ORIGINAL ARTICLE

Blood transfusion, antibiotics use, and surgery outcome in thyroid surgery: Experience from a suburban center in Nigeria

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Abstract

Background: Edo North, which is a known goiter belt in Nigeria, is within the catchment area of this hospital. Although thyroid disease is prevalent in the communities, the fear and cost of surgery have been limiting factors for sufferers who should otherwise seek expert care.

Aim: To review all thyroid surgeries at Irrua Specialist Teaching Hospital, to determine pathological diagnosis of goiters, and to evaluate the outcome and necessity or otherwise of antibiotic therapy and routine cross-matching of blood.

Results: There were 80 patients in the study, with 75 (93.75%) females and 5 (6.25%) males, giving female-to-male ratio of 15:1. People in the 4th and 5th decade of life constituted a dominant 32.5% and 26.7%, respectively, while the 1st and 2nd decades combined constituted only 7.5% of the study population. Two patients (2.5%) had blood transfusion while a similar number had wound infection.

Conclusion: Thyroidectomy is a safe surgery with minimal risk of complications. Grouping and cross-matching of blood in elective thyroidectomy is not an essential pre-operative preparation for all patients just as antibiotic therapy/prophylaxis made no difference in patient outcome. Simple multinodular goiter is the commonest histological diagnosis.

Key words: Antibiotics, blood transfusion, complications, endemic goiter, iodine deficiency, thyroidectomy

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Introduction

Goiters are a relatively common condition in Nigeria, with incidence varying from one part of the country to the other just as the various countries in the continent of Africa have varying rates, with various possible etiologies postulated.[1,2] Pathologic entities responsible for thyroid enlargement range from a variety of tumors, altered functional states, and inflammatory conditions to some rare forms of disorders.[3]

Thyroidectomy is indicated when an enlarged thyroid gland presents with toxicity, obstructive symptoms, or when a neoplasm is suspected, although cosmesis is the most common indication.[3]

Thyroidectomy is generally a safe procedure. It, however, carries some risk of complications such as hemorrhage, tension hematoma, post-operative infection, damage to the recurrent laryngeal nerve, and damage to the parathyroid gland. Preemptive measures put in place to reduce morbidity and mortality include optimization of clinical condition, making the patient euthyroid for toxic goiters, grouping and cross-matching of blood, and preoperative antibiotics.

This study sets out to evaluate thyroid surgery at Irrua and to determine the necessity or otherwise of routine antibiotic prophylaxis and cross-matching of all patients undergoing thyroidectomy.

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Materials and Methods

This is a retrospective review of all thyroidectomies done at the Irrua Specialist Teaching Hospital over a 6-year period in two surgery units with similar surgical techniques but different antibiotic policies.

Records of patients who had thyroid surgeries between April 2002 and March 2008 were reviewed. Those with incomplete data were excluded from the review. The data extracted from the case notes include age, sex, educational status, estimated blood loss and blood transfusion, peri-operative antibiotic use, type of thyroid surgery done, complications of surgery, and pathological diagnosis from histology reports.

Eighty (80) patients whose records contained the complete data formed the cohort for the study. Data was analyzed by simple percentages and tabulations using Microsoft Excel.

Results

Eighty patients who had thyroid surgery during the period, whose complete data could be located, formed the study population. There were 75 (93.75%) females and 5 (6.25%) males giving a ratio of 15:1 [Table 1]. Twenty-six (34.7%) of the patients were aged between 31 and 40 years and 21 (26.25%) between 41 and 50 years. Average age of the patients was 37.7 ± 14.39 yrs.

Majority of the patients had some form of education. The number of patients with tertiary, secondary, and primary levels of education were found to be 21 (26.25%), 30 (37.5%), and 25 (31.25%), respectively. Four (5%) had no formal education [Table 2].

