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Rare Presentation of Follicular Thyroid Carcinoma with Retrosternal Goiter: A Case Report and Literature Review

Eko Hamidianto[1*], Marjono[1], Dwi Hari Susilo[1]

[1]*Head and Neck Surgeon, Head and Neck Surgery Department, Faculty of Medicine Airlangga University/RSUD dr. Soetomo, Surabaya, Indonesia*

Corresponding Author:
Eko Hamidianto, Head and Neck Surgeon, Head and Neck Surgery Department, Faculty of Medicine Airlangga University/RSUD dr. Soetomo, Surabaya, Indonesia. Email: ekospbkl@gmail.com

ABSTRACT

Follicular thyroid carcinoma (FTC) with retrosternal goiter is a rare clinical scenario, posing significant diagnostic and therapeutic challenges. These cases require detailed differentiation between intrathyroidal extension and distant metastasis. We present a 55-year-old female who presented with a longstanding neck and chest mass, initially noted in adolescence and previously operated on 20 years prior. Recent investigations were prompted by new-onset hypertension. Chest radiography revealed a persistent mediastinal mass, prompting referral for further evaluation. CT-guided core biopsy confirmed retrosternal goiter, and FNAB indicated a follicular neoplasm. Physical examination showed a 2x3 cm immobile, firm, and tender mass at the xiphoid region. Laboratory tests only demonstrated elevated TSH levels. Thoracic and cervical CT with contrast, revealed a heterogeneous, solid mass with necrotic areas in the anterior mediastinum, adherent to the aortic arch and compressing both upper lung lobes, along with multiple peritumoral lymph nodes and left lower lobe pneumonia. The thyroid gland displayed a lobulated mass extending into the thoracic inlet and retrosternal region. The patient underwent a combined pro-thyroidectomy retrosternal via sternotomy and completion thyroidectomy with central compartment clearance. Postoperative recovery was uneventful, and histopathological examination confirmed the diagnosis of follicular thyroid carcinoma. Follow-up imaging showed no residual tumor or further metastasis. This case highlights the diagnostic complexity of FTC with retrosternal extension, necessitating a multidisciplinary approach for accurate diagnosis and effective surgical management. Our literature review underscores the rarity of such presentations and emphasizes the need for heightened clinical vigilance in similar cases.

KEYWORDS: Follicular Thyroid Carcinoma, Retrosternal Goiter, Mediastinal Mass, Sternotomy, Thyroidectomy

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INTRODUCTION

Follicular thyroid carcinoma (FTC) represents a significant clinical challenge, especially when associated with retrosternal goiter, a condition characterized by the extension of thyroid tissue into the mediastinum. FTCs are follicular cell-derived carcinomas known for their slow growth and indolent biological behavior. These cancers typically remain localized within the thyroid gland and are the second most common differentiated thyroid cancer histological type [1].

This uncommon presentation complicates both diagnosis and treatment, as it requires careful differentiation between intrathyroidal extensions versus distant metastases [2]. The diagnosis is often delayed due to the asymptomatic nature of early-stage disease and the overlapping features with other mediastinal masses. Standard diagnostic tools, including imaging and fine-needle aspiration biopsy (FNAB), play crucial roles in evaluating these cases, yet the interpretation of findings can be complex due to the anatomical location and potential for concurrent conditions [3].

Accurate and timely diagnosis is imperative to guide appropriate surgical intervention and improve patient outcomes. This case report, coupled with a literature review, aims to elucidate the clinical course, diagnostic challenges, and therapeutic strategies associated with FTC presenting with retrosternal goiter, thereby contributing to the broader understanding and management of this rare finding.

