

## Histopathological Review of Thyroid Diseases in A Sub-urban Tertiary Health Facility in the Tropics

\*Abudu EK<sup>1</sup>, Inyang-etoh EC<sup>2</sup>, Anonubi CC<sup>3</sup>

### ABSTRACT

*Diseases of the thyroid gland are common, and they can occur in any individual irrespective of the race. This retrospective study was designed to review of all haematoxylin and eosin stained slides of thyroid diseases diagnosed in the Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria between January 2003 and December 2009 to determine the pattern of thyroid diseases among patients in the centre. The demographic data and clinical information about the patients were obtained from their case notes. A total of 62 thyroid biopsies from 55 females and 7 males were analysed during the period of the study. The age of patients with thyroid diseases ranged from 12 years to 90 years, with a peak age incidence of 74.2% in the 21- 50 years age group. The mean ages of 42.1 years, 38.0 years and 55.8 years were recorded for goiters, adenomas and carcinomas respectively. Multinodular goiter was the most common (46.8%) thyroid disease, and it accounted for highest numbers of non-neoplastic disease, being responsible for 58% of cases. Colloid goiters, toxic goiters and non-toxic goiters were the other types seen in 26.0%, 10.0% and 6.0% of cases respectively. Benign tumours were predominantly follicular adenoma type, accounting for 6 out of 12 cases of neoplastic diseases. Papillary carcinoma was the most frequent malignant tumour, accounting for 50% (3 out of 6) of malignant tumours. Follicular carcinoma was responsible for two (2) cases while medullary carcinoma accounted for one case. In conclusion, multinodular goiter was the most common thyroid diseases among patients in Sagamu, Nigeria with a predilection for females. Follicular adenoma and papillary carcinoma were the predominant benign and malignant thyroid tumours respectively.*

**Keywords:** Histopathological, review, thyroid diseases, Goiter, Adenoma, Carcinoma and Nigeria.

### INTRODUCTION

The thyroid is an endocrine gland that is located in the anterior aspect of the neck, and it could be affected by diseases that may be neoplastic or non-neoplastic in nature<sup>1,2</sup>. Thyroid diseases were initially thought to be rare in occurrence, although recent studies have demonstrated an increasing occurrence of thyroid disorders<sup>3-5</sup>.

Thyroid diseases can occur in any age group, but young adults and people in their middle-age are most vulnerable to Hashimoto thyroiditis, Grave's disease, nodular goiter, and thyroid tumours<sup>1,2</sup>. Thyroid diseases are known to have a predilection for females<sup>1,5,13</sup>. Iodine deficiency, dietary substance, drugs like thiocyanates and propylthiouracil have been implicated in the causation of goiter<sup>1-5,13</sup>. Minerals including selenium, increase demand for thyroid hormones, and biosynthetic defects during

hormone synthesis have also been implicated in the aetiopathogenesis of nodular hyperplasia of the thyroid glands<sup>1-5,13</sup>. The major risk factors for carcinomas of the thyroid gland are environmental factors including ionizing irradiation, Hashimoto thyroiditis, and long standing simple goiters, as well as genetic factors which include increased incidence of ras point mutation<sup>1, 13</sup>. The measurement of antibodies to thyroglobulin (TgAb) and thyroid peroxidase (TPOAb) using an ELISA technique are helpful in the management of auto-immune thyroid diseases such as Graves' diseases and Hashimoto thyroiditis<sup>14</sup>.

This study is aimed at determining the pattern of thyroid diseases that occurred among patients in Sagamu, South-West Nigeria. The findings of this study will probably provide insight on the types of thyroid disorders that are prevalent among the people of South- West Nigeria.

### PATIENTS AND METHODS

This was a retrospective study designed to review the histopathological reports of all thyroid biopsies that were submitted to the department of Morbid Anatomy and Histopathology of the

### THE CASE

Mrs AEJ was an unbooked 36year old G<sub>4</sub>P<sub>2</sub>+1 civil servant, who presented to the labour ward of the University of Uyo Teaching Hospital with a 2hour history of intrapartum haemorrhage, having been in labour at a traditional birth attendant's (TBA) home for about 12hours. Her obstetric history revealed that her first pregnancy resulted in an emergency caesarean delivery due to failure of induction of labour in the centre of case report, while she had a spontaneous vaginal delivery at a TBA's home in her second delivery. Both infants were alive and well. Preliminary clinical examination showed moderate degree of clinical palor, radial pulse of 100b/m, which was regular and of moderate volume. Her admission blood pressure was 160/110mmHg. The abdomen was enlarged with moderate tenderness in the suprapubic area and the fetal heart rate was 154b/min and regular. There was minimal vaginal bleeding, and the cervix was 6cm dilated.

