

Pattern of presentation and experience with incisional hernia repair at the Abia State University Teaching Hospital, Aba, Nigeria

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Abstract

Background: Incisional Hernia (IH) is a preventable cause of morbidity and mortality, yet they are commonly encountered in our locale.

Objective: This study was undertaken to determine the pattern of presentation of incisional hernia in our setting.

Patients and methods: Consecutive patients aged 18 years and above, who presented with incisional hernia over a 5 year period (1st January 2010 to 31st December 2014) at the Surgical Out-Patient Clinics and Accident and Emergency Department of ABSUTH were studied.

Results: Thirty five adult patients with IH were seen. Five (14.3%) patients were males and 30 (82.9%) were females. The age range was 24–79 years with a mean age of 50.1 years. Nineteen patients (54.3%) presented within 5 years of the pre-hernia surgery while 4 patients (11.4%) presented 15 or more years following the surgery. Thirty two (91.4%) patients presented with abdominal swelling, pain, unsightly abdominal wall singly or in combination, while 3(8.6%) patients presented with features of intestinal obstruction. All the patients had midline incisions. Obstetric and gynaecological operations in 29 patients (82.9%) were the leading pre-hernia operations. In 21 patients (60%), the pre- hernia surgeries were emergency surgeries. The pre-hernia operation wounds were infected in 25 patients (71.4%). Twelve (34.3%) patients had a single fascial defect, while 23 (65.7%) patients had multiple defects. The Body Mass Index (BMI) in 32 patients was more than 32Kg/m². Fifteen (42.9%) patients have had multiple abdominal surgeries including previous unsuccessful repairs of the incisional hernia. The size of the defects on the fascia ranged between 6cm² and 148cm². Repair was by use of mesh in on lay technique in 33 cases (Polypropylene mesh) and fascial closure in 2 cases.

Conclusion: Obstetric and gynaecological operations using midline incisions were the commonest causes of incisional hernia in this study.

INTRODUCTION

Incisional hernias occurs following fascia defects at the sites of previous abdominal surgeries or procedures such as laparoscopy and catheter placements in the peritoneal cavity. They result from breach in the fascia plane, when the skin and subcutaneous tissues are intact, and constitute common problem in general surgery occurring in 2-26% of patients undergoing abdominal surgeries (1-3). The incidence is a reflection of the nature and volume of abdominal surgeries done in an area (4). The strength of the abdominal wound depends on the tensile strength of the fascia. When there is a fascial wound, the tensile strength is very low or nonexistent between day 0 and day 30, depending solely on the strength of the suture material used to close the fascia. Any patient activity that places undue tension on the fascia in this early stage is likely to cause a breach on the fascia which may not be immediately noticeable (5,6).

Many factors have been associated with the aetiology of incisional hernias. They could be surgeon's factors or patient's factors. Surgeon's factors include poor surgical technique, use of midline incisions, use of early absorbable suture materials like catgut for closing the fascia, and closing the fascia under tension. Patient related factors include wound infection, increased abdominal distension, anaemia, malnutrition, jaundice, diabetes mellitus, immunosuppression, azotaemia, jaundice, obesity, senility, metabolic connective tissue disorders and multiple abdominal surgeries (7-9).

Whatever the aetiological/predisposing factors, there is a disruption of the healing of the fascia which normally maintains the integrity of the abdominal wound whiles the skin and subcutaneous layers are intact. This scar insidiously gives way under stress leading to an incisional hernia (8-10). The hernia may not be clinically obvious until after many years. Most incisional hernias present within 3 years of the pre-hernia surgery (1,2).

This study was undertaken to determine the pattern of presentation of incisional herniae in our setting and share our experience on the challenges associated with repair of incisional herniae in patients presenting with this condition at ABSUTH, Aba, Southeastern Nigeria.

Materials and Methods

This was a prospective study of patients with incisional hernias, who presented at Abia State University Teaching Hospital from 1st January 2010 to 31st December 2014.

A proforma was designed which captured the patients' demographic information including age, sex, height, weight, Body Mass Index, co- morbidities, presenting symptoms and physical findings, type and indication for the pre- hernia surgery, number of previous abdominal surgeries, complications of pre- hernia surgery, nature of scar, size and number of fascia defects. The repair techniques, choice of anaesthesia, complications associated with repair were also documented.

