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Original Research Article

Incisional hernia: preliminary observations at a new institute

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ABSTRACT

Background: Ventral hernia develops when an area of the abdominal wall weakens and develops a tear or hole. It may develop as a defect at birth, resulting from incomplete closure of a part of the abdominal wall, or develop where an incision was made during an abdominal surgery, occurring when the incision doesn't heal properly. Incisional hernia is typically observed within the first 5 years after the surgical incision is made, but may develop long afterwards.[1] This study was undertaken to review the history and clinical presentations in patients with incisional hernia, and subsequent treatment.
Methods: In the present study, the first 20 cases of incisional hernia admitted to this institute for elective herniorrhaphy were studied. History of the previous surgery was obtained and the findings noted. Treatment carried out was included in the study.
Results: Out of 20 cases, 12 were female (60%). Mean age of the patient was 41.9±11.9 years. Lower segment Caesarian section was the commonest preceding surgery (7 out of 12 females; 58.33%). Exploratory laparotomy accounted for 5 out of 8 cases amongst males (62.5%). Commonest site of the hernia was infraumbilical (n=9; 45%). Average size of the defect was 6.2 cm x 5.6 cm. 13 patients underwent surgery. Laparoscopic ventral hernia repair was the most common modality used (10 out of 13; 76.9%).
Conclusions: Incisional hernia is more common in females, and gynaecological operations are most common cause and most common site is infraumbilical.

Keywords: Hernia, Incisional, Laparoscopic repair

INTRODUCTION

The term "hernia" is derived from the Greek word hernios, which means "budding". The term ventral hernia is used to describe any protrusion of abdominal viscera, most often a part of intestine, through the anterior abdominal wall. Ventral hernia can be divided into two categories: spontaneous (or primary) hernia and incisional (or secondary) hernia. European Hernia Society (EHS) introduced an elaborate classification of ventral hernias.[2] To avoid confusion, parastomal hernias were excluded from this classication, and were classified separately.[3] Incisional hernia account for almost 80% of the ventral hernias.[4] Their incidence following laparotomy ranges from 2% to 11% in different studies.[5] Technical factors, such as slippage of knots, suture fractures, excessive tension, or rapidly absorbable sutures, can result in increased rate of incisional hernia.[6] A surgical-site infection at the time of initial surgery has been reported to double the risk of herniation.[7] Van't Riet showed that any type of wound dehiscence led to an incisional hernia in 63% of patients at 4-years of follow-up.[8]

Many hernia repair methods have been described. Traditional primary repair entails a laparotomy with suture approximation of strong fascial tissue on each side of the defect. However, recurrence rates after this procedure is as high as 41 to 52% during long term follow-up.[1,9,10] Hernioplasties in which large prosthetic

meshes are implanted appear to have lower recurrence rates (12 to 24%), but the required dissection of wide areas of soft tissue contributes to an increased incidence of wound infections and wound related complications (12% or higher).[9,11,12]

Table 1: Description of incisional ventral hernia (EHS classification).

EHS Incisional hernia classification			
Midline	Subxiphoidal	M1	
	Epigastric	M2	
	Umbilical	M3	
	Infraumbilical	M4	
	Suprapubic	M5	
Lateral	Subcostal	L1	
	Flank	L2	
	Iliac	L3	
	Lumbar	L4	
Recurrent incisional hernia?		Yes O	No O
Length: _____cm		width:_____cm	
Width cm	W1 <4cm O	W2 ≥4-10cm O	W3 ≥10cm O

The laparoscopic repair technique is based on the principles of Rives-Stoppa operation and involves placement of a large prosthetic mesh in a retro-muscular, intraperitoneal location.[9,13,14] The mesh overlaps the margins of the hernia by several centimeters, and is secured by multiple, interrupted, transabdominal sutures placed along the edge of the mesh. Placement of a large mesh in this intraperitoneal or preperitoneal location allows an even distribution of forces along the surface area of the mesh, which may account for the strength of the repair and the decreased recurrence rates associated with it. Additionally, minimally invasive procedure allows for lesser length of hospital stay, early return to work, and less surgical site infection. The aim of this study was to study the age-sex distribution in patients with incisional hernia, their past operative history, the site and size of defect, and the operative modality used.

METHODS

This is a prospective study done in the Department of General Surgery at All India Institute of Medical Sciences, Rishikesh

Inclusion Criteria

First 20 cases of incisional hernia presenting to the outpatient unit of this institute.

Exclusion Criteria

Intestinal obstruction, peritonitis, and defect size above 15 cm.

