

ORIGINAL RESEARCH

Short-term outcomes of thyroid surgery at a regional referral hospital in Ruhengeri, northwest Rwanda: A 1-year retrospective study

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East Cent Afr J Surg. 2021;26(4):148-151
<https://doi.org/10.4314/ecajs.v26i4.1>

Abstract

Background

In the rural areas of sub-Saharan Africa, goitres are often undertreated due to the limited availability of thyroid surgery in referral hospitals. This study evaluated patient outcomes following surgical treatment for goitres at Ruhengeri Referral Hospital, a resource-limited hospital in northwest Rwanda.

Methods

We reviewed the medical records of patients who were surgically treated for goitres between December 2017 and November 2018. Data were collected on the following variables: patient sex, patient age, date of symptom onset, clinical diagnosis, indication for surgery, laboratory findings, fine needle aspiration findings, imaging findings, surgical procedure, anaesthetic review details, postoperative complications, length of hospital stay, and follow-up findings.

Results

Our analysis included 44 of the 48 patients who underwent thyroid surgery during the investigated period. Four patients who did not have postoperative follow-up visits were excluded from the analysis. The median patient age was 46 years (range, 18-77 years); 42 patients (95.5%) were women, and 2 patients (4.5%) were men. The most common indication for thyroidectomy was multinodular goitre (n=32, 72.7%), causing either pressure symptoms or cosmetic concerns. The most common surgical procedure conducted was subtotal thyroidectomy (n=34, 77.3%), followed by lobectomy (n=6, 13.6%). Two patients (4.5%) who presented with clinical features suggestive of Graves' disease underwent total thyroidectomy. The average length of hospital stay was 24 hours. No postoperative complications were observed or reported in patients during their hospitalizations or the during the 2 weeks following hospital discharge.

Conclusions

A sizeable number of surgical procedures for goitre were conducted at Ruhengeri Referral Hospital, Rwanda. The absence of short-term postoperative complications suggests that thyroid surgery can be conducted safely in hospitals with limited resources if medical doctors have adequate surgical skills and if patient selection and preparation are properly undertaken.

Keywords: goitre, thyroidectomy, patient outcomes, sub-Saharan Africa, Rwanda

Introduction

In some areas of sub-Saharan Africa, goitre is endemic due to widespread nutritional deficiencies in iodine and selenium,^{[1],[2]} and goitres are commonly treated in the surgical departments of referral hospitals.^{[3],[4]} Thyroidectomy is the primary method of treating goitres^{[5]-[7]} and is considered to be a safe procedure when conducted by experienced clinicians in well-equipped settings.^{[8]-[10]} The

choice of surgical approach and the extent of tissue resection for goitre treatment remain controversial^{[5],[7],[11]} but typically depend on the specific diagnosis: lobectomy if only 1 lobe is affected, subtotal thyroidectomy if both lobes are affected, and total or near-total thyroidectomy for Graves' disease or malignancy.^{[12],[13]} Early postoperative complications of thyroid surgery include hypocalcaemia, airway obstruction due to postoperative haemorrhage, wound infection, thyroid storm, hypoparathyroidism, hypothyroid-

ism, and laryngeal nerve injuries.[1],[14] These complications are common, and they can be difficult to manage or fatal in resource-limited settings.[3],[10],[14]-[18] The average length of hospital stay for thyroidectomy varies widely across hospitals.[3],[11],[19],[20]

While epidemiological data for thyroid gland disease in Rwanda are not available, anecdotal evidence suggests that surgical treatment for goitres is common at Ruhengeri Referral Hospital, located in Northern Province, Rwanda. We aimed to describe surgical procedures and patient outcomes for treatment of goitre at Ruhengeri Referral Hospital, a typical example of a resource-limited hospital in East Africa.

Methods

We reviewed the medical records of all patients who underwent a surgical procedure for goitre treatment at Ruhengeri Referral Hospital from December 2017 through November 2018. Ruhengeri Referral Hospital is a resource-limited setting that, during the period reported in this article, had only 1 general surgeon, 2 anaesthetic officers, and 2 high-dependency beds. The hospital had no intensive care unit and only basic equipment in the operating theatre, including an inconsistently available diathermy machine. The hospital laboratory, however, provided thyroid function tests. Patients who did not return for postoperative follow-up were excluded from the analysis. Using a pretested, standardized, paper-based case report form, a clinically trained medical officer extracted the following variables from medical records: patient sex, patient age, date of symptom onset, clinical diagnosis, indication for surgery, laboratory findings, fine needle aspiration findings, imaging findings, surgical procedure, anaesthetic review details, postoperative complications, length of hospital stay, and follow-up findings. Descriptive statistics, including means, standard deviations, and percentages, were generated and analysed using SPSS Statistics for Windows, version 16.0 (SPSS Inc., Chicago, IL, USA) to evaluate the study data.

Results

We analysed the data of 44 of the 48 patients who underwent thyroid surgery in the Department of Surgery at Ruhengeri Referral Hospital from December 2017 through November 2018; 4 patients who did not return to the hospital for postoperative follow-up visits were excluded from the analysis. All patients underwent routine preoperative investigations, including thyroid function tests, fine needle aspiration for histology, and full blood counts; chest inlet x-rays were conducted when retrosternal goitre extension was suspected. The median patient age was 46 years (range, 18-77 years); 42 patients (95.5%) were women, and 2 patients (4.5%) were men. The average interval between symptom onset and access to thyroidectomy was 5 years.