The most common type of thyroid surgery recorded in this study was sub-total (and near-total) thyroidectomy, which accounted for 74% (n = 59) of the study population. Lobectomy was performed in 19% (n = 15) while total thyroidectomy accounted for only 7% (n = 6) of surgeries.

Blood loss during operation was less than 100 mL in 15 (18.75%), 100–500 mL in 59 (73.75%), and 500 mL and above in six (7.5%) of the study population [Table 3]. The latter group was essentially for giant goiters and re-operative surgeries. The average blood loss in the study population was 334.3 ± 168 mL. Two (2.5%) patients had intra-operative blood transfusion. A total of three units of blood were given to both patients.

A group of patients (32 [40%]) had peri-operative antibiotics while another group (48 [60%]) did not receive any form of antibiotics during or after operation.

Complications were observed in eight different patients (10%). This included wound infection, with one wound infection recorded in the "antibiotic" and one also in the "no antibiotic" groups. Others include upper airway obstruction, significant hemorrhage, upper respiratory tract infection, hypothyroidism, and uncontrolled hypertension, which was responsible for the only death [Table 4].

Pathological diagnosis of the resected tumors included 37 (46.25%) simple multinodular goiters, 16 (20.0%) follicular adenomas, 14 (17.5%) colloid goiters, 8 (10%) papillary carcinoma, and 3 (3.75%) subacute thyroiditis, while 2 (2.5%) had follicular carcinoma [Figure 1].

Table 1: Age and sex distribution of patients

Age range	Male (%)	Female (%)	Frequency
0–10	0	1	1
11–20	0	5	5
21–30	0	16	16
31–40	2	24	26
41–50	2	19	21
51–60	1	5	6
61–70	0	2	2
71–80	0	3	3
Total	5 (6.3)	75 (93.7)	80

Table 2: Distribution by educational status

Level of education	Frequency	Percentage
Tertiary	21	26.25
Secondary	30	37.5
Primary	25	31.25
Nil	4	5.00
Total	80	100.20

Table 3: Distribution of estimated blood loss

Blood loss	Frequency	Percentage
≤100	15	18.75
>100–500	59	73.75
>500	6	7.5
Total	80	100

Table 4: Pattern of complications

Complications	Frequency	Percentage
Wound infection	2	2.5
Significant hemorrhage	1	1.25
Hypothyroidism	1	1.25
Upper airway infection	4	5
Upper airway obstruction (from tension hematoma)	1	1.25
Uncontrolled hypertension	1	1.25
Death	1	1.25