Prior operative history was obtained. Any comorbid condition, if present, was noted. Site and dimensions of the hernial defect was noted. Patients were preferentially treated by laparoscopic ventral hernia repair. Few patients could not be operated during same admission, either due to their unwillingness for surgery despite adequate counselling, or lack of fitness for anaesthesia.

RESULTS

Age and sex distribution

12 out of 20 patients were female (60%). Average age of the patient was 41.9±11.9 years. There was a stark difference in the age distribution between the two genders. Average age of a female patient was 36 years, and only 1 patient was above 50 years of age (8.33%). In contrast, average age of the male patient was 50.75 years, and 5 out of 8 patients were above 50 years of age (62.5%) (Table 2).

Table 2: Age-sex distribution.

Age	Male	Female
30 years or below	0	3
31-40 years	1	4
41-50 years	2	4
51 years or above	5	1

Operative history

Exploratory laparotomy accounted for 5 out of 8 cases amongst male patients (62.5%). Caesarian section was the commonest preceding operative procedure associated with incisional hernia (7 out of 12 females; 58.33%). One male patient had umbilical port-site hernia with prior history of laparoscopic appendicectomy*.

4 cases had recurrence of hernia following prior repair. Amongst those 4, one male patient had recurrence following repair of primary (i.e. spontaneous) epigastric hernia (Table 3)**.

Site of hernial defect

Infraumbilical incisional hernia was the commonest type (n=9; 45%), followed by umbilical incisional hernia (n=7; 35%). 8 out of 9 cases of infraumbilical hernia were females (88.9%), while 5 out of 7 cases of umbilical hernia were males (71.4%). Odds ratio was 20 (Table 4).

Size of defect

Average size of the defect was 6.2×5.6 cm.

There was no gender difference observed. Average area of the defect was 35.63 cm^2 (Table 5).

Table 3: Operative history.

Previous surgery	Male	Female
Exploratory laparotomy	5	0
Appendicectomy	2*	1
Open Cholecystectomy	0	1
Caesarian section	NA	7
Hysterectomy	NA	2
Ovarian cystectomy	NA	1
Recurrence	1**	3

Table 4: Site of hernial defect.

Site	Male	Female
Supraumbilical	1	0
Umbilical	5	2
Infraumbilical	1	8
Subcostal	0	1
Iliac	1	1

Table 5: Size of defect.

Greatest dimension	Male	Female
0-2 cm	0	0
2-4 cm	1	3
4-6 cm	4	4
6-8 cm	0	1
8-10 cm	1	0
10 cm or above	2	4

Comorbidities

Comorbid conditions were more commonly seen in men (3 out of 8; 37.5%). One female had past history of pulmonary tuberculosis and ATT, and another had bronchial asthma (total 2 out of 12; 16.7%) (Table 6).

Table 6: Comorbidities.

	Male	Female
Pulmonary tuberculosis	0	1
Bronchial asthma	0	1
Emphysema	1	0
Hypertension	1	0
Ischemic heart disease	1	0

Treatment

Laparoscopic ventral hernia repair (LVHR) using intraperitoneal composite mesh was the most common surgery performed (9 out of 13 treated patients; 69.2%). Open repair using underlay prolene mesh was done in one male patient, who had history of ischemic heart disease. Other methods used were open repair with suture approximation, IPOM and component separation technique (Table 7).

Table 7: Treatment.

	Male	Female
LVHR	3	6
IPOM	0	1
Suture approximation	0	1
Open mesh repair	1	0
Component separation	0	1

DISCUSSION

This was a prospective study which included the first 20 patients with incisional hernia presenting to the outpatient unit at our institute.

12 out of 20 patients included in the study were women (60%). This was not different from what Carlson MA et al had found, while reviewing 6266 published cases of minimally invasive ventral hernia surgery extracted from electronic databases (PubMed).[15] Out of 5223 procedures in which sex was reported, 3031 of the patients (58%) were female.

