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## A two kilograms euthyroid goiter in Singida Regional Referral Hospital, Central Tanzania: Case report

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### ABSTRACT

**INTRODUCTION:** Multinodular goiter (MNG) is a clinic pathological entity characterized by an increased volume of the thyroid gland with formation of nodules. Goiter is defined as a thyroid gland weighing over 20–25 g or with a volume of over 19 ml in women and 25 ml in men. In developed countries where iodination of food is common and health services are available and accessible, hardly will you see a goiter of up to 0.2 kg while in areas where poverty is high and health services not available, there identification of goiter of up to 4 kg. Therefore each member of theatre team must be competent and experienced to anticipate any complications which may occur during thyroidectomy of such huge goiter. Awareness on the operation of such huge multinodular goiter is the sincere aim of this work due to the fact that these are rare findings in today's surgical clinics.

**PRESENTATION OF CASE:** A 35 M.O.S years old female presented with complain of swelling of the anterior neck for 10 years. Laboratory and radiological investigations reveals nontoxic multinodular goiter with no suspicion of malignance. After successful thyroidectomy, a 2 kg multinodular goiter was removed and taken for histological diagnosis. Post-operative care was uneventful and patient discharged day five post-operative. No complication observed during follow up.

**DISCUSSION:** The case report presented a patient with huge goiter of 2 kg, which was not compressing the trachea. After physical examination, radiological imaging and laboratory investigation of thyroid hormones confirm as nontoxic goiter. The subtotal thyroidectomy was successful and after follow up of 60 days there was no complication reported.

**CONCLUSIONS:** Currently, hardly will you find goiter weighing a kg and thus skills for thyroidectomy in such case is hardly available. Special complications like tracheomalacia and difficult intubation which need one to be aware of fiber optic intubation and be prepared for tracheostomy require experienced operating team.

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## 1. Background

Multinodular goiter (MNG) is a clinic pathological entity characterized by an increased volume of the thyroid gland with formation of nodules [1,2]. Goiter is defined as a thyroid gland weighing over 20–25 g or with a volume of over 19 ml in women and 25 ml in men [3,4]. In developed countries where iodination of food is common and health services are available and accessible, hardly will you

see a huge goiter while in areas where poverty is high and health services not available, goiter of up to 4 kg is found [2,4–6].

Risk factors for malignancy in a MNG include male gender, younger age, fewer nodules, and smaller nodule size [7].

Diffusely enlarged thyroid glands can cause compressive symptoms involving the trachea, esophagus, and recurrent laryngeal nerve. These symptoms are usually associated with malignant goiters, and benign nodular goiters do not normally cause obstructive symptoms [2,7].

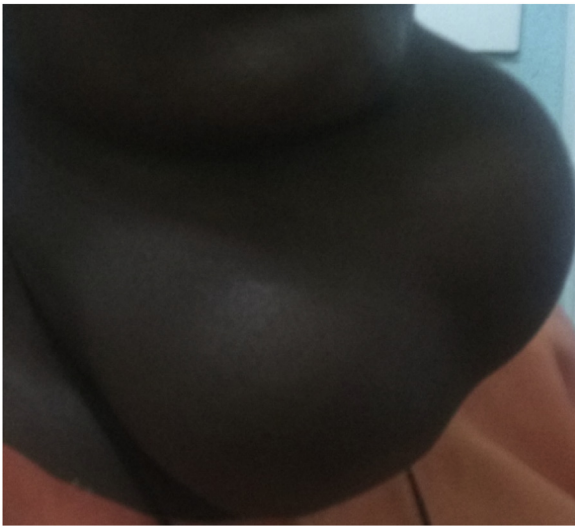
Some goiters grow fast while others grows over a long period, for instance this grew in ten years while the one done in Sudan had 4 kg over forty years [2].

*Abbreviations:* MNG, multinodular goiter; ICU, intensive care unit; TSH, thyroid-stimulating hormone.

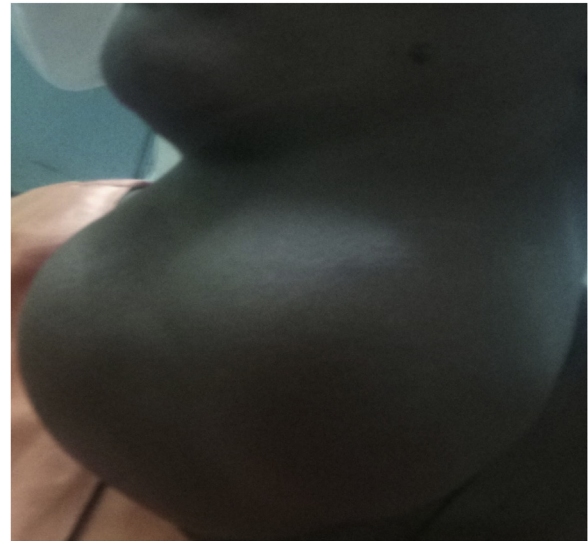
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**Fig. 1.** Look at the goiter of the patient who presented to our clinic.



