

A 5 YEAR EXPERIENCE OF ANTERIOR ABDOMINAL WALL HERNIAS IN NIGER DELTA UNIVERSITY TEACHING HOSPITAL, OKOLOBIRI, BAYELSA STATE OF NIGERIA

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ABSTRACT

BACKGROUND

External anterior abdominal wall hernia particularly, inguinal hernia repair is one of the most common general surgical operations worldwide accounting for 10 to 15% of all surgical procedures and is the second most common surgical procedure after appendectomy. External abdominal wall hernias seem to be common in Niger Delta University Teaching Hospital (NDUTH) Okolobiri. Various authors quote the following order (in decreasing frequency): inguinal, femoral, umbilical followed by rarer forms. But are these figures outdated?

AIM

We investigated retrospectively to determine the evolving relative frequencies of hernias types in our locality to record our first experience over 5 years period.

PATIENTS and METHOD

All external anterior abdominal wall hernias repairs undertaken in all patients during a 5 year period (January 2008 and December 2012) were assessed. Data included: patient demographics; hernia type, operation details and outcome. Data were analyzed using Epi Info version 3.5.4 and manually.

RESULTS

Main outcome measures of Frequency data of different hernia types during the study period, patient demographic data and outcome are shown in tables (1-4) and figures (1-3).

During the study period, 206 patients underwent 209 hernia repairs (i.e. including bilateral and multiple hernias in some patients). Inguinal hernia is the commonest hernia type, accounting for 195 (93.3%) cases. Other types are femoral 1 (0.48%), epigastric 4 (1.9%), umbilical 2 (0.96%) and incisional hernia 7 (3.35%). There was 1 death, a mortality rate of 0.48% due to late presentation.

CONCLUSION

The frequency of hernia type in our locality in decreasing order is: inguinal; incisional; epigastric; umbilical; para-umbilical; femoral; and finally other types e.g. spigelian. Recurrence is yet to be recorded in our cases.

INTRODUCTION

An anterior abdominal wall hernia is an abnormal protrusion of a peritoneal-lined sac through the musculo-aponeurotic covering of the abdomen. The common types of external abdominal hernias are; inguinal (75%), umbilical (15%) and femoral (8.5%). The rare forms comprise 1.5%, excluding Incisional hernia¹. Incisional hernias develop in 3.8-11.5% of patients after abdominal surgery¹⁻³. Generally hernia mass consists of covering (skin, subcutaneous tissue), peritoneal sac and any contained viscera. Incisional hernias, usually don't have a sac¹⁻⁴. If the neck of sac is narrow where it emerges from the abdomen, bowel protruding into the hernia may become obstructed or strangulated irrespective of site. The hernia could be reducible, irreducible, obstructed, incarcerated or strangulated.

Nearly all inguinal hernia in infants, children and young adults are indirect inguinal hernia as they follow they partway of the embryonic descend of the testis through the inguinal canal¹⁻⁵. Direct inguinal hernias are acquired as result of a developed weakness of the transversalis fascia in the hessellbach area. Any condition that increases intraabdominal pressure may contribute to the appearance and progression of anterior abdominal wall hernia. Diagnosis of an anterior abdominal wall hernia is made clinically. An anterior abdominal wall swelling that appears on coughing, straining or standing and disappears on lying is characteristic of hernia.

Anterior abdominal wall hernia particularly, inguinal hernia repair is one of the most common general surgical

operations worldwide accounting for 10 to 15% of all surgical procedures and is the second most common surgical procedure after appendectomy¹⁻³. In parts of Africa, the annual incidence of anterior abdominal wall hernia is as high as 175 per 100,000 people⁴. However, less than 40% are actually repaired, resulting in many patients developing long-standing anterior abdominal wall hernias associated with a higher incidence of morbidity and mortality. Since Bassini published his original description of inguinal hernia repair in 1887, many techniques for hernia repair such as Shouldice, Darning, Desarda, Modified Bassini, Lichtenstein mesh repair and the more recent laparoscopic repair have been published^{5,6}. Laparoscopic and Lichtenstein mesh repair are becoming popular in recent days as they are associated with rapid return to normal activities with low recurrence rates^{7,8}.

