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CLINICAL PATTERN AND EFFECT OF CO-MORBIDITIES IN THE ETIOPATHOGENESIS OF INCISIONAL HERNIAS

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ABSTRACT

Background: Incisional hernia is a common iatrogenic complication of abdominal surgery and is a cause of unwanted morbidity. The study was reported for the first time from Republic of Mauritius. **Aims & Objectives:** The objective of the study was to analyze the clinical pattern and effect of co-morbidities on the clinical course of incisional hernias and repair. **Methods**: The study is a cross sectional study conducted at a tertiary care hospital for over 22 months. 38 patients with incisional hernia were studied with special emphasis laid on the predisposing factors and co-morbidities at the time of hernia repair. **Results**: In this study the incidence of incisional hernia was prevalent in females and occurrence was 3 times more than males. All hernias in females were the result of a gynaecological operation. 68% (26 out of 38 patients studied) of hernias were reported within 2 years of gynaecological operation. Majority of patients presented with swelling and pain related to scar. Twenty two out of thirty eight were operated and hernia repaired. Obesity was found to be the most important factor when the effects of co-morbidities were studied. Fifteen out of thirty eight (39.47%) patients came under the category of morbidly obese. **Conclusion**: In patients with recurrent hernia control of obesity and other co-morbidities before the attempt to repair hernia can be decisive.

INTRODUCTION

Incisional hernia is a problem of magnitude. It is also a socioeconomic problem. For the individual patient incisional hernia is an unexpected and hindering complication, which can influence daily life in such a manner that he or she could be consider disabled. Repeated admissions and operations have a major impact on the patient. When subsequent hernia repair does not solve the problem, but results in recurrence or complications, a patient's quality of life may be seriously affected.

Incisional hernia occurs in about 2-19% of patients after various incisions [1, 2, 3, 4]. When the scar has a defect, the abdominal contents may start protruding through it, due to intra-abdominal pressure. Certain conditions like chronic cough, chronic constipation, urinary obstruction, obesity, pulmonary disease, repeated pregnancies and post-operative abdominal distension may further increase the pressure unwantedly and increase the chance of incisional hernia [5, 6]. Wound infection is probably an important risk factor for the development of incisional hernia [7] and wound dehiscence [8, 1, 2]. In spite of all precautions during surgery and meticulous repairs to cure them, a number of cases of incisional hernias are being reported with failures of repairs leading to "Recurrent incisional hernia". Therefore, prevention of incisional hernia is warranted. Our aim was to study the aetiopathogenesis and effects of co-morbidities on the clinical course of incisional hernias and repair.

MATERIALS & METHODS

Study design: It was a cross sectional, Descriptive study

Locus of study: The study carried out in patients of Jawaharlal Nehru Hospital (JNH), Rose Belle, Mauritius between December 2010 to September 2012.

Sample size: A total number of 38 cases were studied.

Inclusion criteria: All patients of both genders aged above 25 years with incisional hernia who came to JNH were included in this study.

Exclusion criteria: Patients with recurrent inguinal hernia were excluded as they were categorized as primarily hernias of different aetiopathology.

Ethics: The protocol and proforma for collection of data as well for the study was approved by the ethical committee.

Methodology:

Detailed history pertaining to the surgery which later on led to the incisional hernia was recorded; more stress was laid on the predisposing factors and co-morbidities at the time of operation. Thorough work up of all patients included a complete physical examination, weight in kilograms, height in meters, size of defect and investigations like haemogram, X-ray chest, ECG, renal profile and echocardiography.

Patients were evaluated for co-morbidities like asthma, chronic obstructive pulmonary diseases (COPD), diabetes mellitus (DM), morbid obesity, hypertension (HTN) and malignancies at the time of first operation. Body mass index (BMI) at the time of previous operation which led to incisional hernia was also recorded.

Out of 38 patients in this study 22 patients were operated and hernia repaired. These patients were studied for their postoperative recovery and complications. Special emphasis was laid on the date of the operation which led to hernia formation and the actual date when the patient detected hernia. These dates gave information about the

exact time period between surgery and the hernia. In most of the cases the information related to the type of previous surgery and methods of closure adopted were also traced from their earlier records.

