

## Case Series

## Surgical treatment result of giant thyroid tumor: Case series in Vietnam

Quang Van Le<sup>a,b,c</sup>, Hung Van Nguyen<sup>a,\*</sup>, Ngan Thi Kim Mai<sup>a</sup>, Hau Xuan Nguyen<sup>a,b</sup><sup>a</sup> Department of Oncology, Hanoi Medical University, No 1 Ton That Tung Street, Dong Da District, Hanoi, Viet Nam<sup>b</sup> Department of Oncology and Palliative Care, Hanoi Medical University Hospital, No 1 Ton That Tung Street, Dong Da District, Hanoi, Viet Nam<sup>c</sup> Department of Head and Neck Surgery, Vietnam National Cancer Hospital, No 30 Cau Buou Street, Thanh Tri District, Hanoi, Viet Nam

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## ABSTRACT

**INTRODUCTION:** Giant thyroid tumors can be associated with severely compressive symptoms and surgery is inevitable for treatment strategy. However, the risk of surgical complications is higher as well as the duration of operation may be longer than those of small thyroid tumors.

**PRESENTATION OF CASES:** Two patients with large neck tumors were admitted with history of thyroid goiters for more than 10 years. Recently, the patients have complained of worsening compressive symptoms including dyspnea and dysphagia. Imaging work-up indicated a deviation and compression of trachea. Both patients underwent either lobectomy or thyroidectomy and were discharged without any complications. Final histological results were thyroid adenoma in both cases.

**CONCLUSION:** Surgical management is considered as primary treatment for most patients with giant thyroid tumors. It is necessary to be aware of complications and careful dissection to archive a good outcome.

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## 1. Introduction

A giant thyroid tumor is defined as any thyroid tumor with an average weight greater than 500 g, a diameter greater than 100 mm, in which the upper end extends up to the mandibular angle, the lower end extends to the sternum and both sides of the posterior border are normally sternocleidomastoid muscle [1]. Patients with giant thyroid goiters may be asymptomatic, but are usually associated with compressive symptoms such as dyspnea, orthopnea and dysphagia [2,3]. The most common symptom in patients with obstructive cervical or substernal goiter is exertional dyspnea, which is present in 30–60% of patients [4,5]. This is due to the gradual growth of the goiter deviating and narrowing the trachea, which in some instances including rapid and fatal hemorrhage, may be rapid and fatal [6].

Surgical management is recommended for giant thyroid goiters, especially in cases with compressive symptoms [7]. The extent of surgery for benign goiter, including hemi-thyroidectomy or total

thyroidectomy, depends on the extent of the goiter. However, it is possible that surgical complications, such as recurrent laryngeal nerve injury, hypocalcemia and hemorrhage, are higher than in small thyroid goiters because of anatomical changes and difficulty of surgical approach [8,9].

In this report, we present two cases with large thyroid goiters undergoing surgery, and fully recovering without any complications. The work has been reported in line with the PROCESS criteria [10].

