Ann Ibd. Pg. Med 2015. Vol.13, No.2 94-99

ADULT ABDOMINAL WALL HERNIA IN IBADAN.

O.O Ayandipo[1], O.O Afuwape[1], D.O Irabor[1] and A.I. Abdurrazzaaq[2]

1. Dept. of Surgery, University College Hospital, Ibadan and College of Medicine, Univ. of Ibadan, Nigeria
2. Department of Surgery, University College Hospital, Ibadan, Nigeria

Correspondence:
Dr. O.O. Ayandipo
Department of Surgery,
College of Medicine,
University of Ibadan and
University College Hospital,
Ibadan, Nigeria.
E-mail: yokebukola@yahoo.com

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[1,2]. Indeed hernias are a leading cause of morbidity and mortality in various parts of Africa[1,3,4,5,6]. Approximately 7 in 10 cases of all abdominal wall hernias occur in the groin, thus making inguinal hernias the commonest type of hernia[2, 7, 8.] Inguinal hernia has an incidence of 175 per 100,000.[9, 10] 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.[11,12] Laparoscopic mesh repair of hernias, with a lower recurrence rate, is becoming more attractive because of earlier return to normal activities [13].

Challenges in surgical practice in developing countries include delayed clinical presentation of patients[10,14] 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[15] 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 ± 3.60.

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

	Number	Percentage
Gender		
Male	996	81.9
Female	219	18.1
Age group		
≤ 39	583	48.6
40 – 64	445	36.8
≥ 65	187	14.6
Occupation		
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
Co-morbidities		
Diabetes mellitus	147	12.1
Hypertension	157	12.9
Respiratory disease	17	1.4
Etiology (n=304)		
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
Type of Hernia		
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
Mode of presentation		
Emergency (irreducible, obstructed, strangulated)	234	19.3
Elective (sop, ward consultation request)	981	80.7

