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ORIGINAL ARTICLE

Presentation and Management Outcomes of Goitres at a District Hospital in Abuja, North Central Nigeria: A 15-Year-Review

Présentation et Résultats de la Gestion des Goitres dans un Hôpital de District à Abuja, dans le Centre-Nord du Nigeria : Une Revue de 15 ans

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ABSTRACT

BACKGROUND: The clinical and pathologic spectrums of goitres are wide. Even though Nigeria's Federal Capital Territory is within the geographic goitre bed, there is a paucity of thyroid-related data from this region. The objective of this study was to determine the clinical presentation, management and outcomes of patients with goitre operated-on at the Department of Surgery, Asokoro District Hospital, in Abuja, Nigeria.

METHODOLOGY: This is a retrospective study involving patients managed between January 2001 and December 2015. Data were extracted from patients' medical records, operation registers, and histopathology records. Variables were; age, sex, diagnosis, types of operation performed, post-operative complications and histological findings. All patients had general anaesthesia via cuffed endotracheal intubation and the surgical technique used was skin crease transverse collar stud incision.

RESULTS: One hundred and thirty four (134) patients were involved in the study: 124(92.5%) were females and 10(7.5%) males. Mean age was 38years±11.0SD. Seventy-seven (57.5%) patients had simple multi-nodular goitre, followed by simple left nodular goitre 20(14.9%) and simple right nodular goitre 17(12.7%). One hundred and twenty-one (90.5%) patients did not have any complications. On histologic examination, most of the lesions were multinodular goitres 60(44.8%), followed by simple nodular goitres, 23(17.2%). Follicular adenoma was the commonest neoplastic variant accounting for 12(9.1%) cases.

CONCLUSION: The pattern of goitres in Abuja simulates that from other parts of Nigeria and many other African countries though with fewer malignancies in the present study. The management and outcome of goitres in Asokoro District Hospital Abuja is comparable to those obtained from other centres in Nigeria. Pre-and postoperative complications were also minimal. **WAJM 2022; 39(2): 176–182.**

Keywords: Goitres, Pattern, Management Outcome, Abuja.

RÉSUMÉ

CONTEXTE: Le spectre clinique et pathologique des goitres sont larges. Bien que le territoire de la capitale fédérale du Nigeria se trouve dans le lit géographique du goitre, il y a peu de données sur la thyroïde dans cette région. L'objectif de cette étude était de déterminer la présentation clinique, la gestion et les résultats des patients atteints de goitre opérés au département de chirurgie de l'hôpital du district d'Asokoro, à Abuja, au Nigeria.

MÉTHODOLOGIE: Il s'agit d'une étude rétrospective portant sur des patients pris en charge entre janvier 2001 et décembre 2015. Les données ont été extraites des dossiers médicaux des patients, des registres d'opérations et des dossiers d'histopathologie. Les variables étaient : l'âge, le sexe, le diagnostic, les types d'opérations pratiquées, les complications postopératoires et les résultats histologiques. Tous les patients ont bénéficié d'une anesthésie générale par une intubation endotrachéale à ballonnet, et la technique chirurgicale utilisée était l'incision transversale du pli cutané incision du collet.

RÉSULTATS: Cent trente-quatre (134) patients ont participé à l'étude: 124 (92,5%) étaient des femmes et 10 (7,5%) des hommes. L'âge moyen était de 38 ans±11,0SD. Soixante-dix-sept (57,5 %) patients présentaient un goitre simple et multi-nodulaire, suivi d'un goitre nodulaire simple gauche 20(14,9%, et le goitre nodulaire simple droit 17 (12,7 %). Cent vingt et un (90,5 %) patients n'ont présenté aucune complication. A l'examen histologique, la plupart des lésions étaient des goitres multinodulaires 60(44,8%), suivis par des goitres nodulaires simples, 23(17,2%). L'adénome folliculaire était la variante néoplasique la plus courante avec 12 cas (9,1 %).