A tentative diagnosis of intrapartum haemorrhage of undetermined cause with hypertension in pregnancy was made. The possibility of caesarean scar dehiscence was considered and she was resuscitated with intravenous fluids and 50mg of intravenous labetolol. The packed cell volume (PCV) was 29% and urinalysis result was not significant. An urgent obstetric ultrasonography helped to rule out placenta praevia and abruption. Four units of fresh whole blood were cross matched and she was promptly scheduled for an emergency repeat caesarean section (c-section) under general anaesthesia.

At caesarean section, she was found to have developed caesarean scar dehiscence, although a live infant weighing 3.0kg with satisfactory Apgar scores was delivered. The c-section was uneventful and the uterus was repaired without exteriorizing it. She was estimated to have lost about 1000ml of blood although there was no haemoperitoneum. One unit of whole blood was transfused intraoperatively.

Within 12hours following the c-section, she became increasingly pale with clinical signs of hypovolaemia and abdominal distension; there was no evidence of vaginal bleeding. She was transfused with 2 additional units of whole blood

even though her urinary output was only 100ml. The nephrologist was invited to review her and following clinical and laboratory evaluation, a diagnosis of acute renal failure- stage 3 due to severe hypovolaemia was made. A renal challenge was performed with an initial positive response but a relapse to anuria within 12hours of the challenge. The need for dialysis was contemplated but was never performed because the degree of creatinin derangement was not critical.

Twenty-four hours following the c-section, her vital signs remained unstable, and a decision was made to perform an exploratory laparotomy. Four units of blood were crossmatched and the general surgeon, haematologist and nephrologist were invited. The preoperative PCV was 10%.

The exploratory laparotomy, which was performed under general anaesthesia by an obstetrician and a general surgeon through an extended midline incision revealed an intact but atonic uterus with a large haematoma in the right broad ligament measuring 12cm by 8cm and extending into the right retroperitoneal space up to the inferior pole of the right kidney. There were two major rupture sites on the broad ligament and posterior parietal peritoneum due to overdistension by the haematoma with oozing of altered blood.

Surgery involved subtotal hysterectomy with attempts to secure haemostasis through a series of interrupted figure-8 stitches. It proved difficult to achieve haemostasis as blood continued to ooze from every puncture site and the haematoma bed. The possibility of disseminated intravascular coagulopathy was considered and later confirmed with significant intraoperative clotting profile, which showed significant derangement in the platelet count, prothrombin time, partial thromboplastine time with kaolin and thrombin time. The surgery lasted for 6hours while the patient received 5units of fresh whole blood, 5litres of crystalloids as well as calcium gluconate intravenously.

Eventually, the haemorrhage became minimal and local pressure was applied to the haematoma bed with sterile abdominal towels, while the abdominal incision was closed en masse partially leaving a window at the inferior end of the wound to allow for removal of the abdominal pack on a later date. The wound dressing was reinforced

<sup>1</sup>Departments of Histopathology<sup>1</sup> and Obstetrics & Gynaecology<sup>2</sup>, University of Uyo Teaching Hospital, Uyo, Akwa Ibom State, Nigeria; <sup>3</sup>Department of Anatomic Pathology<sup>3</sup>, College of Medicine, University of Lagos.

\*Corresponding Author: ekabudu@yahoo.com

## Case Report

### Massive Obstetric Haemorrhage Resulting in Severe Maternal Morbidity and Near-Miss in a Tertiary Health Facility in Nigeria

\*Inyang-etoh EC<sup>1</sup>, Ekpe EE<sup>2</sup>, Nyoyoko NE<sup>3</sup>

#### ABSTRACT

*A case of massive obstetric haemorrhage, which could have resulted in maternal mortality, saves for timely intervention and availability of resources for emergency management of the patient is reported. The woman was a 36year old unbooked multipara who presented with intrapartum haemorrhage and hypertension, for which she was resuscitated and an emergency caesarean section performed on her. Following delivery, her condition deteriorated with signs of hypovolaemia and abdominal distension. She received blood transfusions and an exploratory laparotomy was performed on her, when she was found to have developed an extensive right broad ligament haematoma, which extended to the retroperitoneal space. The surgery became protracted and involved subtotal hysterectomy and insertion of a series of haemostatic stitches to control haemorrhage. Several units of blood were transfused with disseminated intravascular coagulation supervening. Eventually, haemostasis was achieved through an unconventional technique of applying local pressure at the operation field with sterile abdominal towels. She developed postoperative wound sepsis and dilated cardiomyopathy for which she was treated in addition. Massive obstetric haemorrhage, when associated with prolonged hypovolaemia as in this case could result in the development of dilated cardiomyopathy.*

**Keywords:** Massive obstetric haemorrhage, prolonged hypovolaemia, maternal morbidity, massive blood transfusion, dilated cardiomyopathy.

