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Original Article

Prevalence, Clinical Presentation, and Management of Incisional Hernia in the Indian Population: A Cross-sectional Study

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Abstract

Introduction: Incisional hernia is a type of hernia caused by an incompletely healed surgical wound, and the abdomen is the most common site of its occurrence. The aim of the present study is to analyze the incidence, etiopathogenesis, various modes of presentation, and different therapeutic modalities of incisional hernia in developing countries like India.

Materials and Methods: This is a prospective and observational study conducted on 100 patients. Demographic profile and data regarding the type of surgery, post-operative complication, and duration after which incisional hernia developed were recorded in pro formas. The data were tabulated and analyzed for statistical significance using univariate and multivariate analysis.

Result: Incisional hernia occurs most commonly in the age group of 41-50 years. Incidence is more common in females with female to male ratio of 1.6:1. Maximum cases (48%) of incisional hernia occurred between 6 months and 1 year after surgical intervention. Most common cause for incisional hernia was found to be post-operative infection (47%). Incisional hernias occur more commonly in lower abdominal and gynecological surgeries. Laparoscopic hernioplasty is the first line of treatment for uncomplicated incisional hernias.

Conclusion: In Incisional hernias, the choice of operative technique is crucial. Mesh repair is considered superior to anatomical repair alone, and we recommend laparoscopic hernioplasty as the first line of treatment.

Key words: Hernioplasty, Incidence, Incisional hernia, Recurrence

INTRODUCTION

Hernia is defined as the gap in the continuity of the fascia. Incisional hernia is the appearance of gap in the post-operative surgical site with or without bulging. Some authors explain incisional hernia as a diffuse evisceration of peritoneum and abdominal contents through a weak scar of an operation or accidental wound. It is a type of hernia caused by an incompletely healed surgical wound, and the abdomen is the most common site of its occurrence.[1,2]

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The most common cause of incisional hernia is the presence of infection at the surgical site which leads to the development of excessive tension causing inadequate healing. The other factors which increase the incidence of such type of hernia are obesity, advanced age, malnutrition, ascites, pregnancy, and other conditions that increase intra-abdominal pressure. Some authors believe that besides infection, the other factors are formation of hematoma and seroma, all of which result in decreased wound healing. Like any other hernia, it can lead to pain, bowel obstruction, incarceration, and strangulation.[3-5]

The incidence of occurrence of surgical scar hernia is about 5-11% in developed countries. It is thought

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that this incidence might be very high in developing countries like India due to increased rate of infection and malnutrition.[6]

Almost half of the cases of incisional hernia occur within first 2 years after surgery. The mode of treatment is surgical which ranges from anatomical repair to laparoscopic intervention. In traditional open surgical repair, the weakened tissue of the abdominal wall is re-incised, and a repair is reinforced using a prosthetic mesh. A mesh infection later in this variety of hernia repair most often needs a complete removal of the mesh and eventually results in surgical failure. Furthermore, large incisions essential for open repair are commonly allied with significant post-operative pain. Reported recurrence rates after open repair are up to 20% and are predisposed by mesh size and fixation type.[5,7]

On the other hand, the laparoscopic incisional hernia repair is a new technique of surgery for this ailment. The operation is executed with the help of surgical microscopes and specialized instruments. The surgical mesh is placed into the abdomen underneath the abdominal muscles through small incisions to the side of hernia. As a result, the weakened tissue of the original hernia is not re-incised to implement the repair, and thus potential for wound complications such as infections is minimized. Second, performance of the operation through smaller incisions can make the operation less painful and speed recovery. Laparoscopic repair has been validated to be safe and a more irrepressible repair than open incisional hernia repair.[3,8]

In case of strangulation, emergency surgical intervention is done. However, this treatment is associated with high incidence of recurrence and complications.[9,10] Still, there are lots of controversy among surgeons regarding the ideal time and method of treatment. In this study, we have analyzed the various factors responsible for developing incisional hernia and the most effective treatment modalities in the Indian population.

The aim of the present study is to analyze the incidence, etiopathogenesis, various modes of presentation, and different therapeutic modalities of incisional hernia in developing countries like India.

MATERIALS AND METHODS

This is a prospective and observational study done in Teerthanker Mahaveer Medical College for duration of 1 year. The study was conducted on 100 patients fulfilling certain criteria.