CONCLUSION: Le modèle de goitres à Abuja simule celui d'autres régions du Nigeria et de nombreux autres pays africains, bien qu'avec moins de tumeurs malignes dans la présente étude. La gestion et le résultatmde goitres à l'hôpital du district d'Asokoro à Abuja sont comparables à celles obtenus dans d'autres centres au Nigeria. Les complications pré et postopératoires étaient également minimes. **WAJM 2022; 39(2): 176–182.**

Mots-clés: Goitres, modèle, résultat de la gestion, Abuja.

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INTRODUCTION

The normal thyroid gland is invisible and impalpable and the term goitre refers to an enlargement of the thyroid gland.[1] The enlargement can affect any of the lobes or isthmus and when this occurs, the gland becomes visible, palpable or both. It is also goitrous if the lateral lobes are larger than the terminal phalanx of the patient.[2] The spectrum of goitres ranges from a variety of thyroid tumours, altered functional states and inflammatory conditions, to rare forms of disorders.[3] Goitre may develop as a result of overstimulation of the thyroid gland by thyroid stimulating hormone (TSH), either as a result of its inappropriate secretion from the anterior pituitary or a response to a chronically low level of circulating thyroid hormones. The most important factor in endemic goitre is diet and water deficient in iodine.[4] Endemic areas are in the mountainous areas such as Abuja and other cities in North Central Nigeria.[5] These goitres present to various health facilities including Asokoro District Hospital which has the capacity to manage them. However, the iodinisation programme of the Federal Government of Nigeria where iodised salt and supplements have been made freely available has reduced the prevalence of goitres in Nigeria.[6,7]

Thyroidectomy is the mainstay of treating goitres and it is a safe procedure in well-equipped settings with experienced personnel to anticipate and avoid the occurrence of possible surgical complications.[8] Surgical treatment options for goitres include lobectomy, subtotal thyroidectomy, near-total thyroidectomy, isthmusectomy and total thyroidectomy. However, the choice of surgical approach and extent of tissue resection for the benign thyroid disease vary.[8]

Total thyroidectomy is the gold standard for the treatment of thyroid cancers, multinodular goitres and Graves' disease. However, due to the attendant risks of postoperative complications such as injury to the recurrent laryngeal nerve (RLN), hypocalcaemia and permanent hypothyroidism, many surgeons avoid the procedure for benign diseases.[9] There is a paucity of data on the presentation of goitre and outcome of its management in Abuja, North Central Nigeria. This, therefore, necessitated this study.

OBJECTIVE

To determine the presentation, management and outcomes of patients presenting with goitres managed at the Department of Surgery, Asokoro District Hospital, Abuja, in North Central Nigeria.

PATIENTS AND METHODS

Ethical clearance was obtained from the Asokoro District Hospital Ethics and Research review committee. This was a retrospective review of patients who had thyroidectomy at the department of General Surgery of Asokoro District Hospital, Abuja, in North-Central Nigeria for 15 years, between January 2001 and December 2015.

Asokoro District Hospital is a 120-bed secondary healthcare facility owned by the Federal Capital Territory (FCT) Administration located in Asokoro, one of the urban districts in the Federal Capital City of Abuja and affiliated to the Nile University of Nigeria, Abuja. The district is surrounded by several semi-urban neighbourhoods and villages. The hospital receives patients from within the FCT and other neighbouring states of Niger, Kogi, Nasarawa, Benue and Kaduna. The current estimated population of the FCT is 3,464,000. A total of about 23,000 new patients are seen in the hospital yearly out of which about 2000 new patients are seen in the general surgery outpatient clinic of the hospital annually.