#### INTRODUCTION

The global burden of maternal mortality is borne largely by Sub-Saharan Africa and parts of Asia due to failure of governments in these regions to take deliberate steps to improve on the educational, socio-economic and infrastructural circumstance of vulnerable members of the public.<sup>1,2</sup>

About 70-80% of maternal mortality in affected countries arise from the five major causes namely: obstetric haemorrhage, pregnancy-related sepsis, hypertensive disorders of pregnancy, unsafe abortion and obstructed labour/uterine rupture.<sup>3,4</sup> These complications of pregnancy, some of which are preventable only result in death when presentation in a health facility is delayed or essential health care resources needed for prompt intervention are lacking.<sup>4</sup>

Nigeria, which prides itself as the giant of Africa because of its huge land mass and large human population equally has a high maternal mortality ratio of 630 per 100,000 live births.<sup>5</sup> While some Nigerian women die from complications of pregnancy, others survive with short or long term morbidities. These include, anaemia, anaemic heart failure, kidney failure and stroke.<sup>6,7</sup> Others are vesicovaginal fistula, intrauterine synechia, secondary infertility, pelvic sepsis and chronic pelvic pain.<sup>6,7</sup> Women who suffer severe obstetric haemorrhage may develop secondary morbidities from massive blood transfusion such as acidosis, hypothermia and coagulopathy.<sup>7,8</sup>

This is the case report of a young unbooked multiparous woman who presented in the labour ward of our centre with complaints of intrapartum haemorrhage that snowballed into massive obstetric haemorrhage, which necessitated massive blood transfusion and subtotal hysterectomy. She survived but developed postpartum cardiomyopathy.

Olabisi Onabanjo University Teaching Hospital, Sagamu, South-West Nigeria between January 2003 and December 2009.

These thyroid specimens were received from the Surgery department of the hospital as well as from peripheral health facilities from the neighbouring states of Lagos, Oyo and Osun. Old slides were reviewed microscopically and where necessary, new slides were recut from stored paraffin embedded tissue blocks and stained with haematoxylin and eosin (H&E) stains. On few occasions, special stains including Congo red and silver impregnated Reticulin were done.

Information extracted from the patients' clinical notes and the surgical biopsy register included: age, and sex distribution of the patients, as well as the clinical summary and histological characteristics of the pathological lesions. Following the review of histological slides, diagnoses were modified as appropriate. Thyroid diseases were broadly categorized into: Colloid Goitres, Thyroiditis, Thyroglossal duct cysts, Diffuse hyperplasia, Adenoma and Malignant neoplasms using the WHO classification (IARC Lyon 2004)<sup>15</sup>.

The data obtained were collated, analyzed and interpreted using inferential statistics. Results are presented in the form of numerical, percentages, simple proportion, tables and figures. The data were analysed using Microsoft Excel, Windows 2003.

#### RESULTS

Out of 2850 biopsies diagnosed during the 7-year period of the study, 62 were thyroid diseases accounting for 2.2% of the total. This represents a frequency of 9 cases per year. Non-neoplastic diseases of thyroid gland were responsible for 50 (80.7%) cases, while the remaining 12 (19.3%) cases were accounted for by neoplastic tumours. The total numbers of neoplastic tumours were 12, with an equal number of benign and malignant thyroid tumours.

The age of patients with thyroid diseases ranged from 12 years to 90 years, with a peak age incidence in 21- 50 years age group (74.2%) and a mean age of  $42.9 \pm 2.03$  years (see Table 1). The mean ages were 42.1 years, 38.0 years and 55.8 years were recorded for goiters, adenomas and carcinomas respectively.

There were 7 males and 55 females with a resultant male to female ratio of 1.0:8.0. Non-neoplastic diseases were commoner among females with a male to female ratio of 1.0:16.0. Benign tumours which were exclusively made up of follicular adenomas had a female preponderance with a male to female ratio of 1.0:5.0, whereas thyroid carcinoma was equitably distributed between males and females.

Multinodular goiter was the most common thyroid disease (46.8%) as well as accounting for highest numbers of non-neoplastic disease, accounting for 58% of cases. Colloid goiters, toxic goiters, and non toxic goiters were the other types seen in 13 (26%), 5(10%) and 3 (6%) of cases respectively (see Table 2).

The benign tumours were predominantly follicular adenoma, accounting for 6 out of 12 cases of neoplastic diseases. Papillary carcinoma was the most frequent malignant disease, accounting for 3 out 6 cases of malignant tumours. Medullary carcinoma and follicular carcinoma were the other types seen, with former accounting for one case and the latter being responsible for two cases. There was no case of anaplastic carcinoma, sarcomas, lymphomas or metastatic tumours seen in the study (see Figures 1,2 & 3). Inflammatory thyroid diseases were not seen in the study.

