



Incisional Hernia – A Prospective study of 50 cases for 1 year

KEYWORDS

incisional hernia , risk factors , treatment , complications

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ABSTRACT **BACKGROUND:** Incisional hernia is a common complication of abdominal surgery and an important source of morbidity. It may be repaired using anatomical, mesh or laparoscopic methods. This study analyses the various etiopathogenesis, modes of presentation, modalities of treatment like anatomical, mesh repair and its outcome. **METHODS:** Between April 2013 to March 2014, 50 patients with incisional hernia who got admitted at Alluri Sita Ram Raja academy of medical sciences in the department of surgery were subjected to anatomical or mesh repair depending upon the surgeon's choice and size of the hernial defect. **RESULTS:** Incisional hernia was found to be the 2nd most common type of hernia. The incidence was more common in females, who underwent gynecological procedures by lower midline incisions. It was found to be more common in the age group of 30-50 years. Predominant risk factors being wound infection and obesity. The complications following surgery was found to be less with mesh repair and was significantly reduced by using drains. The post operative complications were mainly wound infections and seroma formation. **INTERPRETATION & CONCLUSION:** Mesh repair results in less post operative complications provided drains are used.

INTRODUCTION

Incisional hernia has followed abdominal surgery like a shadow for more than a century now. Incisional hernia is the one true iatrogenic hernia. Ian Aird defines incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of an operation or accidental wound. Incisional hernia occurs in 5- 11% of patients subjected to abdominal operations^(1, 2). Many factors are associated with incisional hernia like age, sex, obesity, chest infections, type of suture material used and most important wound infection¹. All these present a challenging problem to the surgeon. Incisional hernia usually starts early after surgery, as a result of failure of the lines of closure of the abdominal wall following laparotomy. If left unattended they tend to attain large size and cause discomfort to the patient or may lead to strangulation of abdominal contents. Furthermore, an incisional hernia can incarcerate, obstruct, perforate or can cause skin necrosis all of which markedly increase the risk to patient's life.

With the advent of anesthesia, antisepsis, antibiotics and greater understanding of anatomy, the scientific approach to hernia treatment dawned. Currently by the judicious use of the above three concepts, incisional hernia is repaired with least morbidity, mortality and recurrence rates. Almost every surgeon has got his own techniques and may modify it to suit the situation.

Laparoscopic technique of hernia repair has revolutionized the treatment of incisional hernia repair by reducing the morbidity and less hospital stay to the patient. This study has been undertaken to assess the magnitude of this problem, various factors leading to development of this condition and the different modalities of treatment practiced in our set up.

AIMS AND OBJECTIVES

Since the time abdominal operation became more common it was found that hernia through the scars were not infrequent sequelae. Various operative procedures were developed to tackle this disease, from Maydl (1886) to present date. The aim of this study is to study the following aspects of incisional hernia.

- 1) To analyze various etiological factors of incisional hernia.
- 2) To find out the ratios for age and sex.

- 3) To identify and ascertain various modes of presentation.
- 4) To study therapeutic modalities of treatment
- 5) To study the immediate postoperative complications.

MATERIALS AND METHODS

The present study is a prospective study which has been carried out under the Department of surgery, Alluri Sita Rama Raju Academy of Medical Sciences, Eluru during the period of April 2013 to March 2014.

A total number of 50 cases were studied and the follow up period varied from 6 months to 12 months. Exclusion criteria included incisional hernias associated with other abdominal wall hernias and patients aged above 70 years.

A detailed history of all patients was taken and a thorough clinical examination was done as a very important step to determine the type and cause of hernia. All patients were analyzed in various aspects like age, sex, risk factors, mode of presentation, previous operation and site of previous scar. Patients were also evaluated for other risk factors like obesity, HTN, DM and malignant disease.



PHOTO 1 – Incisional hernia , previous midline surgery

Routine investigations like Blood, Urine, CXR, and ECG were done. All the cases were operated and procedure adopted was anatomical repair or mesh repair. The immediate post operative complications were evaluated. Long term compli-

cations like recurrence, chronic infections and sinus tract formation were also evaluated.



PHOTO 2 – Incisional hernia , previous midline surgery

The analyzed data was compared with other series in literature and discussed.