Data for the analysis was obtained from patients' medical records, operation registers, and histopathology records. The variables included for analysis were: age, sex, diagnosis at presentation, types of operation performed, postoperative complications, and histological findings of the specimens and follow up care for one year. All patients had routine preoperative work-up which included; full blood count, serum electrolytes, urea and creatinine estimation, urinalysis, thyroid function tests (TFTs) including serum free T3, T4 and TSH estimation, ultrasound scan of the neck, plain radiographs of the neck (including the thoracic inlet view where indicated), chest radiograph and computed tomographic (CT) scan where necessary. Other tests done were; indirect laryngoscopy with a laryngeal mirror for the first 5 years and thereafter, direct laryngoscopy with fibre-optic scope for the other 10years by the Ear, Nose and Throat (ENT) surgeons to evaluate the status of the vocal cords. Also, blood grouping, hepatitis and HIV screening were done. ECG was done where necessary. Serum calcium estimation was not routinely done except postoperatively and when indicated. Fine Needle Aspiration Cytology (FNAC) and other forms of biopsy were not done preoperatively but all resected specimens were subjected to histological examination. All the malignant goitres were diagnosed postoperatively by histology.

The diagnosis of the type of goitre was based on clinical findings supported by laboratory and radiologic profiles. Any goitre protruding beyond the jaw of the patient was regarded as a giant goitre, while retrosternal goitre was diagnosed clinically by physical examination and confirmed by ultrasound scan of the neck, plain neck (thoracic inlet view) and chest radiographs or CT scan. All patients with toxic goitres were co-managed conservatively with the endocrinologist and controlled with oral antithyroid drugs like carbimazole and propylthiouracil before surgery[10]. The euthyroid state of such patients was confirmed by a repeat TFT, clinical signs and symptoms and in particular, a sleeping pulse rate of less than 90 beats per minute.

Surgical Approach

Tracheostomy tubes were made ready for all patients with giant goitres at the surgery. All patients were reviewed with the anaesthesiologist pre-operatively to determine those that may need post-operative intensive care. All patients had general anaesthesia via cuffed endotracheal intubation. All patients were operated by a team comprising of the same surgeon and assisted by different medical officers. A skin crease transverse collar stud incision and mostly, extracapsular approach to the thyroid gland were the techniques used. A Redivac™ closed suction drain was

inserted in the thyroid bed and beneath the skin flaps for 12–24hours post operatively[11, 12]. The endotracheal tubes were removed in theatre and the vocal cord was inspected directly to ensure their satisfactory movements and thus adequate breathing before leaving the operating room. Patients were followed up routinely at the outpatient clinic and those who had total thyroidectomy were placed on life-long oral L-thyroxine therapy.

Data Handling

Data analyses were done using IBM Statistical Package for Social Sciences (SPSS) version 22.0. The level of statistical significance was determined by a p-value of < 0.05. The student t-test and chi-square test were applied to compare means and proportions respectively, and frequency tables and cross-tabulations were generated for the variables. Quantitative variables were reported using means and standard deviation, while qualitative variables were reported using percentages.

RESULTS

A total of 134 patients who had the complete record of the needed variables were included in the analysis out of which 124(92.5%) were females and 10(7.5%) were males. The mean age of the patients was 38 years ± 11.0 years and their ages ranged from 19 to 70 years. A higher proportion of the patients, 46(34.3%), were within the age range 30–39 years (Table 1).

Majority of the patients 41(33.1%) were females within the age range of 30–39 years followed by females of less than 30years old 32(25.8%) and then 29(23.4%) within the age range of 40-49years. The mean age of the males was 37.7± 9.7 years, while the mean age of the females was 38 ± 11.1 years, but the difference in means was not statistically significant, (t=–.081, p=0.94). Similarly, a higher proportion of the males (50.8%) were within the predominant age group of 30-39 years than the females (33.1%), but the difference in proportions was not statistically significant, (χ^2=2.205, p=0.53) (Table 2). Majority of the patients, 77(57.5%), had simple multinodular goitre at the time of diagnosis. This was followed by patients who had simple left nodular goitre 20(14.9%), and those who had simple right nodular goitre 17(12.7%). Ten patients (7.5%) had toxic multi-nodular goitre while 6(4.5%) had giant multinodular goitre. The patients who had simple multinodular goitre with retrosternal extension and those who had recurrent nodular goitre were the least, 1(0.7%) each (Table 3).

