PEEP INTO THORAX FROM NECK
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ABSTRACT

BACKGROUND

A case of intrathoracic goitre presenting with features of compression and regarding the modality of approach to such a presentation and a brief outlook regarding the disease condition.

KEYWORDS

Intrathoracic Goitre, Retrosternal Extension, Tracheal Compression.

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BACKGROUND

For an Otorhinolaryngologist, there is not much consideration for thorax naming a few: Retropharyngeal abscess, Oesophageal perforation, Mediastinitis, Impacted foreign body bronchus, Intrathoracic goitre, etc. There are several definitions for intrathoracic goitre, commonly quoted is that provided by Katlic et al who defined it as goitre in which a part of the thyroid mass at least 50% or even more lies beneath the thoracic inlet.[1],[2]

These goitres may be primary, arising from embryonic remnants and have no connection with the cervical thyroid or secondary when they represent a downward growth of the thyroid gland. By far the vast majority are of the secondary variety,[3] which derive its blood supply from the thyroid arteries in the neck.[4]

CASE SUMMARY

A 41-year-old male (Figure 1) with neck swelling of long standing duration and history of treated toxic goitre who remained reluctant for surgery for many years presented with recent onset shortness of breath.

On examination, a well-built male, normal vitals that includes a respiratory rate of 24/min and oxygen saturation 98%. Neck examination showed a swelling in front of neck more towards right, moving with deglutition with lower extent not appreciable. No palpable lymph nodes. Trachea grossly deviated to the left.

Laboratory workup revealed normal Haemogram, Urea, Creatinine and Electrolytes including the Thyroid function.

When trachea is compressed, 70% of its cross-sectional area there is a 20% chance of mortality (Figure 4).

Radiologic investigations including chest x-ray, Ultrasound (US) and Computerised Axial Tomography (CAT) scans showed (Figure 2, Figure 3) a diffuse cervical goitre and huge bilateral intrathoracic masses measuring 12.24 x 4.42 cm in the greatest dimensions, which is in continuation with the cervical mass with intrathoracic extension of 7.2 cm.

Figure 1. Midline Neck Swelling

Figure 2. Showing its Size
When trachea is compressed 70% of its cross-sectional area, there is a 20% chance of mortality (Fig. 4).

Fine needle aspiration of the cervical goitre showed colloid goitre. Patient was counselled regarding the necessity for surgery and its potential risk. The expert opinion of Department of Cardiothoracic was sought and also of Department of Anaesthesia regarding fitness for surgery.

Operative Details
In view of scabbard trachea related intubation difficulty, the Heart-Lung machine was put on standby. A full sternotomy was performed, which was extended cephalad to end with a horizontal neck crease incision (Modified Kocher’s incision) with the patient in supine. Grossly, the mass had the appearance of vascular thyroid tissue. The left mass was dissected first to free it from the surrounding structures and it was dissected in toto. The right side being bulkier was dissected next and freed from the apex of right lung, mediastinum (Figure 5). Finally, after tedious dissection the mass was excised and haemostasis was achieved (Figure 6). Palpation of trachea did not reveal any signs of collapse. Bilateral recurrent laryngeal nerves and superior and inferior parathyroid glands were identified and preserved. Bilateral chest drain was put and wound closure of sternotomy first followed by neck incision. Patient was then shifted, intubated and ventilated to the intensive care unit. Postoperative haemoglobin and calcium level were normal.

In time the patient was extubated and chest drain were removed when he was shifted to the ward and finally discharged on 7th postoperative day. Histopathology revealed multinodular goitre with no evidence of malignancy. On followup, the patient remained well.

DISCUSSION
Extension of thyroid below the thoracic inlet has been termed retrosternal, substernal, mediastinal or intrathoracic goitre by different authors[5] and these terms are considered synonymous by some. It has an incidence of 6.3% - 11%[5,6] with a malignant potential of 8%.[7]
The inconsistent terminology is exemplified by the presence of several definitions for the intrathoracic goitre, most of them are clinically irrelevant. Only the definition provided by Katlic can predict the need for sternotomy.[2] In this context including goitre, which extends for few centimetres into the thoracic aperture, commonly named retrosternal goitre, together with those which have their main mass lying in the thorax, under one category termed “intrathoracic goitre” is quite misleading and should be abandoned. The clinical implications of this differentiation are obvious as retrosternal goitres could usually be removed through a cervical incision and exceptionally if sternotomy necessary.[3,8,9] Surgery for intrathoracic goitre poses significant challenges and should ideally be done by experienced surgeons who are part of a multidisciplinary team and have the knowledge and ability to deal with intra- and postoperative complications. Cervical approach is suitable for 95% of intrathoracic goitres. The need for sternotomy increases greatly if a significant proportion of the gland is located in the mediastinum or the intrathoracic is in a retrotracheal or retro-oesophageal position or if the intrathoracic component is significantly larger than the cervical one. In contrast a thoracic approach is required for “mainly” intrathoracic goitres,[4] recurrent goitres, presence of malignancy with extrathyroidal extension, extension posterior to trachea and oesophagus, isolated mediastinal goitres and intrathoracic goitres with diameter greater than the diameter of the thoracic inlet which may take the form of sternotomy as performed here, posterolateral thoracotomy[5] or a clam shell thoracotomy[6] depending on its location. Consequences and complications include post-extubation airway obstruction, bleeding haematoma, hypocalcaemia, seroma, infection, vocal cord dysfunction, bilateral recurrent laryngeal nerve injury and lastly in the form of tracheomalacia where the trachea is soft and easily collapsible following goitre resection, which can be almost confirmed with intraoperative palpation.

CONCLUSION

Huge intrathoracic goitre represents a real challenge to both the surgeon and the anaesthetist. Difficulty in intubation and ventilation should be anticipated and the ICU service should be available. Due to its hypervascular nature and proximity to great vessels, massive bleeding should be anticipated and precautionary measures taken.

REFERENCES