**RESULTS
PREVALENCE**

TABLE I

Diagnosis	MALE	FEMALE	% of Total
Inguinal hernia	123	8	64.21
Incisional hernia	10	40	24.50
Umbilical hernia	2	7	4.40
Paraumbilical hernia	3	1	1.90
Femoral hernia	0	2	0.98
Epigastric hernia	8	0	3.92
Total = 204	146	58	

From the above table it can be seen that during the study period- 204 patients have been treated for various types of hernia. Out of these, 50(24.50%) cases were incisional hernias and it was the second most common type of hernia.

GENDER DISTRIBUTION

TABLE II

Gender	Total = 50	%
Male	10	20
Female	40	80

In this study of 50 cases it has been found that incidence of incisional hernia is more common in females than males and the overall M: F ratio is 1:6 (approx.).

AGE DISTRIBUTION

TABLE III

Age group	Number	%
11-20	1	2
21-30	14	28
31-40	13	26

41-50	16	32
51-60	4	8
61-70	2	4

From the above table it is learnt that the incidence of incisional hernia is maximum in the age group of 30-50 years (58%). In this study the youngest patient was 20 years and the oldest was 64 years.

MODE OF PRESENTATION

TABLE IV

Presentation	Number	%
Swelling	36	72
Swelling and Pain	12	24
Pain	02	4

In our study 36 patients (72%) presented with only abdominal swelling, 12 patients (24%) presented with abdominal swelling and pain in abdomen. Two patients presented with pain in abdomen as the chief complaint.

DEFECT SIZE

TABLE V

Defect size	Number
Up to 20 Sq. cm.	34
20-40 Sq. cm.	12
40-60 Sq. cm.	04

34 patients had hernia defect which measured up to 20 Sq. cm. (63.33%).12 patients had defects between 20-40 Sq. cm (23.33%). Only 4 patients had defects more than 40 Sq. cms.

PREVIOUS SURGERY

TABLE VI

Previous Surgery	Number
Hysterectomy	09
L.S.C.S.	16
Tubectomy	09
DU perforation closure	04
GJ + BTV	01
Exploratory laparotomy	04
Peritonitis	02
Appendectomy	03
Cholecystectomy	01
Nephrectomy	01
Total	50

From the above table, it is found that in our study 68% of patients had undergone gynecological procedures. Among which LSCS was the most common operation followed by hysterectomy. The GI surgeries account for 28% which includes exploratory laparotomy for intestinal obstruction, DU perforation, GJ and peritonitis.

PREVIOUS INCISION
TABLE VII

Incision	Number
Lower midline	34
Upper midline	11
Paramedian	2
McBurney	1
Transverse	2
Total	50

The patients had previous operations using lower midline abdominal incisions in 68%, upper midline incisions in 22% and paramedian incisions in 4%. Other incisions were McBurney and transverse incisions which led to the incidence of incisional hernias.

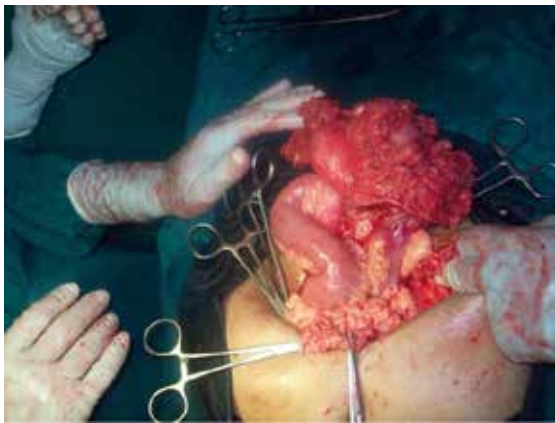


PHOTO 3 - ileal loop as content of the sac

RISK FACTORS
TABLE VIII

Risk factors	Number
Wound infection	10
Wound dehiscence	04
Post operative Cough	05
Repeat surgery	03
Respiratory complications	00
No complications	14
Obesity	10
Diabetes Mellitus	01
Hypertension	04
Stricture Urethra	02

In our study 14 patients had previous post operative complications in the form of wound infection (10 patients) and wound dehiscence (4 patients). The other risk factors were obesity (10 patients), hypertension (4 patients), post op cough (5 patients), stricture urethra (2 patients) and diabetes

mellitus (1 patient). 14 patients had no complications following previous surgery. None of the patients had other risk factor like malnutrition, generalized wasting, avitaminosis, malignant disease, patients on steroid therapy and alcoholism.