Higher proportions of the patients 44(32.8%) had goitre alone without any other associated signs (apart from cosmesis) at presentation and a similar number 44(32.8%) had goitre with tracheal deviation respectively. This was followed by patients who had goitre with tracheal compression 25(18.7%), and those who had goitre with hoarseness of voice 10(7.5%). Only 2 patients had goitre with vocal cord palsy and 1(0.7%) patient had goitre with retrosternal extension (Table 4).

The choice of surgery was guided by the enlarged lobe and intraoperative findings such as the risk of damage to the surrounding tissues like the recurrent laryngeal nerve but majority of the patients 77(57.5%) had sub-total thyroidectomy. This was followed by patients who had left thyroid lobectomy 21(15.2%), and those who had right thyroid lobectomy 15(11.2%). Six patients (4.4%) had hemithyroidectomy while 3(2.2%) had isthmusectomy and total thyroidectomy respectively (Table 5).

Majority of the patients who had thyroidectomies 121(90.5%) did not have any postoperative complications. The highest complication recorded was recurrent goitre in 7(5.2%) of the patients. This was followed by those who had reactionary bleeding with haematoma 3(2.2%). One (0.7%) patient each had

Table 1: Distribution of Age and Sex of the Patients

Variables	Frequency (N=134)	Percent (%)
Gender		
Male	10	7.5
Female	124	92.5
Age groups (years)		
< 30	33	24.6
30 – 39	46	34.3
40 – 49	32	23.9
≥ 50	23	17.2

Table 2: Relationship between Age and Sex of the Patients

Variables	Sex N=134		χ^2	p-value
	Male (n=10) n (%)	Female (n=124) n (%)		
Age Groups (years)				
< 30	1 (10.0)	32 (25.8)		
30 – 39	5 (50.8)	41 (33.1)	2.205	0.53
40 – 49	3 (30.0)	29 (23.4)		
≥50	1 (10.0)	22 (17.7)		

Table 3: Types of Goitre at Diagnosis

Variables	Frequency (N=134)	Percent (%)
Simple Multi Nodular Goitre	77	57.5
Simple Left Nodular Goitre	20	14.9
Simple Right Nodular Goitre	17	12.7
Toxic Multi Nodular Goitre	10	7.5
Giant Multi Nodular Goitre	6	4.5
Simple Isthmus Goitre	2	1.5
Simple Multi Nodular Goitre with Retrosternal Extension	1	0.7
Recurrent Nodular Goitre	1	0.7

Table 4: Distribution of Goitres with associated signs at Presentation among the Patients

Variables	Frequency(N=134)	Percent (%)
Clinical presentation of goitres		
Goitre with tracheal deviation	44	32.8
Goitre with tracheal compression	25	18.7
Goitre with retrosternal extension	1	0.7
Goitre with vocal cord palsy	2	1.5
Goitre with hoarseness of voice	10	7.5
Goitre with toxicity	8	6.0
Goitre alone (Cosmesis)	44	32.8

Table 5: Types of Operations Performed

Variables	Frequency(N=134)	Percent (%)
Type of Operation Performed		
Subtotal Thyroidectomy	77	57.5
Left Thyroid Lobectomy	21	15.2
Right Thyroid Lobectomy	15	11.2
Near Total Thyroidectomy	9	6.7
Isthmusectomy	3	2.2
Hemithyroidectomy	6	4.4
Total thyroidectomy	3	2.2