Inclusion Criteria

The inclusion criteria were as follows: (a) Patient belongs to Indian race, (b) had positive history of single abdominal surgery, (c) age group between 21 and 60 years, and (d) developed hernia at the site of surgical incision.

Exclusion Criteria

The exclusion criteria were as follows: (a) Age < 21 or > 60 years, (b) had positive history of multiple abdominal surgeries, and (c) patients with chronic cough, respiratory diseases, and other debilitating medical illness.

Detailed history of the patients was recorded, and clinical examination was done. Patients underwent routine blood and radiology (ultrasound, chest X-ray) investigations. Demographic profile and data regarding the type of surgery, post-operative complication, and duration after which incisional hernia developed were recorded in pro formas. The data were tabulated and analyzed for statistical significance using univariate and multivariate analysis.

Various parameters which were studied are:

1. Age distribution
2. Sex distribution
3. Mode of presentation
4. Time of onset of herniation
5. Post-operative complication which predisposed to incisional hernia
6. Frequency of herniation in type of incision
7. Type of treatment done to patient for incisional hernia
8. Recurrence rate in different methods of treatment.

RESULTS

The 100 cases of incisional hernia admitted in our institute in 1 year were included in the study. Various parameters were recorded, tabulated, and analyzed statistically. The patients were treated by two different methods (laparoscopic hernioplasty and preperitoneal mesh repair), and post-operative recurrence rate and duration of hospital stay were recorded.

The age distribution of the 100 cases of incisional hernia ranged from 21 to 60 years and had maximum number of patients in the 41-45 years age group (42%), followed by 51-60 years (30%), 31-40 years (17%), and 21-30 years (11%) (Table 1).

This study included 62 female and 38 male patients with female to male ratio being 1.6:1. The difference was found to be significantly significant (<0.05) which proves that the incidence of disease is high in females as compared to males (Figure 1).

On clinical examination, 86 patients out of 100 had reducible bulging through surgical site. Only three patients presented with severe pain and had strangulated hernia, and thus emergency surgical intervention was done (Table 2).

21 patients had an early onset of herniation within 6 months following primary surgery, 48 cases between 6 months and 1 year, 20 cases from 1 to 5 years, and 11 cases had herniation by the end of 5 years (Figure 2). Hence, maximum cases (48%) of incisional hernia occurred between 6 months and 1 year after surgical intervention.

After taking detailed history out of 100 cases, in only 59 cases, proper reason for the development of incisional hernia could be determined. Most common cause for incisional hernia was found to be post-operative infection (47%), followed by cough (10%) and early return to work (2%) (Figure 3).

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 (Table 3).

After the correction of anemia and blood pressure, all the patients underwent surgical correction of hernia. In 52 patients, laparoscopic hernioplasty was done, whereas in 39 patients, mesh repair was done. In only 9 cases, anatomical repair was preferred (Table 4). A total of 2 cases (one of anatomical repair and other of mesh repair) showed the recurrence of hernia out of 100 patients. Both these cases showed the recurrence within 6 months after the repair of hernia.

Table 1: Age distribution of the patients (years)

Age group of patients (years)	Percentage of patients
21-30	11
31-40	17
41-50	42
51-60	30

Table 2: Mode of presentation of the patient

Mode of presentation	Percentage
Reducible	86
Obstructed	11
Strangulated	3

Table 3: The frequency of incisional herniation in different type of incisions

Type of incision	Percentage
Lower abdominal vertical	21
Lower abdominal transverse	47
Upper midline	18
Right paramedian	10
Left paramedian	4

DISCUSSION

This prospective and observational study was conducted on 100 patients with the aim of studying the incidence, etiopathogenesis, modes of presentation, and different