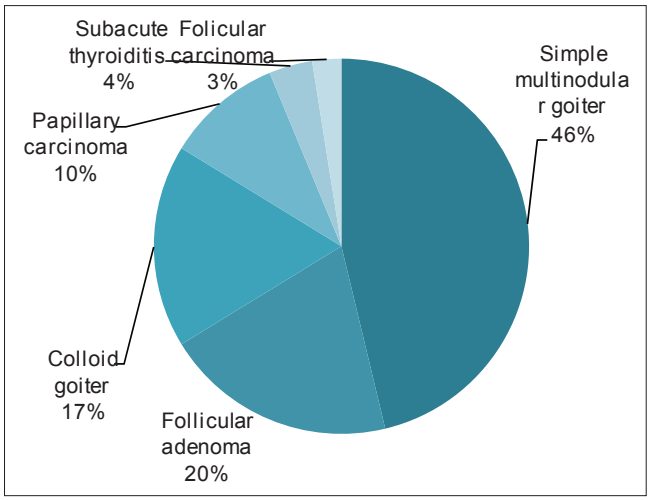

Figure 1: The histological pattern

Discussion

The setting of this study, Edo North, which is dominated by rural farmers, has been known for several years to have a fairly high prevalence of endemic goiter. This area represents part of the goiter belt of Midwestern Nigeria.[4] Despite the high preponderance of the disease in the communities, only a very small proportion seek medical attention. This low patronage of medical facilities may be related to poverty and illiteracy, which characterize most Nigerian farming communities.[5] These have also been identified as factors responsible for delays in seeking healthcare services.[6] It has also been suggested that symptom progression and incapacitation form major reasons why African patients seek medical attention.[7] The slow progression and the fact that the thyroid mass often does not affect their farming work may also have contributed to the delay and in most cases the failure to present for care. The full incidence of the disease has, however, not been ascertained. The preponderance of the disease in females, as shown in this study, is similar to that of other previous studies.[1,3,8] The high frequency of thyroid surgeries observed in the 3rd, 4th and 5th decades of life, especially in females, which represents 93.75% of our study population, is not unexpected. This high preponderance in females has been adduced to the effect of the female hormones and the resultant metabolic changes that occur in pregnancy and lactation. Thyroid enlargement is the consequence of this increase demand for thyroid hormones in the reproductive age without commensurate increase in supply, predominantly due to iodine deficiency.[8-10]

Our study, however, shows a high level of education in patients with goiter presenting for treatment. This is in contrast with the true level of education in the general population in the region. This result, therefore, highlights the fact that the educated patients are presenting more to the hospital whereas the illiterates who constitute the greater proportion of sufferers stay away. This trend is due to the effect of education on the individual values. This, thus, calls for proper education of the populace about the safety of modern anesthesia and surgery.

The average blood loss of 334.3 mL in this study is similar to a similar report of Udosen *et al*.[11] Two patients (2.5%) received intra-operative blood transfusion. A patient who had total thyroidectomy for recurrent malignant goiter received 2 units of blood for massive blood loss. The second patient had 1 unit transfusion during surgery for a giant multinodular goiter that weighed 845 g. Significant hemorrhage is a well-documented complication following thyroid re-operation, particularly for malignant goiter and in giant goiters.[12] Because of the high morbidity following surgery for recurrent malignant goiter, alternative treatment such as radioactive iodine is a preferred treatment in such patient where it is available.[13] One patient who had recurrent goiter was justifiably transfused with 2 units of blood, highlighting the need for selective cross-matching of blood for "high risk" thyroid patients. Significant blood loss wasn't surprising in these two patients owing to the nature of their thyroid disease, recurrent malignant goiter and giant multinodular goiter, both of which have a high risk of bleeding.[14]

Eight (10.7%) different patients had complications. One patient each from the "antibiotic" and "no antibiotic" groups had wound infection, which was not severe enough to require removal of stitches. There was no significant difference in the infection rate between the two groups. There was one death in the series, which was due to uncontrolled hypertension in a simple multinodular goiter in a 75-year-old patient. Transient bilateral recurrent laryngeal nerve palsy, with upper airway obstruction, was observed in one patient requiring tracheostomy. The patient recovered over time and was weaned off the tube. Similar patterns of complications have been reported by other authors.[15]

Of the 80 patients in this study, 32 (40%) were on antibiotics peri-operatively; wound infection was observed in a patient while another patient who had no antibiotics also had wound infection. There was no statistically significant difference in the infection rate between the two groups. Although many surgeons still give antibiotics for thyroid surgery, this practice is unnecessary, not supported by clinical evidence in literature, and contributes significantly to the cost of treatment.[16,17] Antibiotics become necessary in the event of infection.[18]

The most common pathological diagnosis as seen in this study is multinodular goiter occurring in 46% of the study population while papillary carcinoma accounting for 10% was the commonest malignant disease. Similar findings were documented by Edino *et al*.[19]

Conclusion

Thyroidectomy is a safe surgery with minimal risk of complications. Grouping and cross-matching of blood in elective thyroid surgeries is not an essential pre-operative preparation in all patients going for thyroid surgery. Antibiotics prophylaxis does not offer any added advantage and should, therefore, not be given. There is the need for proper education to encourage the poorly educated sufferers to seek early intervention considering the high incidence of malignancy in our series.