Average age of the patient in our study was 41.9 years. Average age in female patients was 36 years, which was lower as compared to average age of male patients, i.e. 50.75 years. Carlson MA et al, in the above mentioned meta-analysis, observed the mean age of 55 years.[15] Singh AP et al, reviewed 3266 cases from 34 studies extracted from electronic databases, and found the average age of the patient to be 55.34 years.[16]

History of preceding gynecological surgery was obtained in 7 out of 12 female patients (58.3%), and thus accounted for 35% of cases. Infraumbilical hernia was the commonest type, and was seen in 9 patients (45%; 8 women, 1 man). Qadri SJ et al in a study of 80 cases of incisional ventral hernia repair at a single centre between December 2005 and December 2009, observed that obstetrical or gynecological procedure was the most common index surgery leading to incisional hernia, and lower midline incision was the most common site of hernia.[17] Average size of the defect was 6.2×5.6 cm, and mean area was 35.63 cm^2. Subramanian A et al in their study also found similar results. Average area of the defect in secondary or incisional hernia observed was 37.9±4.9 cm^2.[18]

LVHR was attempted in 9 patients, and none were converted to open repair (conversion rate = 0%). Bedi Ap et al in their meta-analysis of 34 studies comprising 3266 LVHR, found that 74 cases (2.26%) were converted to open procedure.[16]

CONCLUSION

Incisional ventral hernia is a commonly encountered condition, and is more common in females. Female patients are more likely to be younger compared to their

male counterparts. Most common site is infraumbilical and gynecological operation the common index surgery associated with the condition.

Laparoscopic ventral hernia repair using intraperitoneal mesh is being increasingly used as the preferred modality of treatment, and has very low conversion rate to open procedure.

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REFERENCES

1. Hesselink VJ, Luijendijk RW, De Wilt JH, Heide R, Jeekel J. An evaluation of risk factors in incisional hernia recurrence. Surg Gynecol Obstet. 1993;176:228-34.
2. Muysoms FE, Miserez M, Berrevoet F, Campanelli G, et al. Results of a consensus meeting on the development of an EHS classification held in Ghent, Belgium, 2-4 October 2008. Hernia. 2009;13(4):407-14.
3. Smietanski M, Szczepkowski M, Alexandre JA, Berger D, Bury K, Conze J, et al. European hernia society classification of parastomal hernias. Hernia. 2014;18(1):1-6.
4. Larson GM. Ventral hernia repair by the laparoscopic approach. Surgical Clinics. 2000;80(4):1329-40.
5. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in United States in 2003. Surg Clin North Am. 2003;5:1045-51.
6. Pollock AV, Evans M. Early prediction of late incisional hernias. Br J Surg. 1989;76:953-4.
7. Bucknall TE, Cox PJ, Ellis H. Burst abdomen and incisional hernia: a prospective study of 1129 major laparotomies. Br Med J (Clin Res Ed). 1982;284(6320):931-3.
8. van't Riet M, van Steenwijk PD, Bonjer HJ, Steyerberg EW, Jeekel J. Mesh repair for postoperative wound dehiscence in the presence of infection: is absorbable mesh safer than non-absorbable mesh?. Hernia. 2007;11(5):409-13.
9. Stoppa RE. The treatment of complicated groin and incisional hernias. World J Surg. 1989;13:545-54.
10. Luijendijk RW, Hop WC, Van Den Tol MP, De Lange DC, Braaksma MM, IJzermans JN, et al. A comparison of suture repair with mesh repair for incisional hernia. New Eng J Med. 2000;343(6):392-8.
11. White TJ, Santos MC, Thompson JS. Factors affecting wound complications in repair of ventral hernias. Am Surg. 1998;64:276-80.
12. Leber GE, Garb JL, Alexander AI, Reed WP. Long-term complications associated with prosthetic repair of incisional hernias. Archives of Surg. 1998;133(4):378-82.
13. Rives J, Pire JC, Flament JB, Palot JP, Body C. Treatment of large eventrations. New therapeutic indications apropos of 322 cases. Surgery. Memoirs of the Academy of Surgery. 1985;111(3):215-25.
14. Wantz GE. Incisional hernioplasty with Mersilene. Surg Gynecol Obstet. 1991;172:129-37.
15. Carlson MA, Frantzides CT, Shostrom VK, Laguna LE. Minimally invasive ventral herniorrhaphy: an analysis of 6266 pulished cases. Hernia. 2008;12:9-22.
16. Bedi AP, Bhatti T, Amin A, Zuberi J. Laparoscopic incisional and ventral hernia repair. J Minimal Access Surg. 2007;3(3):83.
17. Qadri SJ, Khan M, Nazir SS, Rather A. Laparoscopic and open incisional hernia repair using polypropylene mesh: a comparative single centre study. Int J Surg. 2010;8(6).
18. Subramanian A, Clapp ML, Hicks SC, Awad SS, Liang MK. Laparoscopic ventral hernia repair: Primary versus secondary hernias. J Surg Res. 2013;181(1):e1-e5.

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