Features of hyperactivity and adenomatous hyperplasia were seen in 3 and 2 out of 29 multinodular goiters respectively. Three out of 13 colloid goiters showed evidence of degeneration while 4 out of 5 toxic goiters had features of involution. None of the malignant tumours showed evidence of metastasis.

Departments of Obstetrics and Gynaecology<sup>1</sup>, Surgery<sup>2</sup>, Senior Registrar<sup>3</sup>, University of Uyo Teaching Hospital, Uyo -Nigeria

\*Corresponding author: emmacol2000@yahoo.com

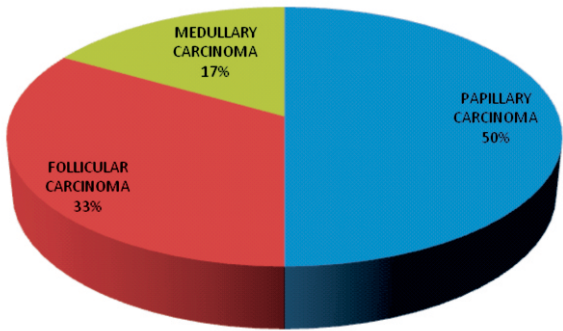


**Table 1: Age and Sex Distribution of Patients with Thyroid Diseases in Sagamu, South West Nigeria**

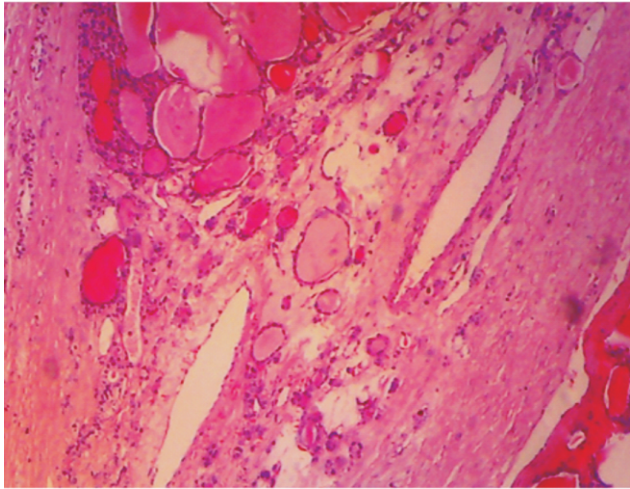
Age Range (Years)	Males Numbers of Cases	Females	Subtotal	Percentage (%)
0-10	0	0	0	0
11-20	0	1	1	1.6
21-30	0	15	15	24.2
31-40	0	15	15	24.2
41-50	3	13	16	25.8
51-60	2	4	6	9.7
61-70	0	2	2	3.2
71-80	1	5	6	9.7
81-90	1	0	1	1.6
<b>Total</b>	<b>7</b>	<b>55</b>	<b>62</b>	<b>100.0</b>

**Table 2: Histological Types of Thyroid Diseases among Patients in the Study Population**

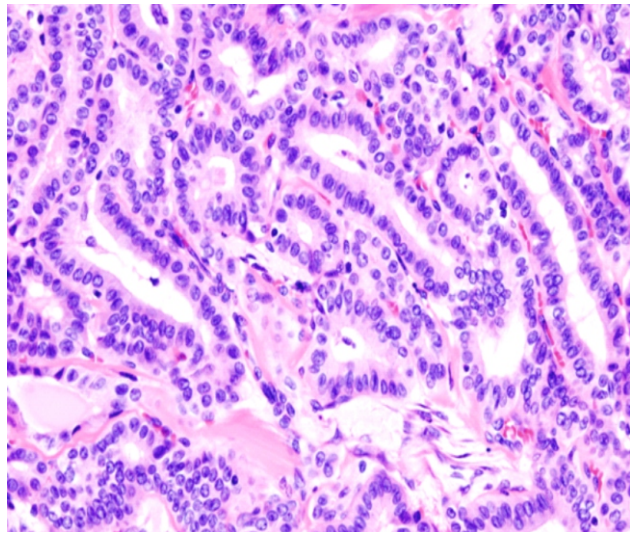
Histologic Diagnosis	Number of Cases			Percentage (%)
	Males	Females	Subtotal	
Multinodular Goiters	1	28	29	46.8
Colloid Goiters	1	12	13	20.9
Toxic Goiters	1	4	5	8.1
Non Toxic Goiters	0	3	3	4.8
Benign Tumours	1	5	6	9.7
Malignant Tumours	3	3	6	9.7
<b>Total</b>	<b>7</b>	<b>55</b>	<b>62</b>	<b>100.0</b>