The management of anterior abdominal wall hernias poses therapeutic challenges to general surgeons practicing in resource-limited countries⁹. In recent years, a number of studies have examined the use of locally available materials for hernia repair in developing countries¹⁰⁻¹². Tongaonkar et al. investigated the use of locally produced nylon mosquito net mesh in 359 patients at four hospitals in India from 1996-2002¹⁰. The mesh composition was a co-polymer of polyethylene and polypropylene, with a melting point of 144.59°C and a breaking load of 126 N. Over a 5-year follow-up period, they reported minor infection in 4.7%, one recurrence and no mesh rejections.

Late presentation of the disease coupled with lack of modern therapeutic facilities such as laparoscopy and mesh are among the hallmarks of the disease in developing countries⁹. Indeed, in many parts of Africa many patients develop large inguinoscrotal herniation as a result of delayed presentation, and the need for emergency surgery with its attendant mortality is not uncommon. In these countries, approximately 65% of inguinal hernias are repaired as emergencies, with a bowel resection rate of 24% and mortality of 87% in those not treated in a hospital¹⁰⁻¹². Early presentation and elective repair of inguinal hernia have been reported to eliminate the morbidity and mortality associated with this very common problem^{9,13,14}.

There is paucity of published data on surgical management of anterior abdominal wall hernias in our environment. To the best of our knowledge, there is no local study which has been done in any hospital in Bayelsa State of Nigeria. This retrospective descriptive study was undertaken at the 200 beds, Niger Delta University Teaching Hospital, sited

temporarily in a Semi-Urban area (Okolobiri), to describe our own experiences in the surgical management of anterior abdominal wall hernias in our local environment, outlining the clinical profile, treatment outcome and identify predictors of outcome among these patients.

PATIENTS AND METHOD

This retrospective study, after Ethical approval, was conducted by the General Surgery Unit D of the Niger Delta University Teaching Hospital (NDUTH), Okolobiri, a 200 Bed tertiary hospital that cares for most of the populations of Bayelsa, parts of Rivers and Delta States of Nigeria. Data were extracted using a study proforma collect from hospital records to include age, sex, hernia type/site, presentation (Elective or Emergency), duration of symptoms, operative findings and management outcome. All cases of anterior abdominal wall hernias of all ages and sex, operated between January 2008 and December 2012 were included in the study. Record of the total number of all general surgical cases operated during the same period was also noted.

Spinal and general anesthesia were the modes of anesthesia commonly used. Herniotomy using Vicryl suture was the surgical procedure for all patients 16 years and below. Posterior wall repair by Nylon Darn was done for all ages above 16 years. Resection and anastomosis in two layers with Vicryl and silk was done for those that presented with gangrenous bowel due to hernia obstruction. Mesh and laparoscopic repairs were not done due or lack of facilities and experience.

Prophylactic and post-operative antibiotics were used as indicated. Postoperatively all patients were given a full doses of parenteral analgesic. Pentazocine and Tramadol were the common analgesic used. Wound care and exposure was based on patient's factors.

Daycare patients were discharged home on the day of operation when it was ascertained that they had fully recovered from anesthesia. Inpatients were discharged two to ten days after surgery depending on the physiological status of the patients. All patients were reviewed on the seventh day after operation and wounds were inspected and stitches removed. Patients were subsequently followed up for postoperatively in the out-patient's clinic for minimum of one year for complications. Statistical data analysis was by Epi Info version 3.5.4 and manually.

RESULTS

We reviewed 206 patients who underwent 209 surgeries for external abdominal wall hernias, with age range of 1 month-79 years. There were 177 (84.7%) cases in males and 32 (15.3%) in females, a male to female ratio of 5.5:1. Out of the 209 cases of hernia surgeries done (Fig. 1), inguinal hernia accounted for 195 (93.3%) cases, femoral 1 (0.48%), epigastric 4 (1.9%), umbilical 2 (0.96%) and incisional hernia 7 (3.35%). Table 1 shows the age distribution of types of hernia, inguinal being the highest in all ages and sexes as shown in Figures 2 and 3. Anterior abdominal wall hernias was more in the 21-30 years age group with 43 (20.57%) and lowest in the ≥ 70 least with 7 (3.35%) cases. Inguinal hernia in males was more on the right, 106 (60.6%), left 54 (30.9%) and bilateral 15 (8.6%) while in females it was more on the left 9 (45%) and bilateral 3 (15%) as shown in Table 2. The right to left ratio of inguinal hernia is 1.8: 1. There was only one case of femoral hernia in a female and on the left side. There were 3 (1.43%) cases of recurrent inguinal hernia in the study population.