Table 6: Postoperative Complications/Outcome among Thyroidectomy Patients

Variables	Frequency(N=134)	Percent (%)
Postoperative complications/outcome		
Reactionary bleeding with haematoma	3	2.2
Tracheomalacia	1	0.7
Unilateral Recurrent Laryngeal Nerve Palsy	1	0.7
Tetany (Hypocalcaemia)	1	0.7
Recurrence of Goitre	7	5.2
No complication	121	90.5

tracheomalacia, unilateral recurrent laryngeal nerve palsy and tetany due to hypocalcaemia respectively (Table 6). The overall range of post operative hospital stay in the study was 3–28 days. Table 7 shows the distribution of histopathological findings of the thyroid lesions among the patients. A higher proportion of the lesions were multinodular goitres 60(44.8%). This was followed by simple nodular goitres 23(17.2%) and colloid goitres 15(11.2%). Amongst the neoplasm was follicular adenoma 12(9.1%), papillary thyroid cancers 5(3.7%), follicular thyroid cancer 2(1.5%) and metastatic adenocarcinoma 1(0.7%). Colloid goitre with focal lymphocytic thyroiditis, Riedel thyroiditis and reactive lymphadenitis were the least, 1(0.7%) each.

DISCUSSION

Thyroid disorders, including goitres, are commonly encountered in clinical practice and are globally ranked as the second most common endocrine disorder after diabetes mellitus.[13] Our findings show that goitres affect females more commonly than males at a ratio of 12:1, which is twice the ratio obtained from another centre in Abuja. The reason for this wide variation in sex ratio amongst goitre patients managed by one secondary care centre and another tertiary care hospital in the same city cannot sufficiently be explained by the level of care and may not reflect the true sex ratio. However, our finding is closer to the 10:1 found in Jos by Misauno et al in the same geographic region.[14,15] The highest frequency was found among the 30–39 years age group which is consistent with findings from other parts of Nigeria[6,14,15] and Cameroon[16] that is within the same geographical belt as Nigeria.

Majority of our patients presented with an anterior neck swelling consistent with simple multinodular goitres 77(57.5%) and this is similar to local, regional and international trends.[6,9,14,16] Interestingly, a total of 37(27.6%) cases of goitres in the series were confined to either the right or left thyroid lobe, higher than 28.9% by Philip, *et al*[9] in Tanzania but lower than that observed in Jos, Nigeria.[17] This pattern influenced the type of surgery these patients had. Also amongst our cohort, goitre was associated with toxicity in 8(6%) patients which is comparable to the values of 5.3% seen in Ibadan[18] and 7.9% in Tanzania.[9] A much higher incidence of toxicity of 34.3% was reported in Uganda.[19] Simple multinodular goitre is the most common type of goitre in endemic iodine-deficiency regions where there is very low iodine content in the water and food, leading to reduced levels of thyroid hormones, a precursor for goitre. The high incidence of simple multinodular goitre in this study may be a reflection of the iodine status of Abuja, which falls in the goitrous bed.[5] The patients that presented with pressure signs and symptoms of compression, displacement of trachea and hoarseness of voice accounted for 82(61.2%) of goitres in our study. These associated pressure signs accounted for the commonest indications for surgery in this study as against anterior neck swelling only (cosmesis) observed in Maiduguri[20] and Sokoto.[21] The presence of obvious compressive signs, points to large glands and delays at time of presentation. Delayed presentation remains a common feature in most patients in Africa[22-25] The absence of other symptoms besides the bulky mass might also cause a delay in presentation. Interestingly, the slow growth of the mass, fear of, and misconceptions about surgery as well as

Table 7: Histopathological Distribution of Thyroid Lesions

Variables	Frequency (N=134)	Percent (%)
Goitre		
Nodular Goitre	23	17.2
Multinodular Goitre	60	44.8
Multinodular Goitre with follicular focus	6	4.5
Colloid Goitre	15	11.2
Colloid Goitre with focal lymphocytic thyroiditis	1	0.7
Toxic Hyperplasia		
Graves' disease	2	1.5
Neoplasms		
Follicular adenoma	12	9.1
Follicular Thyroid cancers	2	1.5
Papillary Thyroid cancers	5	3.7
Metastatic Adenocarcinoma	1	0.7
Thyroiditis		
Hashimoto	5	3.7
Riedel	1	0.7
Others		
Reactive lymphadenitis	1	0.7