**Figure 1: Histological Types of Thyroid Carcinomas**



**Figure 2: Photomicrograph of Thyroid tissue showing Multinodular Goiter, H & E x 100**



**Figure 3: Photomicrograph of Thyroid tissue showing Papillary Carcinoma, H & E x 100**

**DISCUSSION**

Thyroid diseases are not uncommon in Nigeria as demonstrated by the results of this study where 62 thyroid diseases were recorded, accounting for 2.2% of the total biopsies received during the period of the study. The frequency of thyroid diseases was nine cases per year. This rather low frequency contrasted with results from various parts of Africa, where the annual frequency of thyroid diseases ranged from 34.3 to 156 cases in Addis Ababa, Ethiopia; and annual frequency of 19.8 and 27.4 cases were recorded in Kano and Ile-Ife, Nigeria respectively<sup>7,12,13,16</sup>. Interestingly, Young in Sheffield, UK reported a much higher frequency of thyroid disease of 183.3 per year in his series<sup>8</sup>. These reports have however demonstrated that Africa probably has

4. Kingsnorth A, Oppong C, Akoh J, Stephenson B, Simmermacher R. Operation Hernia to Ghana. *Hernia* 2006; 10:376-9

5. Post S, Weiss B, Willer M, Neufang T, Lorenz D. Randomized clinical trial of lightweight composite mesh for Lichtenstein inguinal hernia repair. *Br J Surg* 2004; 91:44-8

6. Clarke MG, Oppong C, Simmermacher R, Park K, Kurzer M, Vanotoo L, Kingsnorth AN. The use of sterilised polyester mosquito net mesh for inguinal hernia in Ghana. *Hernia*. 2009;13:155-9

7. Ohene-Yeboah M, Abatanga F, Oppong J, Tobge B, Nimako B, Amaoh M, Azorliade R. Some aspects of the epidemiology of inguinal hernia in Kumasi, Ghana. *Hernia*. 2009;13:529-32.

8. Sanders DL, Porter CS, Mitchell KCD, Kingsnorth AN. A prospective cohort study comparing the African and European hernia. *Hernia* 2008; 12:527-9

9. Bhattacharjee PK. Surgical options in inguinal hernia: Which is the best? *Indian J Surg*. 2006; 68:191-200. Available from <http://www.indianjsurg.com/textaspf2006/68/4/191/27342>

10. Simons MP, Aufenancher T, Bay-Nielsen et al. European hernia society guidelines on the treatment of inguinal hernia in adult patients. *Hernia* 2009; 13:343-403

11. Agbakwuru EA, Faponle AF, Adesukanmi ARK, Ogundoyin OO. Practice and acceptance of day-care surgery in a semi-urban Nigerian hospital. *East Afr J Med*. 2001;78:170-3

12. Schumpelick V, Stumpf M, Schwab R. Surgery of inguinal hernia as ambulatory and brief in-patient stay. *Chirurg* 2004;75: 126-30

13. Sadowski B, Rodriguez J, Symmonds R, Roberts J, Song J, Rajab MH, Cummings C, Hodges B. Comparison of polypropylene versus polyester mesh in Lichtenstein hernia

repair with respect to chronic pain and discomfort. *Hernia* 2011;15:643-54



Although the optimum repair for inguinal hernia is yet determined, an adequate hernia repair requires a minimum of anaesthesia and surgery risk, cost, hospital stay, complication and recurrence.<sup>9</sup> The minimum anaesthetic risk, cost and duration of hospital stay for inguinal hernia repair can easily be achieved using local nerve or field block in an ambulatory setting. We previously repaired inguinal hernias in our institution under general anaesthesia but had to switch to nerve block for reasons of cost and our desire to adopt same day discharge to reduce the waiting period before surgery and manage the constraints of limited bed space. Our limited practice of day surgery has been very beneficial as our through-put for inguinal hernia has increased while the cost of the procedure has reduced. Ambulatory inguinal hernia repair is routinely practiced in developed economies and follows laid down guidelines<sup>10</sup> but is recent in Nigeria and studies show good outcome, minimal risk and patient acceptance.<sup>11</sup> Ambulatory hernia repair is cost effective, widely acceptable and in trained hands carries minimal complications.<sup>12</sup>

Various repair techniques have been practiced over time but the tension free hernioplasty is currently the technique of choice for hernia repair because of its low recurrence rate.<sup>13</sup> The Lichtenstein repair using on-lay mesh is most popular but rather expensive because of the additional cost of the mesh and so not widely practiced by surgeons working in resource poor settings. A limited study involving thirty patients employing polypropylene mesh done in Ife concluded that tension-free repair is well tolerated.<sup>14</sup>

