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Clinical evaluation and surgical management of incisional hernia

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ABSTRACT

Repair of hernia by Laparoscopic technique has revolutionized the treatment of incisional hernia repair by reducing the morbidity and less stay in the hospital of the patient. This study has been undertaken to assess the magnitude of this problem, various factors leading to the development of this condition and management. This is a hospital-based descriptive type of study done on 100 incisional hernia cases in the Department of Surgery at National Institute of Medical Science and Research, Jaipur, Rajasthan from January 2017 to June 2018. All the cases were operated and prolene mesh repair was done. The next immediate post-operative complications were also be evaluated here. Our study showed that the Incidence of incisional hernia is maximum (up to 60%) in the age group of 31-50 years and hence the ratio of male: female was 0.15:1. Most of the cases were found "with only swelling" which is about 73%. 40% of the cases where patients had previous operations using planned incision, 19% cases in upper midline incisions and 13% in paramedian incisions, 11% in Lower midline incisions. According to analysis, 30% of patients as compared to 70% of patients who underwent Mesh Repair instead of Anatomical Repair. We also examined that 22% of patients had wound infection which was treated or handled with antibiotics according to the culture and sensitivity report. Mesh repair is surely considered superior compare to anatomical repair. We highly recommend Hernioplasty (mesh repair) as the first line of treatment for uncomplicated incisional hernias to prevent recurrences.

Keywords— *Clinical evaluation, Surgical management of incisional hernia, Incisional hernia*

1. INTRODUCTION

For centuries surgeries of the abdomen has been followed by incisional hernia like a shadow. It is a 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. An incisional hernia occurs in 10- 20 % 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 infection[1]

After surgery incisional hernia occurs after the closure of the abdominal wall. After laprotomy there is a failure in healing being the reason. If untreated there is an increase in the size due to which there is discomfort. Strangulation of the contents of the abdomen can also occur later. Further, it can lead to incarceration, obstruction, perforation. The risk to the life of the patient is increased by all these along with the death of cells of the skin.

With the advent of anaesthesia, antisepsis, antibiotics and a greater understanding of anatomy, the scientific approach to Incisional hernia treatment is well understood. 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. Repair of hernia by Laparoscopic technique has revolutionized the treatment of incisional hernia repair by reducing the morbidity and less stay in the hospital of the patient. This study has been undertaken to assess the magnitude of this problem, various factors leading to the development of this condition and management.

2. MATERIAL AND METHODS

This is a hospital-based descriptive type of study done on 100 incisional hernia cases in the Department of Surgery at National Institute of Medical Science and Research, Jaipur, Rajasthan from January 2017 to June 2018.

Inclusion criteria:

- All patients with incisional hernias with a history of previous surgery
- Patients with Age (18-60years)

Exclusion criteria:

- Patients with Uncorrected extreme obesity
- Patients with a Skin infection
- Patients with Ascitis
- Patients with Chronic Cough, respiratory diseases and other debilitating medical illness

2.1 Methodology

A total count of 100 sampled patients was included in the current study after satisfying inclusion and exclusion criteria. Once it is explained in the local language then will opt for written informed consent was taken with the best of their satisfaction. Informative data was collected from a specially designed "Proforma" Case Recording Proforma (CRF) pertaining to sampled patient's particulars, necessary history, clinical examinations, diagnosis, investigations and surgical procedures. A detailed and informative history of patients were taken and a thorough clinical examination was done and was analyzed in various aspects like age, sex, mode of presentation and risk factors, previous operation and site of the previous scar. Patients were also be evaluated for other risk factors like obesity, HTN, DM and malignant disease.

Routine investigations like Blood, Urine, X-ray Chest (PA) view, flat plate abdomen, ECG and USG (Whole Abdomen) were done.

All the cases were operated and prolene mesh repair was done. The next immediate post-operative complications were also be evaluated here.