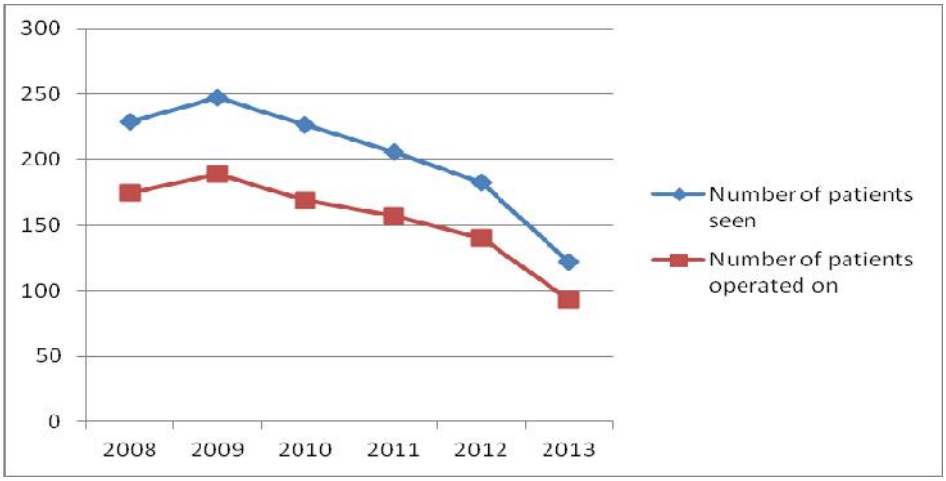

Figure 1: Number of cases and number operated per year

Table 2: Perioperative findings of Groin hernia

	Number	Percentage
GROIN HERNIA (N=922)		
Side of hernia		
Right	425	46.0
Left	357	38.8
Bilateral	140	15.2
Type of hernia		
Direct	182	19.7
Indirect	628	68.1
Pantaloon	74	8.0
Not stated	39	4.2
Extent of hernia		
Bubunocele	267	29.0
Funicular	206	22.3
Inguinoscrotal	343	37.2
Not stated	106	11.5
Type of Anaesthesia		
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
Content of hernia sac		
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
Cadre of surgeon		
Consultant	336	36.4
Senior Registrar	389	42.2
Registrar	197	21.4
Post-operative morbidity		
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
Recurrence	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
Inguinal hernia(N=922)		
Bassini or modification	634	68.7
Shouldice	62	6.7
Nylon Darning	175	18.9
Desarda Repair	5	0.6
Litchenstein Repair	46	5.1s
Epigastric hernia(N=55)		
Primary closure alone	29	53.0
Primary closure and on-lay mesh	26	47.0
Incisional hernia(N=110)		
Primary closure	65	59.0
Primary closure and on-lay mesh	34	31.0
Keel repair	11	10.0
Umbilical hernia(N=78)		
Primary closure	52	67.0
Mayo Repair	26	33.0
Femoral hernia (n=38)		
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[16]. Inguinal hernia is the commonest of these hernias[1]. 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.[2,8,9,17]. 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[18] and supports the reported prevalence noted in people with low socio economic status[8, 19]. 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[1]. Two-fifth of our patients presented within 24 months of the onset of their symptoms. This impacted on our pick up rates of bubunocele and funicular stages of hernia which is converse to what various authors had earlier described[20,21]. 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[18], from neighbouring tertiary institutions[22] or from other developing countries[1,4,14,19]. The incisional hernia rate of 9% is closer to the rates described in the western world of 6-10%[17], but clearly higher than rates (1-4%) quoted by various authors in Africa[8,23]. Post obstetric and gynaecologic surgical interventions ranked highest as the cause of incisional hernia in our series, this support finding from south-western Nigeria[24]. The umbilical hernia rate of 6.4% was within the 3-15% range quoted by other authors[25, 26].

In keeping with earlier works from UCH, Ibadan[18]; but converse to a report from Zaria-Nigeria[8], 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[1,4,8,19]. 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[27], this may be difficult to replicate now because most mosquito nets in Nigeria are impregnated with chemicals (pyrethroid insecticides)[28]. 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[29]. 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 [1]. Day case herniorrhaphy is feasible, safe, and effective with the benefits of early ambulation when dealing with uncomplicated hernia in a physiologically fit individual[4,29,30,31]. 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[1]. 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[1,4,31,32,33] 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[1, 4], but akin to the review from Ile-Ife[33]. 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[34,35]; 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.

REFERENCES

1. **Mebula JB,** Chalya PL. Surgical management of inguinal hernias at Bugando medical centre in North-Western Tanzania: our experience in a resource-limited setting. BMC Research 2012; 5: 585.
2. **Primatesia P,** Golacre MJ. Inguinal hernia repair, incidence of elective and emergency surgery. International Journal of Epidemiology 1996; 25: 835-839.
3. **El Rashied M,** Widatalla AH, Ahmed M E. External strangulated hernia in Khartoum, Sudan. East Afr Med J 2007; 84:379-382.
4. Mbah N. Morbidity and mortality associated with inguinal hernia in North-Western Nigeria. West Afr J Med 2007; 26, 2: 88-92.
5. **Naeder S B,** Archampong E Q. Changing pattern of acute intestinal obstruction in Accra. West Afr J Med 1993; 12:82-88.
6. **Anumar SA,** Ismail T. Abdominal wall hernias in Upper Egypt: A different spectrum. East and Central African Journal of Surgery 2008; 13(2): 109-113.
7. **Javid PJ,** Brooks D. Hernias. In: Zinner M.J and Ashley SW, Editors. Maingots Abdominal Operations vol. 1, 11th Edition, McGraw-Hill,New-York 2007; 103-109.
8. **Garba ES:** The pattern of adult external abdominal hernia in Zaria. Nig J Surg Res 2000; 2(1):12-15.
9. **Sangwan M,** Sangwan V, Garg M, Mahendirutta P, Garg U. Abdominal wall hernia in a rural population in India-is spectrum changing? Open Journal of Epidemiology 2013; 3: 135-138.
10. **Nordberg EM.** Incidence and estimated needs of caesarean section, inguinal hernia repair and operation for strangulated hernia in rural Africa. Br Med J 1994;289:92-93.
11. **Ibingira CB.** Long term complication of inguinal hernia repair. East Afr Med J 1999;76:396-399.
12. **Lichtenstein IL,** Shulman AG, Amud PK, Montllor MM. The tension-free hernioplasty. Am J Surg. 1989; 157:188-193.
13. EU Hernia Trialist Collaboration: Mesh compared with non-mesh methods of open groin hernia repair: Systematic review of randomized controlled trials. Ann Surg 2002; 235(3):322-332.
14. **Ohene-Yeboah M:** Strangulated external hernias in Kumasi. West Afr J Med 2003; 22:311-313.
15. Jaenigen BM, Hopt UI, Obermaier R. Inguinal hernia: mesh or no mesh in open repair? Zentralbl Chir 2008;133:440-445.
16. **Afuwape O,** Ayandipo O, Irabor D. Pattern of patient presentation to the General Surgery Unit of a tertiary health care centre in a developing country. East and Central African Journal of Surgery 2013; 18(2): 7-13.
17. **Kingsnorth AN,** Giorgi G.G, Bennett DH. Hernias, Umbilicus and Abdominal wall. In: Williams NS, Bulstrode CJK, O'Connell PR Editors: Bailey and Love's short Practice of