Darning is an alternative tension free technique using non-absorbable sutures to weave a meshwork in the posterior wall of the inguinal canal. The procedure is a precursor to mesh repair, is cheap, effective and is tension-free. Its early and late outcome have been found in studies to be similar to other procedures for repair of primary inguinal hernia repair<sup>15-18</sup>, with less post-operative cost, pain or septic complications.<sup>19-21</sup>

This study shows that in selected patients darning of inguinal hernias is associated with no recurrence at three years. Recurrence after inguinal hernia repair is an important outcome measure. Most recurrences occur in the first two years and account for a significant post repair

morbidity and cost of subsequent repairs. Our result with darning would suggest the technique is effective in controlling the disease measured by the low recurrence rate we recorded. We believe the tension-free nature of the procedure contributed to this outcome. This technique would appear to have great potentials in the management of inguinal hernias in low income countries in Africa with a high prevalence of the disease.

Acute post operative pain is usual after hernia repair, in particular with bilateral repair. It often responds well to commonly prescribed analgesics. The use of nerve block techniques provides additional post operative analgesia. The absence of tension in the darning technique reduces the possibility of severe pain and is the likely reason we did not encounter chronic pain and its associated challenges. Wound complications were equally rare with this technique and we consider it a proper repair for inguinal hernia in a resource poor setting because it is cost effective.<sup>22</sup>

A major limitation of this study is the short duration of follow-up and limited number of patients. Hernia recurrence occurs even more than ten years post-repair and we will miss recurrences occurring after three years.

## Conclusion

Darning is an effective and safe technique for inguinal hernia repair with minimal wound complication and recurrence rates at three years. We recommend the technique for hernia surgeons who do not have easy access to or whose patients cannot afford synthetic mesh.

## REFERENCES

1. Ashindoitiang J, Ibrahim N, Akinlolu O. Risk factors for inguinal hernia in adult male Nigerians: A case control study. *Int J Surg* 2012;10:364-7
2. Hernandez-Irizarry R, Zendejas B, Rmairez T, Moreno M, Ali S, Lohse C, Farley D. Trends in emergent inguinal hernia surgery in Olmsted County MN: a population based study. *Hernia* 2012;16: 397-403
3. Sanders DI, Porter CS, Mitchell KCD, Kingsnorth AN. A prospective cohort study comparing the African and European hernia. *Hernia* 2008;12:527-9

lower incidences of thyroid diseases, when compared with their Caucasian counterparts. Notwithstanding, the very low incidence of thyroid diseases recorded in this study in Sagamu, Nigeria may be due to under reporting of cases, as some patients prefer to patronize traditional herbalists for treatment. The reasons for such preferences include poverty, ignorance and the relatively high user-fees charged in hospitals. It is important to also note that Sagamu, where the study was carried out is situated in a low land, where the soil may be rich in iodine salts resulting in a low incidence of non-malignant thyroid disorders, especially goiters.

The majority of thyroid diseases were non-neoplastic diseases which occurred in 50 (80.7%) cases. This finding compares favourably with the results of other studies in Nigeria and the United Kingdom, where rates of non-neoplastic diseases ranged from 79.0% to 92.1 %.<sup>7,8,10,12,13,16,17</sup> Benign and malignant thyroid tumours occurred in a ratio 1.0:1.0, which concurred with the report of a study in Ile-Ife, Nigeria where Nggada *et al* reported the same ratio in their study<sup>12</sup>. Conversely, Tsegaye and Abebe in Addis Ababa, Ethiopia recorded a preponderance of benign tumours, giving a ratio of 1.6:1.0 and 7.9:1.0 respectively.<sup>7,10</sup> The reasons for this disparity have not been addressed by this study; however, differences in environmental factors, differences in sample size, as well as differences in the population studied could have contributed to this discordance.

The mean ages of patients who presented with thyroid diseases from various parts of the world varied from 32.2 to 42.0 years of age, which is comparable with the mean age of  $42.9 \pm 2.03$  years and lies within the peak age incidence of 21-50 years age group (74.2%) recorded in this study.<sup>6, 10, 11, 13</sup> These findings also concur with studies in Addis Ababa, Ethiopia where a peak age incidence ranging from 20-30 years to 30-40 years of life for thyroid diseases was recorded.<sup>7,10, 13</sup> There were 7 males and 55 females giving a male to female ratio of 1.0:8.0, which concurred with most reports showing female preponderance, with a male to female ratio ranging from 1:1.3 to 1.0:6.0.<sup>1, 5-13</sup> Additionally, the equal male to female ratio obtained for malignant tumours in study population is similar

to findings by Nggada<sup>12</sup> in Ile Ife, Nigeria, but discordant to reports from many other studies<sup>2,7-9,12, 17,19</sup>.