3. TREATMENT STRATEGY FOR INCISIONAL HERNIA

The following are the treatment strategy followed for incisional hernia:

- **Cattell's operation**: In this method layer by layer anatomical repair is done using monofilament non-absorbable suture material like polypropylene/ polyethylene
- **Double breasting**: Double breasting of rectus sheath using interrupted non-absorbable sutures using monofilament suture material. Hence it is overlapping a rectus sheath in two layers and with two rows of sutures.
- **Mesh Repair**: It is always better and ideal with probably fewer chances of recurrence occurs
- **Laparoscopic mesh repair**: It is done by placing a mesh under the defect laparoscopically in an intraperitoneal plane
- **Nuttall's operation**: Operation is done for lower midline Incisional hernia
- **Keel operation**: Operation is done in the large defect. The scar is excised and is dissected beyond the margin of the defect

3.1 Statistical analysis

The difference in proportion was analyzed by using the chi-square test. The difference in means among the groups was analyzed using T-Test.

4. RESULTS

Our study showed that the incidence of incisional hernia is maximum(60%) in the age group of 31-50 years along with minimum age group was 21 years and maximum age was 67 years old (table 1). We have found in the cases that 63% of the cases were present with Up to 20 Sq. cm followed by 23% cases with up to the range of 20-40 Sq. cm (Figure 1).

In our study and analysis of cases, 27 patients had previous post-operative complications in the form of wound infection (23 patients) and wound dehiscence (4 patients). The other risk factors were obesity (4 patients), hypertension (13 patients), and stricture urethra (5 patient). 40 patients had no complications following previous surgery. None of the patients had other risk factors like malnutrition, avitaminosis, generalized wasting, malignant disease, patients on steroid therapy and alcoholism (Table 2).

We have found that in our study 20% of patients presented with incisional hernia within 3 months of the previous surgery, 31% of patients noticed swelling at the operated site within 3 months to one year of surgery and 16 Patients within 1-3 years of surgery i.e., nearly 67% of them developed incisional hernia within 3 years of surgery. Remaining 33% of patients developed hernia after 3 years (Figure 2). 30% of patients underwent Anatomical repair compared to 70 % of patients who underwent Mesh Repair (Table 3).

We have also found that 22% of patients had wound infection which was treated with antibiotics according to culture and sensitivity reports. Nine patients had wound dehiscence and were taken up for secondary suturing. Sixteen patients had seroma formation which was treated by drainage and dressings. Three patient who had respiratory complication was treated with benzoin steam inhalation, chest physiotherapy and cough syrup. One patient expired due to associated renal failure. There was no surgery-related mortality in this study (Table 4).

5. DISCUSSION

The incidence of incisional hernia was maximum about 60% in the age group of 31 years to 50 years with minimum age group considered as 21 years and maximum as 67 years. Also to highlight that similar observation was made in the study of Ellis, Gajraj and George[2]. In their study, they have noticed a mean age of 49.4 years Narayanaswamy T, (2013)[3] where 48% of the patients belonged to the age group of 31 to 40years. In Deshmukh SN et al (2017)[4] The fact in this study was that the most vulnerable age group were 31 years to 40 years which contributes 28%. The very next common age group which was affected was from 41 years to 50 years (about 26%). Md. Mukhtar Naved et al (2017)[5] have also observed that the age distribution of 60 cases of incisional hernia is ranging from 10-60 years. The highest number of cases presented for the first time at approx. 66.6% was between 30-40 years of age followed by 12 cases contributing approx. 20% presented between 40-50 years of age.

The sex incidence of incisional hernia for 100 cases that we have studied for Male to Female ratio was 1:6.6 approximately which shows a female preponderance, the ratio of females as compared to males are 87% vs. 13%. Hence according to our observation, females clearly outnumbered the males in the present study. The similar finding with correspondence to the study of Ellis, Gajraj and George2 they also obtained an incidence of 64.6% of the female population in their 383 sample patients study report. J.B.Shah6also studies and Goel and Dubey[7] series also have male to female ratio as 1:1.17 and 1:1.25 ratios respectively. Deshmukh SN et al (2017)[4] studied on 50 sample cases and found that 41 were females and 9 were males means that females to males ratio as 4.5:1. Narayanaswamy T, (2013)[3] found Females to males ratio as 4.8:1, the reason could be the laxity of abdominal muscles due to multiple pregnancies. Another reason might be the increased number of lower abdominal incisions in the female category. Ellis et al reported an incidence of 64.6% of the female population in the 383 sample patient study.[2] Md. Mukhtar Naved (2017)[5] according to the study, 54 out of 60 patients (90%) were falling under the female category where only 6 patients were males. Here females to males ratio as 9:1 because of the same fact that laxity of abdominal muscles due to multiple pregnancies. Another fact is an increased incidence of obesity in the female category.