Statistical analysis: Data was analyzed using descriptive statistical principles (like mean, proportions and percentages) with SPSS 19 Package analyzed and different findings were compared with the available literature and discussed.

RESULTS

Out of 38 patients in the study, 29 patients were female while 9 were male. The age group of the patients varied from 29 to 82 years. Incidence was highest in the age group ranging from 50 to 70 years. Regarding the occupation of patients, out of 29 females majority of them (22) were house-wives.

Most of the patients (15) presented with swelling, followed by pain and swelling in about 11 of them, pain alone in 9 cases and rest (3) with associated symptoms of constipation. Only two out of 38 came with features suggestive of intestinal obstruction. Incisional hernia was more common after midline incision (76.31%). Out of the 38 patients studied the commonest incisions responsible, for the hernia were infra umbilical midline (16) and supra umbilical midline (13) (Table – 1).

Lower segment caesarean section (LSCS) was the commonest operation responsible for the incisional hernia in 18 cases of this study followed by emergency laparotomy (Table – 1). The dimension of the defect was studied in only 30 patients. The commonest defect size was 12 sq. cm. observed in 7 followed by 8 sq.cm in 6 out of 30 patients studied (Table – 1). The time period between the appearance of hernia and the operation responsible for it showed that 26 out of 38 patients reported about their hernia within 2 years of operation (68.42%) (Table – 2).

Morbid obesity was the commonest co-morbidity amongst the patients (15) studied followed by hypertension in 14 patients (Table – 3). Out of the 38 patients studied, 28 (73.68%) patients were obese (BMI over 25 kg/m2). Out of these 28 patients, 15 came under the category of morbidly obese with 3 in class III (BMI over 40 kg/m2), 4 in class II (BMI over 35 kg/m2) and 8 in class I (BMI over 30 kg/m2).

Out of 38 patients, 22 were operated and repair of hernia carried out. There was no recurrence or complications observed in our study. There was no mortality.

Table 1: Operations and Incisions causing hernia with Defect sizes

Operation	No. of cases	Incision	No. of cases	Defect size	No. of cases
LSCS	18	McBurney	2	2 sq.cm	3
Cholecystectomy	3	Kocher's	2	2.25sq.cm	1
Hysterectomy	2	Infra umbilical transverse	2	4 sq.cm	4
Appendicectomy	2	Infra umbilical midline	16	6 sq.cm	5
Expl. Laparotomy	7	Supra umbilical midline	13	8 sq.cm	6
Laparotomy	1	Supra umbilical transverse	1	12 sq.cm	7
Umbilical hernia	4	Lumbar	1	15 sq.cm	2
Nephrolithotomy	1	Para median	1	24 sq.cm	2

Table 2: Onset of hernia

Time interval	Number of cases
0 to 6 months	9
6 months to 1 year	8
1 year to 2 year	9
2 year to 3 year	1
3 year to 4 year	3
4 year to 5 year	3
5 years onwards	5

Table 3: Types of Co-morbidities

Co-morbidities	Number of cases	Percentage
Diabetes mellitus	7	18.42
Hypertension	14	36.84
Morbid obesity	15	39.47
Ischaemic heart disease	4	10.52
Hyperthyroidism	1	2.63
Bronchial asthma	4	10.52
Neurological disorder	2	5.36
Malignant disease	1	2.63

DISCUSSION

38 cases of incisional hernia admitted in JNH, Rose Belle, Mauritius for treatment were included in this study between December 2010 to September 2012. The mean age of patients of incisional hernia in our study was 56.02 years. Ellis et al [9] in their study observed a mean age of 49.4 years. The youngest patient in our study was 29 years and the oldest was 82 years. The sex ratio of incisional hernia among the cases studied was 1:3 (M: F), showing a female preponderance. This can be attributed to the laxity of abdominal muscles due to multiple pregnancies and an increased incidence of obesity in females. Most of the women were housewives which show that incisional hernias were more common in women.

Thirty nine percent (39.4%) of patients presented with abdominal swelling without any complaint of pain or discomfort due to hernia. Two patients (5.26%) presented with complication, i.e. one with acute intestinal obstruction which needed an exploratory laparotomy with resection and anastomosis of small bowel for gangrene and repair of hernia. The other was a sub-acute case of intestinal obstruction, treated conservatively and hernia repair done later on. This can be compared with Mudge and Hughes [4] series (14%).