From the foregoing, it is obvious that there is an increased demand for iodine in females within the age group (20-45yrs) in response to some physiological sexual activities including menstruation and child bearing. On the other hand, relationship between thyroid hormones and physiological sexual activities in post-pubertal males especially spermatogenesis is still doubtful and require more researches in this area.

Multinodular goiter was the most common thyroid disease (46.8%) and ranked the leading non-neoplastic disease (58%). Colloid goiters, toxic goiters, goiters, and non toxic goiters were the other types seen in 26.0%, 10.0% and 6.0% cases respectively. These results were comparable to findings by Tsegaye<sup>7</sup> and Abebe<sup>10</sup> in Addis Ababa, Ethiopia, where they reported nodular colloid goiter (NCG) as the most frequent non neoplastic disease in 76.9% and 80.0% of cases respectively.<sup>7,13</sup> On the other hand, non-toxic simple goiters were the leading non-neoplastic thyroid lesion in Sheffield, UK (53.0%) and Garbon, Sub-Sahara Africa (54.7%)<sup>2,8</sup>. From the foregoing, it is obvious that predominant type of goiters differs from region to region but the underlying aetiological factors are almost the same. These include deficiencies of iodine and other minerals including selenium, use of drugs like thiocyanates and propylthiouracil as well as increase demand for thyroid hormones at the expense of deficiency of iodine<sup>1-5,13</sup>.

Benign tumours were predominantly follicular adenoma, accounting for 6 out of 12 cases of neoplastic diseases, which agrees with reports from Kano, Nigeria, Addis Baba, Ethiopia and Houston, USA, but contrasts with results from other studies in Addis Baba, Ethiopia and Sheffield, UK, where Hurtle cell tumour was the most common benign tumour in those series.<sup>7,8,11,13,16</sup>

Papillary carcinoma was the most frequent malignant disease, accounting for 3 out of 6 cases of malignant tumours which concur with findings of Tsegaye *et al.*<sup>7</sup> in Addis Baba, Ethiopia, Kountakis *et al.*<sup>11</sup> in Houston, USA, and Gorges in Germany, who reported papillary carcinoma as the most frequent thyroid

malignancy in their studies <sup>7, 9, 11</sup>. In contrasts, follicular carcinoma was the leading carcinoma in

Adelusola K. Thyroid malignancy in endemic nodular goitres: prevalence, pattern and treatment. *Eur J Surg Oncol*, 2001,Nov;27(7):699.

18. Aghini-Lombardi F, Antonangeli L, Martino E, Vitti P, Maccherini D, Leoli F, Rago T, Grasso L, Valeriano R, Balestrieri A, Pinchera A. The Spectrum Of Thyroid Disorders In An Iodine-Deficient Community: The Pescopagano Survey. *J Clin Endocrinol Metab*. 1999 Feb; 84 (2):561-6.

19. Sant M, Aareleid T, Berrino F, Bielska Lasota M, Carli PM, Faivre J, Grosclaude P, Hedelin G, Matsuda T, Moller H, Moller T,Verdecchia A, Capocaccia R, Gatta G, Micheli A, Santaquilani M, Roazzi P, Lisi DEUROCARE Working Group EUROCARE-3: Survival of cancer patients diagnosed 1990-94: results and commentary. *Ann Oncol*. 2003; 14(5): 61-118.

20. Evangelina R. Pipo and Ma. Yvette R. Amante. The Detection Of Follicular Variant Of Thyroid Papillary Carcinoma and Follicular Carcinoma of the Thyroid ByFine Needle Aspiration Biopsy And Frozen Section: *A Three-Year Comparative Review; Phil. J. Internal Medicine*, 2006 July-August; 44:167-73.



Plate I : A typical inguinal hernia seen in Africans, often of large size containing a large amount of intra-abdominal contents.

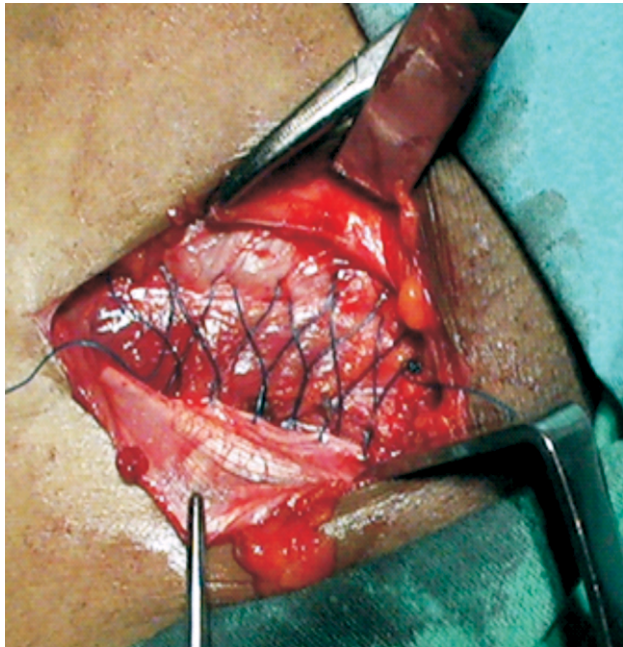


Plate II: First layer of darning placed at repair of inguinal hernia in a female patient.