## 2. Case presentation

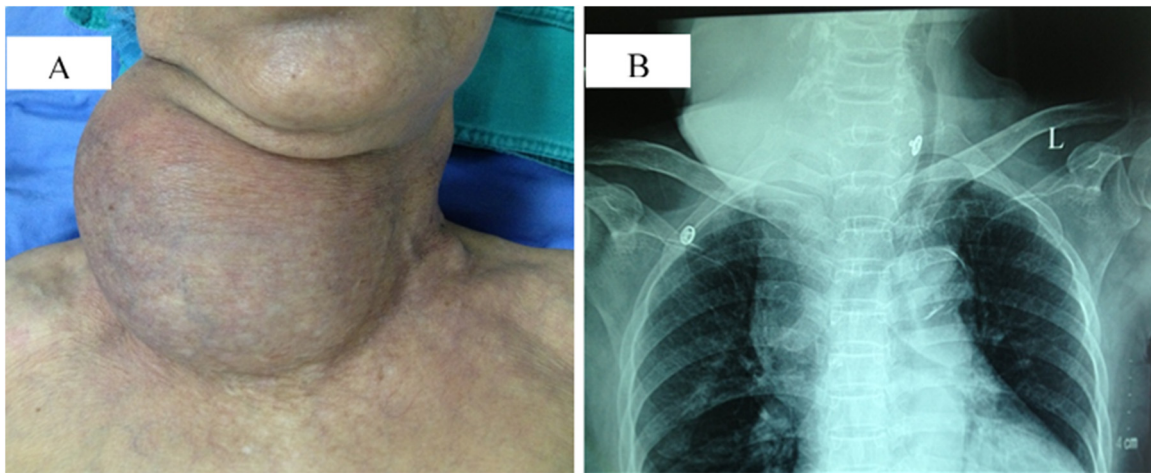
## 2.1. Case 1

A female patient aged 83 years was admitted to our institute with a large tumor in her neck. This patient had been diagnosed as thyroid goiter for 20 years and she had recently complained of worsening dyspnea and dysphagia, and frequent choking on food. Besides, the patient did not experience any symptoms of hypothyroidism or hyperthyroidism.

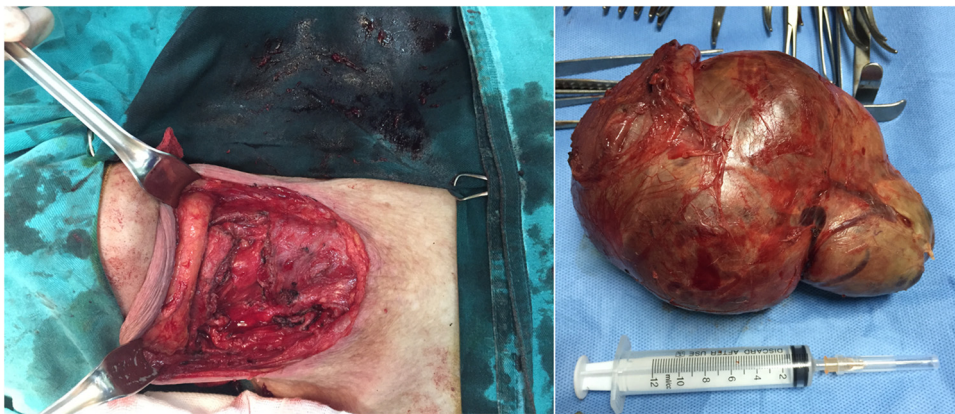
Physical examination indicated a large (200 mm in diameter), soft, and painless goiter in front of her neck, which was classified as grade III according to the WHO modified classification (Fig. 1A). Extension below the sternum was not found and the Pemberton's

\* Corresponding author.

E-mail addresses: [lequang@hmu.edu.vn](mailto:lequang@hmu.edu.vn) (Q.V. Le), [dr.hungnguyen.hmu@gmail.com](mailto:dr.hungnguyen.hmu@gmail.com) (H.V. Nguyen), [maithikimngan91@gmail.com](mailto:maithikimngan91@gmail.com) (N.T.K. Mai), [nguyenxuanhau@hmu.edu.vn](mailto:nguyenxuanhau@hmu.edu.vn) (H.X. Nguyen).



**Fig. 1.** (A) Patient was admitted with a large neck goiter. (B) Chest X-ray showed a huge neck mass causing tracheal compression and displacement.



**Fig. 2.** Patient underwent right lobectomy.

sign was negative. No clinical signs of thyroid dysfunction were noticed.

Chest X-ray showed a mass in her neck, causing a remarkable tracheal deviation and airway narrowing (Fig. 1B). The lung was clear in the X-ray and no signs of heart diseases were reported. Laboratory tests showed normal serum TSH, FT3, FT4 levels as well as normal full blood count, biochemistry profile and coagulation tests. Patient underwent fine-needle aspiration and the result was colloid nodule. Thus, the preoperative diagnosis of this patient was thyroid goiter with tracheal compression. Surgery was planned to manage her symptoms.

We started the operation with a 10-cm cervicotomy incision (Fig. 2). This was a large tumor with confined border and no invasion to surrounding tissues. The tumor deviated the trachea towards the left side, the upper end reached the mandibular and the lower end located close to the sternal notch. The tumor was dissected carefully to reserve both parathyroid glands and clearly identify the recurrent laryngeal nerve. After confirming that there was no suspicious cervical lymph nodes and the other thyroid lobe was normal, right lobectomy was performed.

