

Presternal Goiter

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ABSTRACT

An enlarging thyroid normally extends into the mediastinum, resulting in a presternal or substernal goiter, depending on its migration anteriorly or posteriorly, respectively. The first one was a rare entity in medical literature, being previously reported in only 6 cases worldwide. The present case reports a 54-year woman with a presternal goiter. She had a history of partial thyroidectomy due to a colloid goiter in 2004. Her thyroid function revealed subclinical hypothyroidism. No other abnormalities were present in physical exam or in laboratory tests. A resection of the remaining thyroid tissue was made, with great postsurgical recovery. The anatomopathological study revealed a colloid goiter. Such case porpoise is to remember physicians that unusual presentations of ordinary diseases can occur. This report differs on literature, which demonstrated that papillary thyroid carcinoma is the most important cause of presternal goiter. Moreover, unlike previous reports with normal thyroid function, this case is the only one reported with subclinical hypothyroidism.

Key Words: Goiter, Hypothyroidism, Thyroidectomy, Colloid cysts.

INTRODUCTION

Presternal goiter is a rare entity in medical literature with only 6 published cases. This atypical presentation is usually related to papillary thyroid carcinoma.^{1,2} The main reason for this presentation be uncommon is that the thyroid gland resides beneath the pretracheal fascia and the strap muscles, and their attachments are connected to the top of the manubrium. Due to this, goiters usually migrate down into the superior mediastinum - known as substernal goiters.³⁻⁵ But in rare case, the thyroid enlargement migrates in an anterior way, in front of the stern, causing the presternal goiter. The pathogenesis behind this type of alternative migration is not known yet.^{1,3}

We present the case of a patient with a presternal colloid goiter and review the literature and the published cases of this medical condition.

CASE REPORT

A 54-year woman presented to the oncology ambulatory in May 2017 with enlargement of a presternal goiter over the past few years. The patient reported dysphagia and dyspnea and denied hypo- or hyper-thyroid symptoms. She used to wear scarfs to hide her medical condition.

In her medical history, a previously partial thyroidectomy was performed for a colloid goiter in 2004. At physical

examination, a large, firm, regular mass with a linear surgical scar was visible in the presternal region (Figure 1A). Pemberton's maneuver was negative and Marañon's sign was not present. The cervical lymph nodes were not enlarged.

The free thyroxine level was 1.11 ng per deciliter (normal range 0.9 to 1.7) and thyrotropin level was slightly elevated, 4.72 μ U per milliliter (normal range 0.3 to 4.2). She was not receiving L-thyroxine for her subclinical hypothyroidism. A thyroid ultrasonography (US) and a

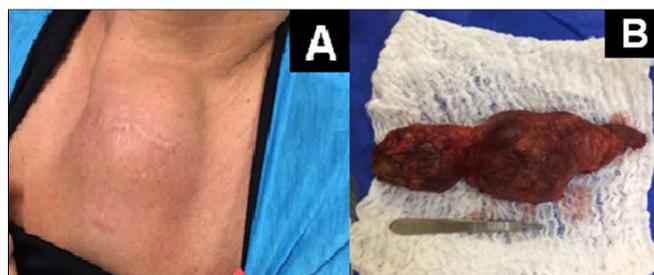


Figure 1: Presternal goiter. (A) Goiter's aspect before surgery; (B) Specimen after surgery with 20 x 9 cm.

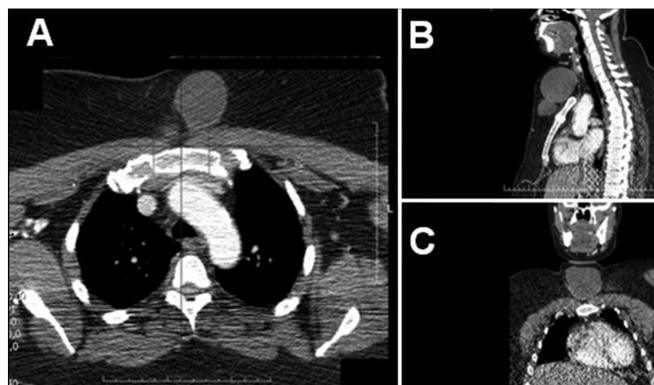


Figure 2: Computed tomography image showing a thyroid mass goiter extending into presternal region. (A) Axial view; (B) Sagittal view; (C) Coronal view.

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Received: May 16, 2018; Accepted: November 1, 2018

Table I: Presternal goiter case report's characteristics.

