



ORIGINAL RESEARCH PAPER

General Surgery

A CLINICAL STUDY AND MANAGEMENT OF INCISIONAL HERNIA

KEY WORDS: Incisional Hernia, Risk Factors, Repair, Anatomical Repair, Mesh Repair, Post Operative Complications.

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Introduction: Incisional hernia has followed abdominal surgery like a shadow for more than a century. Ian Aird defines incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar in an operation or accidental wound. Incisional hernia occurs in 5-11% of patients subjected to abdominal operations. Many factors are associated with incisional hernia like age, sex, obesity, chest infections, type of suture material used and most important wound infection. Laparoscopic techniques of hernia repair have revolutionized the treatment of incisional hernia repair by reducing the morbidity and less hospital stay. This study has been undertaken to assess the magnitude of this condition and the different modalities of treatment practiced in our set up.

Aim of the Study: To analyze the various etiological factors for incisional hernia, therapeutic modalities of treatment adopted and immediate post operative complications.

Material and Methods: This is prospective study which has been carried out in the department of surgery for a period of two years. A total of 50 cases were studied and the follow period varied from 6 months to 18 months. Exclusion criteria included patients beyond 70 years of age and incisional hernias associated with other abdominal wall hernias. A detailed history of all the patients was taken and a thorough clinical examination was done 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, diabetes and malignant disease. Routine blood and urine investigations-ray 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 complications like recurrence, chronic infections and sinus tract formation were also evaluated. The analyzed data were compared with other series in literature and discussed.

Results

During the study period 232 patients have been treated for various types of hernia, 50 cases (21.55%) were incisional hernias and were the second commonest type. (Table 1).

Table 1: Distribution of Various types of Hernia

Type of Hernia	Male	Female	Percentage
Inguinal hernia	150	09	68.5
Incisional hernia	07	43	21.55
Umbilical hernia	03	08	4.74
Epigastric hernia	05	00	2.15
Paraumbilical hernia	04	01	0.86
Femoral hernia	00	02	2.15
Total	169	63	100

In the present study the male: female ratio is 1:6, being more common in females. The prevalence of incisional hernia was common in the age group of 31-50yrs (60%), youngest being 24 years and oldest being 70 years. (Table 2)

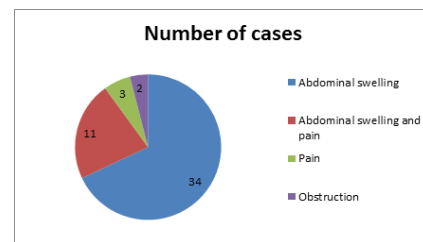
Table 2: Age distribution

Age	Number of cases	Percentage
11-20	00	0
21-30	08	16
31-40	15	30
41-50	15	30

51-60	08	16
61-70	04	08
Total	50	

In the present study 34(68%) of patients presented with only abdominal swelling, 11 patients(22%) presented with abdominal swelling and pain in abdomen, 3 patients with only abdominal pain and 2 patients with obstruction.(chart 1)

Graph 1: Mode of clinical Presentation



Thirty two patients had hernia defect which measured up to 20sqcm, 11 patients had defects between 20-40sqcm. Only 7 patients had defects more than 40sqcms. (Table 3)

Table 3: Size of the defect

Size of the defect	Number of patients
Upto to 20sqcm	32
20-40sqcm	11
40-60sqcm	07

In the present study 64% of patients had undergone gynecological procedures. Among which Caesarian section was the most common operation followed by hysterectomy. The gastrointestinal surgeries account for nearly 30% which includes exploratory laparotomy for intestinal obstruction, duodenal perforation, gastrojejunostomy vagotomy and peritonitis.(Table 4)

Table 4: Previous surgeries

Name of operation	Number of patients
Hysterectomy	10
Caesarian section	16
Tubectomy	06
Duodenal perforation closure	04
Gastrojejunostomy and vagotomy	02
Explorative laparotomy	04
Peritonitis	02
Appendicectomy	01
Cholecystectomy	00
Miscellaneous	05

The patients had previous operations using lower midline abdominal incisions in 64%, upper midline incisions in 12% and paramedian incisions in 12%. Other incisions were McBurney, oblique lumbar and transverse incisions which led to the prevalence of incisional hernias.[Table 5]

Table 5: Previous incisions used

Incision	Number of cases
Lower midline	32
Upper midline	06
Paramedian	06
McBurney	01

Transverse	03
Oblique Lumbar	02

On analyzing the risk factors, 26 patients had previous post operative complications in the form of wound infection (20 patients) and wound dehiscence in 6 patients. Other risk factors were obesity (15 patients); chronic obstructive pulmonary disease (6 patients) and malnutrition in 2 patients. 14 patients had no complications following previous surgery. [Table 6]

Table 6: Risk factors associated with Incisional hernia

Risk factors	Number of patients
Wound infection	20
Wound dehiscence	06
Post operative cough	08
Repeat surgery	06
Respiratory complications	04
No complications	20
Obesity	15
Diabetes mellitus	10
Malnutrition	02