ONSET OF HERNIA
TABLE IX

Duration since surgery	Number
0-3 months	12
3 months to 1 year	21
1-3 years	10
> 3 years	07

From the above data it is found that in our study 12 patients (24%) presented with incisional hernia within 3 months of the previous surgery, 21 patients (42%) noticed swelling at the operated site within 3 months to one year of surgery and 10 patients (20%) within 1-3 years of surgery i.e., nearly 86% of them developed incisional hernia within 3 years of surgery. Remaining 7 patients (14%) developed hernia after 3 years.

DRAINS:

In majority of the patients closed suction drains were used and brought out through separate incision.

TECHNIQUE OF SURGERY
TABLE X

Type of repair	Number
Anatomical repair	03
Mesh repair Onlay	46
Underlay	01

In this study most of the surgeries for incisional hernia were done by onlay mesh repair technique 92%. Outcome of the surgery was satisfactory and there was no recurrence for a follow up period of 6 to 18 months.



PHOTO 4 - Onlay Mesh Repair

POSTOPERATIVE COMPLICATIONS
TABLE XI

Complications	Number	%
Wound infection	11	22
Wound dehiscence	03	6
Seroma	08	16
No complications	27	54
Expired	0	0
Respiratory complications	01	2
Recurrence	NIL	0

In our study, 11 patients had wound infection which was treated with antibiotics according to culture and sensitivity reports. 3 patients had wound dehiscence and were taken up for secondary suturing. 8 patients had seroma formation

which was treated by drainage and dressings. One patient who had post operative cough was treated with steam inhalation, chest physiotherapy and cough syrup. There was no mortality in this study.

DISCUSSION

50 cases of incisional hernia were admitted in Alluri Sita Ramaraju Academy of Medical Sciences, Eluru for treatment between April 2013 to March 2014. This study may not reflect all the aspects of incisional hernia, as the series is small and follow up has been for a short period in most of the cases.

Incisional hernia is the second most common hernia among all the hernias operated in our institution (24.50%). The maximum age incidence of incisional hernia in our study has been 30-50 years. Ellis, Gajraj and George³ in their study noticed a mean age of 49.4 years. The youngest patient in our study was 20 years and the oldest was 64 years.

The sex incidence of incisional hernia among the 50 cases studied is 1:4 (M: F) approximately showing a female preponderance. This is because of laxity of abdominal muscles due to multiple pregnancies and also an increased incidence of obesity in females. Ellis, Gajraj and George³ obtained an incidence of 64.6% female population in their study of 383 patients. J.B.Shah⁴ studies and Goel and Dubey⁵ series have male to female ratio 1:1.17 and 1:1.25(M: F) ratios respectively.

Almost all patients presented with abdominal swelling and pain (96%). Only 2 out of 50 patients (4%) presented with pain as the only symptom.

In our study 68% of the incisional hernia occurred in mid-line infraumbilical incisions. This may be because of the following features:

- Intraabdominal hydrostatic pressure is higher in lower abdomen compared to upper abdomen in erect position i.e., 20 cm of water and 8 cm of water respectively.
- Absence of posterior rectus sheath below arcuate line.
- This incision is used in gynecological surgeries who have poor abdominal wall musculature.

This is comparable with A.B.Thakore et al⁶ studies (67.1%) and Goel and Dubey⁵ studies (44.6%).

Over 68 % of cases occurred following gynecological procedures (Hysterectomy, Tubectomy, Caesarean sections). This may be because most of these procedures were done through lower midline incisions.

Ponka⁷ in his study noted 36% incidence and Goel and Dubey⁵ noted 28.76% incidence among gynecological procedures.

In considering the risk factors promoting incisional hernias, wound infection accounted for 20% in our study. The other risk factors observed were obesity (20%) and COPD (10%). This is comparable with that of Bose et al⁸ studies in which wound infection (59 out of 110 patients-53.63%), obesity (33/110-30%), COPD (23/110 – 20.90%) and stricture urethra (10/110 – 9.09%). 3 patients (10%) had undergone more than one operation previously which is also one of the risk factors in our study which can be compared with Ponka⁷ series (25%). Brenden Devlin⁹ states that repeated wounds in the same region or just parallel to each other will often lead to the development of herniation.

