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Morbidity and Mortality Associated with Inguinal Hernia in Northwestern Nigeria

La morbidité et la mortalité associées au Hernie inguinale dans le Nord-Ouest du Nigéria

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ABSTRACT

BACKGROUND: **Treatment of uncomplicated inguinal hernia is relatively simple and the outcome is often favourable. Complicated hernias are fraught with increased mortality with and without operative management.**

Objective: To determine the scope of adverse events which attend the management of inguinal hernia in extreme northwestern region of Nigeria.

METHODS: **Subjects. From the hospital records department, the case folders of all patients with the clinical diagnosis of hernia seen between January 2000 and December 2002 were retieved. Of the cases identified, 227 patients diagnosed of inguinal hernia, either alone or in combination with other forms of hernia formed the basis of this report. Relevant data extracted and analyzed included the patient's demographics, clinical details, treatment offered and outcome.**

RESULTS: **Two hundred and fifty three inguinal hernias in 227 individuals were seen.. This represented 76.9% of patients diagnosed of external abdominal hernias., 16 times more commonly in males than females. Fifty two (20.6%) hernias presented as acute abdominal emergencies while 225 hernias in 199 patients were repaired. Local anesthesia was used in 32 (16.1%) of the patients with 33 (14.7%) inguinal hernias. Four (1.8%) individuals were managed on day case basis. Twelve (5.3%) deaths occurred in this series , three of which were pre-operative. At a mean follow up of 7 months (range 1-23 months), 1 (0.4%) hernia recurrence was noted.**

CONCLUSION: **Complicated inguinal hernias and their emergency surgical treatment are associated with increased mortality in our environment. Prophylactic elective herniorrhaphy is recommended as a safeguard for inguinal hernia as soon as identified irrespective of patient's age. WAJM 2007; 26(4): 288–292.**

Keywords: ***Inguinal hernia; Emergency; Mortality; North-Western Nigeria.***

ABSTRACT

CONTEXTE: *Traitement de l'hernie inguinale simple est relativement simple et le résultat est souvent favorable. Compliqué hernies sont lourdes de l'augmentation de la mortalité avec et sans dispositif de gestion. Objectif: déterminer la portée des événements indésirables qui fréquentent la gestion de la hernie inguinale dans l'extrême nord-ouest du Nigeria.*

MÉTHODES: *Sujets. De l'hôpital records département, le cas des dossiers de tous les patients avec le diagnostic clinique de la hernie observée entre janvier 2000 et décembre 2002 ont été retieved. Parmi les cas recensés, 227 patients diagnostiqués de hernie inguinale, seul ou en combinaison avec d'autres formes d'hernie à la base de ce rapport. Les données pertinentes extraites et analysées compris du patient démographie, les détails cliniques, le traitement offert et des résultats.*

RÉSULTATS: *Deux cent cinquante-trois hernie inguinale et 227 individus ont été vus .. Cela représentait 76,9% des patients diagnostiqués externe de hernies abdominales, 16 fois plus fréquemment chez les hommes que chez les femmes. Cinquante deux (20,6%), présentés comme des hernies abdominales aiguës urgences 225 hernies en tout 199 patients ont été réparés. L'anesthésie locale a été utilisée dans 32 (16,1%) des patients avec 33 (14,7%), l'hernie inguinale. Quatre (1,8%) personnes ont été gérées au jour cas. Douze (5,3%) des décès se sont produits dans cette série, dont trois ont été pré-opératoire. A suivi une moyenne de 7 mois (fourchette 1-23 mois), 1 (0,4%) hernie récidive a été notée.*

CONCLUSION: *Complicated hernies inguinales et leur traitement chirurgical d'urgence sont associés à une augmentation de la mortalité dans notre environnement. Électif herniorrhaphy prophylactique est recommandé comme une garantie pour hernie inguinale dès identifiés, indépendamment de l'âge du patient.* ***WAJM 2007; 26(4): 288–292.***