The operation took 90 min and the patient was discharged after 7 days without any complications. Final histological result revealed thyroid tissues with benign cells, arranging to form follicular structures which are filled with colloid. The tumor was then diagnosed as thyroid follicular adenoma (Fig. 3). In follow-up examinations, the patient had no compressive symptoms or surgical complications, and was able to carry on normal living performance.

## 2.2. Case 2

A male patient aged 65 years was admitted to our institute complaining of dysphagia. This patient had found a growing mass in his neck for nearly 15 years. Recently, he had suffered from increasing dysphagia and exertional dyspnea. Similarly, patient did not experience any symptoms of hypothyroidism or hyperthyroidism.

On examination, a 100 mm, soft, diffusely palpable and multinodular thyroid tumor was found in his neck, which was classified as grade III in WHO modified classification. The tumor was noticed to extend below the sternum and the Pemberton's sign was positive. No clinical signs of thyroid dysfunction were noticed.

Ultrasound demonstrated a diffuse enlargement of thyroid gland with multinodular goiters. Chest CT Scan indicated bilateral enlargement of thyroid lobes, in which the sizes of right and left lobes were  $32 \times 23 \times 60$  mm and  $43 \times 64 \times 100$  mm, respectively. Both lobes had clear borders, developed into the mediastinum, and caused tracheal narrowing (Fig. 4). His laboratory tests showed normal results, including serum TSH, FT3, FT4. The preoperative diagnosis of this patient was thyroid goiter with substernal extension.

Patient therefore underwent operation with an 8 cm cervicotomy incision. The right thyroid lobe was  $4 \times 6$  cm in size and well-confined, which extended partially to the mediastinum. The left lobe appeared to be  $10 \times 8$  cm in size, loose and extended deeply into the upper mediastinum. The total thyroidectomy was performed in two steps: a right lobectomy plus isthmectomy, followed by a resection of the left lobectomy. The retrosternal part of the thy-



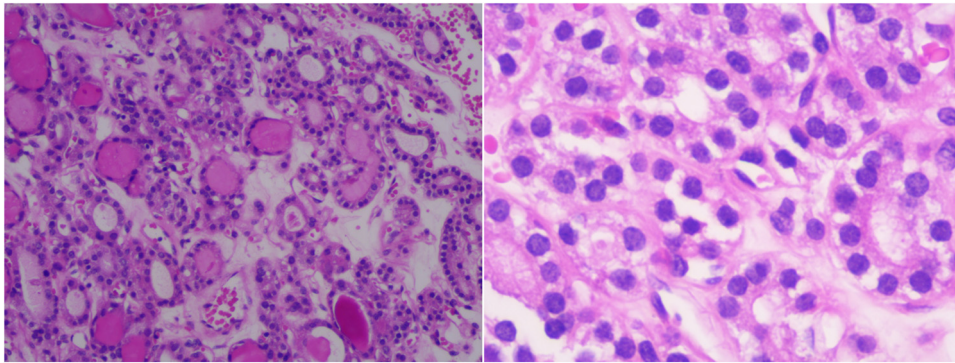


Fig. 3. Pathology result was thyroid follicular adenoma.