Table 1 : Inguinal hernia is common among young males and occurs more on the right side

Characteristics	Frequency (%)
<b>Sex</b>	
<b>Males</b>	49 (75.4)
<b>Females</b>	16 (24.6)
<b>Age group (Yr)</b>	
<b>16 -40</b>	29 (44.6)
<b>41 -60</b>	27 (41.5)
<b>&gt;61</b>	9 (13.8)
<b>Side</b>	
<b>Right</b>	33 (50.7)
<b>Left</b>	21 (32.3)
<b>Bilateral</b>	11 (16.9)
<b>Complications</b>	
<b>Pain</b>	33 (50.7)
<b>Wound haematoma</b>	1 (1.5)
<b>Stitch granuloma</b>	6 (9.2)
<b>Wound infection</b>	0 (0)
<b>Recurrence</b>	0 (0)

DISCUSSION

A simple, cheap, safe and effective elective repair technique for inguinal hernias is of utmost importance in the west Sub-Saharan region to serve as part of an integrated approach to encourage more patients to have early elective hernia repair as a means to controlling this pathology which places a huge burden on the economic growth of many African countries. Inguinal hernia predominantly affects the productive age group of the economy (see table 1), especially in males in farming communities. The epidemiology of inguinal hernia in the African continent is markedly different from that in Europe and North America; hernias in the continent are larger, of longer duration and more than 70% of repairs are done on emergent bases<sup>7,8</sup> with a high rate of bowel resection, morbidity and mortality. The cost of repair and proximity of health facilities are contributory to this situation.



## PATIENT AND METHODS

### *Setting*

The Department of Surgery of the University of Uyo Teaching Hospital, Uyo.

### *Inclusion Criteria*

Patients aged 18-70 years in American Society of Anaesthesiology (ASA) class I and II presenting with simple unilateral or bilateral inguinal hernia and who accept ambulatory repair by darning.

### *Exclusion Criteria*

ASA III and IV patients, presence of obstruction or strangulation, or a large hernia requiring general surgery and admission.

### *Consent*

A formal consent was obtained from patients enrolled into the study after adequate explanation of the procedure by a member of the study group

### *Ethical Approval*

Approval to conduct the study was obtained from the institutional review committee.

## METHODS

Patients presenting with a diagnosis of simple inguinal hernia at the out-patient clinic were recruited into the study after adequate counselling by the lead surgeon and consent to undergo a darn repair obtained. A minimum of full blood count and urine analysis was done for all patients, those older than 50y had a chest X-ray also. They were booked for ambulatory hernia repair and advised to come with an adult escort on the scheduled operation date in a fast. In theatre a member of the group reviewed the patient records, diagnosis and investigation results, examined and marks the operation site.

The hernia repair was done under ilio-inguinal nerve block using 1% xylocaine with or without adrenalin which was surgeon administered. A standard open inguinal incision

was made, haemostasis secured, the spermatic cord freely mobilised and the hernia sac dissected free, its contents reduced and high ligation and excision of the sac done. Reconstruction of the transversalis fascia and narrowing the internal ring was done with chromic catgut 0. Size 0 polypropylene suture was used to weaving a darn in the posterior wall of the inguinal canal (Plate II) in two layers commencing medially from the pubic tubercle moving laterally, picking the inguinal ligament and the external oblique muscle and aponeurosis without tension, to 2cm past the the internal ring and returning to the pubic tubercle and the knotted. A layered closure of the soft tissue was done with subcuticular skin closure.

The patient was discharged after two hours observation in the recovery room in care of the escort after instruction on post-operative medication and care had been discussed with both. They were reviewed at one week in the clinic and skin sutures removed. Further reviews were scheduled for four and twelve weeks and subsequently by six monthly phone calls for a minimum duration of three years, thereafter a physical examination will be required only if symptoms of a recurrence of the swelling is reported.

Data on the age, sex, evidence of wound complications (bleeding, haematoma, infection, and stitch sinus), pain and recurrence of a swelling at the same site will be recorded.

### *Data Analysis*

Data analysis will be done using SPSS 17 using descriptive statistics and presented as simple percentages, ratios, charts and tables.

## RESULTS

A total of 76 inguinal hernias were repaired in 65 patients, predominantly involving young males. Post-operative pain was the most common complication reported and was more in patients with bilateral repair. We did not encounter recurrence in three years.