CASE ILLUSTRATION

We present a 55-year-old female who was admitted for elective retrosternal thyroidectomy. She had a longstanding history of neck and chest masses, initially noted in adolescence and previously operated on 20 years ago. Eight months ago, the patient sought treatment at secondary hospital for newly diagnosed hypertension. A chest X-ray revealed a persistent mediastinal mass, leading to a referral for further evaluation. CT scan and needle biopsy at secondary hospital were inconclusive, prompting a referral to our tertiary hospital for consideration of a core biopsy. A CT-guided core biopsy performed at our hospital confirmed the diagnosis of

retrosternal goiter. At the time of admission, the patient reported no symptoms and was not experiencing dyspnea.
Physical examination revealed a 2x3 cm immobile, firm, and tender mass at the xiphoid region. Other clinical findings included normal lung sounds with no evidence of wheezing or ronchi, a regular heart rhythm with no murmurs or gallops, and a soft, non-tender abdomen with normal bowel sounds. Extremities were warm with a capillary refill time of less than two seconds. The patient appeared well-nourished and in no acute distress. Laboratory results indicated elevated TSH levels. Additional blood tests, including complete blood count and metabolic panel, were within normal limits.

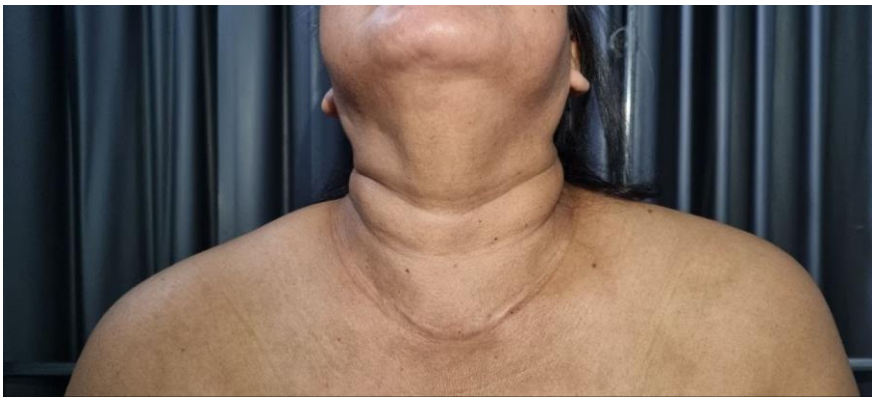

Figure 1: Swollen Cervical Mass

A thoracic MSCT with contrast revealed a heterogeneous, solid mass with necrotic areas in the anterior mediastinum, adherent to the aortic arch, and compressing both upper lung lobes. Multiple peritumoral lymph nodes and left lower lobe pneumonia were also noted. A cervical CT with contrast showed a lobulated mass in the left thyroid extending into the thoracic inlet and retrosternal region, displacing the trachea and vascular structures. Multiple small lymph nodes were noted in the paratracheal and supraclavicular regions. The thyroid function tests confirmed a diagnosis of subclinical hyperthyroidism, with T3 and T4 levels slightly elevated, and suppressed TSH. We diagnose the patient with right follicular thyroid carcinoma ($T_{1A}N_{1A}M_1$) post-subtotal left thyroidectomy with type 2 diabetes mellitus, hypertension, 1st grade obesity and subclinical hyperthyroidism.