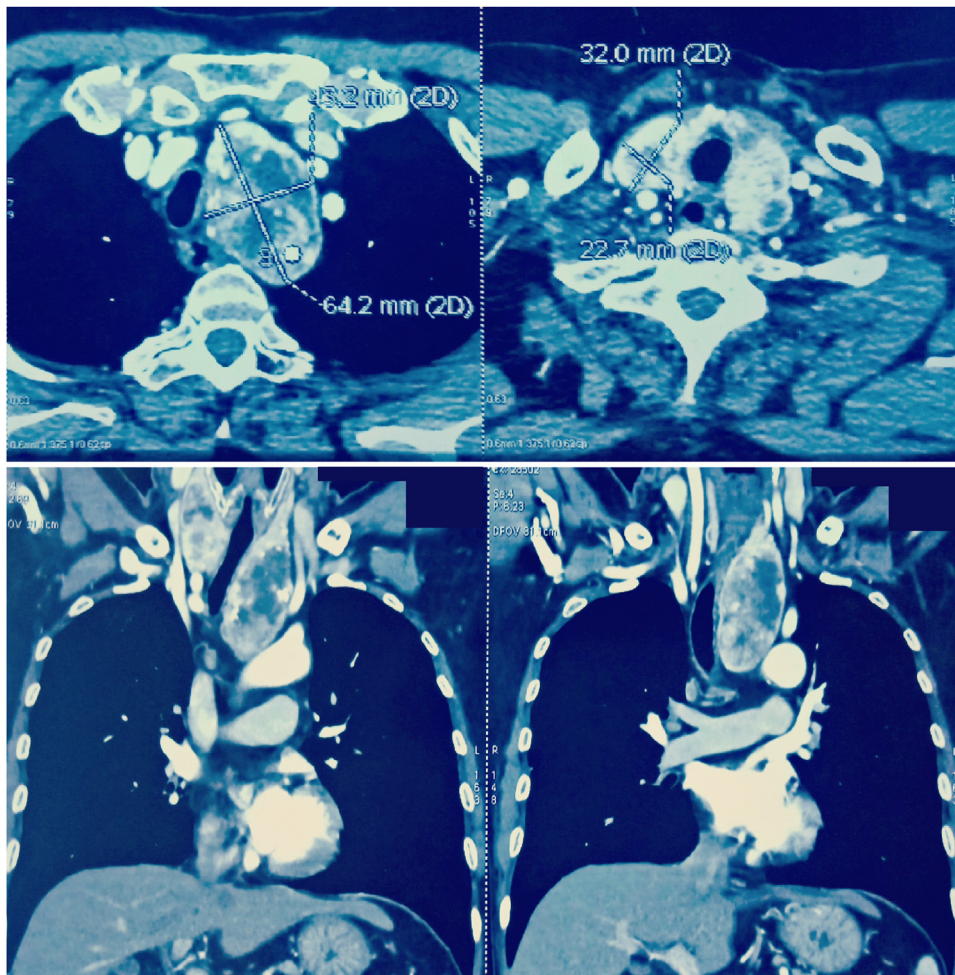


Fig. 4. Chest CT Scan indicated bilateral enlargement of thyroid lobes.

roid tumor was released by fingers. Bilateral parathyroid glands and recurrent laryngeal nerves were reserved (Fig. 5).

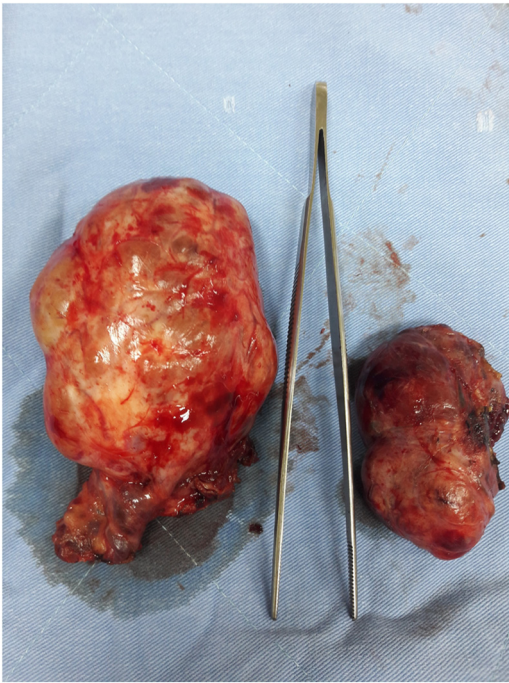
The duration of the operation was 120 min. Definitive histological result revealed a thyroid follicular adenoma (Fig. 6). Patient recovered completely and was discharged after 7 days. Levothyroxine was administered for thyroid function replacement.