Surgery. 25th edition, London: Hodder Arnold; 2008; 967-990.
18. **Ajao OG:** Obstructed groin hernia in a tropical African population. Journal of the National Medical Association 1979; 71(11): 1093-1094.
19. **Osifo OD,** Amusan TI. Outcome of giant inguinoscrotal hernia repair with local lidocaine anaesthesia. Saudi Med J 2010; 31 (1):53-58.
20. **Awojobi OA,** Ayantunde AA. Inguinal hernia in Nigeria. Trop Doct 2004; 34:180-181.
21. **Nathan JD,** Pappas TN. Inguinal hernia: an old condition with new solution. Ann Surg 2004; 240: 922-923.
22. **Ashindoitiang JA,** Ibrahim NA, Akinlolu OO. Risk factors for inguinal hernia in adult male Nigerian: A case control study. International Journal of Surgery 2012; 10: 364-367.
23. **Sultan B,** Qureshi Z, Malik MA. Frequency of external hernias in Ayub teaching hospital Abbottabad. Journal of Ayub Medical College Abbottabad; 21,57-58.
24. **Adesunkanmi AR,** Faleyimu B. Incidence and aetiological factors of incisional hernia in post-caesarean operations in a Nigerian hospital. The Journal of the Institute of Obstetrics and Gynaecology 2003; 23(3): 258-260.
25. **Deveney KE.** Hernias and other lesions of the abdominal wall. In: Way LW and Doherty GM editors. Current surgical diagnosis and treatment.11th ed. McGraw-Hill, New-York 2003; pp 783-796.
26. **Perrakis E,** Velimezis G, Vezakis A *et al.* A new tension free technique for the repair of umbilical hernias using the prolene hernia system-early result from 48 cases. Hernia 2003;7(4):178-180.
27. **Tongaonkar RR,** Peddy BV, Mehta VK, Singh NS, Shivade S. Preliminary Multicentre trial of cheap indigenous mosquito net cloth for tension free hernia repair. Indian Journal of Surgery 2003; 65(1):89-95.
28. **Kilian A,** Koenke H, Baba E, Funafoa EO, Selby RA, Lokko K, Lynch M. Universal coverage with insecticide treated nets-applying the revised indicators for ownership and use to the Nigeria 2010 malaria indicator survey data. Malaria Journal 2013;12;314-326.
29. **Lichtenstein IL,** Shulman AG. Ambulatory out-patients hernia surgery, including new concepts, introducing tension free repair. Int Surg 1986, 71:1-4.
30. **Crawford DL,** Phillips EH. Laparoscopic hernia and groin hernia surgery. Surg Clin N Am 1998,78:1047-1062.
31. **Agbakwuru E,** Arigbabu AO, Akinola OD. Local anaesthesia in inguinal herniorrhaphy: our experience in Ile-Ife, Nigeria. The Central African Journal of Medicine 1995; 41(12): 405-409.
32. **Kimyil VM,** Iya D, Ogbonna BC, Dakum NK. Safety of day case hernia repair in Jos, Nigeria. East Afr Med J 2000; 77:326-328.
33. **Adesunkanmi AR,** Badmus TA, Salako AA: Groin hernias in patients 50 years of age and above; pattern and outcome of management in 250 consecutive patients. West Afr J Med 2000; 19:142-147.
34. **Agbakwuru EA,** Olabanji JK, Alatise OI, Okwerekwu RO, Esimai OA. Incisional Hernia in Women: Predisposing factors and management where mesh is not readily available. Libyan Journal of Medicine, DOI: 10.4176/ 081105
35. **Gilbert AI,** Felton IL. Infection on inguinal hernia repair considering biomaterials and antibiotics. Surg Gynecol 1993; 117: 126-130