

## ADULT ABDOMINAL WALL HERNIA IN IBADAN

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### ABSTRACT

**Background:** Abdominal wall hernias are very common diseases encountered in surgical practice. Groin hernia is the commonest type of abdominal wall hernias. There are several methods of hernia repair but tension-free repair (usually with mesh) offers the least recurrent rate.

**Aim:** To describe the clinical profile of anterior abdominal wall hernias and our experience in the surgical management of identified hernias

**Methods:** The project was a retrospective study of all patients with abdominal wall hernia presenting into surgical divisions of University College Hospital Ibadan during a 6 year period (January 2008 to December 2013). Relevant information was retrieved from their case notes and analysed.

**Result:** The case records of 1215 (84.7%) patients out of 1435 were retrieved. Elective surgery was done in 981(80.7%) patients while 234 (19.3%) patients had emergency surgery. There were 922 (84.8%) groin hernias and post-operative incisional hernia accounted for 9.1% (111) of the patients. About half (49.1%) of those with incisional hernia were post obstetric and gynaecologic procedure followed by post laparotomy incisional hernias 16 (14%) and others (23.5%). The ratio of inguinal hernia to other types in this study is 3:1. Hollow viscus resection and emergency surgery were predictors of wound infection statistically significant in predicting wound infection ( $P < 0.001$ ). Peri-operative morbidity/mortality at 28 days post operation was documented in 113 patients (12.1%). One year recurrence rate of groin hernia was 2.1%.

**Conclusion:** The pattern of presentation and management of anterior wall hernias are still the same compared with the earlier study in this hospital. New modality of treatment should be adopted as the standard choice of care. Abdominal wall hernias are very common clinical presentation. Modified Bassini repair was the preferred method of repair due to its simplicity. Mesh repair is becoming more common in recent time but high cost and initial non-availability of the mesh limit its use in our centre

**Keywords:** Hernia, Mesh, Bassini, Ibadan

### INTRODUCTION

Abdominal wall hernia repair accounts, in the average surgical unit, for 15-18% of all surgical procedures<sup>1,2</sup>. Indeed hernias are a leading cause of morbidity and mortality in various parts of Africa<sup>1,3,4,5,6</sup>. Approximately 7 in 10 cases of all abdominal wall hernias occur in the groin, thus making inguinal hernias the commonest type of hernia<sup>2,7,8</sup>. Inguinal hernia has an incidence of 175 per 100,000.<sup>9,10</sup> However, only a third of these are repaired surgically.

Although there are several methods of repair, the absence of recurrence is a marker for determining the most ideal method of repair. In this light, mesh repair with well demonstrated low recurrence rates in the current era is now a much favoured method for this surgical procedure.<sup>11,12</sup> Laparoscopic mesh repair of

hernias, with a lower recurrence rate, is becoming more attractive because of earlier return to normal activities<sup>13</sup>.

Challenges in surgical practice in developing countries include delayed clinical presentation of patients<sup>10,14</sup> and very inadequate privately-funded health care financing. This necessitates the need to ultimately strike a balance between expensive cutting-edge and an affordable surgical practice. It is also necessary to ensure adequate training for surgical trainees. The overall aim is a repair with a low peri-operative complication profile. This will enable the largely predominant male population<sup>15</sup> early return to normal life style and work.

The aim of this study was to describe the clinical profile of anterior abdominal wall hernias and our experience in the surgical management of identified hernias.

## MATERIALS AND METHODS

This was a retrospective study conducted at the University College Hospital, Ibadan-a tertiary health institution situated in Ibadan, Nigeria. All cases of adult external abdominal wall hernias seen in the hospital during a 6 year period (January 2008 to December 2013) by the surgical teams were included. Paediatric cases were excluded from this study. We retrieved the case folders of all the adult patients with the clinical diagnosis of an external abdominal wall hernia seen in our surgical services during the study period.

Relevant data including the patients' socio-demographic information, clinical presentation, anaesthetic and surgical treatments along with outcomes and follow-up were retrieved from the case records. The data were analysed using the SPSS Version 16.0. The findings were presented using frequency distribution, percentages, range, mean, tables and charts as appropriate. Statistical tests of associations were performed, and an alpha value of <0.05 was deemed significant.

