



## **Inguinal Hernias in a Tertiary Hospital in South South Nigeria**

**A. Dodiya-Manuel<sup>1\*</sup> and P. N. Wichendu<sup>1</sup>**

<sup>1</sup>Department of Surgery, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author PNW designed the study, performed the statistical analysis and wrote the protocol. Author ADM wrote the first draft of the manuscript, managed the analyses of the study and literature searches. Both authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JAMMR/2018/38103

#### Editor(s):

(1) Georgios Tsoulfas, Assistant Professor of Surgery, Aristoteleion University of Thessaloniki, Thessaloniki, Greece.

#### Reviewers:

(1) Einar Arnbjörnsson, Lund University, Sweden.

(2) Guido Mantovani, University of Verona, Italy.

Complete Peer review History: <http://www.sciencedomain.org/review-history/23714>

**Original Research Article**

**Received 4<sup>th</sup> November 2017**

**Accepted 10<sup>th</sup> January 2018**

**Published 19<sup>th</sup> March 2018**

### **ABSTRACT**

**Background:** Inguinal hernia repair is the most common operation performed by general surgeons worldwide. Early presentation and elective repair are necessary to eliminate the morbidity and mortality associated with this condition. The diagnosis is based on clinical signs and symptoms. This study seeks to determine the pattern of adult inguinal hernias and type of repair offered at the University of Port Harcourt Teaching Hospital (UPTH).

**Materials and Methods:** This is a 4-year retrospective study of all adult patients with inguinal hernias who were admitted into the surgical wards of UPTH. Relevant data were retrieved and analysed using the Statistical Package for Social Sciences (SPSS).

**Results:** A total of 276 patients were seen. There were 180 males and 96 females giving a male to female ratio of 1.9:1. Majority of the patients were in 31-40 years age group. The hernias were commoner on the right and inguinoscrotal hernias more commonly seen than bubonocoele. and funicular types.

All the patients had open herniorrhaphy. Nylon darning was done in 181 (65.6%) and this was the commonest form of posterior wall repair.

Thirty two (11.6%) patients had complications with scrotal haematoma being the commonest

\*Corresponding author: E-mail: [dodman\\_05@yahoo.com](mailto:dodman_05@yahoo.com);

accounting for 6.5% of patients.

Six patients died giving a mortality of 2.2%.

**Conclusion:** Inguinal hernia still remains a common disease and source of morbidity and mortality in our locality. Males were more commonly affected and Nylon darning was the method of choice in the majority of cases operated. It is recommended that early presentation and elective herniorrhaphy be encouraged in order to eliminate the morbidity and mortality associated with this condition.

*Keywords: Pattern; adult; inguinal hernia; hernias, repair.*

## 1. INTRODUCTION

Inguinal hernia repair is the commonest operation performed by general surgeons worldwide [1]. Men are more commonly affected and often treated in advanced stages with complications because of late presentation [1]. Early presentation and elective repair are necessary to eliminate the morbidity and mortality associated with this common disease [2].

The diagnosis is based on clinical signs and symptoms [3]. Inguinal hernias may cause a gurgling, heavy or dragging sensation which may worsen towards the end of the day after prolonged activity. An abdominal bulge may disappear when the patient is in supine position [4,5].

Other diagnostic modalities like ultrasound scan, computerized tomography scan (CT scan) or magnetic resonance imaging (MRI) are rarely needed except when the diagnosis is uncertain, if there are complications or in differentiating hernias from other causes of groin swelling [6].

This study seeks to determine the pattern of adult inguinal hernia and type of repair offered in University of Port Harcourt Teaching Hospital.

## 2. MATERIALS AND METHODS

This is a 4 year retrospective study from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2012 of all adult patients with inguinal hernia admitted into the surgical wards of UPTH. Data retrieved from the case notes included age, sex, site (right or left), marital status, educational level, duration of symptoms before presentation at the hospital, type of posterior wall repair, cadre of operating surgeon, type of anaesthesia, length of hospital stay, post operative complications and mortality. These were analysed using SPSS version 16. Continuous variables were compared

by student t-test while proportions or categorical parameters by chi-square test or two tail fisher's exact test as appropriate. A P-value of  $\leq 0.05$  was considered statistically significant. Pearson's correlation was used to assess the relationship between 2 variables.

## 3. RESULTS

Out of a total of 386 patients with abdominal wall hernias over the 4 year period, 276 of them had inguinal hernias and this constitutes about 71.5%. There were 180 males and 96 females giving a male to female ratio of 1.9:1.

The highest incidence of 84 (30.5%) patients were recorded in 2009. This was followed by 2011 with 76 (27.5%) and subsequently, 2010 and 2012 with 60 (21.8%) and 56 (20.3%) patients respectively. Sixty seven (24.3%) patients were aged 31-40 years and this constituted the modal age group. The age group distribution is as shown in Table 1.