### 3. Discussion

In our study, both elderly patients were admitted with compressive symptoms due to massive thyroid tumors, which had developed for a long period of time. Surgical management was

planned to relieve the patients' symptoms. The incisions were relatively long to provide better surgical field. It took 90 min to perform lobectomy in the first patient and 120 min in the second one, which seemed to be longer than in patients with small thyroid tumor (normally below 60 min). Both patients recovered entirely and were discharged after 7 days.

In Vietnam, thyroid goiters involved approximately 28–45% of population [11]. Patients usually remain asymptomatic until compression occurs [8]. The reason is that giant thyroid gland tumors often need a long duration to expand due to their slow enlargement process. A previous study showed the mean history period was 4.9 years [1]. If the tumor is not removed, symp-



**Fig. 5.** Left thyroid lobe (left side) and right thyroid lobe (right side) after resection.

toms associated with giant thyroid tumors may develop, in which common symptoms are dysphagia, dyspnea, orthopnea and cough [4,9,12,13]. There was a case report of a patient with massive thyroid goiter who was admitted to hospital due to fever, productive cough and right lung patchy opacities in chest X-ray. In that case, esophageal compression secondary to retrosternal goiter may cause esophagopharyngeal reflux, leading to aspiration pneumonia [14].

The primary treatment of giant thyroid goiter with compressive symptoms is surgery [7]. However, the rate of surgical complications, including recurrent laryngeal nerve injury, hypocalcemia and hemorrhage, tends to be higher than in small thyroid goiters because of anatomical changes and sometimes the need for sternotomy [8,9]. In a previous report, the duration of surgery was 107.2min for near-total thyroidectomy and the rates of hypoparathyroidism, recurrent laryngeal nerve lesions and hemorrhage in giant thyroid goiter treatment were 7.0% (5.6% transient and 1.4% permanent), 1.4% (transient), and 1.4% for near-total thyroidectomy, respectively [1]. Thyroid surgery performed by surgeons specifically trained for ENT/head and neck surgery was

shown to be safer and associated with a significantly reduced rate of complications than general surgeons [15].

#### 4. Conclusion

Surgical management is still primary treatment for patients with giant thyroid tumor to quickly relieve compression symptoms. In these cases, cautious dissection and awareness of the increased risk of postoperative complications are essential to perform effective and safe surgery.

#### Conflicts of interest

None.

#### Sources of funding

None.

#### Ethical approval

The study was approved by our research committee, Hanoi Medical University Hospital, Hanoi, Vietnam.

#### Consent

The publication of this study has been consented by the relevant patient.

#### Author contributions

Hau X. Nguyen: Main surgeon.  
 Hung V. Nguyen: Assistant surgeon, wrote manuscript.  
 Ngan T.K. Mai: Assistant surgeon.  
 Quang V. Le: Professor, revised manuscript.

#### Registration of research studies

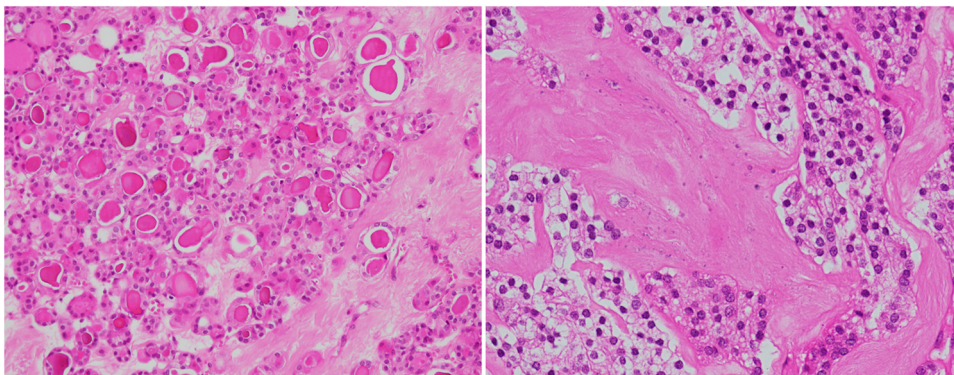
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#### Guarantor

Quang V. Le, Professor, M.D, Ph.D.

#### Provenance and peer review

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**Fig. 6.** Pathology result was thyroid follicular adenoma.



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