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Case Report

Huge Dual Ectopic Retroternal Thyroid Masses within a Single Capsule: A Case Report

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ABSTRACT

Background: Goiter sometimes has retrosternal extension in the mediastinum. And may present with compressive symptoms such as dyspnea, dysphagia, dysphonia or sleep apnea. Treatment of choice is total thyroidectomy and removal of the intrathoracic portion of thyroid. However, these cervicomediastinal masses may be separately encapsulated, and a sternotomy may be required for complete and safe excision of the mediastinal mass to achieve decompression of the surrounding structures and preventing the hemorrhagic complications if attempted from cervical incision.

Introduction

Ectopic thyroid gland prevalence of is one case for every 100000 to 300000 of healthy individuals, and one of 4000 to 8000 patients who have thyroid disease [1]. Most cases of the ectopic thyroid identified during the neonatal period through newborn screening, but in some cases, it is discovered in the fourth, fifth or sixth decade when the ectopic thyroid tissue transforms to abnormal tissue pathology and gives rise to symptomatic manifestations. In other cases, the ectopic thyroid gland identified during imaging when it enlarges during periods of stress. It affects both males and females equally [2]. High cervical thyroid can result from incomplete migration, and excessive movement may cause a superior mediastinal or even paracardiac location. There are reporting cases of two and three ectopic thyroids [3]. The other possible locations of ectopic thyroid are:

i. In the head and neck: the trachea, submandibular, lateral cervical regions, palatine tonsils, carotid bifurcation, iris of the eye and pituitary gland.
ii. Axilla.
iii. Heart and ascending aorta.
iv. Lymphoid tissue: thymus.
v. Gastrointestinal system: esophagus, duodenum, gallbladder, stomach bed, pancreas, mesentery of the small intestine, porta hepatis.
vi. Adrenal gland.
vii. Reproductive system: ovary, fallopian tube, uterus, and vagina [4].

Many studies suggest that "almost all individuals with ectopic thyroid are hypothyroid." Thus, newborn screening is the recommendation. Many centers are now routinely obtaining a thyroid profile in all newborns [5-7]. Thyroid function tests (TSH, T3, total T4, free T4, and

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thyroglobulin are necessary in the screening and diagnosing of the ectopic thyroid - most cases will provide evidence of hypothyroidism, while some patients may be euthyroid.

i. Thyroid scintigraphy to detect the etiological diagnosis.
ii. MRI and CT scan also can be used to determine the exact site of ectopic thyroid.
iii. High-resolution ultrasound scanning for the initial assessment, especially in patients presenting with neck masses.
iv. Tissue biopsy for histology or fine needle aspiration cytology (FNAC) should be performed to exclude malignancy.

Studies have estimated the risk of developing malignancy from ectopic tissue is less than 1% [8]. Other complications include benign neoplasms and thyroiditis. Symptomatic patients without treatment are more likely to develop complications of hypothyroidism.

Case Report

In this case report, we discussed a 58-year-old female patient came to King Fahd General Hospital Jeddah, complaining of orthopnea and chest discomfort on lying flat. palpable lymph nodes were not present in the neck in physical. X-ray and computed tomography scan were done (Videos 1 & 2) (See the video at http://dx.doi.org/10.31487/j.AJSCR.2020.01.08.SUP) which showed enlarged thyroid with multiple internal calcifications and retrosternal extension up to the level of azygos arch (Figures 1 & 2) with multiple collateral vascular channels around mass lesion in anterior mediastinum. Considering the tracheal shifting and compression by the mass; inhalational induction was done by sevoflurane and intubation was done by Glidescope. Then maintenance of anesthesia was done by sevoflurane, fentanyl and rocuronium. Femoral central venous line and arterial line were inserted. Monitoring of the patient intraoperatively included heart rate, oxygen saturation, end tidal CO2, invasive blood pressure and depth of anesthesia.

Thyroidectomy performed through a collar neck incision (Figure 3). There was no anatomical communication between the neck and the retrosternal masses; so, the ectopic thyroid tissue was removed by performing sternotomy (Figure 4). There were two masses included in the same capsule extending from the suprasternal notch extending in the anterior and middle mediastinum till the azygos vein arch with compression of brachiocephalic vein measuring about 15×5×2cm (Figure 5). Meticulous surgical dissection from the surrounding vessels was done from the surrounding structures (Figures 6 & 7). No observed postoperative surgical complications were detected. She was given intravenous analgesia and deep venous thrombosis prophylaxis postoperatively. The histopathological examination revealed that the neck thyroid weight about 35g, the right lobe measures 4×3×1cm. The left lobe measures 5×4×1cm. The isthmus measures 2×1×0.5cm. While the huge ectopic thyroid consists of about 200g gray tan tissue measures 15×5×2cm. The cut section shows multi cystic colloid goiter with hemorrhage and calcification. And the provisional diagnosis was (native and ectopic thyroid): Nodular thyroid hyerplasia, with focal cystic and hemorrhagic changes.