Mots clés: *Hernie inguinale; urgence; Mortalité; Nord-Ouest du Nigéria.*

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INTRODUCTION

The commonest operation performed by the general Surgeon in many centres is the repair of hernias.[1-4] In most series, inguinal herniorrhaphy constitutes the majority.[2,4] In the past, giant inguinal hernias bigger than the human head were described in Africans.[5] Some extended below the knee. These enormous often irreducible swellings accommodated several viscera which were said to have "forfeited their right of domicile within the abdominal cavity".[5] In present day Nigeria, the trend has changed due to the numerous private hospitals and government-owned health institutions involved in the treatment of this condition even in the remote areas. It is therefore rare to see inguinal hernias extending up to the knee level in recent times. Despite this salutary departure from the experiences in the past, many cases still present late after complications had developed. Consequently, significant mortality and morbidity continue to attend the management of this common condition in our environment. This study was therefore aimed at determining the scope of morbidity and mortality that are associated with inguinal hernias and their treatment in the extreme northwestern part of Nigeria in the dawn of the 21st century.

PATIENTS AND METHODS

Setting: Usmanu Danfodiyo University Teaching Hospital is a tertiary health institution situated in Sokoto, Nigeria. Its catchment area predominantly comprises states in the extreme northwestern part of the country namely Sokoto, Kebbi and Zamfara. All cases of paediatric and adult hernia seen in this hospital during the period under review were managed by general surgeons. Payment of prerequisite hospital user fees was mandatory for all ages and all categories (emergency and elective) of surgical care delivered in this centre during the period under consideration.

Subjects: From the hospital records department, we retrieved the case folders of all patients with the clinical diagnosis of hernia seen at the Usmanu Danfodiyo University Teaching Hospital (UDUTH) Sokoto, between January 2000 and December 2002. Of the 295 cases identified, 227 patients were diagnosed of inguinal hernia, either alone or in combination with other forms of hernia. These subjects formed the basis of this report. Relevant data were extracted and analyzed. These included the patient's demographics, clinical details, treatment offered and outcome. The findings were reported using the mean, relative frequency distribution, group percentages, tables and charts.

RESULTS

During the three-year period (Jan. 2000 – Dec. 2002) under survey, 295 patients with various forms of external abdominal hernias were seen. Inguinal hernia was diagnosed in 227 (76.9%) of these individuals among whom a total of 253 groin hernias were recorded. These comprised the direct type, indirect hernia, inguinoscrotal and inguinolabial forms. Five of the cases were recurrent. The male patients were 214 (94.3%) and the females were 13 (5.7%) representing a male to female ratio of 16.5:1. The ages at presentation ranged from 11 hours to 86 years, mean age 31.7 years (Fig. 1). The hernias were unilateral in 198 (87.2%) persons. They were situated on the right alone in 132 (58.1%) cases, unilateral to the left side in 66 (29.1%) patients but bilateral in another 26 (11.5%) individuals.

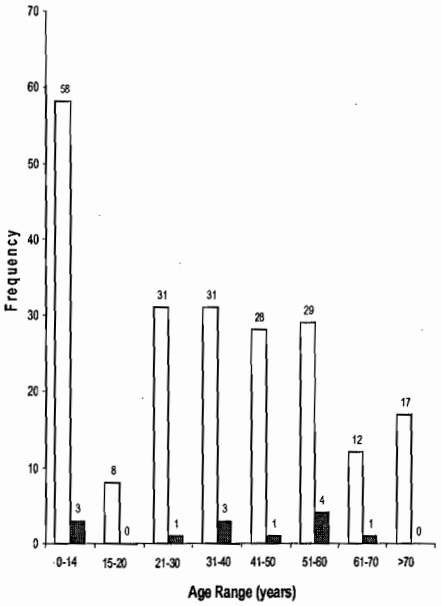

Figure 1: Age-Sex Distribution of Inguinal Hernias (NW, Nigeria) □ Male ■ Female.