All the patients were surgically operated through an appropriate incision according to type of hernia. Four cases out of the 195 (2%) of the hernia cases had bowel resection for strangulated/gangrenous small intestine as shown in **Table 3**. There was 1 death in our study and mortality rate was 0.48%. Factors associated with mortality were late presentation at hospital (after 72 hours of strangulation symptoms) in a 1 month old age male with inguinoscrotal hernia, associated nonviability of gut and postoperative septicemia.

DISCUSSION

Anterior abdominal wall hernia repair is a commonly performed general surgical operation, and therefore comprises a significant proportion of trainee teaching time. External abdominal wall hernias seem common in NDUTH, Okolobiri, Nigeria.

Our results clearly differ from the classically taught order of hernia frequency (i.e. inguinal (70.75%), femoral (61.7%), then umbilical (38.5%) followed by rarer forms 12%^{1,5}. In fact, our results suggest an order of: inguinal (93.3%); incisional (3.35%), epigastric (1.9%); umbilical (0.96%) and femoral (0.48%) Fig. 1. Other hernia types, e.g. spigelian were not seen during the period of study. More interestingly, our results seem to suggest that although the incidence of hernia by type in textbooks^{1,5} was accurate in the 1970s and 1980s, this has since changed. We sampled textbooks commonly used by medical students and junior

surgical trainees as a measure to understand commonly accepted prevalence figures. This is similar to the findings of Dabbas & Co.¹³.

Inguinal hernia repair consumes a lot of healthcare resources because it has a high lifetime risk of obstruction. Inguinal hernias are undoubtedly the commonest hernia type. Our results showed 93.3% of all hernia repairs undertaken were inguinal, a figure higher than the 75% quoted by various authors^{1,5,12-15}.

Inguinal hernias are quoted as being 20 times more common in men than women^{3,9,13-15}. Our results vary showing that inguinal hernia repairs were carried out in total 8.75 (175/20) times more commonly in men than women. Inguinal hernias are also quoted to be right-sided in 55% of cases¹²⁻¹⁵. Our results have mirrored this slight right predominance in males due to the later embryonic descent of the right testis, with 60.9% right, 30.9% and 8.6% bilateral, while in females it is slightly left predominance with 45%, 40% right and 15% bilateral.

Classical textbooks and publications quote femoral hernia as the third most common type of primary hernia^{5,13,15}. In our total study group, the rate of femoral hernia was only 0.48%, equating to the fifth commonest hernia type in our study. This is similar to the findings of Dabbas & Co.¹³. Femoral hernias are quoted as accounting for 20% hernias in women, and 5% in men^{5,12-13}.

Other statistics quoted in the classical teaching include that femoral hernia are twice as common on the right side as the left^{5,12-15}. Our results show only 1 case of left-sided femoral hernia. Our results do suggest that the classical belief that femoral hernias are commoner in women than men remains true as no case was recorded.

Incisional hernias occur as a result of excessive tension and inadequate healing of a previous incision, which is often associated with surgical site infections. These hernias enlarge over time, leading to pain, bowel obstruction, incarceration, and strangulation. Obesity, advanced age, malnutrition, ascites, pregnancy, and conditions that increase intraabdominal pressure are predisposed factors to the development of an incisional hernia. Obesity can cause an incisional hernia to occur, owing to increased tension on the abdominal wall provided by the excessive bulk of a thick pannus and large omental mass. Chronic pulmonary disease and diabetes mellitus have also been recognized as risk factors for the development of incisional hernia. Medications such as corticosteroids and chemotherapeutic

agents and surgical site infection can contribute to poor wound healing and increase the risk of developing an incisional hernia.

