

## Plunging Down the Neck-A Rare Case Report of a MNG with Retrosternal Extension

Diksha Sharma\*

Department of Medicine, King George's Medical University, Uttar Pradesh, India

\*Corresponding author: Diksha Sharma, Department of Medicine, King George's Medical University, Uttar Pradesh, India, Tel: 9899232475; E-mail: diksha.0993@yahoo.in

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### Abstract

A retrosternal goiter is defined as at least 50% of the thyroid tissue located intrathoracically. They can be primary or secondary, wherein primary retrosternal (1% of all mediastinal goiters) that arise from accessory thyroid tissue located in the chest. Primary retrosternal goiters are supplied by intra thoracic blood vessels and do not have any connection to thyroid tissue in the neck. Secondary mediastinal goiters arise from surgery, the treatment of choice for retrosternal goiter. It may be sub sternal, wholly intrathoracic or plunging *i.e.* intrathoracic but is forced into the neck while coughing. Retrosternal goiter extending beyond the aortic arch into the posterior mediastinum are treated usually with sternotomy or lateral thoracotomy but majority of retrosternal goiters can be resected through a single cervical incision. Here, we report such a case of retrosternal goitre which was managed successfully in our hospital by a trans cervical approach with good surgical outcome.

**Keywords:** Retrosternal goiter; Trans cervical; Posterior mediastinum; Intrathoracic

3.3 cm x 3.1 cm and left lobe measuring 2.9 cm x 1.8 cm with peripheral vascularity, with no invasive features with inferior margin not visualized suggestive of retrosternal goiter. CT scan of neck and thorax showed grossly enlarged lobulated thyroid gland with heterogenous enhancement suggestive of multinodular goiter and retrosternal extension up to the level of arch of aorta and aorto pulmonary region on the left side with displacement of carotid sheath posteriorly and displacement of trachea to the right, with bilateral cervical lymphadenopathy involving levels I, II, III. USG guided FNAC done showed features suggestive of nodular colloid goiter with cystic change and hemorrhage. Patient was planned for total thyroidectomy +/- sternotomy/lateral thoracotomy and physician fitness was taken for the same [1]. Cardiothoracic surgery opinion was sought and their advice was followed. Pre operatively, indirect laryngoscopy was done and vocal cord palsy was ruled out. Patient underwent total thyroidectomy with mediastinal tumor excision on 07/04/22 under general anaesthesia (Figure 1).

### Introduction

A 56 year old female, known case of type-2 diabetes mellitus, came to JSS hospital with complaints of swelling in front of the neck since 2 years with no history of pressure symptoms like dyspnea, dysphagia or voice change. Clinically, there was diffuse swelling was noted over anterior triangle of the neck of size ~10 cm x 8 cm with nodular surface which was moving on deglutition, and inferior border was not made out. Hematological investigations were within normal limits and patient was euthyroid.

### Case Presentation

USG thyroid gland done showed diffusely bulky thyroid gland with nodular architecture and heterogeneous echo texture with multiple well defined heteroechoic nodules diffusely distributed in both lobes of thyroid, largest nodule in right lobe measuring



**Figure 1:** CT scan demonstrating retrosternal extension of thyroid mass in a sagittal and a coronal section.

Intra operatively large diffuse multinodular goiter with enlarged left lobe, right lobe and isthmus was noted. Dissection was done on left side first. Superior pedicle identified and ligated. Superior and inferior parathyroid were identified with blood supply and preserved. Bilateral recurrent laryngeal nerve identified and preserved. Mediastinal extension of left lobe was adherent to anterior mediastinum. Tumour was dissected off from pleural attachments using finger dissection and delivered through the thoracic inlet and cervical incision. French removal drain was placed in the mediastinum and 16 French removal drains was placed in strap muscles. Post-operative days were uneventful. The strap muscle drain was removed on POD-2 and the mediastinal drain was removed on POD-4. Diet was advanced as tolerated [2]. Patient was discharged on POD# and was found to be stable on post-operative follow ups. Histopathological biopsy showed features suggestive of adenomatoid goiter and patient was started on thyroxine supplementation therapy accordingly [3,4].

## Results and Discussion

Retrosternal goiter was first described by Haller in 1749. The incidence is reported to be 3% to 20% of the patients undergoing thyroid surgery. They can cause respiratory distress, dysphagia, vascular compression, sudden death and carry a risk of malignancy between 3%–21%. Surgery is the treatment of choice for retrosternal goiter with or without clinical symptoms. Where in a transcervical approach or sternotomy or thoracotomy can be used. It has been reported that skilled surgeons need to perform an extra cervical approach in 2%–5% of thyroidectomies for retrosternal goitres. Symptoms can be cough, dyspnea, dysphagia, stridor which are absolute indications for surgery. Radiological imaging indicators may include compression of trachea, tracheal deviation, compression of adjacent vessels and nerves. The need for sternotomy or thoracotomy ranges between 0% and 13%, while some authors claim such a rate to be as high as 50%.

Retrosternal thyroidectomy is a surgically challenging procedure as it comes with various anatomic variations. A transcervical approach to mediastinal tumors, particularly those in the posterior mediastinum, can be troublesome. These patients are at a higher risk of uncontrollable haemorrhage, injury to the Recurrent Laryngeal Nerve (RLN), and incomplete removal of the goiter when the transcervical approach is used [5].

Usually, the cervical approach is useful in retrosternal goiters extending to the anterior mediastinum, and sternotomy or thoracotomy is needed in those extending into the posterior mediastinum. The presence of a clear tissue plane is the most important predicting factor as to whether a goiter can safely be

removed solely with a cervical incision. Factors reported increasing the likelihood of using an extra cervical approach include the presence of a mass that is larger than the thoracic inlet or a mass inaccessible from the neck, involvement of the posterior mediastinum, extension of the goiter to the aortic arch, large thyroid tissue extending towards the tracheal bifurcation, presence of a recurrent postoperative goiter, superior vena cava compromise, preoperative diagnosis of malignancy with suspicion of involvement of neighboring structures, ectopic thyroid tissue in the mediastinum, airway obstruction or inability to palpate the lowermost extent of the gland. The ultrasonic instruments, like harmonic scalpel, can be very useful in the coagulation and resection of small thyroid vessels for resection of retrosternal goiter [6].

In our case, a successful transcervical retrosternal thyroid excision was done by simple finger dissection indicating that ours was a secondary sub sternal goiter. There was no peri-operative or a post-operative complication which was consistent with the existing literature regarding the transcervical approach being a safe and effective approach.

## Conclusion

Total thyroidectomy *via* transverse cervical incision is the surgery for choice for majority of retrosternal goitres. It provides satisfactory outcomes with minimal post-operative morbidity to the patient as opposed to sternotomy/thoracotomy.

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