The side affected was not stated in 3 of the patients who left against medical advice soon after detection. Overall, 158 (62.5%) hernias were seen on the right side and 92 (36.4%) on the left. Initial presentation was at the surgical out-patient department (SOPD) in 163 (71.8%) patients, emergency unit in 51 (22.4%) and as incidental finding in patients on admission in hospital wards belonging to other clinical specialties in the remainder (13 or 5.7%).

The duration of onset of the swellings prior to hospital presentation ranged between 11 hours and 30 years, mean 4.3 years. Fifty-two (20.6%) hernias presented as acute abdominal emergencies; obstructed in 35 (13.8%) cases, strangulated in 17 (6.7%) others. One hundred and ninety three (76.3%) swellings were reducible at presentation. In another five (2.0%) cases, the inguinal hernias were incarcerated /irreducible but not obstructed. Three (1.2%) presented with enterocutaneous fistula from perforation.

In 155 (68.3%) subjects, there were no other clinically identifiable illnesses beside inguinal hernia. The remainder came with various associated clinical conditions. These comprise external abdominal wall hernias 14 (6.2%), intercurrent bladder outflow obstruction 11(4.8%), cardio-pulmonary diseases 7 (3.1%) and others, either alone or in combination (Table 1).

Table 1: Associated Clinical Conditions in Patients with Inguinal Hernia (NW Nigeria)

*Associated Clinical Conditions	No of Patients (%)
1. External abdominal wall hernias (epigastric; umbilical; femoral)	14 (6.2)
2. Bladder out-flow obstruction (urethral stricture; BPH; prostate cancer)	11 (4.8)
3. Cardio-pulmonary diseases (hypertension; congestive heart failure; asthma; bronchitis; pulm. tuberculosis)	7 (3.1)
4. Others (diabetes mellitus; peptic ulcer (disease; haemorrhoids; acute malaria, etc)	48 (21.1)
Total	**72 (31.7)**

* **Some had multiple conditions.**

Two hundred and twenty five hernias (88.9%) were repaired in 199 (87.7%) patients. The different methods of repair employed are shown in Table 2. The Bassini technique was the commonest in 130 (65.3%) individuals requiring 146 (57.3%) repairs. General anaesthesia was used for 115 (57.8%) cases, 32 (16.1%) patients received local anaesthesia and the rest 52 (26.1%) were done under spinal anaesthesia. One hundred and ninety five (98%) operated patients were admitted for surgery for a period of stay ranging between one and 42 days (mean 8 days). The rest (2%) were day cases.

Twelve hospital deaths (5.3%) occurred in this series from the abdominal emergencies; 3 were pre-operative and 9 followed surgical treatment. They comprised 7 cases of strangulated hernia and 5 non-strangulating intestinal obstructions with delayed presentation (Table 3).

Among survivors, wound complications accounted for the post-operative morbidity in 14 separate repairs representing an incidence of 6.2% in this series. These ranged from surgical site infection and wound haematoma following elective herniorrhaphy (seven and two cases respectively) to wound sepsis after the emergency procedures (five cases). All resolved on conservative treatment alone. The mean post operative duration of hospital stay among those admitted for surgery was 8.2 days (range 1-42 days). The average (range) duration of post-operative follow up was seven (1–23) months). Chronic groin pain was recorded in 11 (4.8%) post-repairs at the out-patient clinic. None adversely affected the patient's lifestyle, daily activities or income. All improved on mild analgesics. There was only one (0.4%) case of hernia recurrence (post Bassini repair) amongst the 76% of the patients who attended follow up clinic.

DISCUSSION

Inguinal hernia repair constitutes the bulk of the general surgeons' work-load in our center in common agreement with several other published works.[1-4] It is also the commonest hernia seen in this environment as reported elsewhere.[2,4,6] Sixty one (26.8%) patients in this audit were children below 14 years of age in whom a total of 68 (26.9%) hernias were recorded. The youngest was only 11 hours old. This confirms the congenital origin of some of these hernias, many of which are never brought to the attention of a clinician until they become symptomatic. This fact is underscored by the finding of symptomless primary inguinal hernia in 21 Nigerian school children of both sexes among a randomly sampled total of 7,968, representing a population incidence of 2.5 cases per 1,000[7].

