previous surgeries. Gynecological conditions were the major cause for previous surgeries (95%)(table :2). There was a preponderance of infra umbilical midline incision (80%) in present study. There was a high incidence of post operative complications after operative procedures. Wound infection was the main complication noted.

40% of cases appeared within first year.45% were obese and 55%were normal built.30% had poor abdominal tone (grading was done clinically. Patient with malgagnian bulge were considered as patients with poor muscle tone).of 40 cases, 22 cases selected for mesh repair and 18 cases selected for various anatomical repair (table: 3). 9 had complications, wound infections and seromas were more with mesh repair than anatomical repair.(table:4) one had stitch abscess which was drained local anaesthesia. one had stitch sinus which was explored under local anaesthesia which healed afterwards.

In our series there was no recurrence with mesh repair. Two cases developed recurrence with anatomical repair with an incidence of 5%.

**Table: 1 Distribution of predisposing factors in incisional hernia**

Predisposing factors	No. of patients (40)	Percentage (%)
Obesity	18	45.0
Multiparity	20	50.0
Anaemia	16	40.0
Diabetes	03	7.5
Asthma	06	15.0
Chronic Bronchitis	03	7.5
Bladder outlet obstruction	02	5.0

**Table : 2 History of previous surgery in the patients.**

Surgery	No. of cases	Percentage (%)
Abdominal hysterectomy	06	15.0
Tubectomy	14	35.0
LSCS	16	40.0
Ovarian cystectomy	02	5.0
Duodenal perforation	01	2.5
Appendicular perforation	01	2.5

**Table: 3. Operative procedure for incisional hernia in the cases.**

Operation	No. of cases	Percentage (%)
<b>Anatomical repair</b>		
Resuture	8	20.0
Maingot's keel	5	12.5
Shoelace repair	3	7.5
Mayo's repair	2	5.0
Total	18	45.0
<b>Mesh repair</b>		
Onlay	16	40.0
Inlay	6	15.0
Total	22	55.0

**Table: 4. Post operative complications**

Complications	Anatomical repair (n=18)		Mesh repair (n=22)		p value
	No. of cases	Percentage (%)	No. of cases	Percentage (%)	
Wound infection	1	2.5	3	7.5	0.001
Seroma	1	2.5	2	5.0	0.106
Postoperative cough	1	2.5	0	0	-----
Distention of abdomen	1	2.5	0	0	-----

**p value <0.05 is significant.**

#### 4. DISCUSSION

During the study period 40 patients were operated for incisional hernia. Maximum number of cases were in middle age group 20 to 50 years, youngest being 21 and eldest 65 years. Incisional hernia found to be more common in females in ratio 5:1. this may be due to multiple child births which leave the abdominal wall weak and predispose to hernia.

While studying the predisposing factors for the development of Incisional hernia, it was found that multiparity, obesity, wound infection, post operative cough and diabetes were the important factors. In our study most incisional hernias occurred following elective operations and most of them were gynaecological procedures. 40% of the cases incisional hernia developed in first year after previous operation. About 45% developed during 2nd to 5th postoperative year. The incisional hernias were found in lower abdominal incisions in nearly 2/3rd of the cases. this is due to gynaecological procedures which preferably done by infraumbilical incision.

Out of 40 cases 22 cases were selected for mesh repair. The criteria for selection being wider defects, predisposing factors and recurrence after anatomical repairs. Rest of the cases underwent anatomical repairs like keel operation and shoelace darning, resuturing. Complications were treated accordingly. In no case

there was rejection of mesh. The final wound healing was good. Compared to anatomical repair wound infection rate was more in mesh repair but the infections were controlled.

Patients were followed up for period of 6 months to 1.5 years. The follow-up period being very short, it is difficult to comment about recurrence. However there was no recurrence with mesh repair during brief follow-up. Usher in his own two series gives recurrence rate of 0 and 10% (1970 and 1962) [6]. Among anatomical repair 2 had recurrence. They were chosen for prolene mesh repair. This study establishes the superiority of mesh repair with regard to recurrence of incisional hernia.

#### 5. CONCLUSION:

Among patients with midline abdominal incisional hernias, mesh repair is superior to suture repair with regard to the recurrence of hernia, regardless of the size of hernia.

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