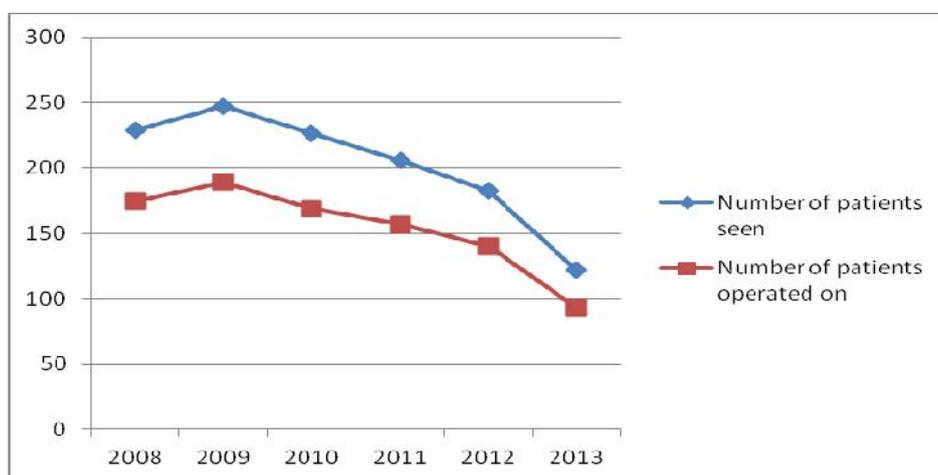
## RESULTS

Over the 6 year period, a total of 1435 patients with various forms of external abdominal wall hernias were seen in the surgical units. The case records of 1215 (84.7%) of this case load were retrieved. There was an average yearly presentation of 239 patients while an average of 156 cases of various hernias were operated yearly in our institution (Fig 1).

The male: female ratio was 4:1. The age range was 16 - 95 years, median age of 48 years. The mean BMI was  $21.75 \pm 3.60$ .

**Table 1:** Clinical findings of patients with abdominal wall hernias (N = 1215 patients except otherwise stated)

	Number	Percentage
<b>Gender</b>		
Male	996	81.9
Female	219	18.1
<b>Age group</b>		
≤ 39	583	48.6
40 – 64	445	36.8
≥ 65	187	14.6
<b>Occupation</b>		
Student	182	15.0
Artisans (low income earners)	419	34.5
Civil servant (mid income earners)	259	21.3
Professional	233	19.2
Not stated	122	10.0
<b>Co-morbidities</b>		
Diabetes mellitus	147	12.1
Hypertension	157	12.9
Respiratory disease	17	1.4
<b>Etiology (n=304)</b>		
Heavy duty job	25	8.3
Post-operative	28	9.1
Traumatic	1	0.2
Bladder outlet obstruction	3	1.1
Respiratory causes	4	1.2
<b>Type of Hernia</b>		
Inguinal	922	75.9
Incisional	110	9.0
Umbilical	78	6.4
Epigastric	55	4.5
Femoral	38	3.1
Others (Para-stomal, traumatic, obturator)	13	1.1
<b>Mode of presentation</b>		
Emergency (irreducible, obstructed, strangulated)	234	19.3
Elective (sop, ward consultation request)	981	80.7



**Figure 1:** Number of cases and number operated per year

**Table 2:** Perioperative findings of Groin hernia

	Number	Percentage
<b>GROIN HERNIA (N=922)</b>		
<b>Side of hernia</b>		
Right	425	46.0
Left	357	38.8
Bilateral	140	15.2
<b>Type of hernia</b>		
Direct	182	19.7
Indirect	628	68.1
Pantaloon	74	8.0
Not stated	39	4.2
<b>Extent of hernia</b>		
Bubunocele	267	29.0
Funicular	206	22.3
Inguinoscrotal	343	37.2
Not stated	106	11.5
<b>Type of Anaesthesia</b>		
L.A	635	68.9
S.A.B	64	7.0
G.A	223	24.1
Day case surgery	625	67.8
In-patient care	297	32.2
<b>Content of hernia sac</b>		
Empty	348	38.1
Small bowel	209	22.9
Omentum	282	30.9
Stomach	6	0.6
Large bowel		
(Transverse/Sigmoid)	31	3.3
Sliding	39	4.2
Appendix	1	0.1
Richter's hernia	6	0.6
<b>Cadre of surgeon</b>		
Consultant	336	36.4
Senior Registrar	389	42.2
Registrar	197	21.4
<b>Post-operative morbidity</b>		
Wound infection	42	4.5
Scrotal hematoma	22	2.4
Testicular atrophy	0	0.0
Bladder injury	4	0.4
Acute urinary retention	20	2.1
Chronic groin pain	8	0.8
Seroma	4	0.4
<b>Recurrence</b>	20	2.1

*Clinical findings*

Detailed clinical information was available for 1215 patients. The distribution of their socio-economic classes, associated co-morbidities and clinical patterns of presentation including types of hernia and possible aetiological factors identified in the study subjects are shown in Table 1. Only about 487 (40%) patients presented within 24 months of onset of their symptoms. There were 922 (84.8%) groin hernias. Bubunocele, Funicular and Complete inguino-scrotal

hernia types were seen in 267 (29%), 206 (22.3%) and 343 (37.2%) patients respectively. In 106 patients (11.5%), the extent of groin hernia was not stated. A total of 111 (9.1%) of this cohort of patients had post-operative incisional hernia at presentation. About half of these (49.1%) were post obstetric and gynaecologic procedure followed by post laparotomy incisional hernias 16 (14%) and others (23.5%). Thirty-eight patients (3.1%) had femoral hernia with a female: male ratio of 3.2:1.