Incisional hernias have been reported to occur in up to 10% of laparotomies³. Incisional hernia is the second commonest hernia in our study, accounting for 3.35%. This is in variance with most reports^{1,5,11-15}. There were more females with incisional hernia in our study from previous gynecological surgeries.

Textbooks also quote the rate of umbilical/para-umbilical hernia to be up to five times commoner in women^{1,5,13}, citing pregnancy as a significant aetiological factor. Our results are similar with this, as all were females in our study. Cosmetic reasons as the indication for the surgery in this in hernia, may explain why males were not seen in this study. Any condition which raises intra-abdominal pressure, such as a powerful muscular effort, stretching of the abdominal musculature because of an increase in its contents such as in obesity, physical strain and pregnancy are important aetiological factors in the development of both umbilical/para-umbilical hernias and epigastric hernias. Our results show difference in gender in epigastric hernias as all patients were females.

We have shown the absolute number of hernia repairs of most types being undertaken in a single trust over 5 years in our centre. It is likely that the low mortality/morbidity recorded in our study is mirrored in most hospital trusts throughout Nigeria as well as internationally, driven by increased healthcare spending, day-case operating becoming commonplace, and the greater feasibility of elective surgery. Perhaps another factor affecting these results may be that doctors recommend surgery for earlier, even asymptomatic hernias, which in the past were left until they became symptomatic. This may be as a result of new surgical and anaesthetic techniques perceived by referrers as 'safer', thereby allowing for repair on all ages and higher-risk surgical candidates. Most of our cases (87%), Table 4: were done electively which is in variance with publications¹⁰⁻¹². It seems the populace in our locality is presenting early with hernia. Only 3 (1.43%) of our cases were recurrent and lies within the quoted 110%^{1,5,13,15}.

We do, of course, recognize important limitations to our study, not least of all its retrospective nature. Counting the number of hernia repairs as a proxy for hernia prevalence in a population will undoubtedly miss out those patients who do not undergo operation for reasons of patient choice, anaesthetic risk, et cetera.

Table 1. Age distribution of types of hernia

Age (yrs)	Inguinal		Femoral		Epigastric		Incisional		Umbilical	
	Male N (%)	Female N (%)								
<10	33 (15.8)	2 (0.96)	0	0	0	0	0	0	0	0
11 – 20	10 (4.8)	0	0	0	0	0	0	1 (0.48)	0	0
21 – 30	37 (17.7)	2 (0.96)	0	0	0	3 (1.43)	0	1 (0.48)	0	0
31 – 40	29 (13.9)	1 (0.48)	0	0	0	0	1 (0.48)	3 (1.43)	0	1 (0.48)
41 – 50	22 (10.53)	4 (1.9)	0	0	0	1 (0.48)	0	0	0	1 (0.48)
51 – 60	22 (10.53)	2 (0.96)	0	1 (0.48)	0	0	1 (0.48)	0	0	0
61 – 70	15 (7.72)	9 (4.3)	0	0	0	0	0	0	0	0
>70	7 (3.35)	0	0	0	0	0	0	0	0	0
Total	175(83.73)	20(9.57)	0	1 (0.48)	0	4(1.9)	2 (0.96)	5 (2.4)	0	2 (0.96)

Table 2. Distribution of Inguinal hernia by sex and location of groin hernias

Hernia type	Sex	Right N (%)	Left N (%)	Bilateral N (%)	Total N (%)
Inguinal	Male	106 (60.6)	54 (30.9)	15 (8.6)	175 (100.0)
	Female	8 (40.0)	9 (45.0)	3 (15.0)	20 (100.0)
		114 (58.5)	63 (32.3)	18 (9.2)	195 (100.0)

There was only one case of femoral hernia - in a female and on the left side.