Table. Diagnoses and interventions for surgically treated thyroid disease at Ruhengeri Referral Hospital, Rwanda, December 2017 through November 2018 (N=44)

Diagnosis	n (%)	Intervention
Multinodular goitre	34 (77.3)	Subtotal thyroidectomy
One-lobe multinodular goitre	8 (18.2)	Lobectomy
Graves' disease	2 (4.5)	Total thyroidectomy

Diagnoses and interventions

The most common chief concern of presenting patients was a painless anterior neck mass (n=34, 77.3%). In all patients, preoperative and postoperative histological test results indicated benign thyroid disease; there were no x-ray findings suggesting retrosternal goitre extension. The most common diagnosis was multinodular goitre, which was diagnosed in 34 patients (77.3%) (Table). Thyroid nodules were more common in younger patients. The most frequent surgical intervention was subtotal thyroidectomy (n=34, 77.3%); this procedure was performed on patients who presented with thyroid pathology affecting both lobes. Lobectomy was performed for patients in whom only 1 lobe was affected (n=8, 18.2%). Conditions that affected a single lobe included thyroid cysts and nonreactive nodules (n=8, 18.2%). Total thyroidectomy was performed for 2 patients who presented with clinical features suggestive of Graves' disease; these patients were treated with a combination of propranolol 40 mg twice daily and carbimazole 50 mg twice daily for 8 weeks prior to surgery.

The most common indication for thyroidectomy was multinodular goitre large enough to cause either cosmetic concerns or pressure symptoms (n=32, 72.7%). Among patients with large multinodular goitres, 26 underwent subtotal thyroidectomy, and 6 each underwent lobectomy of single enlarged lobes. Patients who presented with small multinodular goitres were counselled against undergoing thyroidectomy due to the risk of complications. Patients with simple nodules (n=7, 15.9%) underwent lobectomy or subtotal thyroidectomy, depending on whether disease was present in 1 or both lobes.

Patient outcomes

The average length of hospital stay for patients who underwent surgical goitre treatment was 24 hours. No postoperative complications were observed or reported in patients either during the hospital stay or during the 2 weeks following discharge from hospital. All patients postoperatively initiated lifelong levothyroxine (50-150 µg daily) before discharge.

Discussion

We reviewed the medical records of patients who underwent surgical goitre treatment at Ruhengeri Referral Hospital during the 12 months from December 2017 through November

2018. Such treatment is widely unavailable at similar referral hospitals in resource-limited settings.[3],[11],[19] Patients in this study were slightly older (median age, 46 years) than patients surgically treated for goitres in studies in Tanzania (median age, 38.4 years)[3] and Yemen (median age, 35.2 years).[21] The ratio of female to male surgical patients with goitres was higher in our study (21:1) compared with ratios reported in Brazil (4.5:1),[15] Kenya (7.2:1),[19] and Tanzania (11:1).[3] The unbalanced gender distribution is associated with the interplay between sex hormones and thyroid gland activity.[22]

Our finding that the most common chief concern of presenting patients was a painless anterior neck mass was similar to that of the aforementioned Tanzanian study,[3] whereas in the study conducted in Yemen, all patients were symptomatic.[21] In our study, the most common indication for thyroidectomy was multinodular goitre, a condition present in over 70% of study patients. However, in our setting, multinodular goitres were only considered for surgical intervention if the goitre was large and caused cosmetic concerns or pressure symptoms. Subtotal thyroidectomy was the most common surgical intervention for goitres in our setting and was performed for over three-quarters of patients. Two patients with symptoms suggestive of Graves' disease underwent total thyroidectomy. Postoperative laboratory tests for these patients showed that they had become euthyroid after surgery.

Strikingly, no patients in this study experienced postoperative complications, either during their hospitalization periods or during the 2 weeks following discharge from hospital. Similar studies of surgical goitre treatment have reported various complications, including recurrent laryngeal nerve injury, hypocalcaemia, unilateral or bilateral vocal cord paralysis, haemorrhage, and wound infection.[7],[17] Some studies have reported thyroid storm following surgery in patients with undiagnosed thyrotoxicosis or comorbidities.[15],[16],[19] In our study, the average length of hospital stay was 24 hours, similar to durations observed in other settings.[3],[15],[20],[21]

Conclusions

In 1 year, 44 patients safely underwent thyroid surgery with follow-up at Ruhengeri Referral Hospital, a resource-limited hospital in Rwanda. The absence of short-term complications in patients following these procedures suggests that thyroid surgery can be carried out safely in hospitals with limited resources if medical doctors have sufficient surgical skills and if patient selection and preparation are properly undertaken. This study evaluated short-term patient outcomes; future studies should consider longer-term complications following surgical procedures for goitre treatment in resource-limited settings.

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Peer Reviewed**Competing Interests:** None declared**Received:** 13 Jun 2019 • **Revised:** 6 Apr 2020, 12 Aug 2020**Accepted:** 25 Aug 2020 • **Published Online:** 7 Jan 2021**Cite this article as:** Niyirera E, Kiswezi Kazigo A, Sayanone I. Short-term outcomes of thyroid surgery at a regional referral hospital in Ruhengeri, northwest Rwanda: A 1-year retrospective study. *East Cent Afr J Surg.* 2021;26(4):148-151. doi:10.4314/ecajs.v26i4.1

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