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PREDISPOSING FACTORS AND ETIOLOGY IN VENTRAL HERNIA: A SINGLE INSTITUTION STUDY

General Surgery

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ABSTRACT

Ventral hernias are a familiar surgical problem. Millions of patients are affected each year. They are among the most frequently performed surgical procedures. The risk for a later recurrence repair is significantly higher after sutured repairs compared with mesh repairs.1 In incidence it is second only to inguinal hernias, accounting for 25-35 % of all hernias. Ventral hernias include incisional and primary defects in the abdominal fascia, which can cause umbilical, epigastric, or spigelian hernias. In adults, incisional hernias account for 80% or more of ventral hernias that surgeons repair. The prevalence of incisional hernias after Laparotomy is 2% to 11% and increases substantially when certain risk factors for postoperative incisional hernia, such as a wound infection or obesity, are present. Many patient-related risk factors have been implicated in the development of incisional hernias, including obesity, smoking, aneurismal disease, chronic obstructive pulmonary disease, male gender, malnourishment, corticosteroid dependency, renal failure, malignancy, and prostatism. Obesity often has been cited as a risk factor, with an incisional hernia rate of 15% to 20%. Incidence of Incisional hernias was more in females with male to female ratio of 1:2. Previous surgery or trauma was the single most important cause for ventral (Incisional) hernias. There is an association between an increased complication rate following ventral hernia repair and specific factors , including concomitant bowel surgery, ASAclass, age ,gender and method of hernia repair.2
Other etiological factors were multiparity, obesity, anemia, COPD, BPH, diabetes mellitus alcoholism and smoking. Post operative wound infection was important cause for development of Incisional hernias.

KEYWORDS

Ventral hernia, incisional hernia.

AIM -

To determine the important predisposing factors and etiology for ventral hernia.

MATERIALS AND METHODS-

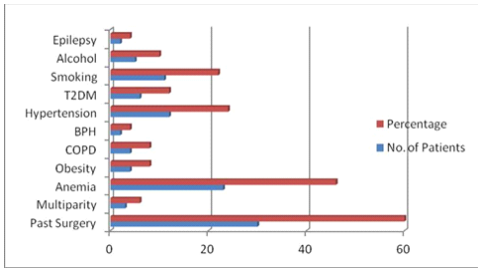
50 cases of ventral hernias were included in the study from 2015 to 2017 december. Data was collected according to proforma which included detailed history, clinical examination and investigation. Data was tabulated, analyzed and results interpreted.

RESULTS

Incisional hernias showed female preponderance with female to male ratio of 2:1. Surprisingly, males and females were affected equally with 25 cases each. Epigastric and umbilical hernias showed male preponderance with male to female ratio of 8:1 and 4:1 respectively. Increased body mass index is a risk factor for operative, medical, and respiratory complications after open ventral hernia repair.[3]

Previous surgery / trauma was the most common etiological factor. Incisional hernias accounted for 58% (along with traumatic ventral hernias) of ventral hernias. The overall sex ratio distribution in ventral hernias showed that both sexes were affected equally. However, with respect to Incisional hernias female to male ratio was 2:1 (17 female patients, (34%) and 8 males (16%)). Ellis H. et.al. have obtained 64.6% female population in their study of 342 patients.[4] This female preponderance of Incisional hernias could be due to relatively high frequency of employing lower midline incisions notoriously prone for herniation in women who undergo surgery for pelvic organ pathology.

With respect to umbilical and epigastric hernias male preponderance was seen (8 male each (16%, 14%) and 2 (4%), 1(2%) females respectively) making a ratio of 4:1 and 8:1 respectively. Affected males typically presented in their 4, 5, 7th decades (24, 28, 24 %) 76% and females in their 3, 5, 6,7th decades (24, 24, 20, 20%) 88 %.



Graph – 1: Common predisposing factors for development of ventral hernias

DISCUSSION

There is an association between an increased complication rate following ventral hernia repair and specific factor , including concomitant bowel surgery, ASA class, age, gender and method of hernia repair. Opinions vary as to the importance of patient's age in predisposing to post operative herniation (Kozoll 1964; Lindner;, 1975; Thorlakson, 1965 ; Vilvanto and Vanttinen, 1968). Carlson found no significant risk for the elderly or male patients in his study. Certainly Incisional hernia is not unique to elderly patients but wound healing is somewhat impaired in patients older than 60 yrs of age and the incidence in comparable situation is considerably increased with tissues senescence as reported by Robert J Baker.[5]Majority of the patients who underwent gynecological procedures (56%) namely Tubectomy – 32%, LSCS - 18%, hysterectomy – 6% developed incisional hernia through lower midline incisions. 32% of the patients who underwent laparotomy for perforation peritonitis developed incisional hernia.Toms P.A et al. has said Incisional hernia are more common following midline incision through the relatively avascular linea alba and are less common following transverse incision, especially where muscle splitting approaches are been used.[6] Carlson found a 10.5% ventral hernia rate in 4129 midline incisions compared with a 7.5% rate for transverse incision and a 2.5% rate of paramedian incision.[7]Rios A et al. has given the percentages of various incisions through which hernia has occurred.In our study ventral hernias constituted 32.5% and Incisional hernias 16.4 % of all hernias. This is comparable to Hodgson N.C.F et, al and Robert J.Baker series.The high recurrence rates with primary suture repair have led to an increased use of prosthetic mesh to provide for a "tension-free" repair. This approach has resulted in a decline in recurrence rates; however, mesh-related complications, such as infection, extrusion, and fistula formation, are significant problems. Recent emphasis on the importance of restoration of midline myofascial continuity and dynamic abdominal wall support has led to the application of numerous techniques of autologous reconstruction.Until the 1990s, simple suture repair of incisional hernias was the gold standard. Multiple retrospective studies in the literature have demonstrated high recurrence rates (25%–63%) of primary suture repair of even small (<5 cm) fascial defects. Various techniques have been applied; however, the continued presence of tension at the site of repair has led to high recurrence rates. Additional hernias and areas of fascial weakening may not be appreciated by the limited exposure of primary suture repair and may result in future recurrences. In a study of recurrent hernias by Girotto and colleagues , 50% of patients were noted to have more than one hernia at the time of exploration. An expert panel on incisional herniorrhaphy concluded that primary suture repair should be used only for small (< 5 cm) hernias and if the repair is oriented horizontally with nonresorbable, monofilament suture with a suture-to-wound length ratio of 4:1.

