Original Article

The study of risk factors in the development of postlaparotomy incisional hernias - a study from tertiary care centre

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Abstract:

Incisional Hernia is a long term complication of laparotomy. Its exact frequency varies but is around 10 -15 %. The Aim of the study is to assess the risk factors in the development of incisional hernia with one, or in various combinations such as Age, Sex, Obesity, History of previous wound infection, The type of incision used and The number of previous operations through the same incision are studied. Longitudinal study of 100 patients with incisional hernia admitted to surgical wards of Yashoda Hospital during May 2012 to April 2014. Post operative wound infection at previous surgery & repeated surgeries through the same incision are associated risk factors for development of incisional hernia.

Key words: Laparotomy; Incisional hernia, tertiary care centre

INTRODUCTION:

Hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the wall of its containing cavity. Incisional hernias arise through a defect in the musculo fascial layers of the abdominal wall in the region of a post operative scar. Thus they may appear anywhere on the abdominal surface. A postoperative ventral abdominal wall hernia, more commonly termed incisional hernia, is the result of a failure of fascial tissues to heal and close following laparotomy. The approximated tissues give way, and abdominal organs, mainly bowel loops bulge through the gap, which is covered from inside outwards with peritoneum, scar tissue and skin. Incisional hernias have been reported in upto 20% of patients undergoing laparotomy. Modern rates of incisional hernia range from 2% to 11%. Based on National operative statistics, incisional hernia accounted for 15 to 20 % of all abdominal wall hernias. Incisional hernias are twice as common in women as in men. The incidence of ventral herniation after mid line laparotomy ranged from 3% to 20% and doubles if the operation was associated with a surgical site infection. Among these, 80–95% develop within 6 months to 3 years after initial surgery. Obesity, malnutrition, advanced age, malnutrition, ascites, pregnancy, and conditions that increase intra abdominal pressure are factors that predispose to the development of incisional hernia. Chronic pulmonary disease, diabetes mellitus, medications such as corticosteroids and chemotherapeutic agents and surgical site infections can contribute to poor wound healing and increase the risk for developing an incisional hernia.

The financial cost of the repair of an Incisional Hernia is approximately USD 6,000, without considering the loss of productivity. Hence, one can imagine the important economic impact of reducing the incidence of Incisional Hernia in this era of retraction of resources.

Incisional hernias may become apparent during the early months after surgery when there has almost certainly been some deep wound dehiscence in the postoperative period. An incisional hernia usually starts as a symptomless partial disruption of the deeper layers of a laparotomy wound during the immediate or very early postoperative period. A serosanguinous discharge is often the signal of dehiscence. Based on National operative statistics, incisional hernia accounted for 15 to 20 % of all abdominal wall hernias. Incisional hernias are twice as common in women as in men. The incidence of ventral herniation after mid line laparotomy ranged from 3% to 20% and doubles if the operation was associated with a surgical site infection. Among these, 80–95% develop within 6 months to 3 years after initial surgery. Obesity, malnutrition, advanced age, malnutrition, ascites, pregnancy, and conditions that increase intra abdominal pressure are factors that predispose to the development of incisional hernia. Chronic pulmonary disease, diabetes mellitus, medications such as corticosteroids and chemotherapeutic agents and surgical site infections can contribute to poor wound healing and increase the risk for developing an incisional hernia.

The financial cost of the repair of an Incisional Hernia is approximately USD 6,000, without considering the loss of productivity. Hence, one can imagine the important economic impact of reducing the incidence of Incisional Hernia in this era of retraction of resources.
repair of incisional hernias can be technically challenging. The most important distinctions in describing surgical management of incisional hernias are Anatomical vs. mesh repair and Conventional vs. laparoscopic repair. Anatomical repairs for incisional hernia include both simple suture closure and components separation. Anatomical suture repair of abdominal wall incisional hernias is associated with an unacceptably high incidence of hernia recurrence, and has prompted the wide use of prosthetic mesh materials for hernia repair. Mesh repair has become the gold standard in the elective management of most incisional hernias. Mesh repairs can be categorized according to the way in which mesh is placed as well as its relationship to the abdominal wall fascia. Broadly, meshes can be synthetic or biologic. Permanent (synthetic) prosthetic mesh implants are made of materials that do not degrade over time, whereas absorbable (Biological) meshes are degraded, primarily by hydrolytic enzyme activity. Biologic meshes are prepared from collagen-rich porcine, bovine, or human tissues from which all antigenic cellular materials are removed. These properties provide distinct advantages in infected or contaminated cases in which synthetic mesh is thought to be contraindicated. 9

This study is undertaken to review the various factors and circumstances leading to the development of incisional hernia in each case and hence may be able to minimize its occurrence.