*• Peri-operative findings*

The majority of patients had elective surgery 981(80.7%) while 234 (19.3%) patients had emergency surgery. According to the ASA classification, 567 (46.7%), 293 (24.1%), 158 (13.0%), 125 (10.3%) and 72 (5.9%) patients were classes I, II, III, IV and V respectively. The sac was empty in 348(38.1%) of the patients while omentum and small bowel were content of the sac in 282(30.9%) and 209 (22.9%) respectively (Table 2). Excision of the sac with herniorrhaphy was done in 892 patients (95.4%) with additional procedures done in 43 patients (4.6%). These additional procedures include omentectomy (1%), small bowel resection (3.3%), and gastric resection (0.3%) respectively. The modes of presentation (emergency), ASA status, hollow viscus resection were statistically significant in predicting the length of hospital stay ( $P < 0.001$ ; each).

In all, only 9 (1%) patients suffered post-operative mortality in these series. Peri-operative morbidity/

**Table 3:** Type of hernia and method of repair

	Number	Percentage
<b>Inguinal hernia(N=922)</b>		
Bassini or modification	634	68.7
Shouldice	62	6.7
Nylon Darning	175	18.9
Desarda Repair	5	0.6
Lichtenstein Repair	46	5.1s
<b>Epigastric hernia(N=55)</b>		
Primary closure alone	29	53.0
Primary closure and on-lay mesh	26	47.0
<b>Incisional hernia(N=110)</b>		
Primary closure	65	59.0
Primary closure and on-lay mesh	34	31.0
Keel repair	11	10.0
<b>Umbilical hernia(N=78)</b>		
Primary closure	52	67.0
Mayo Repair	26	33.0
<b>Femoral hernia (n=38)</b>		
Lockwood	34	89.0
McEvedy	4	11.0

mortality profile was recorded at 28 days postop and was documented in 113 patients (12.1%).

Hollow viscus resection and emergency surgery were statistically significant in predicting wound infection ( $P < 0.001$ ). Follow up at 13 months in the surgery out patients unit showed chronic groin pain in 3.7% of patients and a recurrence rate of 2.1%, 1.5% and 0.9% in groin, epigastric and incisional hernias respectively.

## DISCUSSION

The aim of this study was to describe the spectrum of external abdominal wall hernias and our experience in their surgical management in our university teaching hospital in south-western, Nigeria. These hernias are a common clinical-surgical presentation in our surgical units. Indeed, one in twenty patients seen in our centre has a clinical diagnosis of anterior abdominal wall hernia, thus making it the second commonest benign condition in our centre<sup>16</sup>. Inguinal hernia is the commonest of these hernias<sup>1</sup>. The results of this study show an inguinal to other hernia ratio of 3:1 (75.9%) which is at par with the 75% quoted by various authors.<sup>2,8,9,17</sup>. Most of our patients were still predominantly artisans (low income earners) which show a continuation of the trend noted from the same unit in 1979<sup>18</sup> and supports the reported prevalence noted in people with low socio economic status<sup>8, 19</sup>. This probably meant that there is no significant change in the socioeconomic state and occupational profile of the people in the region of the hospital.

Mabula and Chalya reported a comorbidity rate of 16.8%, a comparable rate to our finding of 17.0%. However, hypertension ranked highest in our review as opposed to chronic chest infection in theirs<sup>1</sup>. Two-fifth of our patients presented within 24 months of the onset of their symptoms. This impacted on our pick up rates of bubunocoele and funicular stages of hernia which is converse to what various authors had earlier described<sup>20,21</sup>. Complete inguino-scrotal hernia was seen in most of our patients. Overall, the clinical presentation of inguinal hernia has not changed significantly from earlier works reported; either from the unit<sup>18</sup>, from neighbouring tertiary institutions<sup>22</sup> or from other developing countries<sup>1,4,14,19</sup>. The incisional hernia rate of 9% is closer to the rates described in the western world of 6-10%<sup>17</sup>, but clearly higher than rates (1-4%) quoted by various authors in Africa<sup>8,23</sup>. Post obstetric and gynaecologic surgical interventions ranked highest as the cause of incisional hernia in our series, this support finding from south-western Nigeria<sup>24</sup>. The umbilical hernia rate of 6.4% was within the 3-15% range quoted by other authors<sup>25,26</sup>.

