

INCISIONAL HERNIA - A CLINICAL STUDY, OBESITY - A MAJOR RISK FACTORRamesh Kota¹, Ramesh Lingala²¹Assistant Professor, Department of General Surgery, Gandhi Medical College and Hospital, Secunderabad, Telangana.²Assistant Professor, Department of General Surgery, Gandhi Medical College and Hospital, Secunderabad, Telangana.**ABSTRACT****BACKGROUND**

Incisional hernia is a common surgical problem with which a patient presents to the surgical OPD. There are certain modifiable risk factors, which if corrected can prevent incisional hernia. Among these risk factors, obesity is a major risk factor. Present study aims to prove that obesity is a major risk factor for incisional hernia.

MATERIALS AND METHODS

It is a prospective observational study conducted at a tertiary care centre from December 2014 to December 2017.

RESULTS

Obesity was a common risk factor in the study population. About 92% of them had a BMI >25, (74% being overweight and 18% falling under class I obesity) with a mean BMI of 28.1. Most of them (94%) had disease causing central abdominal obesity with waist hip ratio of more than 1 and (6%) are with waist hip ratio less than 1.

CONCLUSION

Obesity is a major risk factor in development as well as recurrence of incisional hernia and to take appropriate measures of weight reduction and proper surgical technique of mesh repair while managing a case of incisional hernia with obesity.

KEYWORDS

Obesity, Body Mass Index, Mesh repair.

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BACKGROUND

Incisional hernia is defined as a breakdown in the musculoaponeurotic layer of the abdominal wall in the vicinity of previous surgical scar with the formation of a potential sac through which intra-abdominal contents protrude at times of raised intra-abdominal pressure. It is a frequently occurring postoperative complication after abdominal surgery with occurrence rate remaining high for major abdominal operations ranging from 2% to 20%.^{1,2} Based on statistics, 10% of all hernioplasties in any large hospital is being done for incisional hernia repair. Among all the risk factors, the most important ones are wound infection, obesity, wound dehiscence, type of incision, poor surgical technique, reoperation and old age.

Incisional hernia is an iatrogenic hernia and the principle of its treatment should therefore begin with prevention, which is a proper method of wound closure. The repair of incisional hernia requires a good knowledge about the risk factors for its recurrence. It was found in various studies that

the risk of recurrence was not significantly affected by any of the factors except for obesity. Hence, recurrence is more likely in obese patients. Therefore, obesity is accounted for a major risk factor. It is known that despite optimal closing techniques for any laparotomy, the risk of incisional hernia is still high. Patients with a BMI >27, i.e. overweight patients have a greater chance of developing incisional hernia following primary laparotomy.

Therefore, it is highly imperative to exclude the modifiable risk factors, i.e. weight reduction before taking up a patient for incisional hernia repair and identifying the high-risk population and taking appropriate measures, i.e. proper abdominal closure during the primary laparotomy itself.

MATERIALS AND METHODS

It is a hospital-based descriptive study conducted at a tertiary care hospital. 50 patients who presented to the outpatient department from December 2014 to December 2017 between the age groups 30 yrs. to 80 yrs. were included in the study.

Inclusion Criteria

- All cases of uncomplicated incisional hernia.
- Cases who have given consent for the study, who presented to the outpatient.

Exclusion Criteria

- Cases presenting with features of complications like obstruction, strangulation, etc.

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- Chronic debilitating medical illnesses like chronic renal failure, chronic liver disease.
- Patients with Malignancies.
- Patients who have not consented.

Methods of Data Collection

Data was collected from cases presenting to the Surgery OPD after informed consent using a preformed proforma taking detailed history of their present complaints, duration, history of past surgery and any postop complications, associated comorbidities. Each case was examined properly, noting down weight, height, BMI, waist hip ratio and was evaluated with routine investigations and managed with surgical hernioplasty using mesh repair. Postoperatively was managed and monitored for any complications developed. Follow up evaluation was done at one month post repair and looked for any specific signs or symptoms of recurrence like chronic postoperative wound site pain.

Statistical Methods

All cases were serially analysed with data collection according to the specified proforma and necessary details were entered to work excel sheet. It was analysed with the help of a statistician using SPSS 17.0 version.

Statistical Tools

Descriptive statistics such as percentage, mean, standard deviation and median were used to describe the variables used in the study. In inferential statistics, independent test was used to compare BMI with selected variables.

RESULTS

Out of 50 patients studied in an age group of 34-78 yrs. in both male and female population, about 42% of incidence fell in the age group of 50-59 yrs. with a female-to-male ratio of 58:42 putting the female gender and old age at high risk. Obesity was a common risk factor in the study population, about 92% of them had a BMI >25, (74% being overweight and 18% falling under class I obesity) with a mean BMI of 28.1. Most of them (94%) had disease causing central abdominal obesity with waist hip ratio of more than 1 and (6%) are with waist hip ratio less than 1. Most of them had the symptoms for a period of >1 year (76%) indicating a late onset incision hernia, which is due to patient related risk factors than the perioperative risk factors and surgical techniques, which result in early onset incisional hernia.

