

A Rare Case of Huge Retrosternal Goitre Managed by Total Thyroidectomy with Medial Sternotomy

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Abstract: Retrosternal goitre is very rare condition which account for 5 to 20 % of thyroidectomy patients. Though rare, it can be better managed surgically. In this article we report a rare case of 60 year old female who had nodular goiter with huge retrosternal extension. Majority of retrosternal thyroid can be removed safely by conventional cervical approach. Our patient had around 20 x 18 x 6 cm mass which was impossible to remove it from conventional approach and hence total thyroidectomy with medial sternotomy was done. Procedure was uneventful and patient is doing fine in of follow-up. The role of thyroidectomy in patients with retrosternal goitre provides yet another area of surgical controversy

I. Introduction

Retrosternal goiter is defined when 50 % of the thyroid is below the thoracic inlet. This can also be called as intrathoracic goiter. Retrosternal goiter is a very rare condition which account for 5 to 20 % of thyroidectomy patients. Mediastinal extension is more common in huge goiters with a peak incidence in 5th to 6th decade. This is usually rare when the patient has associated hyperthyroidism which may increase the risk of complications. The reported incidence of goiters with thyroid malignancy is around 3 to 17 %. Retrosternal goitre occurs when the thyroid enlarges downwards into the chest. Although the great majority of retrosternal goitres are extensions from the neck, pure intrathoracic goitres are very rare.

Any goitre that descends below the plane of thoracic inlet and growing into the anterior mediastinum for > 2cms.

Types- Substernal type – Part of nodule is palpable in the lower neck.

Plunging goitre – An intrathoracic goitre is occasionally forced into neck by increased intrathoracic pressure.

Intrathoracic goitre itself – Neck is normal.

Huge Goitre can results into compression of trachea and oesophagus thus causing dyspnoea ,chocking sensation, cough and dysphagia . Many times engorgement of neck veins & superficial vein on chest wall known as Superior Venacava syndrome. Pemberton sign is positive in case of Retrosternal goitre.

II. Case Summary

A 60 Year old obese female presented in our opd with a huge neck mass causing stridor, hypercapnia, orthopnoea , drowsiness and engorged neck vein.

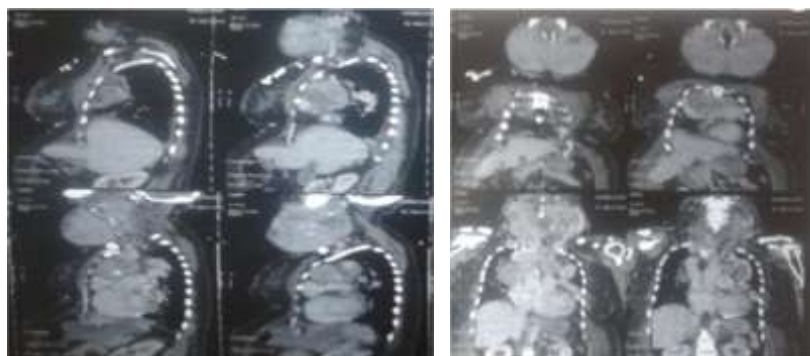
On local examination 20 by 18 cms anterior neck mass

No hoarseness, no dysphagia. Patient Needed preoperative ventilation.

III. Investigations

X Ray chest – shows soft tissue shadow under the sternum, with mild tracheal shift.

Ct Scan- Huge Anterior Mediastinal Mass(20*18cms) And Neck.



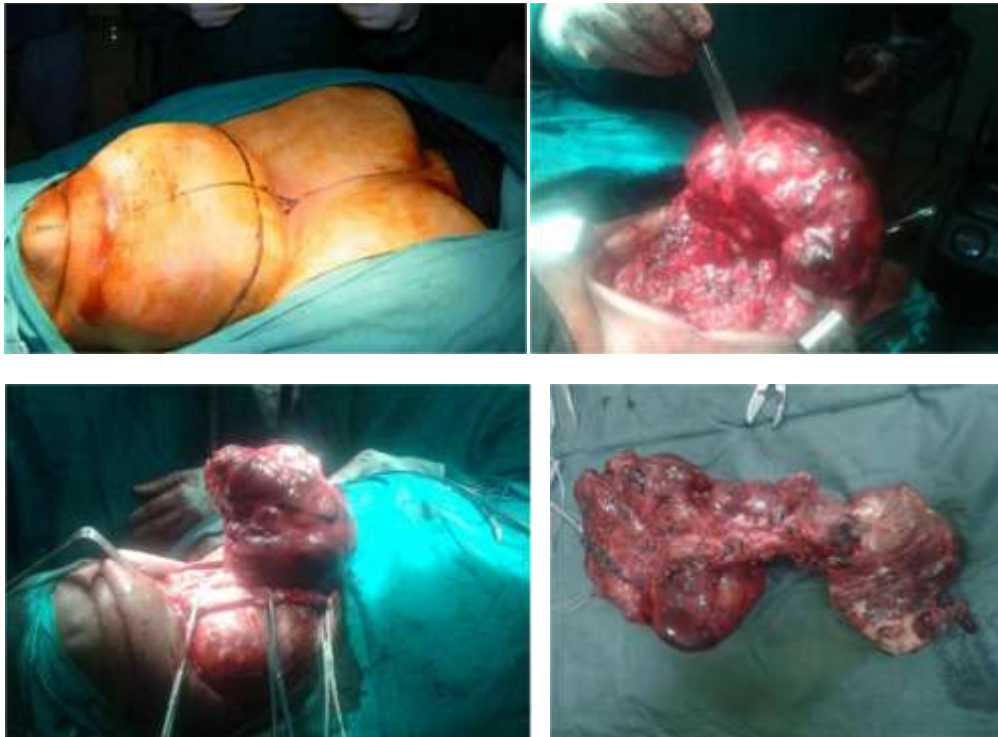
FNAC-s/o colloid goiter T3, T4, TSH - NORMAL

Surgery

Neck incision- Transverse incision of size 20cm given over most prominent part of thyroid gland. Total thyroidectomy with Medial sternotomy- with anterior mediastinal mass dissection. Note- Surgical removal should be complete because recurrent retrosternal goitre is very difficult to re-operate. Tumour weight – 2 kg.