MATERIAL AND METHODS

**Study Design:** Longitudinal study

**Study Population:** We recruited 100 patients with incisional hernia admitted to surgical wards in the Department of General surgery, Yashoda Hospital, Secunderabad, during the study period from May 2012 to April 2014. This study was approved by the Scientific committee and Ethics committee.

Patients with incisional hernia - Detailed history with specific reference to previous surgery / surgeries and the postoperative period, is elicited from the patient and verified with the previous records which are available with the patient.

The following risk factors are studied

- Age
- Sex
- Obesity – Body mass index above 30 is taken as obesity in this study.
- Wound infection – History of any purulent discharge from the wound is considered as wound in infection.
- Second Surgery through the same incision.

The association of incisional hernia with these risk factors with one and in combination is studied.

**INCLUSION CRITERIA FOR THE STUDY:**

- All patients between age 20 to 80 years with Incisional Hernia.
- Both the sexes.

**EXCLUSION CRITERIA:**

- Strangulated and Incarcerated Incisional Hernia
- Pregnancy with Incisional Hernia
- Patients with age < 20 years & > 80 years.

**RESULTS & DISCUSSION**

Hundred patients participated in this prospective study done during a time span of 22 months from May 2012 to April 2014

Incisional hernia usually appears from the 3rd decade onwards, the peak incidence is in the 4th decade. Goel and Dubey 10, Harikishnan & Karr 11, Bhattarai et al 12 and Bhattarai et al 13 also found more incidences in the 3rd 4th and 5th decades.

In this study 84% were females and male to female ratio being 1:5.

Dasilva 14, W.T. Blutia 12 and Manohar 15 also found more incidence among females.

High incidence of incisional hernia is seen in young and middle aged females, whereas the same incidence is not seen in males. This can be explained by multiparity and repeated surgeries on female pelvic organs.

**Table 1: Initial operative procedure compared with literature**

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<tbody>
<tr>
<td>Total Abdominal Hysterectomy</td>
<td>24.1%</td>
<td>17%</td>
<td>36%</td>
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<tr>
<td>LSCS</td>
<td>42%</td>
<td>33.3%</td>
<td>24%</td>
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<tr>
<td>Tubectomy</td>
<td>11.1%</td>
<td>8.3%</td>
<td>12%</td>
</tr>
<tr>
<td>Acute Abdomen With Peritonitis</td>
<td>13.3%</td>
<td>17%</td>
<td>24%</td>
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<tr>
<td>Incisional Hernia Repair</td>
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<td>4%</td>
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In our study 72% of the incisional hernias occurred following operations on female pelvic organs. Harikishnan and J.K. Karr 11 have also found operations on female pelvic organs were being the commonest surgeries which lead to the development of incisional hernia (77.2%). Bhattarai 13 in 2010 also found similar results in his study.

**Table 2: Site of previous incision compared with literature**

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<td>Incisional Hernia Repair</td>
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Obesity and wound infection show an association to incisional hernia with p < 0.05. Obese people with lower midline incision constitute 96.3% and non obese with lower midline incision was 52%. There appears a strong association between lower midline incision in an obese person to the occurrence of incisional hernia (p<0.05). Repeat surgery done through a lower midline incision resulted in incisional hernia in 68.4 percent of patients in our study, where as repeat surgery done through other incisions resulted in 16% of cases, showing a strong association (p<0.005).

CONCLUSION:

- Incisional hernia is common in the 3rd decade of life in obese females.
- Mean Age of presentation is 38.44 years.
- Operations on the female pelvic organs were the most common procedure preceding the development of incisional hernia.
- Post operative wound infection at previous surgery & repeated surgeries through the same incision are associated risk factors for development of incisional hernia.

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