In our study 66% of patients developed incisional hernia within 1 year of previous surgery, 20% within 1-3 years and 14% after 3 years. In Akman's series more than 65% of the incisional hernias occurred within 1 year after previous surgery.

During the clinical examination in our study 34 patients (68%) were found to have hernial defect of up to 20sq cms and 4

patients had defects more than 40sq cms. Thomas A.Santora et al¹⁰ believes that the size of the fascial defect and the appearance of the fascia should dictate the selection of the most appropriate method of hernia repair.

Jack Abrahamson¹¹ believes that mesh repair is excellent method of repair for large ventral abdominal hernias but has not specified the size of the defect.

None of the patients required perioperative blood transfusion. 3 patients required preoperative preparation in the form of controlling skin infection, diabetic control and COPD management.

In our study polypropylene mesh and the suture material of the same type was used to repair the incisional hernias and the technique of the repair was decided by the size of the hernial defect, abdominal muscle tone, whether hernial defect could be approximated without tension and general condition of the patient. 47 out of 50 were treated with polypropylene mesh repair and 3 with anatomical repair.

Incidental surgeries were performed in 2 patients; appendectomy in 1 patient and ileal resection in another. Seroma collection in suture line, wound dehiscence and wound infection occurred in both the groups which were treated appropriately. Khaira H.S. et al¹² reported seroma formation in 6 out of 35 patients and wound infection in 1 out of 35 patients.

In our study we had no recurrences; however the follow-up period was variable and short to comment upon. Usher¹³ reported zero percent recurrence in 48 patients who were treated by polypropylene mesh repair. Jacobus W.A et al¹⁴ reported a 10 year cumulative rate of recurrence of 63% in anatomical repair and 32% in mesh repair. The recurrence rate thus varies in different studies but all studies favour mesh repair to decrease the recurrence rate.

With thorough patient evaluation, pre operative skin preparation, meticulous operative technique, use of non absorbable sutures for musculo aponeurotic tissue, use of suction drain, use of peri-operative broad spectrum antibiotics, nasogastric aspiration, early ambulation and chest physiotherapy, complication rates in our study were minimized.

With prosthetic mesh, defects of any size can be repaired without tension. The polypropylene mesh, by inducing inflammatory response sets up scaffolding that in turn induces the synthesis of collagen. Thus the superiority of mesh repair over suture repair can be accounted for.

SUMMARY

50 cases of incisional hernia which were admitted in Alluri Sita Ramaraju Academy of Medical Sciences, Eluru were studied. The statistical data and analysis of the cases studied during this period are presented in this study.

- Incisional hernia (24.50%) was the 2nd most common hernia preceded by the inguinal hernia (64.21%).
- It was more common in females than in males with a ratio of approximately 4: 1.
- Incidence of incisional hernia was highest in the age group ranging from 30-50 years.
- Most of the patients presented with swelling (72%) and swelling with pain (24%).
- Incisional hernia was more common in patients with previous history of gynecological operations (68%).
- The incisional hernia was common in the infraumbilical region (68%).
- In majority of patients (86%) the incisional hernia occurred within 3 years of previous operation.
- Wound infection following previous surgery was the most important risk factor associated with wound failure. The other major risk factors were obesity and COPD.
- The size of the hernial defect less than 20sq cms was

found in patients (68%).

- 47 patients (92%) underwent mesh repair and 18 patients had post operative complications- wound infection being the commonest.
- Post operative complications included wound infection (22%), seroma (16%) and wound dehiscence (6%). Respiratory complication was observed in 1 patient (2%).
- Post operative complications were minimized by the use of closed suction drains.
- There was no recurrence in our study though the period of follow-up was not adequate to make correct assessment of recurrence.
- There was no mortality.

CONCLUSION

- The use of midline incision should be restricted to operations in which unlimited access to the abdominal cavity is necessary.
- Meticulous aseptic technique and careful closure of the abdominal wound is necessary to prevent incisional hernia.
- Proper preoperative preparation of the patients with high risk is an important factor in preventing recurrence of incisional hernia.
- Mesh repair results in less post operative complications for incisional hernia provided drains are used.

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