Intra Operative Findings-

- Transverse incision of around 20cm given over most prominent part of thyroid. Total thyroidectomy was planned. After dissection of both lobe and isthmus upto thoracic inlet, incision extended midline over the sternum taking care of the intrathoracic structure. Extension of the thyroid is identified.
- Medial Sternotomy was done and dissection of intrathoracic cavity was carried out. Intrathoracic portion of thyroid was displacing Heart and Mediasternum posteriorly and to the left .
- Tumour was sitting over the pericardium. Gentle dissection was done all around, taking care of surrounding vascularity and surrounding pericardium and structure.
- With meticulous dissection whole of the tumour was successfully dissected.



Post Operative Management-

Patient was put on IV fluids and Antibiotics. ventilation given. Maintained on tracheostomy ventilation for > 1 month Tracheostomy removed after 2 mnths. No hypocalcemia, no hoarseness of voice noted. Patient was discharged on oral medication.

IV. Discussion

The definition of retrosternal goiter is not uniform and often varies among authors. Goldenberg and Lindskog defined retrosternal goiter as a lesion of the thyroid gland extending downward the fourth thoracic vertebra on chest imaging or a structure with an inferior margin extending down to the level of the arch of the aorta. According to Katlic and colleagues retrosternal goiter is defined when more than 50% of the mass lies distally to the thoracic outlet. Patients often complain with slow and progressive growth commonly seen in 5th or 6th decade of life. When the age of clinical presentation advances there is increased medical co-morbidity implying that surgery at an earlier stage may be associated with reduced complications related to co-existing disease. Other symptoms can be cough, dyspnoea, dysphagia , stridor , and symptoms of choking which are absolute indications for surgery.

Radiological Imaging indicators may include compression of trachea , tracheal deviation, compression of other adjacent vital structures. Imaging often helps in correlating the symptoms with size of goiter, presence of tracheal deviation or extent of retrosternal extension.

The majority of nodular goitres, limited to the neck and including a retrosternal component are often benign in nature. Clinical and ultrasonography examination can be done for cervical goitres and needle biopsy of suspicious areas can be taken , with cytological determination of malignant nodules, leading to patient selection for surgery. Retrosternal or substernal components of goitres are not easily imaged by ultrasound due to artefact generated by bony structures and needle biopsies are difficult to perform in routine practice. This can lead to exclusion of malignancy thought with difficulty in retrosternal goitres. Prospective studies reveals the incidence of development of malignancy in goitres is 1.3–3.7 new cases per 1000 patients. A recent review of evidence-based management of substernal goitres concluded the incidence of malignant transformation is equivalent in retrosternal goitres to those residing entirely in the neck. With few exceptions huge goiters can be removed by cervical approach but less than 2 % patients require conventional cervical approach combined with sternotomy/ manubriotomy/ thoracotomy.

Review of the literature regarding the complications of recurrent laryngeal nerve injury, hyperthyroidism, hypoparathyroidism and tracheomalacia after retrosternal goitre excision reveals conflicting results as to whether these specific complications are increased by comparison to cases of excision of simple cervical goitre. Total Thyroidectomy for retrosternal goitres with associated medical co-morbidities should be performed by surgeons who are experienced in thyroid surgery to prevent complications and a cervical approach is successful in the maximum number of cases. Graves disease is one of the most common cause for thyrotoxicosis or thyroid storm. It can be precipitated by systemic insults like trauma , surgery surgery, trauma, myocardial infarction, pulmonary thromboembolism and severe infection. In the past, thyroid storm was most commonly caused in thyroid surgery patients who had uncontrolled hyperthyroidism. Though this condition has been decreased by newer imaging modalities , but has not been completely eliminated the incidence of thyroid storm. Preoperative management of the thyrotoxic patient includes preparation for elective or nonurgent procedures and preparation for emergent procedures.

There is always a controversy to perform a Total thyroidectomy in patients with retrosternal goitre. There was historical surgical dogma to operate the patient with retrosternal goitre. But due to increased use of radiological investigations, particularly advanced Computed tomography scans has identified the often asymptomatic retrosternal goitre. These developments have prompted some thyroid surgeons to challenge the traditional surgical doctrine. Today it remains generally accepted that patients of retrosternal goitre with clinical symptoms of stridor / dysphagia and/or radiological evidence of significant tracheal narrowing, oesophageal compression or SVC syndrome are ideal candidates for surgery.

V. Conclusion

Total Thyroidectomy with Medial Sternotomy in retrosternalgoitre patients must be performed with utmost precautions. Surgery is usually associated with increased risk of complications and hence must be performed by an experienced surgeon.

Prognosis in retrosternal goitre is very good if diagnosed and treated in the proper time. Almost all the compressive symptoms completely disappear (as was seen in this case), mortality reported is near zero and morbidity is very low.

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