An unusual presentation of a calcified thyroid gland

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SUMMARY

A multinodular goitre with cystic degeneration with haemorrhage and subsequent calcification is a common occurrence in long-standing multinodular goitres. But extensive enlargement and calcification causing obstructive symptoms including dysphagia and tracheal shift has not been commonly reported in the literature. Our patient, an 82-year-old man presented with long-standing dysphagia and tracheal shift. His case proved challenging with the retrosternal location of the calcified gland, needing a collar neck incision and a manubriectomy to assess the thyroid. There was a large calcified shell to the gland that made mobilising and removing the gland very difficult. Histology revealed a large multinodular goitre with a large calcified cyst representing previous cyst haemorrhage which underwent calcification. Symptoms resolved postsurgical intervention.

BACKGROUND

This case proved to be surgically challenging, the large calcified thyroid gland and its retrosternal location brings to the fore the management of large thyroid masses and highlights the difficulties encountered and best management options currently available.

CASE PRESENTATION

An 82-year-old man presented with severe right-sided neck pain, a 3-day history of complete obstructive dysphagia and gradual weight loss of 8.5 kg. On examination this cachectic gentleman had stridor, tracheal deviation to the left and continuous drooling. A large mass in the anterior aspect of the neck was found, measuring 8 cm×13 cm on the right and 6 cm×8 cm on the left. There was obvious nodularity bilaterally and no evidence of cervical adenopathy.

INVESTIGATIONS

A CT neck and thorax revealed a large calcified thyroid cyst. This was obstructing the oesophagus with displacement and narrowing the trachea (figure 1 and figure 2).

DIFFERENTIAL DIAGNOSIS

- ▶ Multinodular goitre
- ▶ Thyroid carcinoma
- ▶ Laryngeal carcinoma
- ▶ Sarcomatous lesion

TREATMENT

This patient had a central line placed and total parenteral nutrition initiated as he was worked up for surgical intervention in the form of a total thyroidectomy. Intraoperatively the left lobe was mobilised without difficulty through a collar neck incision. The right lobe however was a hard immobile structure which

was fixed at the lower pole. A manubriectomy was carried out to aid exposure and extraction. Recurrent laryngeal nerves were identified and spared bilaterally. The right lobe with a large 1 cm thick calcified shell-like structure, weighing 323 g and measuring 7.9 cm×11 cm. Histology revealed a large multinodular goitre with a large calcified cyst representing previous cyst haemorrhage that underwent calcification.

OUTCOME AND FOLLOW-UP

Symptoms resolved postsurgical intervention and the patient was discharged home 3 days postoperation tolerating full oral diet.

DISCUSSION

This case highlights the rare occurrence of complete calcification of the right lobe of the thyroid gland secondary to an old haemorrhage into a multinodular goitre causing obstructive symptoms of complete dysphagia, tracheal stenosis and deviation. Unlike other cases reported in the literature, this calcification was not associated with a thyroid carcinoma¹ and was more substantial than the commonly reported egg shell calcification.^{2–5} Due to the obstructive symptoms this man was experiencing, this case brings the surgical management of large thyroid masses to the fore.

The majority of obstructive or substernal goitres are benign, with 51% being multinodular in origin, as in our case.⁶

Investigations for obstructive or substernal goitres should include serum thyroid stimulating hormone to evaluate for subclinical or overt hyperthyroidism. However, most are biochemically euthyroid. Radiological investigations should include a chest x-ray with a thoracic inlet view and a CT or MRI should be utilised to evaluate the true extent of the goitre and to allow for surgical planning. A flow-volume loop study may be beneficial for airflow obstruction or if a tracheal narrowing of <1 cm on cross-sectional imaging is found.

It is suggested to obtain an ultrasound to assess the features of the goitre and nodule characteristics, unless there is an immediate need for surgical intervention. Should malignancy be suspected, a fine-needle aspiration biopsy is indicated. Importantly, if a total thyroidectomy is planned, radionuclide imaging is unnecessary and should only be obtained if limited surgery in a hyperthyroid patient or treatment with radioiodine is being considered.⁷

The current AACE/AMA/ETA guidelines state that surgical intervention for thyroid nodules with obstructive symptoms such as dysphagia, dyspnoea on exertion or lying supine and neck pain is the main modality for definitive treatment.⁸ The standard cervical incision approach is usually adequate for most obstructive goitres. However, in cases of previous thyroid surgery, large substernal goitres

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Figure 1 CT neck and thorax displaying a large 11 cm×8 cm calcified thyroid cyst with tracheal deviation, stenosis and obliteration of the oesophageal lumen. The inferior pole of the right thyroid gland extends substernal to the level of the aortic arch.

Figure 2 Postoperative specimen displaying a large calcified egg-like cyst measuring 12.5 cm×8 cm occupying the lateral aspect of the right thyroid gland. The wall was approximately 1 cm in thickness. The left thyroid gland was 6 cm×8 cm and multinodular in nature.

and potential malignancy a partial or total sternotomy may be appropriate.⁹ A partial manubriectomy was utilised in this case to allow for mobilisation of the inferior pole as it was adherent to the underlying structures. The use of drains in thyroid surgery is currently under much debate. A drain was not used in this case as there was meticulous homeostasis and no signs of bleeding or ooze after a Valsalva manoeuvre was carried out on the patient by the anaesthetist prior to closure.

Learning points

- ▶ Complete calcification of the thyroid gland is a rare occurrence and can cause complete dysphagia and tracheal deviation.
- ▶ The majority of obstructive or substernal goitres are benign as was the case in this man, having a multinodular goitre.
- ▶ Manubriectomy is an appropriate means to allow for mobilisation of a very large and adherent thyroid lobe.

Competing interests None.

Patient consent Obtained.

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