The later descent of the right testes into the scrotum and a higher incidence of failure of closure of the processus vaginalis are factors usually ascribed to the predilection of this disease on the right.[2,6,8] Albeit, in a review of 701 cases, Gue (1972) found that the ratio of right-sided hernia to left-sided hernia post-appendicectomy was 6:1 compared with only 2:1 in patients who had not undergone appendicectomy.[9] He therefore concluded that appendicectomy predisposes to the development of right-sided inguinal hernia consequent upon iatrogenic injury to the segmental nerve supply of the inguinal musculature during the procedure. However, this relationship between previous appendicectomy and secondary right sided inguinal hernia was not determined in the present study because of poor documentation.

In the mid-20th century, Davey had described giant forms of inguinal hernias in Africans based on their size.[5] These enormous swellings were bigger than the adult human head. Some actually extended beyond the patient's knees. Then, many parts of the continent were under served by doctors capable of repairing this common disease. Into the 21st century however, it is rare to see hernias up to the knee level in Nigeria. Comparatively smaller hernias were seen in our series due to the establishment of both government and privately owned hospitals even in the rural parts of this country where these swellings could be treated. However, delay in hospital presentation is still rampant among the patients. Consequently, 1/5th of the cases in the present study came with various late complications of hernia which required emergency surgical treatment. Other investigators working in environments like ours had made similar observations.[2] In a series of 270 inguinal/inguinoscrotal hernia cases, workers in Ile-Ife, Nigeria (2000) reported a 22.4% incidence of late complications that required emergency operation[10]. In our review, some patients were afraid of undergoing surgical operations and so delayed until the swelling developed

Table 2: Surgical and Anaesthetic Procedures for Inguinal Hernia Repair (NW Nigeria)

Procedure	G.A	Spinal	L.A	Total (%)
Herniotomy	48 (*7)	-	-	48 (24.1)
Bassini	59 (*11)	48 (*3)	23 (*2)	130 (65.3)
Shouldice	5 (*2)	3	4	12 (6.0)
Nylon darning	3 (*1)	1	5	9 (4.5)
Total (%)	**115 (57. 8)**	**52 (26.1)**	**32 (16.1)**	**199(100)**

*Number of bilateral hernia

Table 3: Outcome among Inguinal Hernia Patients (NW Nigeria)

Treatment	Reducible hernias	Obstructed hernias	Strangulated hernias	Incarcerated hernias	Enterocu-taneous fistulae	Total (%)
Operated	171	34 (*4)	15 (*5)	2	3	225(88.9)
Not operated	22	1 (*1)	2 (*2)	3	–	28(11.1)
Total	**193**	**35 (*5)**	**17 (*7)**	**5**	**3**	**253(100)**

*Number of deaths.

complications. Those who came with enterocutaneous fistula had resorted to native cure in order to avoid the "high" cost of operative treatment in a hospital. Consequently, some of the patients in this series died pre-operatively due to complications from late presentation and inability to promptly pay the prerequisite user fees before their emergency operative treatment. Agreed that concerted efforts geared at public enlightenment on the dangers of neglecting early repair are required to address this issue, but the problem is not only ignorance. The income poverty in sub Saharan Africa is a major factor as well.[11] In this respect, the nascent national health insurance scheme (NHIS) recently introduced in Nigeria is potentially salutary. If and when fully embraced, the scheme would hopefully assist in reducing the incidence of delayed presentation and treatment of hernias in our environment. Then, surgery will no longer be predicated on the patient's ability to pay.