References

1. Osime U, Okobia MN. Thyrotoxicosis in Benin City: A study of surgical treatment of 50 patients. J Med Biomed Res 2004;3:81-5.
2. Rumstadt B, Klein B, Kirr H, Kaltenbach N, Homenu W, Schilling D. Thyroid Surgery in Burkina Faso, West Africa: Experience from a surgical help program. World J Surg 2008;32:2627-30.
3. Abebe B, Mensur O. Goitre in a Teaching Hospital in North Western Ethiopia. East Afr J Surg 2006;11:21-7.
4. Egbuta J, Onyezili F, Vanormelingen K. Impact evaluation of efforts to eliminate iodine deficiency disorders in Nigeria. Public Health Nutr 2003;6:169-73.
5. Imonikebe BU. Constraints to Rural Women Farmers' Involvement in Food Production in Nigeria. Africa Research Review 2010;4.
6. Matebesi Z, Meulemas H, Timmerman C. Healthcare-seeking behaviour among clinic-based tuberculosis patients Acta Acad Suppl 2005;1:154-72.
7. Ell K, Haywood LJ, Sobel E, deGuzman M, Blumfield D, Ning JP. Acute chest pain in African Americans: Factors in the delay in seeking emergency care. Am J Public Health 1994;84:965-70.
8. Elusoji SO, Iribhogbe PE, Osime OC. Thyroidectomy under ketamine anaesthesia in a semi urban hospital in Nigeria. Pak J Med Sci 2009;25:695-7.
9. Berghout A, Wiersinga WM. Thyroid size and thyroid function during pregnancy. In: Stanbury JB, Delange F, Dunn JT, Pandav CS, editors. Iodine in pregnancy. Delhi: Oxford University Press; 1998. p. 35-53.
10. Dunn JT. Iodine deficiency-the next target for elimination. N Engl J Med 1992;326:267-8.
11. A.M. Udosen ,A.U. Etiuma, A.I. Eshiet, M.A. Asuquo: Non-Transfusion Surgery In Calabar, Nigeria: Our Experience In Twenty-Eight Major Surgeries. The Internet Journal of Third World Medicine. 2007; 5: DOI: 10.5580/e6a.
12. McNally MM, Agle SC, Williams RF, Pofahl WE. A comparison of two methods of hemostasis in thyroidectomy. Am Surg. 2009;75:1073-6.
13. Karamanakos SN, Markou KB, Panagopoulos K, Karavias D, Vagianos CE, Scopa CD, *et al*. Complications and risk factors related to the extent of surgery in thyroidectomy. Results from 2,043 procedures. Hormones (Athens) 2010;9:318-25.
14. Fredrickson J, Paniello R. Neoplasms of the thyroid. In: Cummings C, Fredrickson J, Haiker J, Krause C, Schuler D, editors. Otolaryngology-head and neck surgery. Philadelphia: W. B. Saunders. Co.; 1993. p. 2436-51.
15. de Roy van Zuidewijn DB, Songun I, Kievit J, van de Velde CJ. Complications of thyroid surgery. Ann Surg Oncol 1995;2:56-60.
16. Avenia N, Sanguinetti A, Cirocchi R, Docimo G, Ragusa M, Ruggiero R, *et al*. Antibiotic prophylaxis in thyroid surgery: A preliminary multicentric Italian experience. Ann Surg Innov Res 2009;3:10.
17. Royal College of Physicians Thyroid Cancer: Guidelines for the management of thyroid cancer. In: Report of the Thyroid Cancer Guidelines Update Group. In: Perros P, editor. London: Royal College of Physicians; 2007.
18. Dionigi G, Rovera F, Boni L, Dionigi R. Surveillance of surgical site infections after thyroidectomy in a one-day surgery setting. Int J Surg 2008;6 Suppl 1:S13-5.
19. Edino ST, Mohammed AZ, Ochicha O. Thyroid gland diseases in Kano. Niger Postgrad Med J 2004;11:103-6.

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