The hernia defect was measured preoperatively on ultrasound where 63% of the cases present with up to 20 Sq. cm followed by 23% of the cases 20-40 Sq. cm. Narayanaswamy T, (2013)[3] found that the size of the defect in 41% of patients was less than 3 cm and also 4 out of 6 patients who presented with obstructed hernia had a defect size of less than 3 cm and only 1 patient with strangulated hernia had a defect size of less than 3 cm. When we have compared it then we found that it is comparatively higher with the results by Millbourn D (2009)[8] found that Incisional hernia was present in 63 out of 522 patients which are approx. 12.1% and was less frequent in the short stitch group. In the case of surgical site infection, the incisional hernia was present in 11 of 27 patients which are approx. 40.7% in the long stitch group and in 1 of 16 as 6.2% in the short stitch group (P = .02). Deshmukh SN et al (2017)[4] also found in the study that most of incisional hernias 14 as 28% contribution occurred following tubal ligation and then Abdominal hysterectomy (24%) and Lower segment cesarean section (22%). 14% of total patients developed incisional hernia following the previous laparotomy for peritonitis

Md. Mukhtar Naved1 (2017)[5] found that 90% of the patients were women because of the high incidence of gynaecological operations. According to this study, nearly 67% of patients were developed incisional hernia within 3 years of surgery and the remaining 33% of patients developed hernia after completion of 3 years. A similar observation with Md. Mukhtar Naved (2017)[5] who found that the 40% of the cases 24 were reported between 1 to 2 years of the appearance of incisional hernia followed by 30% which is 18 cases reporting between 6 to 12 months and then 2–5 years of delay in the presentation were observed in 14 cases contributing approx. 23.3%.

In this study, 30% of the patients underwent Anatomical repair compared to 70% of the patients who underwent Mesh Repair. Deshmukh SN et al (2017)[4] according to him, 68% of the patients or 34 in numbers undergone only prolene mesh repair while the anatomical repair was carried out in 16 patients.

According to our study, 22% of the patients had wound infection which was treated with antibiotics according to culture and sensitivity reports, it means 9 patients had wound dehiscence and were taken up for secondary suturing and almost 50% hernia were observed asymptomatic. According to Flament J B, et al (1997)[9], many incisional hernias ranging from 47% to 88% are asymptomatic. In this review, strangulation or incarceration in incisional hernias was mentioned as an indication for operation in 6 to 14.6% of total cases. Trophic ulcers were also observed in 3.25% of giant incisional hernias which is 33 cases out of 1018 cases.

6. CONCLUSION

The following are the key conclusion that we have observed and analyzed after completion of the detailed analysis of the cases that are considered in the study:

- Incisional hernias occur more commonly in the female category instead of a male in case of post lower abdominal surgeries and gynaecological surgeries
- The use of midline incision necessarily is restricted to operations where unlimited access to the abdominal cavity is important.
- To prevent incisional hernia, we have the option of meticulous aseptic technique and careful closure of the abdominal wound which is necessary.
- A key factor in preventing recurrence of incisional hernia is proper preoperative preparation of the patients with high risk.
- Mesh repair is surely considered superior compare to anatomical repair.
- We highly recommend Hernioplasty (mesh repair) as the first line of treatment for uncomplicated incisional hernias to prevent recurrence.

