

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Medical Imaging Quiz – Case 72

A 53-year-old male patient, living in the suburbs, was admitted to the hospital due to an enlarged tracheal mass, referring worsening dyspnoea and dysphagia for 3 months. None previous medical history was documented. Vital signs and laboratory investigation were normal. A neck and chest computed tomography (CT) was performed and revealed the underlying condition (fig. 1).

Comments

Goiter refers to enlargement of the thyroid gland, resulting from multiple conditions. The definition of a goiter depends on age and sex. The thyroid gland may become so enlarged that it becomes a substernal (retrosternal) goiter.

The prevalence of goiter varies widely depending on the level of iodine deficiency. In severely iodine-deficient areas the prevalence may be as high as 80%. Goiter is more common in women (M:F=1:4) and incidence declines with age. Causes of goiter are non-toxic simple goiter, Graves' disease, multinodular goiter, Hashimoto thyroiditis, thyroid cancer, goitrogens (drugs, diet), depositional disease (amyloidosis), miscellaneous. Substernal goiter (or retrosternal goiter) is an enlarged thyroid gland with intrathoracic extension.

It remains unclear which goiters are to be termed substernal, but a recently proposed definition is a goiter that requires mediastinal exploration and dissection for complete removal or an intrathoracic component extending >3 cm in the thoracic inlet.

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Chest x-ray may show a superior mediastinal radiopacity causing the deviation of trachea to the opposite side. The superior margin of the radiopacity/mass is untraceable (cervicothoracic sign).

On ultrasound, the inability to scan the inferior most of the thyroid due to its extension posterior to the sternum makes substernal thyroid likely. According to one study, the most important CT features in determining the necessity of sternotomy for goiter excision include the presence of an ectopic goiter, total thyroid gland volume and goiter extension below the tracheal carina.

Most anterior substernal thyroid goiters are accessed via a transcervical approach. For goiters that cannot be removed via neck dissection, such as those with complicated anatomic extensions or posterior mediastinal involvement, the surgeon may need to incorporate a partial upper sternotomy and clavicular head resection or mini-thoracotomy for adequate exposure.

A surgeon with an understanding of the radiologic reporting of a substernal goiter on a dedicated chest CT might perform a

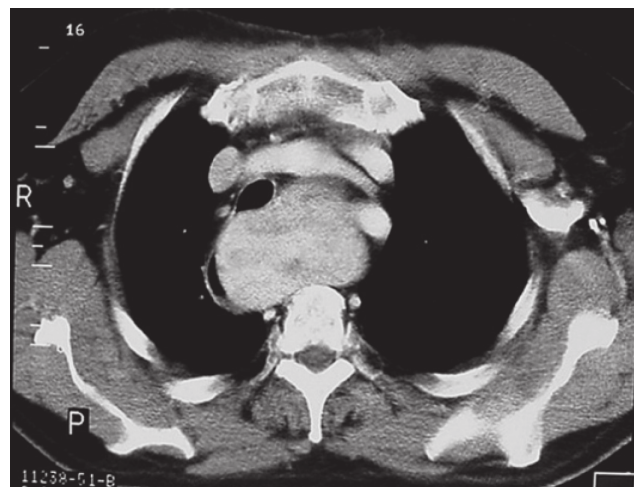


Figure 1. Neck and chest computed tomography (CT) after intravenous contrast medium enhancement reveals enlarged paratracheal mass.

sternotomy instead of a simple low-collar incision for resection of substernal goiter. Some suggested imaging features may indicate requirement for a thoracic approach with a sternotomy include extension of the goiter below the aortic arch, extension into the posterior mediastinum, a dumbbell shape, thoracic component that is wider than the thoracic inlet. A potential pitfall in the assessment of retrosternal extension is the apparent lower position temporarily assumed by the gland when the arms are raised in the case of imaging aimed at the chest. This can be avoided by having the patient's arms by their side when imaging for retrosternal extension.

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