

## MANAGEMENT OF ADULT INCISIONAL HERNIAS AT THE UNIVERSITY OF MAIDUGURI TEACHING HOSPITAL.

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### ABSTRACT

**Background:** Incisional hernias (IH) represent a breakdown or loss of continuity of a fascial closure. They are thus unique as the only external wall hernias that are iatrogenic in aetiology. Incisional hernias are not uncommon complications of laparotomy closure with reported incidence of 2 to 11%.

**Objectives:** To review our experience, with incisional hernia identify possible risk factors and proffer preventable strategies.

**Patients and methods:** All case records of adult patients managed with IH at the University of Maiduguri Teaching Hospital between January 1995 and December 2004 were retrieved from the Medical Records Department. Relevant data on age, sex, type and institution of index surgery (General Hospital or Private Hospital), premorbid factors, type of repair, post-operative complications were extracted. Case records with inadequate information were excluded.

**Results:** Between January 1995 and December 2004 a total of 440 patients with external abdominal hernias were treated at UMTH. Out of these: 38 (11.6%) were Incisional hernias and form the basis of this study. Their ages ranged between 18 and 80 years, with peak age range of 40-49 years. There were 6 males and 32 females giving a male to female ratio of 1:5.3. The commonest index surgeries were caesarean section in 12 patients (31.6%) and appendectomy 10 patients (26.3%). Of the index surgeries 26 (68.4) and 10 (26.3) were performed in general and private hospitals respectively. Only 2(5.3%) were done at UMTH. Wound sepsis, in 18 patients (47.4%), postoperative cough, 8 (21.1%) and obesity 6 (15.8%) were the commonest risk factors. Poor surgical technique was found in 36 patients (94.7%) Most of the patients presented late; 8(21.1%) with recurrence and 6(15.8%) were giant in size. All but one were successfully repaired. Only one (2.3%) had recurrence. There was no mortality.

**Conclusions:** Incisional hernias are not uncommon constituting 11.6% of all adult external abdominal wall hernias repaired at UMTH. Most of the causes are preventable with 94.7% of the index surgery done at peripheral hospitals where poor surgical technique was common to all. There is urgent need to re-train our general duty doctors on proper surgical techniques of abdominal wound closure.

**Keywords:** Pattern and problems, Management, Incisional hernia, Experiences, UMTH (Accepted 20 April 2006)

### INTRODUCTION

Incisional hernias (IH) represent a breakdown or loss of continuity of a fascial closure, are thus unique as the only external abdominal wall hernias that are iatrogenic in aetiology.<sup>1</sup> IH are not uncommon complication of a laparotomy scar following wound failure with reported incidence in 2 to 11%.<sup>1-4</sup> IH continues to be a significant source of morbidity, resulting in loss of productive livelihood with the economic loss incalculable. The management of IH poses a great challenge for both the patient and surgeon, as recurrences are common and is the most

dreaded complication.<sup>5</sup> The purpose of this study is to review our experience, with a view to identifying possible predisposing factors and proffering preventing strategies.

### PATIENTS AND METHODS

A review of all the cases of adult external abdominal hernias which were managed at the University of Maiduguri Teaching hospital (UMTH) over a ten year period (January 1995 to December 2004) was carried out. Patients managed for incisional hernia (IH) were specifically selected for this study. Their case notes were retrieved from the Medical Records Department. Relevant information analysed included,

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Age, Sex, Occupation, Index surgery and place of Surgery. Others were premorbid factors, type of repair, postoperative complications, duration of hospital stay and outcome of treatment. Patients whose case records contained inadequate information were excluded from the study.

**RESULTS.**

Between January 1995 and December 2004 (a decade) a total of 440 adult patients with external abdominal hernias were treated at UMTH. Out of these 38 (11.6%) were Incisional hernias that satisfied the inclusion criteria and formed the basis of this study. Two case notes had incomplete information and were excluded from the study. Their ages ranged between 18 and 80 years, with the peak age range of 40-49 years (Table 1). There were 6 males and 32 females giving a male to female ratio of 1:5.3. The commonest index surgeries were Caesarean Section, 12 or 31.6% and appendicectomy 10 or 26.3%. Others were laparotomy for intestinal obstruction 4 (10.6%), peritonitis 2 (5.3%) and penetrating abdominal injuries 2 (5.3%). (Table II). Of the index surgeries, 26 (68.4%) and 10 (26.3%) were done in General and Private Hospitals respectively. Only 2 (5.3%) were done at UMTH.