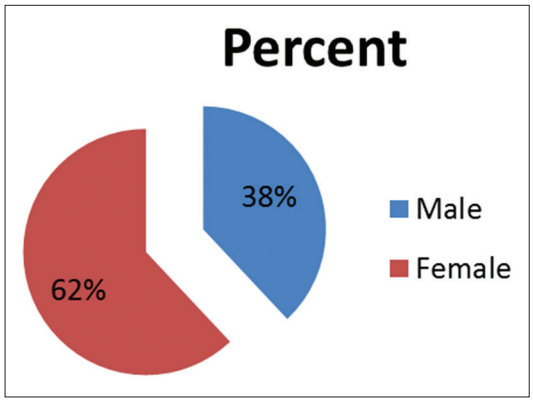

Figure 1: Sex distribution of the patients

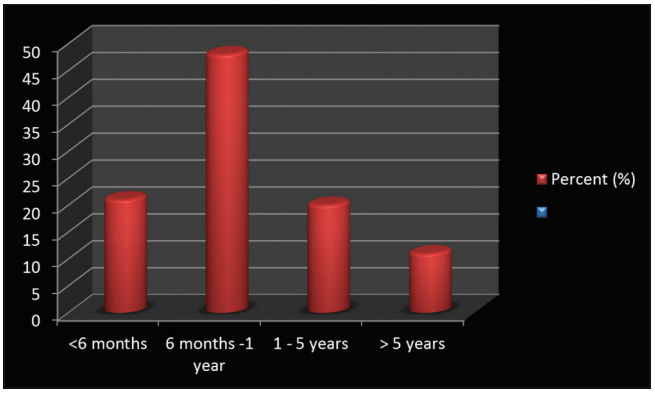

Figure 2: Time of onset of herniation

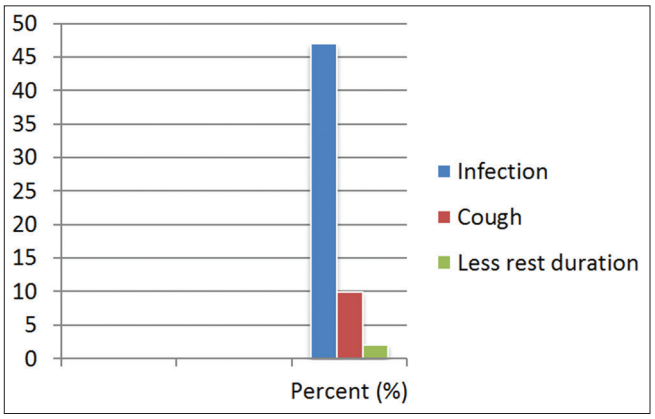

Figure 3: The post-operative complication which predisposed to incisional hernia

Table 4: Type of treatment done to patient for incisional hernia

Type of treatment	Percentage
Laparoscopic hernioplasty	52
Preperitoneal mesh repair	39
Anatomical repair	9

therapeutic modalities of incisional hernia in developing countries like India.

In our study, the most common age group involved is 41-50 years while female to male ratio was found to be 1.6:1. In a similar study done by Ellis *et al.*,[6] 48% patients developing incisional hernia belonged to the age group of 31-40 years. Female to male ratio was found to be 4.8:1. In both the studies, the incidence of hernia development at the surgical site is more common in females. Millbourn *et al.*[10] reported an incidence of 64.6% female population in their study of 383 patients. The reason behind this could be laxity of the abdominal muscles due to multiple pregnancies and increased number of lower abdominal incisions in females.

In various studies,[11-13] 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. All these findings are similar to our study.

In our study, the maximum cases (48%) of incisional hernia occurred between 6 months and 1 year after surgical intervention. In a research done by Bucknell *et al.*,[8] 42% cases presented with hernia 1-5 years after primary surgery. 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. Similarly, Millbourn *et al.*[10] and Carlson[11] also found that this type of hernia is common in females undergoing gynecological surgeries in which lower abdominal incisions are made. 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 our study, three different methods were used for treating the patients. Only two patients who underwent mesh repair and anatomical repair showed the recurrence of disease. According to Bessa *et al.*,[5] the mesh repair is a simple and effective operation for incisional hernia. Jenkins[13] in their study in 154 patients established the superiority of mesh repair over suture repair with regard to the recurrence of hernia.

CONCLUSION

- Incisional hernia occurs most commonly in the age group of 41-50 years
- Incidence is more common in females with female to male ratio of 1.6:1
- Maximum cases (48%) of incisional hernia occurred between 6 months and 1 year after surgical intervention
- Most common cause for incisional hernia was found to be post-operative infection (47%)
- Incisional hernias occur more commonly in lower abdominal surgeries and gynecological surgeries
- Laparoscopic hernioplasty is the first line of treatment for uncomplicated incisional hernias.

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