The interval between incisional hernia presentation and previous surgery was more than 5 years in majority of cases (64%). This attributes to the fact that most of the cases studied were of late incisional hernia type, thus filtering out the perioperative risk factors.

The nature of previous surgery was elective in about 84% cases excluding the risk factors of emergency surgery such as poor surgical techniques, wound contamination and poor general condition.

Among the previous surgeries, most of them, 64% had undergone a midline laparotomy in the past, which by itself results in a week scar and weak abdominal wall. Going

through their associated comorbidities, 32% had no comorbidities. Of the rest, 68% had diabetes as their coexisting disease, which itself is an added risk for development of incisional hernia. While comparing the postop complications, patients with more BMI had an increased incidence of postop complications with a mean BMI of 28.5.

DISCUSSION

Incisional hernia occurs in 2-20% 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. Obesity is defined as an excess accumulation of body fat. Traditionally, overweight and obesity have been evaluated by anthropometric measurement of weight-for-height. More recently, BMI has been used. Not only is the total amount of fat an individual carries important, but also where the fat is distributed in the body. Fat in a central or upper body (android) distribution is most related to health risk.

$$BMI = m/h^2$$

Where m and h are the subjects' weight and height, respectively. BMI is usually expressed in kilograms per square meter resulting when weight is measured in kilograms and height in meters. This is according to the definition published by World Health Organization (WHO) in 2000.

BMI (kg/m ²) classification
<18.50 under weight
18.50-24.99 normal weight
25.00-29.99 over weight
30.00-34.99 class I obesity
35-39.99 class II obesity
>/=40.00 class III obesity
Table 1. Classification of Obesity

Sugerman et al has stressed that obesity maybe greater risk than chronic steroid use in their study.³ People who are obese have 20-28% chances of developing incisional hernia in the first 12-28 months of primary surgery.⁴

Obese people, especially those with large amount of abdominal adiposity have increased abdominal pressure, which predisposes the patient to umbilical and incisional hernia. Most recent literature shows that a BMI >27 has a chance of 20% to develop incisional hernia following midline laparotomy in the first 12 months. In this study of 50 patients, maximum incidence was found in the 6th decade (50-59) of life.

The complications of mesh placement are recurrence, foreign body reaction leading to adhesions, pain,⁵ bowel obstruction,⁶ infertility⁷ and enterocutaneous fistula.⁸ Leber et al reported an incidence of 3.5% for enterocutaneous fistula.

Incisional hernia is more common in females as also in this study the male-to-female ratio was found to be 42:58.

This is due to lax abdominal wall in females because of multiple pregnancies, multiple numbers of gynaecological procedures they may have to undergo, which are mostly lower abdominal procedures. Other studies have also found similar incidences due to same reasons. Ellis et al have reported an incidence of 64.6% in their study.⁹

There occurs increased strain on the operative wound due to bulky and fatty omentum and excess subcutaneous fat, which interferes with the early healing period. These obese people also have an additional loss of muscle mass tone, so their fascial planes have decreased strength. A fatty abdominal wall adds to added strain in the operative wound, impairs local blood supply and also can become infected.

In this study, most of them had the complaints for a period of >1 year duration (76%) that is most of them presented with chronic complaints excluding the acute conditions like obstruction, strangulation, which have to be managed on emergency basis. This is indicative that these hernias were of late onset type for which other factors are of importance.

On studying the other associated risk factors in the study population, 32% had no known comorbidities, 84% had undergone elective surgery in the past, 74% had not developed any complications following the index surgery and only 8% had history of multiple surgeries in the past, all these highlight the important contribution that obesity has on this study population.

Among the population who had comorbidities, 40% had diabetes mellitus, 10% had COPD and 2% bronchial asthma, which were significant risk factors based on other studies.

The study also proved that patients who had a higher mean BMI had more number of symptoms and more chance of postop wound infection due to the abnormal strain by the excess subcutaneous fat on the hernia repair wound and more chance of seroma formation due to adipolysis. It was also found that patients who were more obese patients with higher mean BMI of 28.5 presented later than a year.

CONCLUSION

- Incisional hernia was found to have greater incidence in the older age group, i.e. 5th decade.
- The female sex has a greater predilection in incisional hernia development compared to males.
- The study population had a common finding of being obese with a mean BMI of 28.1 and 94% having central abdominal obesity.
- Most of the incisional hernias (76%) were of late incisional hernia type with duration of complaints being there for 1 year.

- Among the associated risk factors, 40% had diabetes mellitus and 32% had no known comorbidities.
- The incidence of postoperative wound infection was also very low, only 10% had any accountable surgical site infection.
- About 64% had undergone midline laparotomy in the past.
- Based on these results, we can come to a conclusion that this study was done on a highly selective population who had presented mostly with late type of incisional hernias with a known significant contributory factors other than obesity, which was uniformly found. Hence, to a conclusion that obesity is a major risk factor in development as well as recurrence of incisional hernia and to take appropriate measures of weight reduction and proper surgical technique of mesh repair while managing a case of incisional hernia with obesity.

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