Data analysis was done with Microsoft Office Excel 2007. Statistical analysis was by simple percentages and averages.

Results

Thirty five cases of IH were seen during the period of study. There were 30 (85.7%) females and 5 (14.3%) males giving a Female: Male ratio of 6:1. The age range was from 24 years to 75 years with a mean age of 50.1 years ±6.7 years and a modal age of 35 years.

The pattern of presentation of the patients with incisional hernia is summarized in Table 1. Regarding the previous surgeries that preceded the incisional hernia, 29 (82.9%) were obstetric and gynaecological while 6 (17.1%) were laparotomies for general surgery conditions. There were 21 (60.0%) emergency abdominal operations and 14 (40.0%) elective abdominal operations and 15 (42.9%) had multiple operations.

Table 1: Pattern of presentation of patients with incisional hernia

Pre-incisional hernia operation	Emergency No. (%)	Elective No. (%)
Caesarean section	13(37.1)	6(17.1)
Myomectomy	-	4(11.4)
Salpingectomy (for rupture ectopic gestation)	3(8.6)	
Total abdominal hysterectomy	-	4(11.4)
Perforated peptic ulcer	1(2.9)	-
Intestinal obstruction	3(8.6)	-
Peritonitis for ruptured appendicitis	1(2.9)	-
Time between operation and presentation (years)	Frequency	(%)
	0-5	19 54.3

Pre-incisional hernia operation	Emergency No. (%)	Elective No. (%)
	6-10	7 20
	11-15	5 14.3
	>15	4 11.4
	Total	35 100
Symptoms	Frequency	(%)
Abdominal protrusion	35	100
Abdominal pain	25	71.4
Abdominal discomfort	15	42.9
Unightly abdominal wall	7	20
Obstruction/strangulation	3	8.6
No. of fascial defects	Frequency	(%)
	1	20 57.1
	2	12 34.3
	3 or more	3 8.6

Regarding the time between the pre-hernia surgery and the time the hernia was noticed, 19 (54.3%) presented within 5 years of the surgery while 4 (11.4%) presented 15 or more years following the surgery. All the previous scars were on the midline. In 20 (57.1%) patients there was a single fascia defect while 3 patients had 3 or more fascial defects. Thirty two (91.4%) patients presented with abdominal swelling, pain, unsightly abdominal wall singly or in combination, while 3 (8.6%) patients presented with features of intestinal obstruction.

The BMI at the time of the pre incisional hernia surgery could not be ascertained in all the patients. The BMI given here are as of the time of presentation. There was evidence of wound infection (ascertained by prolonged stay and purulent discharge in pre- hernia operation or from patient volunteering the information and nature of scar) in 24 (68.6%) patients. Two of the patients had diabetes mellitus.

Repair was by use of mesh in on lay technique in 33 cases (Polypropylene mesh) and fascial closure in 2 cases. General anaesthesia was used in 23 patients while 12 patients received spinal anaesthesia. The 2 cases that had fascial closure were incisional herniae complicated by strangulation which needed resection and anastomosis. Average length of hospitalization was 10 days.

Complications encountered included superficial wound infection in 7 patients, seroma in 10 patients, recurrence in 2 patients and respiratory tract infection in 5 patients. All the patients had prophylactic antibiotics in the form of ceftriaxone and metronidazole.

Discussion

Incisional hernia result from defective wound healing at the fascial layer following abdominal operations or procedures such as laparoscopy and placement

of catheters for dialysis. Though the incidence is not known in Aba, South East Nigeria, various authors have reported incidence ranging from 2- 26% (1,2,3,9,10). The incidence appears to mirror the volume and type of procedures done in an area (4).

IH usually presents as protrusion over or around an abdominal scar, most noticeable in the erect position. Occasionally, it presents with pain, discomfort, obstruction and gangrene. The overlying skin may undergo depigmentation, attenuation and ulceration (10, 11). Emegakor *et al* (11) in Nnewi, Nigeria reported IH complicated by rupture and evisceration of the intestine and another with incarcerated pregnant uterus in a woman in labour. Rao *et al* (12) reported a case of pregnant uterus herniating via a laparotomy scar in India (12). These are unusual complications of IH.