Right inguinal hernias were the commonest affecting 165 (59.8%). See Table 2. The hernias were indirect in 212 (76.8%) and direct in 64 (23.2%) patients. Inguinoscrotal hernias were seen in 182 (65.9%) patients while bubonocele and funicular in 62 (22.5%) and 48 (17.4%) patients respectively.

The duration of hernias before presentation ranged from 1 to 21 years, with the majority of patients, 111 (40.2%) presenting to the hospital after more than 5 years of onset. Eighty two (29.7%) patients presented less than one year of onset of hernia and 83 patients between 1 and 5 years of onset.

Majority of the patients (66%) did not have any formal education.

Sub-arachnoid block was done in 212 (76.8%) patients and this was the commonest form of

anaesthesia. Others were general anaesthesia in 47 (17.8%) patients, total intravenous anaesthesia in 1 (0.4%) patient and local infiltration in 14 (5%) patients.

All the patients had open herniorrhaphy. Nylon darning was done in 181 (65.6%) patients and this was the commonest form of posterior wall repair in our patients while modified Bassini was done in 95 (34.4%) patients. Out of the 48 (17.4%) patients that had an obstruction, 12 (4.3%) of them had resection and anastomosis of part of the small bowel and subsequent repair of the posterior wall.

Most of the cases (84.41%) were operated upon by surgical residents while the others were done by consultants. See Fig. 1.

A total of 32 post-operative complications were recorded in 32 (11.6%) patients. Of these, scrotal haematoma was the commonest accounting for 6.5% of patients. See Table 3. Complication rates were significantly higher in emergency than elective herniorrhaphies. (P = 0.001) see Table 4. All complications resolved on conservative management.

Length of hospital stay ranged from 3 to 12 days with a median duration of 7 days. The length of hospital stay was significantly higher in those that had emergency surgeries (P = 0.001).

Six patients died giving a mortality of 2.2%. All the 6 patients presented with obstruction and septic shock.

**Table 1. (Age of patient)**

Age	Number of patients (%)
11-20	12(4.3)
21-30	66(23.9)
31-40	67(24.3)
41-50	53(19.2)
51-60	35(12.7)
61-70	26(9.4)
71-80	14(5.1)
81-90	3(1.1)

#### 4. DISCUSSION

Inguinal hernia repair is commonly done and constitutes part of a significant proportion of surgical workload in many centres [7,8]. Undoubtedly, inguinal hernias are the commonest hernia type [2] and our result showed that they comprised 71.5% of all abdominal wall hernias which is similar to the 75

and 76.1% reported by Garba [7] and Mabula et al. [2] from Zaria (in Nigeria) and Tanzania respectively.

**Table 2. (Site of hernia)**

Site	Number of patients (%)
Left reducible inguinal hernia	81(29.4)
Right reducible inguinal hernia	121(43.9)
Bilateral reducible inguinal hernia	26(9.4)
Obstructed right inguinal hernia	44(15.9)
Obstructed left inguinal hernia	4(1.4)

**Table 3. Post operation complications**

Complications	Number of patients (%)
Haematoma	18(6.5)
Surgical site infection	14(5.1)

Similar to the findings of Awe et al. [3], the peak age distribution was in the 31-40 years age group and males were more afflicted than females approximately in the ratio of 2:1. The exact reason for this male preponderance is not clear, although, it is possible that males have an increased risk due to their involvement in strenuous work which may partly account for the development of hernias.

Inguinal hernia has been reported to be more prevalent in people of low socioeconomic class [9]. This observation is reflected in our study where most of the patients had either primary or no formal education. A similar observation has been reported by others previously [8,9,10], This observation has an implication on accessibility to health care facilities and awareness of the disease. In many countries, financial constraints and lack of awareness make many patients present very late with giant inguinoscrotal hernias [9]. A long-standing history of inguinal hernia is common and presentation during bubonocoele and funicular stages are rare [11,12]. This finding is reflected in our study where most of our patients presented late with inguino scrotal hernias and some presented for the first time with obstructed or strangulated hernias. Financial constraints and lack of awareness have been reported as the most common reasons for late presentation in developing countries [13,14].

The finding of inguinal hernias being commoner on the right side in this study is in agreement with the observation from the previous series [7,14].