Author and year	Patient	Clinical manifestation	Thyroid function	Histopathology	Comment
Present case	Female, 54 years	Dysphagia and dyspnea, previously partial thyroidectomy	Subclinical hypothyroidism	Multinodular colloid goiter	"Heart or potato" shaped thyroid mass; only case with thyroid function altered
Zhen-Ning <i>et al.</i> , 2016	Male, 76 year	Swelling in the front of the neck since the age of 42	Not informed	Papillary thyroid microcarcinoma was found, but the predominant mass was characterized as multinodular goiter	Huge thyroid mass partially cystic with solid areas
Fanantenana <i>et al.</i> , 2015	Female, 60 years	Previously exert of the mass, but with new enlargement over the years	Not informed	Multinodular goiter	"Heart or potato" shaped thyroid mass
Chow <i>et al.</i> , 2014	Male, 50 year	Enlargement over the past 3 years associated with pain	Euthyroidism	Papillary thyroid carcinoma	Dumb-bell-shaped thyroid mass
Patil <i>et al.</i> , 2012	Female, 60 years	Swelling in front of the neck since 12 years associated with water discharge in past 6 months	Euthyroidism	Papillary thyroid carcinoma	Only case with sinus and serous discharge present
Brilli <i>et al.</i> , 2007	Male, 50 years	Enlarged in the past 5 years, with mild discomfort	Euthyroidism	Multinodular goiter with macro and micro follicles, and chronic inflammation with areas of sclerosis and calcification	Tear-like thyroid mass
Raman <i>et al.</i> , 1999	Female, 39 years	Painless progressive midline neck swelling of 7 years duration and hoarseness of voice of 1 year duration	Euthyroidism	Papillary thyroid carcinoma	Multiple cystic thyroid mass; first report of presternal goiter

computed tomography (CT) were performed for surgical planning (Figure 2). After that, a resection of the remaining thyroid tissue was made. Under general anesthesia, a total thyroidectomy with a "T" incision was performed. The thyroid mass passed through the midline fascia and reached the presternal area. Middle thyroid veins were dissected and ligated. Parathyroids and laryngeal nerves were dissected and preserved. The gross specimen had 20 x 9 cm (Figure 1B) and the anatomopathological study revealed to be a colloid goiter. Postoperative period was uneventful.

The patient had a great recovery and received levothyroxine for the postsurgical hypothyroidism.

DISCUSSION

There are a few differential diagnoses to be contemplated in a presternal mass. The most common benign cervical and chest wall cysts are lymphangiomas, dermoid cysts, epidermoid cysts, hygroma and inflammatory cysts.¹ Diseases that occur typically in the mediastinum can appear as a presternal mass because of continuity. Thymoma, thyroid (as neoplasm, goiter, ectopy),² teratoma, and lymphoma are part of the differentials.³

Only few cases (Table I) of presternal goiters are published in the medical literature. All reported patients were treated with total thyroidectomy. As observed, presternal goiter is often related to papillary thyroid carcinoma. Benign multinodular thyroid growth is the second most common cause.

The mechanism of presternal goiter is not entirely understood. Substernal goiter is more common due to the negative intrathoracic pressure during inspiration, which can drag down the thyroid along with gravity effect.⁴ Presternal goiter, on the other hand, occurs probably due to migration and growth of thyroid cells into the cervical linea alba between the strap muscles, passing by the pretracheal fascia that encloses the thyroid retrosternally.⁵

US (ultrasound) is one of the best exams to detect and to characterise the thyroid. Sonographic features that are found to be associated with an increased risk of

malignancy nodules include a predominantly solid composition, hypoechogenicity, absence of a hypoechoic halo, presence of microcalcifications, irregular margins, intranodular vascularity, and large size. Nevertheless, a CT exam is usually necessary to evaluate goiter's size and an eventual substernal component concomitant to plan surgical approach.³

Goiter's treatment depends on a variety of symptoms and thyroid function (toxic or not). The classic indications for non-toxic goiter surgical treatment are: large size, substernal extension, compressive symptoms (dyspnea and dysphagia *i.e.*), suspect or proven malignancy and cosmetic reasons.⁶

A recent meta-analysis that included 1,305 participants, evaluated the impact of total/near-total thyroidectomy *versus* subtotal thyroidectomy in adults with non-toxic multinodular goiter.⁷ The main point observed was that the recurrence of goiter was lower in patients who underwent thyroidectomy compared with those who underwent subtotal thyroidectomy, with rates of goiter recurrence of 84 in 1,000 patients with subtotal thyroidectomy and 5 in 1,000 patients with total thyroidectomy. In addition, most centers have adopted total and/or near total thyroidectomy and reported low morbidity rate similar to the subtotal procedure.

Accompaniment depends on the cause. If the histology confirms a papillary thyroid carcinoma, the correct management with a specialist is recommended, with radioiodine, if necessary, and assessment of thyroglobulin levels periodically.^{8,9}

In summary, when a presternal goiter is observed, thyroid function should be evaluated to differentiate toxic *versus* non-toxic goiter. If thyroid function is normal, remember that papillary thyroid carcinoma is the most frequent etiology and an US and a CT should be performed before surgery. Total thyroidectomy is the preferable procedure. Then, the patient should have adjuvant therapy and routine follow-up frequently depending on goiter's etiology. Hypothyroidism needs to be treated and hypoparathyroidism assessed after thyroidectomy.

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