Wound sepsis 18 (47.4%), post-operative cough 8 patients (21.1%) and obesity 6 patients (15.8%) were the common risk factors (Table III). Eight (21.1%) patients had failed repairs (recurrence) before presenting to us. Most of our patients presented late; 8 (21.1%) with recurrence and 6 (15.8%) as giant IH (Fig 2 and 3). All the patients were successfully repaired. Only one (2.3%) had recurrence. There was no mortality.

**Table I: Age and Sex Distribution of Incisional Hernia at UMTH.**

Age (yrs)	Sex		Total	%
	M	F		
<19	2	-	2	5.3
20-29	-	6	6	15.8
30-39	-	8	8	21.1
40-49	2	10	12	31.6
50-59	2	6	8	21.1
60-69	-	-	-	-
70+	-	2	2	5.3
<b>Total</b>	<b>6</b>	<b>32</b>	<b>38</b>	<b>100</b>

M: F = 1:5.3

**Table II: Index Surgeries for Development of Incisional Hernia.**

Index Surgery	No	%
Caesarean Section (C/S)	12	31.6
Appendicectomy	10	26.3
Laparotomy for:		
-Intestinal Obstruction	4	10.5
-Peritonitis	2	5.3
-Penetrating abdominal injuries	2	5.3
Umbilical hernia	4	10.5
Para umbilical hernia	2	5.3
Epigastric hernia	2	5.3
<b>Total</b>	<b>38</b>	<b>100</b>

**Table III: Risk Factors for the Development of Incisional Hernia.**

Risk Factors	No
Age	2
5.2	
Wound sepsis	18
47.4	
Obesity	6
15.9	
Post-operative cough	8
21.0	
Jaundice	2
5.2	
Diabetes	4
10.5	
Anaemia	2
5.2	

**FIGURE 1**

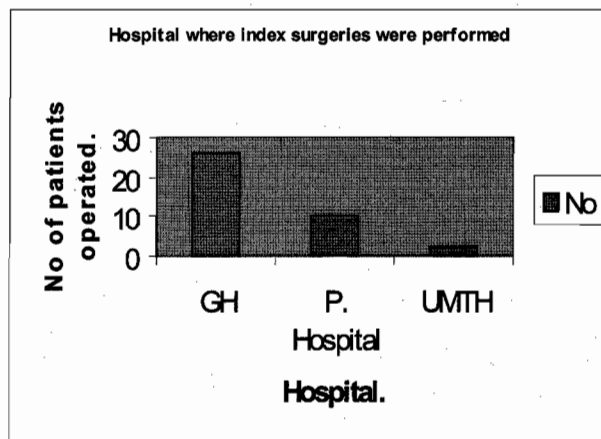
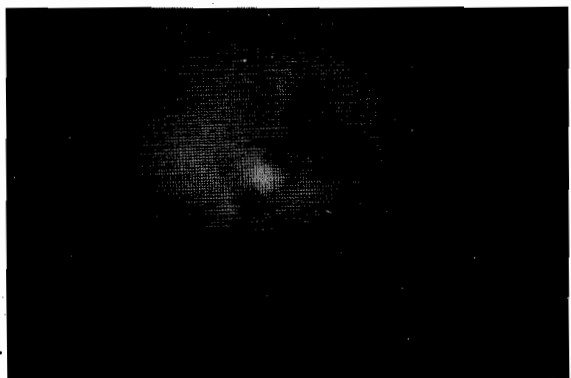


figure 2



FIGURE 3



FIGURES 2 & 3 are photographs of two patients with Giant Incisional Hernias; Note their gender, build and the ugliness of the lower midline abdominal scars.

## DISCUSSION

The exact incidence of IH has not been well documented, but available western literature put it between 2 and 11%.<sup>1-4</sup> Most of the studies centred on various techniques or methods of repair.<sup>4-7</sup> In Africa most of the studies are in relation to other external abdominal wall hernias repaired, and few available records from Zaria<sup>8</sup> showed IH as the 3<sup>rd</sup> commonest type of external abdominal wall hernias 30 (3.0%) and in Ghana<sup>9</sup> out of 120 strangulated external hernias 9 (7.5%) were due to IH. In this present study, out of 440 patients with external abdominal hernias, 38 (11.6%) were due to IH. IH can present early after the index surgery or many years subsequently.<sup>1</sup> In our series most of the index surgeries were done at peripheral hospitals and thus the presentation was late. More than 80% of our patients presented after 2 years of index surgery and had visited several hospitals or have had several failed attempts at repair. Eight of our patients had failed repairs (recurrences). In fact three had more than two attempts at repair and these made the subsequent repairs difficult because of adhesions