Mesh repair

High recurrence rates associated with primary suture repair led to an increased application of prosthetic mesh for the repair of incisional hernias. The use of synthetic mesh in incisional hernia repairs increased from 34.2% in 1987 to 65.5% in 1999. The American Hernia Society has declared that the use of mesh currently represents the standard of care in incisional hernia repair. Placement of mesh allows for a tension-free restoration of the structural integrity of the abdominal wall. Advantages to the use of mesh include availability, absence of donor site morbidity, and strength of the repair. The ideal prosthetic material should be nontoxic non- immunogenic, and nonreactive. Rarely there is a true failure of the mesh material. Recurrence after mesh repair is rarely caused by intrinsic failure of the prosthetic material. Failure to identify healthy fascia and technical error in securing the mesh to the fascia commonly lead to recurrence at the mesh-fascia interface. Several methods of securing the mesh to the fascia have been described, with the most common being mesh onlay, and mesh inlay, retro rectus placement, and intraperitoneal underlay. The onlay technique is popular because it avoids direct contact with the bowel and imparts less tension on the repair. In a survey of more than 1000 surgeons, Milliken reported that 50% of surgeons use this repair without closing the fascial defect. The disadvantages are that it requires wide tissue undermining, which may predispose to wound-related complications, and that the pressure required to disrupt the mesh from the anterior abdominal wall is less than other repairs. abdominal pressure impart significant tension to the mesh-fascial interface, which is the weakest point of the repair. High recurrence rates of 10% to 20% have resulted in use of other techniques to optimize strength of the mesh-fascia interface.

Retrorectus placement of mesh, popularized by Rives and Stoppa, has been used with increasing frequency. In this technique, the hernia sac is preserved and used as a buffer between the mesh and underlying viscera. The mesh is placed above the posterior rectus sheath and beneath the rectus muscle. Below the arcuate line, the mesh is placed in the preperitoneal space. It is generally recommended to place the mesh with at least 4 cm of contact between the mesh and fascia, which allows for distribution of pressure over a wider area (Pascal's principle), and the pressure-induced apposition promotes fibrous in growth at the mesh-fascial interface. The patients related factor namely age, sex, multi parity, obesity, cough/COPD, constipation, prostatism, diabetes mellitus, hyper tension, steroid therapy, consumption of tobacco and alcohol, past surgical history were recorded. A master chart has been made recording relevant history and findings of personally studied 50 cases of ventral hernia. Routine investigation-Hematology, Urine examination, chest x-ray, ECG, Ultrasound abdomen and Pelvis for all patients and other special investigations were done for associated diseases wherever required. As clinical diagnosis was made, patients with medical illness were appropriately treated to attain near normal parameters before surgery. At the induction of anesthesia, prophylactic dose of antibiotic (3rd generation cephalosporin) was given. Patients were assigned to undergo suture repair or mesh repair at operating surgeon's discretion.

Table 2: Common predisposing factors for development of ventral hernias

Risk Factors	No. of patients	percentage
Past Surgery	30	60
Multiparity	3	6
Anemia	23	46
Obesity	4	8
COPD	4	8
BPH	2	4
Hypertension	12	24
T2DM	6	12
Smoking	11	22
Alcohol	5	10
Epilepsy	2	4

CONCLUSION

Female preponderance was seen in Incisional hernias with male to female ratio of 1:2, where as in epigastric and umbilical/para umbilical hernias male predominance was seen with ratio of 8:1 and 4:1 respectively. Most of the ventral hernias except congenital varieties presented in 3rd to 7th decades. 90% of ventral hernias were uncomplicated at the time of presentation. Previous surgery or trauma was the single most important cause for ventral (Incisional) hernias. Other etiological factors were multiparity, obesity, anemia, COPD, BPH, diabetes mellitus alcoholism and smocking.Post operative wound infection was important cause for development of Incisional hernia.

summary

Ventral hernias were common surgical problems second only to groin hernias. Most of the Incisional hernias develop within 1'st year of previous surgery. Size of the defect and presence of complication are the guiding factors for choosing the type of repair.

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