Majority of the patients in this study presented within 5 years of the pre-hernia surgery. Most incisional herniae occur during this period (1,10) and are usually more troubling than those that appear later (2). Many patients had multiple abdominal surgeries including attempted repair of the IH and this agrees with Hamid *et al* (13) in Iraq who recorded 29.3% in their series. The vascularization of the scar tissue is usually poor. If it is incised instead of being excised during subsequent surgeries, the healing of fascia would be poor, predisposing to another IH (14,15). The 8.6% incidence of strangulation in this study is higher than the 0.18% recorded by Malviya *et al* (1) in India, and could be due to late presentation of our patients. The age range of 24-79 years, with mean age of 50.1 years is similar to the experience of other authors (1,14). The female preponderance of this condition in this study is similar to that reported by Garba (16) in Zaira, Nigeria, Ezeome and Nwajiobi (17) in Enugu South East Nigeria, Pillay *et al* (18) in Durban, South Africa and Malviya *et al* (1) in India. While some authors have found a male preponderance (7,8), others have shown no sex predilection (17). The M:F ratio is a reflection of the volume and gender of patients undergoing abdominal surgeries in an area (4).

Gynaecological and obstetric operations in 29 (82.9%) patients accounted for the majority of cases in this study. It is possible that the repeated and prolonged stretching of the muscular-facial layer of the abdomen with pregnancy weakened this plane predisposing to the development of incisional hernias. Many female patients had emergency caesarean section. Other workers have noted a high incidence of IH from caesarean sections (1,18,20). The emergency nature and the indication of most caesarean sections, with high incidence of infection following the surgery and the experience of the surgeons who performed the surgeries have been implicated as being responsible for the high number of caesarean sections leading to IH. Such emergency surgeries most times are carried out by non specialists who do not have the requisite

surgical technique and experience to properly perform the surgery. Most of the pre- hernia surgeries were done outside our facility and by operators whose level of competence could not be ascertained.

All the patients had midline incisions in the pre-hernia surgeries. Other works on IH have noted that IH are commoner with midline incisions (1,18,21,22). Vertical abdominal wall incisions run against the line of pull of the musculo-aponeurotic fibres. Contraction of the abdominal musculature pulls the edges of the wound laterally. This leads to separation of the edges of the fascia with the sutures cutting through when tension is exerted (1,8,23). The relatively avascular nature of the linea alba could also be a contributing factor to poor healing of midline wounds (13).

Wound infection in the pre hernia surgery was recorded in 24 (68.6%) patients. Wound infection as a predisposing factor to IH has been observed by other workers (1,19,22). When wound infection occurs, fibroblast concentration and activity are reduced leading to deficient collagen formation with resultant weak scar (24).

Fifteen (42%) patients were obese at presentation. Obesity has been implicated as a predisposing factor to IH (1,21,24). In obesity, the omentum and subcutaneous tissues are bulky causing increased strain on the healing wound. There is also reported associated attenuated muscle and reduced strength of the fascia in obesity. The reduced blood supply to the fatty tissue also predisposes to wound infection (18). Two (13.3%) patients were diabetic. Other series have reported higher incidence of diabetes mellitus in relation to IH (13,18). In diabetics the hyperglycaemia predisposes to micro angiopathies which lead to 5 fold increase in risk of wound infection in clean wounds (13,24).

In this series, effective repair involved the use of polypropylene mesh on lay technique in the majority of cases. Unfortunately we encountered two cases of recurrence. Superficial wound infection morbidity and seroma were the commonly encountered complications despite the use of prophylactic antibiotics.

The study had several limitations. The sample size is small and this has implication for the generalizability of findings from this study. We could not establish the history of chronic obstructive airway disease or pulmonary complications in the pre-hernia surgeries in any of our patients. These are predisposing factors to IH which other workers have identified (1,13).

Conclusion

Gynaecological and obstetric operations accounted for the majority of incisional hernia in this study and all the patients had midline incisions in the pre-hernia surgeries. Improved surgical techniques and use of pfannenstiel incisions may have prevented the occurrence of incisional hernia in these patients.

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