**Table 4. Post OP complications in elective vs emergency herniorrhaphy**

Operation type	Total number of patients	Number of patients	P value
Emergency	288	21(9.2)	0.001
Elective	48	11(22.9)	

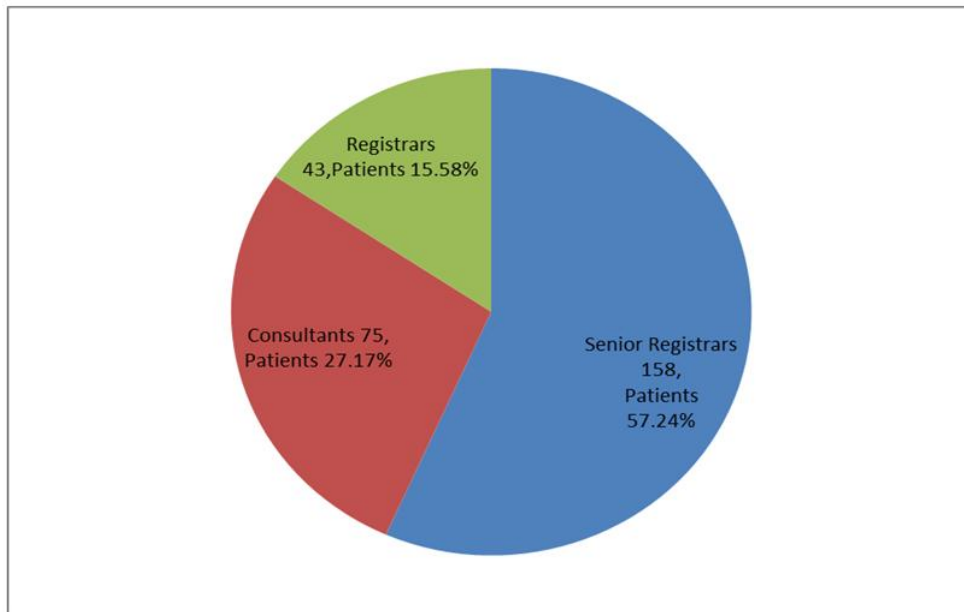
The later descent of the right testes and a higher incidence of failure of closure of processus vaginalis are factors usually described as responsible for the preponderance of the disease on the right [7, 14].

In agreement with other studies in developing countries, all cases were managed by open herniorrhaphy [7,9,14]. Most publications from Africa indicate that the inguinal hernia repair technique that was most commonly used across the continent has been Bassini [15], but in the series of Olasehinde et al. [16], Nylon darning was the predominant method of repair. It is relatively tension free as the posterior wall is repaired without forcefully apposing the tissues [16]. The darning technique has been acclaimed to have the advantage of a short learning curve, particularly when compared to other popular non-prosthetic methods of repair [17]. The fact that most of our cases were performed by resident doctors bears testimony to this fact.

Similar to other studies in most developing countries [7,9,14], no laparoscopic repair was performed in this study. Laparoscopic repair has

become a popular method for treating inguinal hernias in western countries due to its superior benefits relating to morbidity, shorter hospital stay, accelerated recovery and earlier return to work [18,19]. This form of treatment may become feasible in our locality as soon as the facilities and requisite expertise are made available. The choice of anaesthesia was determined by the physiological state of the patient, size of the hernia and the extent of the perceived procedure. In this study, the most prevalent form of anaesthesia used was spinal anaesthesia followed by general. This reflected the high incidence of huge and complicated hernias. This is in contrast to the exclusive use of local anaesthesia with sedation in a series of 98 hernia repairs by McFarlane [20] working on small, uncomplicated inguinal hernias.

In the present study, bowel resection rate was 4.3%. This is clearly lower than the 21% reported by Ajao [21] in Ibadan and 15.9% reported in Bugando, Tanzania [2]. 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 clearly related to the time interval between the



**Fig. 1. Cadre of surgeon**

onset of acute symptoms and hospital presentation [22].

The complication rate of 11.6% in this study is in keeping with the findings of between 4.2 and 12% in other series [14,23,24]. The complication rate was significantly higher in an emergency than elective herniorrhaphy. The fact that most emergency herniorrhaphy in our series was performed by residents who were the first on call, may explain the high rate of complications in this group of patients. In order to reduce the incidence of complications that follow emergency herniorrhaphy, adequate supervision of surgical residents must be enforced as well as strict attention to aseptic technique and meticulous haemostasis. The median duration of hospital stay of 7 days is less than the 8-9 days reported in other series [2,14]. Emergency surgery only was the sole predictor of length of hospital stay. This implies that good outcome in hernia surgery is predicated on early elective patient presentation.

The mortality rate of 2.2% from this study is in agreement with the documented range of 1-14% [14,23].

## 5. CONCLUSION

Inguinal hernia still remains a common disease and source of morbidity and mortality in our locality. Males were more commonly affected and Nylon darning was the method of choice in the majority of cases operated. It is recommended that early presentation and elective herniorrhaphy be achieved in order to eliminate the morbidity and mortality associated with this condition.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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