In keeping with earlier works from UCH, Ibadan<sup>18</sup>; but converse to a report from Zaria-Nigeria<sup>8</sup>, femoral hernia was a distant fifth in hierarchical order of presentation of ventral hernia. However it is still noted to be commoner in females. Most of our patients had the modified Bassini repair done which tends to be our preferred method of choice in managing groin hernias. This is in agreement with studies in Africa which allude to its simplicity, speed of execution and surgeon's preference as the reason for its popularity<sup>1,4,8,19</sup>. More importantly for us in Ibadan, is its cost effectiveness, and ease of training. The high cost and initial non-availability of synthetic mesh resulted in its selective use in our patients. Although reports from India showed that the use of mosquito net made of a copolymer of polypropylene and polyethylene for hernia repair is feasible<sup>27</sup>, this may be difficult to replicate now because most mosquito nets in Nigeria are impregnated with chemicals (pyrethroid insecticides)<sup>28</sup>. Furthermore the socio-economic status of our patients limits the fraction of cases of abdominal wall hernia that could be offered mesh repair. Hence only about 5% of our groin hernias were repaired using the open mesh technique as described by Lichtenstein in 1986 for inguinal hernia<sup>29</sup>. This was undertaken in our patients who requested or could afford it. Other forms of groin hernia repair undertaken in this review are highlighted in Table 3.

The recent upsurge in laparoscopic surgery suggests that this form of treatment is feasible in the future. Most of the incisional and epigastric hernia cases were done by primary repair with or without on-lay mesh, whilst the umbilical hernia were all primarily closed using non absorbable suture.

The patient's physiology at presentation, proposed surgical intervention and possible post-operative complication all played some roles in determining the type of anaesthesia administered. A significant proportion of our hernias could be managed surgically under local anaesthesia, while about a third had regional or general anaesthesia. This conservative use of anaesthesia for our herniorrhaphy patients populations impacted tremendously on our day case volume of two-thirds (67.8%). The above supports the assertion that choice of anaesthesia influences the practice of day case surgery<sup>1</sup>. Day case herniorrhaphy is feasible, safe, and effective with the benefits of early ambulation when dealing with uncomplicated hernia in a physiologically fit individual<sup>4,29,30,31</sup>. However in emergency/complicated cases of hernia; general or regional anaesthesia was the predominant method used; this necessitated in-patient care in all of them. Our viscus resection rate of 3.6% is clearly lower than the

21% reported in 1979 by O.G Ajao, and also in sharp contrast to the 15.9% rate reported in Bugando, Tanzania<sup>1</sup>. This may imply that patients present relatively earlier now than in the preceding decades. It is a well-known fact that the need for bowel resection is closely related to the time interval between the onset of acute symptoms and hospital presentation.

In this review, the peri-operative (28 day) morbidity rate of 11% is at the upper end of the 4.2-12.4% in other series<sup>1,4,31,32,33</sup> with most occurring in the emergency herniorrhaphy patients and those with the non-viable viscus as the content of the hernia sac. However a distinction should be made between these other studies and our own as the former address only groin hernias whilst ours is a summation of all abdominal wall hernias. The median duration of hospital stay of 4 days is less than 8-9 days reported in other series<sup>1, 4</sup>, but akin to the review from Ile-Ife<sup>33</sup>. Out-patient optimization of our elective patients served to reduce the duration of in-patient care. The sole predictor of length of hospital stay in our study was emergency surgery cases only. This suggests that an optimal outcome is predicated on an early elective patient presentation compared to the increased burden of morbidity and mortality in delayed, emergency presentation for herniorrhaphy patients. Only about half (52%) of the patients were followed up for 13 months after surgical intervention and the recurrence rates noted for groin, epigastric and incision hernia were within the documented range<sup>34,35</sup>; this may however not be representative, putting into consideration our short duration of follow-up.

## CONCLUSION

It appears from this study that compared to earlier epochs not much has changed in the pattern of presentation and surgical management of anterior abdominal wall hernias in our university hospital. Due to its high frequency of presentation, competency in surgical management of all forms of hernia should be instilled in all surgical training programmes. Adoption of newer modalities of care should be considered standard. However in low income countries like Nigeria, the aim should be to perform a skilful and technically effective technique whilst using adequate anaesthesia and ensuring a good post-operative pain control, along with minimal post-operative morbidity.

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