In our study 42.1% of incisional hernia occurred in midline infra umbilical incisions. This may be because of following features:

1. Intra-abdominal hydrostatic pressure is higher in lower abdomen compared to upper abdomen, in erect position i.e. 20cm of water and 8cm of water respectively.
2. Absence of posterior rectus sheath below the arcuate line.

Midline infra umbilical incisions were used mainly in females for LSCS and abdominal hysterectomy, which have poor abdominal wall musculature. This can be comparable with that of Goel and Dubey[10] studies (44.6%).

Fifty two percent of cases (52%) occurred following gynaecological procedures (abdominal hysterectomy and LSCS). Suhas and Rigved[11] in their studies noted 68% incidence and other studies [10] noted 28.76% incidence following gynaecological procedures. Higher incidence in our study similar to studies [11] may be because most of these procedures were done through lower midline incisions.

In our study 23.68% of patients developed incisional hernia within 6 months of previous surgery. These early hernias can be attributed to a possibly faulty technique of repair. 21.05% of patients developed within 6-12 months. 23.68% of patients developed within 12-24 months. 31.57% of patients developed incisional hernia after 2 years of the previous surgery. All the hernias which were reported by patients within 2 years come under the category of early incisional hernia, the defect must have started at the initial phase of healing but was detected little later. Most studies showed incidence within a year of follow-up of patients except for studies of Ellis et al [9] which showed an incidence of 5.8% for a follow-up period of 2.5 – 5.5 years in 363 patients, similar to present study.

Considering the dimension of defect in 30 patients, 23.3% of patients were found to have hernia defect of up to 12 sq. cm. While most others showed a defect size of 2sq.cm to 8 sq. cm. Previous studies [1] show that the size of the fascial defect should dictate the selection of the most appropriate method of hernia repair.

One patient with diabetes mellitus developed an intractable infection which needed removal of the mesh. It is one of the most dreaded complications, as it adds to the morbidity and leads to recurrent hernia invariably. 11 patients (28.9%) in this study had history of multiple attempts of repair. This can be compared with Ellis et al [12] series (25%). Co-morbidities which were encountered in the patients were namely obesity (15) , hypertension (14), diabetes mellitus (7), ischaemic heart disease , bronchial asthma (4 each) and neurological disorder (2). One of the patients had hyperthyroidism and one patient had colonic malignancy. Out of all above conditions, morbid obesity (39.47%) was the commonest co-morbidity in the patients studied. This can be compared to the results reported by Nikhil et al (40%) [13].

In our study Body mass index (BMI) of more than 30 was considered as morbid obesity. 15 out of 38 patients were morbidly obese with BMI of more than 30. In this study 11 patients with recurrent incisional hernia formed a major group. Out of these 11 patients 6 (54%) were morbidly obese with BMI of more than 40 (Morbid obesity class III). Hernia repair was carried out in 22 cases. The types of repair done were polypropylene mesh repair in 12 patients and anatomical repair in 10 patients. Non-absorbable suture material was used to close the fascial layer. In our study no complications or recurrences were observed. This can be compared to Usher[14] who reported zero percent recurrence in 48 patients who were treated by polypropylene mesh repair. Certain studies show recurrence rates up to 43% after anatomical suture repair and 24% after mesh repair [15]. Thus the recurrence rate varies in different studies but all studies favor mesh repair to decrease the rate of recurrence. The merit of our study was that there was no mortality.

CONCLUSION

Thirty eight cases of Incisional hernias were studied with respect to its clinical pattern aspects, effects of its co-morbidities and efficacy of its repair. The following conclusions were drawn: Obesity with deposition of fat in the lower abdomen is an important factor in causation of recurrent hernia. Operation for an incisional hernia should be undertaken after reduction of body weight. The use of midline incision should be restricted, to operations in which unlimited access to abdominal cavity is necessarily required. Non absorbable suture material should be used for repair of facial layer. All co-morbidities should be corrected before a planned operation.

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Conflict of Interest: Nil

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