and weak abdominal wall fascia. These contributed to the only recurrence we had. Many of these patients seek surgical advice late when the hernia has become a source of morbidity or the size is large, causing an embarrassing abdominal protuberance as exemplified by two of our patients (Figures 2 and 3). The indication for repairs in Read and Younder series were incarceration or strangulation in 17% of their patients,<sup>10</sup> while all nine patients in Ohene-Yeboah<sup>9</sup> were as a result of strangulation. Surprisingly none of our patients presented with strangulation, but 8 (21.1%) were giant in size (hernia with neck more than 10 cm in diameter). Predisposing factors to IH can be categorised into two broad groups: "patient factors" (obesity, old age, abdominal distension, postoperative cough, jaundice and wound sepsis) and "surgeons factors" (type of incision, closure technique and type of suture materials)<sup>1,2,11</sup>. A prospective study by Ellis and co workers<sup>12</sup> comparing types of incisions in non-urgent abdominal procedures has not demonstrated any significant difference between Midline, Paramedian and Transverse abdominal incisions in the development of incisional hernias, but there are arguments that favour the influence of closure technique and the type of suture material in the development of incisional hernias<sup>1,2,11,12</sup>.

In Benin<sup>4</sup> and Zaria<sup>8</sup> the most common index operation was caesarean section (37.5% and 66% respectively), which is higher than findings from our study (12 or 31.6%), however it still remains the most common predisposing index operation. The reasons for this is not very clear, however it may not be unrelated to the fact that most of the caesarean sections are done as emergencies and therefore wound closures are hurriedly done. Besides, most are carried out by surgeons who are below consultant status and non-absorbable sutures are rarely employed in wound closure. That five times more females than males are affected is not surprising, this is similar to the experience in Benin.<sup>4</sup> Caesarean Section is the most common index operation and even when caesarean section is excluded it is still more common in females and this can be explained by the fact that the females are more prone to develop IH due to lax abdominal muscles and stretched fascial planes from repeated pregnancies especially in Nigerians.

With the exception of 2 cases, all the Incisional Hernias were referred from GH or private hospitals where the index surgeries were also performed (Fig 1). Although "patient factors" may have made some contribution to the development of some of the incisional hernias, during the repair of these hernias there was no indication that non-absorbable suture material was used for abdominal wound closure, as there were no suture remnants seen at exploration.

The surgical techniques and experience of the doctors that performed the index surgery would therefore be suspect, and therefore there is a need for continuous medical education especially with respect to methods of abdominal wound closure. Recurrence rate for incisional hernia repairs has been reported to be 20% to 46%.<sup>13</sup> In our series the recurrence rate was low (2.6%). This may not be unrelated to the vigorous pre-operative improvement of respiratory function and reasonable weight reduction in obese patients coupled with the use of non-absorbable Nylon mass closure of the wound.<sup>13,14</sup> The patients that had recurrence had 2 failed attempts at repair; one at a private hospital that carried out the index surgery (Umbilical hernia repair) and the second in a General Hospital. He was obese and significantly reduced his weight preoperatively however, he developed post-operative cough, which led to suture failure and recurrence of the hernia. We therefore had to use stainless steel wire for the repair, the use of which has become unpopular in the recent years owing to the high risk of inflicting micro-lacerations on the 'Surgeons hand' during handling and the potential for transmission of HIV and Hepatitis.<sup>1</sup> The technique of repair was a slight modification of the modified rectus repair for midline ventral abdominal wall hernia as described by Naraynsingh et-al.<sup>15</sup> This technique of repair was carried out in 4 other patients with giant Incisional hernias making a total of 5 patients. The modifications included a vertical mattress approximation of rectus sheath and rectus abdominis muscle without keeling using Nylon 2 suture material, excision of the stretched linea alba, reinforcement with haemostatic application of Nylon 2 between the vertical mattress sutures, drainage of the wound and the routine administration of antibiotic prophylaxis. The remaining patients were repaired satisfactorily by simple closure or Mayo's technique.

## CONCLUSION

Incisional hernias are not uncommon; they constitute 11.6% of all external abdominal hernias repaired at UMTN over a decade. Most of the causes are preventable. Over 90% of the index surgery was done at peripheral hospital and poor surgical technique was common to all, this therefore underscores the importance for re-training our general duty Doctors with the use of non absorbable suture materials utilising mass closure technique. Our experience with the open techniques with the modification of rectus repair for midline ventral abdominal hernia was satisfactory with, despite the unavailability of prosthetic material, with only a single (2.6%) recurrence, despite the unavailability of prosthetic material

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