7. REFERENCES

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APPENDIX

Table 1: Age incidence

Age group	No. of cases	Percentage
11-20	0	*0%*
21-30	17	17%
31-40	30	30%
41-50	30	30%
51-60	16	16%
61-70	7	7%
Total	100	100%

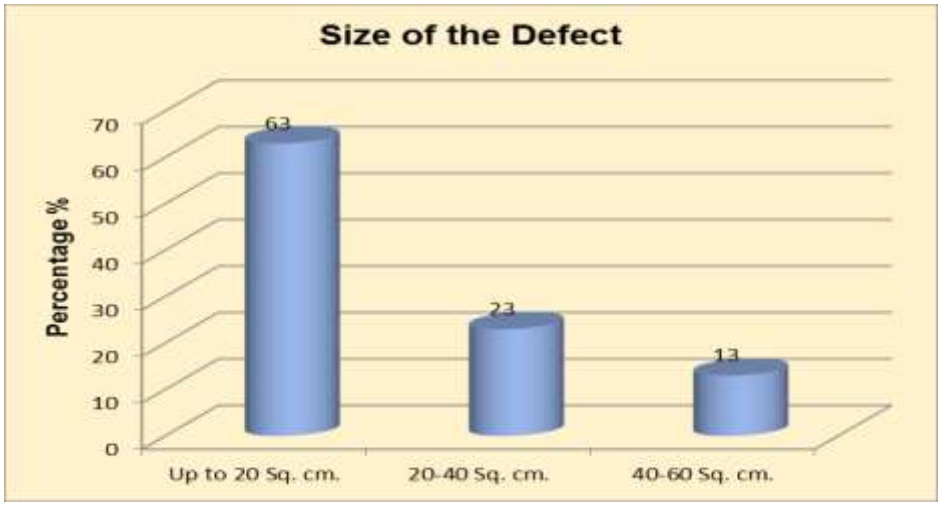

Fig. 1: Size of defect

Table 2: Risk Factors

Risk Factors	Number	Percentage
No complication	40	40
Wound infection	23	23
Hypertension	13	13
Stricture urethra	5	5
Obesity	4	4
Respiratory complication	4	4
Wound dehiscence	4	4
Diabetes Mellitus	3	3
Repeat surgery	2	2
Post-operative Cough	2	2

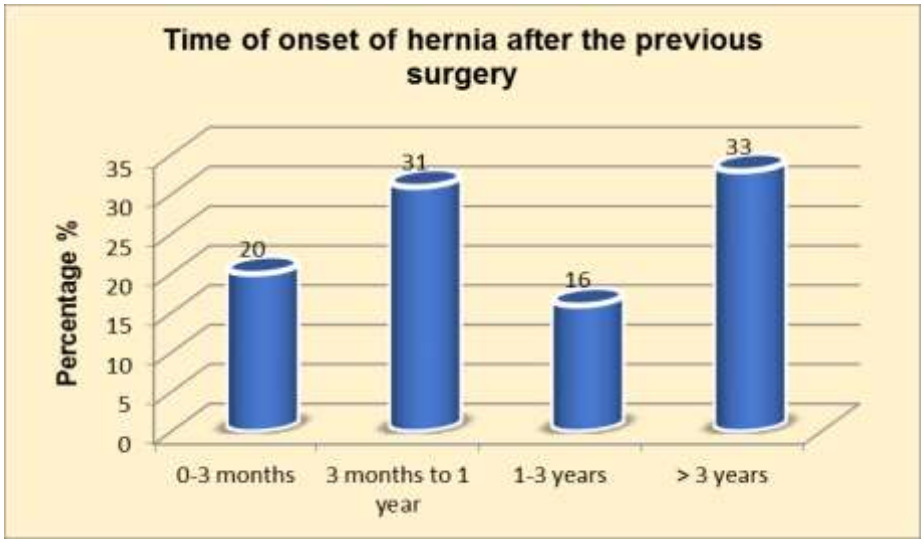

Fig. 2: Time of onset of hernia after the previous surgery

Table 3: Anatomical Versus Mesh Repair

Type of repair	No. of patients	Percentage
Anatomical repair	30	30%
Mesh repair	70	70%

Table 4: Post-Operative Complications

Complications	No. of patients	Percentage
Wound infection	22	22
Wound dehiscence	9	9
Seroma	16	16
No complications	49	49
Expired	1	1
Respiratory complications	3	3
Recurrence	0	0