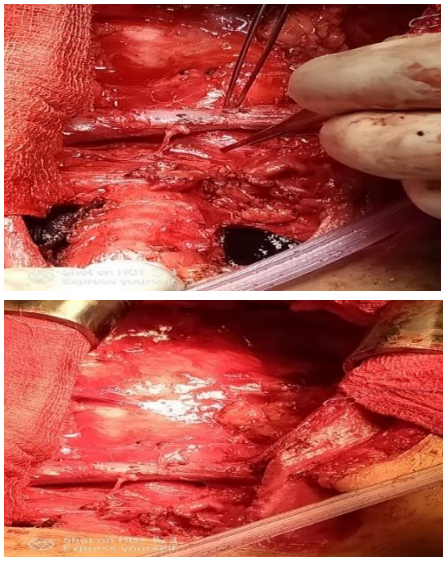
Figure 1: CT- Scans with pulmonary window shows the mass at the levels of aortic arch branches.

Figure 2: CT- Scans with pulmonary window shows the mass at the levels of aortic arch.

Figure 3: The excised neck thyroid.

Figure 4: Surgical excision of the thoracic mass.

Figure 5: The excised thoracic dual masses in single capsule.



Figures 6 & 7: Surgical field after removal of the ectopic thyroid show left brachiocephalic (innominate vein).

Discussion

Retrosternal goiter is the extension of thyroid gland in the mediastinum. Retrosternal goiters are supplied mediastinal vessels and the vessels in the neck [9]. Ectopic thyroid has a rare anatomical, clinical, and surgical characters. In the literature there are very few cases reported as mediastinal thyroid tissue detected after thyroidectomy, such as cases reported by Sahbaz *et al.*, Calò *et al*. and Casadei *et al*. [10-12]. The incidence of retrosternal goiter ranges between 0.2% and 45% of all goiters. 20–40% of retrosternal goiters are symptomatic [10]. Symptomatic cases presented by respiratory symptoms and rarely dysphagia or vena cava superior syndrome [13]. Chest X-ray, CT-scan and magnetic resonance imaging (MRI) examination are important for preoperative evaluation of patients with retrosternal thyroid tissue [13]. Tracheal compression and deviation findings were detected in preoperative chest X-ray of the patient in this case report. A mass compatible with 15 × 5 cm size thyroid tissue in anterior mediastinal region was detected in CT-scan of our patient.

Surgical management of retrosternal goiter is dependent on the experience of the surgeon [14]. Batori *et al*. reported that cervical approach is the surgical method used in retrosternal goiter [14]. However, thoracotomy or sternotomy is sometimes needed for surgical excision in cases of huge mediastinal thyroid tissue [13]. Most cases of mediastinal goiters can be delivered through cervical approach; however, it is sometimes there is a need of sternotomy for the complete and safe resection [15]. Sometimes thyroid mass not in direct connection with neck goiter, but present in mediastinum, separately encapsulated, as the case we described above. It should be removed at the time of initial excision of cervical thyroid to prevent reoperation later on and decreasing the risk of morbidity and mortality from the procedure [16]. Therefore, detailed examination and extensive imaging preoperatively keeping in mind the possibility of a separate retrosternal thyroid mass can result in better preoperative planning and patient counseling, hence further reducing the morbidity and risk of complications from the procedure.

Low morbidity is associated with surgical treatment for forgotten goiter, when performed in specialized centers [10]. In this patient, ectopic thyroid tissue was excised through median sternotomy. Complication of median sternotomy include presternal cellulitis and abscess, sternal osteomyelitis and dehiscence, or retrosternal mediastinitis, hematoma and abscess and range from 0.5% to 5%. [17]. No complication related to sternotomy was observed in postoperative period in this patient.

Conclusion

Ectopic thyroid tissue may be retrosternal or middle mediastinal or both. It may be with a separate entity and need to be excised through sternotomy to avoid grave complications.

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