All cases of paediatric and adult hernias in this audit were managed by the open method under general Surgeons. The Bassini technique was the method of choice in majority of cases operated except in most paediatric hernias for which herniotomy was done. Simplicity, speed of execution and the preference of the surgeon probably accounted for the popularity of Bassini approach in this centre. The low incidence of recurrence in this survey lends credence to the reliability of this time tested technique of hernia repair described over a 100 years ago.[12] However, ours is significantly lower than the 1-10% recurrence rate reported in larger series over a 5 year period. The shorter median period of follow up in our circumstance could have accounted for the lower incidence of hernia recurrence noted in this study. It's also possible that some of the cases may have resorted elsewhere for further treatment.

Laparoscopic repair was not performed in this series similar to what obtains in other Nigerian centres.[2,3] Laparoscopic mesh hernioplasty has become a popular method for treating inguinal hernias in the more affluent societies owing to it's superior benefits relating to reduced morbidity, shorter hospital stay, accelerated recovery and earlier return to previous employment.[13,14,15] This form of treatment may become feasible in our health community as soon as the facilities and requisite expertise are made available.

The choice of anaesthesia in hernia surgery is determined by the physiological state of the patient, size of the swelling and extent of the perceived procedure. General form of anaesthesia ranked the single most commonly used form of anaesthesia in this review and reflected the high incidence of complicated hernias and often huge swellings which required full muscle relaxation. This is in contrast to the exclusive use of local anaesthesia with sedation in a series of 98 hernia repairs by McFarlane (2000) working on smaller uncomplicated inguinal hernias.[16] The choice of anaesthesia also influences the practice of day case hernia surgery. During the period under consideration, day case herniorrhaphy was infrequent in this centre, accounting for only 2% of operations. This is in contradistinction to much higher rates exceeding 22% reported in a Scottish national survey.[17] Day case hernia treatment has been found to be feasible, safe, effective and with the benefit of earlier ambulation when dealing with the uncomplicated average sized hernia in a physiologically fit individual.[18] This practice is still evolving in our centre after the previously existing stringent criteria regarding case selection for day surgery in our hospital were reviewed. The new policy revision followed the recent advent of the global system of mobile (GSM) telephony in Nigeria which facilitates contact and follow up with persons in remote locations post-operatively. Lately, more cases are being prospectively enrolled for day case hernia repair in our centre. This new development is the subject of discussion in a subsequent prospective report from this institution.

Wound complications occurred in 6.3% of the repairs, which compares favourably with the finding of between 4.2% and 12% in other series[1.0,19] Curiously, simple elective herniorrhaphy in uncomplicated cases constituted the majority. This paradoxical observation may have been predicated on the junior rank of the surgeon usually involved in these often regarded simple procedures and the non-observance of requisite strict aseptic technique and meticulous haemostasis. In order to reduce the incidence of adverse wound events and morbidity that follow elective herniorrhaphies, adequate supervision of surgical trainees must be enforced as well as strict attention to aseptic technique. The emergency cases should as well receive broad spectrum prophylactic antibiotic cover in order to minimize the risk of postoperative wound infection.

The incidence of chronic groin pain was low in our series in comparison with rates varying from 0% to 54% reported in Western literature after laparoscopic and open mesh hernioplasty.[4,20] This prominent complication of mesh repair appears to be much lower after Bassini herniorrhaphy probably for technical reasons.

The postoperative mortality in this report was limited to patients who arrived with long-standing strangulated or obstructed hernia. Similar high mortality pattern amongst persons with complicated hernias at presentation had been observed by others and ranged between 1 and 14%.[2,10] In a previous report from this centre, we had established a mortality rate of 22% among cases of acute abdominal emergencies operated beyond 6 hours of arrival into the hospital.[21] This is usually due to the increased septic, metabolic, cardio-respiratory and renal derangements that attend these delayed cases of acute abdomen. Therefore, the goal of treatment should be the surgical repair of the asymptomatic hernia as early as they are detected.

In conclusion, inguinal hernia is still a common disease in our health community. The uncomplicated condition has better post-operative outcome and with good patient selection would be suited for day case treatment. Significant case mortality attends the complicated hernia as well as the emergent surgical procedure.

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