Right/left ratio = 114/63 = 1.8: 1

Male/Female ratio = 174/19 = 8.8: 1

Table 3. Incarceration, strangulation and bowel resection ratios according to hernia types

Hernia type	Incarcerated bowel	Strangulated bowel	Bowel resection
Inguinal	21/195 = 10.8%	3/195 = 1.5%	4/195 = 2.0%
Femoral	0	0	0
Umbilical	1/2 = 50.0%	0	0
Epigastric	0	0	0

Figure 1: Distribution of types of Hernia

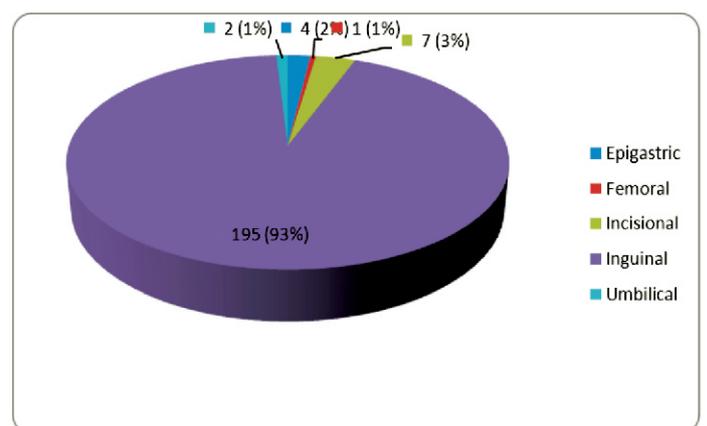


Figure 2: Distribution of hernia types among female patients

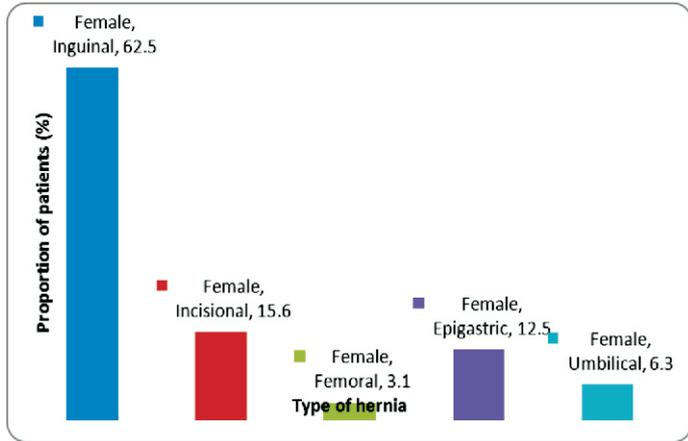


Figure3: Distribution of hernia types among male patients

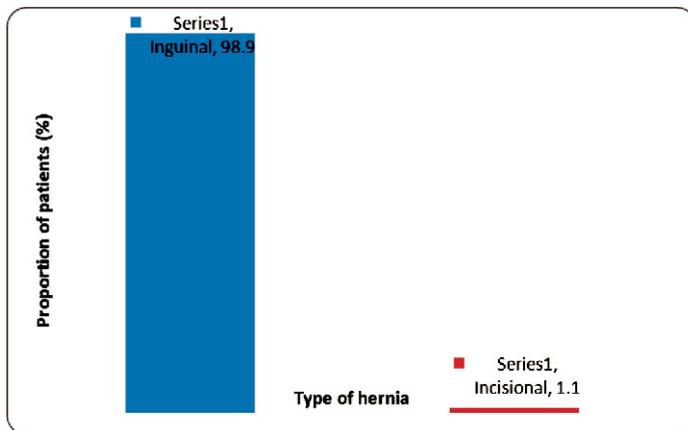


Table 4: Hernia type and mode of presentation

Hernia type	Elective		Emergency		Bowel Resection	
	Male	Female	Male	Female	Male	Female
Inguinal	154 (73.7)	16 (7.7)	21 (10.0)	4 (1.9)	3 (1.4)	1 (0.5)
Femoral	0	1 (0.5)	0	0	0	0
Incisional	2 (0.95)	5 (2.4)	0	0	0	0
Epigastric	0	4 (1.9)	0	0	0	0
Umbilical	0	0	0	2 (0.95)	0	0
Total	156 (74.6)	26 (12.4)	21 (10.0)	6 (2.9)	3 (1.4)	1 (0.5)

CONCLUSION

Inguinal hernia is the commonest hernia in our locality. Presentation for elective surgery is common, accounting for low cases of strangulated hernias in our centre.

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