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## Giant retrosternal goitre causing lung atelectasis

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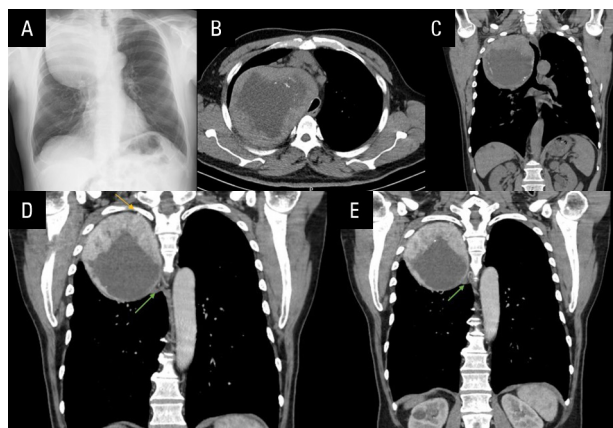
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Retrosternal goitre is documented when 50% of the thyroid is below the thoracic inlet [1]. It causes 5% to 20% of total thyroidectomies and, with few exceptions, massive goitres can be removed via a cervical approach. However, less than 2% also require sternotomy/thoracotomy. Most retrosternal goitres originate in the neck, with pure intrathoracic goitres being very rare [2].

A 56-year-old man, with no relevant medical history, was diagnosed with a massive lesion in the right hemithorax found in a routine chest X-ray (Fig. 1A). He had no complaints beyond chronic hoarseness, and on physical examination no cervical mass was palpable or visible. He did not have evident stridor or Pemberton sign. Right vocal cord paralysis was confirmed by nasolaryngoscopy.

Thoracic computed tomography (CT) showed a large lesion, in continuity with the right thyroid lobe, measuring 119 × 123 × 130 mm, occupying the apex of the right hemithorax, and causing left mediastinal deviation, tracheal and oesophageal compression, and lung atelectasis (Fig. 1BC). The lesion's blood supply appeared to be of both cervical and aortic origin (Fig. 1DE). Cervical ultrasound only showed a small right thyroid lobe of size 9 × 7 mm. Laboratory tests were performed, with normal levels of serum thyrotropic hormone (TSH), triiodothyronine (T<sub>3</sub>), and thyroxine (T<sub>4</sub>). He was submitted to a CT scan-guided biopsy, and the cytological result was colloid goitre. After multidisciplinary discussion, surgical intervention was proposed, because the patient already had right recurrent laryngeal nerve compression, significant loss of lung volume, and tracheal and oesophageal compression that could cause serious short-term complications. Due to the massive retrosternal extension of the goitre, it was assumed that surgical intervention would require surgical access other than a standard collar incision, requiring a partial sternotomy and right thoracotomy to



**Figure 1.** A. Chest X-ray; BC. Computed tomography (CT) scan showing massive lesion occupying the apex of the right hemithorax and causing left mediastinal deviation; DE. Vascularization of the goitre by cervical branches of thyroid arteries (yellow arrow) and thoracic branches of aorta (green arrow)

remove the lesion by thoracic approach. The procedure occurred without immediately complications. The pathology exam confirmed thyroid nodular hyperplasia. About 3 weeks after surgery, the patient developed a hydropneumothorax that was easily resolved after intercostal drainage. Currently, 10 months after surgery, he underwent a chest CT that showed an intercostal lung herniation. A surgical intervention is planned to repair the intercostal muscle defect.

We present a case of a retrosternal goitre incidentally discovered in a routine chest X-ray, in a 56-year-old man. Diagnosis of retrosternal goitre is most frequently made in the fifth or sixth decade of life, with a female/male ratio of 4:1, and it is characterized by its slow growth [3]. Signs and symptoms as cervical mass, dyspnoea, dysphagia, coughing, hoarseness, and stridor are usually present and lead to the diagnosis [4].



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Our patient, despite the massive goitre causing tracheal and oesophageal compression and lung atelectasis, was practically asymptomatic, just referring chronic hoarseness that he treated by himself.

Taking in account the large dimensions of the lesion, both the diagnostic and surgical approach had to be carefully planned. The cytological diagnosis of the right thyroid lobe was performed by a radiologist with experience in CT scan-guided biopsy, and the surgical intervention required an experienced and skilled surgical team because it involved a conventional cervical approach combined with partial sternotomy and right thoracotomy. Post-operative complications after retrosternal goitre resection are slightly higher, highlighting recurrent laryngeal nerve injury, hypoparathyroidism, post-operative bleeding, and tracheomalacia [3].

The incidence of malignancy is similar in retrosternal goitre and cervical goitre (2–3%) [5]. However, in this case, the cytological result before surgery was of major importance to exclude other diagnostic possibilities like lymphoma, due to the massive size of the lesion and the absence of cervical thyroid enlargement.

In conclusion, massive retrosternal goitres are a real challenge, leading to a more complex diagnostic and surgical approach. In this case, its slow growth led

to a practically silent clinical picture, which also allowed it to reach such large dimensions.

### **Conflict of interests**

The authors have no conflicts of interest to disclose.

### **Statements of ethics**

The research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. Data were collected retrospectively.

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