high cost of surgery, might also contribute to the delay in presentation[9, 23]. A previous study by Bekele et al has identified the factors that determine hospital visits to include cosmetic interest, educational status recent onset of new symptoms, psychological trauma and stigmatisation[23]. While thyroidectomy is the acceptable surgical procedure and gold standard for the treatment of goitres[8] the approach and extent of tissue resection for benign goitres vary [26]. Generally, a surgical procedure that carries low complications and recurrence risks is preferred[27]. In our study, subtotal thyroidectomy was the commonest form of thyroidectomy, accounting for 57.5% of all the thyroid surgeries. Interestingly, the choice of thyroid surgery done in our institution, differ from the approach at some facilities in other parts of Africa[25, 27]. In our series, the cervical approach was used for one patient who had retrosternal extension. The provision of more surgical training and intensive post thyroidectomy care facilities must be ensured if radical surgical approaches for benign lesions are considered as this will minimise post-operative complications[25]. Follicular adenoma was the commonest form of benign thyroid tumour while papillary carcinoma was the commonest type of thyroid cancer in this study. This finding is in agreement with previous African studies.[23,24] The incidence of thyroid carcinoma in our study is much lower than those reported by previous studies from Nigeria and elsewhere in Africa.[23,24,31,32] However, Chow, *et al*[33] and Franssila, *et al*[34] have reported high incidences of papillary carcinoma in Hong Kong and the Nordic countries respectively. Follicular thyroid carcinoma is said to follow long-standing iodine deficiency goitres and it is more prevalent in areas of endemic goitres.[35] The national iodine replacement programme and the routine addition of iodine to some food including salt in Nigeria may have helped in modulating, not only the long-standing iodine deficiency, but also the consequent malignancy. This is different from findings seen in other centres[7,17–20] with higher rates even though our cohort is of a smaller sample size. All our patients that had thyroid cancer following histological examination were referred to a tertiary centre for adjuvant therapy and were later lost to follow up.

The postoperative complications recorded in our study were comparable to those found in previous studies.[36–37] In our study, reactionary haemorrhage, though minimal, was the commonest immediate post operative complication as with most other studies, also requiring blood transfusion.[24–25] Most post-operative haemorrhages occurred with giant goitres and in thyroid malignancies. Specifically, the three patients, 1.67%, who had reactionary haemorrhage in our study, were re-explored, further haemostasis secured with haemostatic sutures and diathermy and each transfused with blood. The patient who had unilateral recurrent laryngeal nerve palsy recovered within 3 months after surgery without further intervention. The patient who developed tracheomalacia after total thyroidectomy got a temporary tracheostomy tube inserted which was extubated on the 28th post-operative day. The patient, who had tetany on the 5th postoperative day (after subtotal thyroidectomy) and 48hours after discharge, was readmitted and treated with intravenous calcium gluconate and intravenous fluids.

There was no mortality in our series, highlighting our experiences with goitres and outcome of surgical management even in our resource-limited environment. This is contrary to the significant mortalities recorded in some other centres in Africa with similar resource-limited setting.[9,23,25] Although the operations were performed by consultant surgeons, the causes of high mortalities in those centres included postoperative complications like sudden tracheostomy tube obstruction for a patient who had tracheomalacia, coexisting HIV infection which was a major co-morbidity absent in our patients and advanced thyroid malignancies.[9]

CONCLUSION

The pattern of goitres in Abuja simulates that from other parts of Nigeria and some other African countries, though with fewer malignancies. The management and outcome of goitres in Asokoro District Hospital Abuja is comparable to those obtained from other centres in Nigeria despite being a relatively young secondary healthcare facility. Pre- and post-operative complications were also minimal. Thyroid-related health education may be necessary to empower patients to seek medical attention early.

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Conflict of Interest

There are no areas of conflicting interest in this study.

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