**Fig. 2.** The same patient from the other side.

When operating a huge goiter, the team must be aware of possibility of tracheomalacia which may need tracheostomy post-operative also the team must be competent and experienced to anticipate for complications which may occur at any time during operation and after operation. Anesthetist must anticipate for difficult intubation when dealing with big goiters. The aim of this case report is to draw attention to the healthcare workers that such procedure can be performed to the healthcare facility which has similar setting like where this case was managed. Also explains what should be done during pre and post operation to avoid adverse effect to the patients. This case report has been reported in line with the SCARE 2018 criteria [8].

## 2. Case presentation

### 2.1. Patient information

A 35 M.O.S years old female from Singida presented at surgical clinic with complain of swelling of the anterior neck for 10 years. Patient noticed a swelling which was progressively increasing in size, it was painless, no difficulty in breathing, no awareness of heart beat, no abnormal sweating, no change in bowel habit, no abnormal angry behavior and has normal menstrual cycle.

Mother of five children, married, neither drink alcohol nor smoke cigarette, no history of goiter to the member of the family, there are very rare case of goiter in the community.

### 2.2. Clinical findings

On examination the patient was fully conscious and oriented, blood pressure 110/80 mmHg, radial pulse rate 88beats/minute regular and synchronous with femoral pulse, body temperature of 37 °C, oxygen saturation 98%, no lower limb edema, no palpable lymph nodes. The eyes were normal. Obvious huge swelling on the anterior neck about 14 cm by 12 cm, the mass covers the whole anterior neck and no visible vessel. The swelling is firm in consistency, non-tender, not fixed to the underlying structures. On other examinations such as Cardiovascular, respiratory, CNS, abdominal and genital urinary systems were normal.

From the all clinical findings come up with provisional diagnosis of nontoxic multinodular goiter (Figs. 1 and 2).

### 2.3. Laboratory investigations and radiological findings

Full blood picture, hormone profile (T3, T4 & TSH) were within normal range. Ultrasound was done and results showed to be multinodular goiter and there were no enlarged cervical lymph nodes. Chest x ray showed normal and no retrosternal extension of goiter.

### 2.4. Conclusion of diagnosis

The diagnosis was thus confirmed to be nontoxic multinodular goiter

### 2.5. Patient management plan

Elective subtotal thyroidectomy was planned.

### 2.6. Patient preparation before procedure

The patient was admitted two days before the procedure. The consent to agree was signed by patient after full explanation and counseling. The haemoglobin estimation, blood grouping and cross match were performed. The haemoglobin estimation were 13.4 g/dl. Two unit of blood were prepared for emergency. The patient instructed to fast atleast twelve hours. The blood pressure, pulse rate, oxygen saturation, respiration and body temperature were monitored three times a day. All monitored vital signs were normal. One litre physiological saline was intravenous provided to the patient. Also Ceftriaxone 1gm was provided an hour before the procedure started.

### 2.7. Therapeutic intervention

Under general anaesthesia, Intubation was successful and after cleaning and draping an elliptical incision was made and flaps raised. The strap and platysma muscles were stretched and atrophied. As the goiter was huge, it was highly vascularized therefore bleeding was significant but we achieved hemostasis. We however could not identify the recurrent laryngeal nerve as we normally do due difficult in dissection in such a huge bleeding goiter. Three parathyroid glands were identified and secured (Fig. 3).



Fig. 3. One lobe removed during the operation.

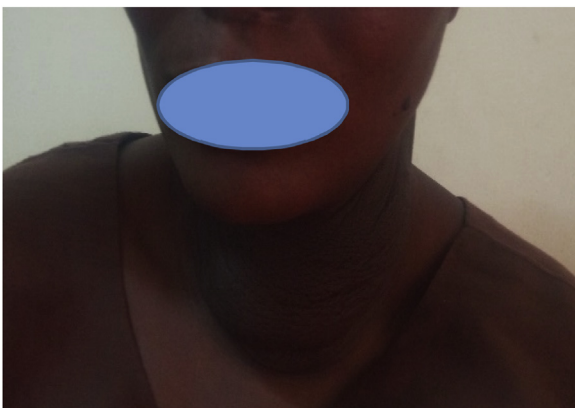


Fig. 4. Seventh day post-operative, look at the redundant skin after thyroidectomy due to huge multinodular goiter.

Intraoperatively the trachea was palpated and was found to be normal, there was no signs tracheomalacia although we had tracheostomy tube incase the need would arise.