In the present study the onset of incisional hernia was seen between 3 months to 1 year duration after the previous surgery in 44% (n=22) of cases and 24 % (n=12) within 1-3 years of surgery. Nearly 84% of cases developed incisional hernia within 3 years of surgery. [Table 7]

Table 7: Time of onset of hernia after the previous surgery

Duration of surgery	Number of patients
0-3 months	08
3months-1 year	22
1 year-3 years	12
>3 years	08

Twelve patients underwent anatomical repair and 38 patients underwent Mesh repair. The complications noted following these procedures were wound infection (Anatomical repair-1, Mesh repair-2) and Seroma (Anatomical repair-1, Mesh repair-6). The data was statistically analyzed using Yate's Correction Chi Square test and P value, was found to be not significant. [Table 8,9]

Table 8: Anatomical versus Mesh repair

Type of repair	Number of patients
Anatomical repair	12
Mesh repair	
Onlay	11
Sublay	21
Underlay	06

Table 9: Statistical significance

Complications	Anatomical repair	Mesh repair	P value
Wound infection	01	02	>0.05 (not significant)
Seroma	04	06	>0.05 (not significant)

In the present study post operative complications 3 patients had wound infection which was treated with antibiotics according to culture and sensitivity reports, 10 patients had seroma formation which was treated by drainage and dressings. Two patients had post operative cough and was treated with steam inhalation, chest physiotherapy and cough syrup. There was no surgery related mortality in this study. In majority of the patients closed suction drains were used through separate incision. [Table 10]

Table 10: Post operative complications

Complications	Number of patients	Percentage
Wound infection	03	6
Seroma	10	20
Respiratory complications	02	4
No complications	30	70
Mortality	00	0
Recurrence	00	0

Discussion:

Men, women, and children of all ages and ethnic backgrounds may develop an incisional hernia after an abdominal surgery. They occur more commonly among adults than children. After surgical repair, incisional hernias have a high rate recurring. The incidence is also higher if there is wound infection immediately after surgery. In the past, material that was used to close the abdominal incision was of the absorbable nature and the rate of such hernias was higher. However, now synthetic, non-absorbable suture material is used and the rate has come down. The prevalence of incisional hernia in the present study was 21.55%. In the present study male: female ratio was 1:6, being more common in females. 68% patients had previous surgeries through lower abdominal incisions, 18% patients with upper midline incision, 10% patients with right paramedian incision, and 4% with left paramedian incision. 68% patients who had lower abdominal incisions developed incisional hernia followed by 18% patients with upper midline incision, 10% patients with right paramedian incision, and 4% with left paramedian incision. Some authors believe that incisional hernia rates do not differ by type of incision, and incision should be driven by surgeon's preference with respect to the patient's disease and anatomy. In the present study 90% of cases presented with abdominal swelling and pain. Incisional hernia occurred in midline infraumbilical incisions in 64% of the cases. This could be due to intra abdominal hydrostatic pressure being higher in lower abdomen when compared to upper abdomen in erect posture, absence of posterior rectus sheath below arcuate line and most commonly used incisions in gynecological surgeries in females who have poor abdominal wall musculature. In the present study 60% of the patients developed incisional hernia within one year of previous surgery. Incisional hernias occurred following gynaecological procedures in 64% of cases in the present study and 12% of cases had undergone more than one surgery. In various studies wound infection following the surgery was the main factor for the development of incisional hernia. The other common factors were burst abdomen following infection and chronic cough during post-operative period. In a research done by in their study documented the common risk factors as wound infection in 53.63% of cases, obesity in 30% and COPD in 20.90%. common cause for incisional hernia was found to be post-operative infection (47%), followed by cough (10%) and early return to work (2%). In the present study risk factors promoting incisional hernias was, wound infection accounted for 40 %, obesity (30%) and COPD in 8% of cases. In the present study 64% were found to have hernia defect upto 20 Sq. cms and 7 patients had defect of more than 40 Sq cms. In the present 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 hernia defect, abdominal muscle tone, whether hernia defect could be approximated without tension and general condition of the patient. Out of 50 cases of incisional hernia 38 were treated with polypropylene mesh repair and 12 with anatomical repair in the present study. Seroma collection in the suture line (Anatomical repair-4, Mesh repair-6), wound infection (Anatomical repair-1, Mesh repair-2) occurred in both groups which was treated appropriately. In the present study there were no recurrences on follow up. With thorough patient evaluation, preoperative skin preparation, meticulous operative technique, use of non absorbable sutures for musculo aponeurotic tissue, use of suction drain, use of perioperative broad spectrum antibiotics, nasogastric aspiration, early ambulation and chest physiotherapy, complication rates in the present study was minimized. Laparoscopic incisional hernia mesh repair was associated with lesser hospital stay, less pain and less post operative complications.

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 than anatomical repair for incisional hernia provided drains are used.

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