Drainage was put and wound closed in layers, though it was difficult due to huge redundant skin, atrophied platysma muscles and significant dead space left by the goiter. Two kilogram of goiter was removed. The overall blood loss was estimated to be 500mls.

#### 2.8. Post-operative management

Patient was admitted in surgical ward under high intensive care of the Surgeon, medical doctor, anesthetists and medical nurses. After almost five hours the patient was able to talk normally thus there were no injury to the recurrent laryngeal nerves. The Ceftriaxone 1gm was provided once daily for five days. After five days of follow up in the ward, no complication reported patient was discharged. During follow up of two days after hospital discharge patient look normal, able swallow and to talk without any difficult. On the site of surgery skin looks redundant as seen in Fig. 4. The second follow up was done after 60 days of procedure, the patient was tested T3, T4 and TSH, complete blood counts. After investigation all parameters were normal, no recurrent of enlargement of goiter observed under ultrasound investigation.

### 3. Discussion

Multinodular goiter (MNG) is a clinic pathological entity characterized by an increased volume of the thyroid gland with formation

of nodules. The nodules can be very small, often only a few millimeters in size, or can be larger, perhaps several cm each [2,5]. The normal thyroid gland weighs approximately 20 g, but gland weight varies with body weight and iodine intake [1].

A multitude of different tests are available to evaluate thyroid function. No single test is sufficient to assess thyroid function in all situations, and the results must be interpreted in the context of the patient's clinical condition [1,3].

Multinodular goiter may be toxic or nontoxic and in case of toxic multinodular goiter, the patient present more with cardiovascular sign and symptoms which include palpitations, atrial fibrillation and other tachyarrhythmias. On the other hand nontoxic multinodular goiter present more with pressure symptoms [1,9].

Malignance in some studies shows that it occurs at a rate of up to 30%, and the risk factors for malignance are male gender, small nodules, younger age and fewer nodules. The risk of malignance in a dominant nodule is about 10%, and may tend to grow slowly and only thyroidectomy may suffice [1,2,7].

Surgery provides instantaneous relief of pressure effects and cosmetic concern of MNG. Subtotal thyroidectomy carries low risk of recurrent laryngeal nerve injury and hypoparathyroidism but results in a recurrence rate up to 40% in the long term [1,4,6]. The case report presented a patient with huge goiter of 2 kg, which was not compressing the trachea. The subtotal thyroidectomy was successful and after follow up of 60 days there was no complication reported. The main complications one must expect when dealing with such huge goiters are hemorrhage, in our case it was significant, about 500mls were lost. Injury to the recurrent laryngeal nerve which has never occurred out of 96 patients we have operated since 2016. Tracheomalacia must be thought of and its management prepared thus one must have tracheostomy tube and set when attempting these cases. Anesthetist must anticipate difficult intubation and fiber optic intubation is the best choice when available and where not available anesthetist and surgeon must prepare for emergency tracheostomy in case intubation fail.

### 4. Conclusion

In this era of science and technology one may rarely find goiter weighing a kilogram and thus skills for thyroidectomy in such case is hardly available. The procedure like this can be performed to the healthcare facility which has similar setting like where this case was managed and successful under experienced and skilled surgical operating team. With all other potential risks and complications of thyroid surgery kept constant, huge goiter like this one pose a risk on special complications like tracheomalacia and difficult intubation which need one to be aware of fiber optic intubation and be prepared for tracheostomy. Experienced team for surgery, anesthesia and ICU are mandatory. The patient management before and after procedure is very essential to avoid patient complication during and after procedure.

#### Declaration of Competing Interest

The authors report no declarations of interest.

#### Funding

No fund granted for this study.

#### Ethical approval

This study is exempt from ethical approval at our institution, no ethical clearance required as it only involves case report.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Author's contribution

**Amri A. Mabewa:** Performed the surgery and clinical evaluation, and analyzed and reviewed all medical investigation and the medical history of the patient regarding this pathology, following up the patient manuscript writing and follow up.

**Joyce Njile:** Assist in procedure, following up the patient and develop manuscript.

**Ramadhani B. Kabala:** Radiologist who performed and interpreted radiology and imaging investigation, review, approval of manuscript and follow up.

**Omando Michael, Timothy Agapiti and Osca Robert:** Anaesthesiologist following up the patient and final approval of the manuscript.

**Winfrida Mboya and Theresia Ngaa:** Nursing officer, assist in procedure, following up the patient, final approval of the manuscript.

**Amedeus Mushi:** Epidemiologist and Health Laboratory scientist, performed laboratory investigation, manuscript writing and follow up.

## Registration of research studies

Not applicable.

## Guarantor

Amedeus Mushi.

## Provenance and peer review

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