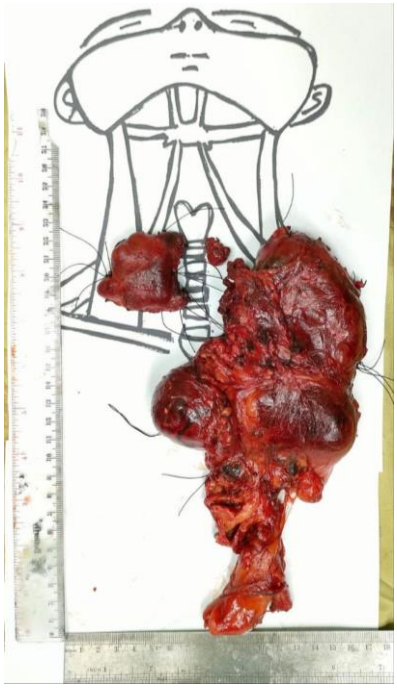

Figure 2: Intraoperative Finding of Thyroid Mass

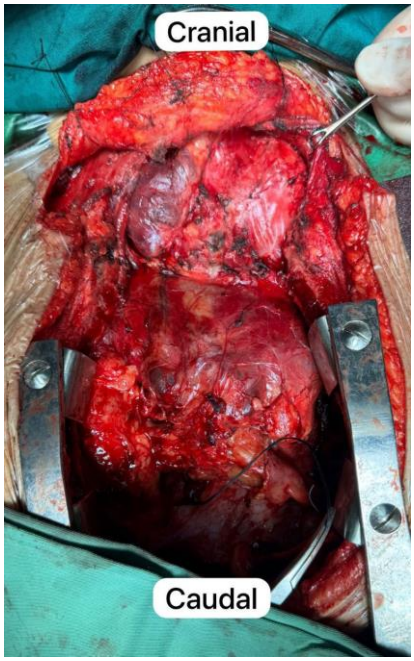

Figure 3: Retrosternal Thyroidectomy Via Sternotomy with Central Compartment Clearance

The patient underwent a combined retrosternal thyroidectomy via sternotomy, completion thyroidectomy, and central compartment clearance. The postoperative recovery was uneventful, with the patient showing no signs of infection or other complications. She was discharged with a follow-up plan including regular thyroid function tests and imaging studies to monitor for recurrence. Histopathological examination confirmed the diagnosis of follicular thyroid carcinoma. Follow-up imaging showed no residual tumor or further metastasis. This case highlights the diagnostic complexity of FTC with retrosternal extension, necessitating a multidisciplinary approach for accurate diagnosis and effective surgical management.

DISCUSSION

This case of follicular thyroid carcinoma (FTC) with retrosternal goiter is particularly intriguing due to its rare presentation and the diagnostic and therapeutic challenges it poses. FTC is typically confined to the thyroid gland and seldom extends into the mediastinum. However, in this patient, the substantial retrosternal extension complicated the clinical picture, requiring meticulous differentiation between intrathyroidal extensions versus distant metastasis. The patient's history of a long-standing neck and chest mass, coupled with previous thyroid surgery two decades ago, adds complexity to the case. It underscores the importance of thorough follow-up and the potential for recurrence or secondary malignancy even years after initial treatment. The diagnosis of hypertension and diabetes mellitus, which prompted further investigation, highlights how incidental findings during routine evaluations for other conditions can lead to significant discoveries.

In comparison with other reported cases of FTC with mediastinal involvement, this case stands out due to the size and extent of the mass. While FTC typically presents as an asymptomatic thyroid nodule, in this instance, the mass was substantial enough to cause mediastinal compression, as evidenced by the CT scan findings. The presence of necrotic areas within the mass and the adherence to the aortic arch are also noteworthy, as these features can complicate surgical intervention and increase the risk of perioperative complications. Literature on retrosternal goiter often discusses its presentation as a benign condition that may cause compressive symptoms due to its size and location. However, the coexistence of FTC transforms the clinical approach, emphasizing the need for a high index of suspicion for malignancy in patients with significant thyroid masses, regardless of their initial presentation.

The diagnostic approach in this case included the use of multiple imaging modalities and biopsies. The initial chest X-ray and subsequent CT scans were crucial in delineating the extent of the mass and its impact on surrounding structures. Fine-needle aspiration biopsy (FNAB) and core biopsy were instrumental in confirming the diagnosis, although the initial FNAB results were inconclusive, necessitating a core biopsy for definitive diagnosis. This highlights the importance of using comprehensive diagnostic tools and sometimes employing repeated or multiple biopsy techniques to achieve accurate diagnosis. The therapeutic strategy involved a combined surgical approach with retrosternal thyroidectomy via sternotomy and completion thyroidectomy with central compartment clearance. This multidisciplinary approach, involving thoracic surgeons and head and neck surgeons, ensured the complete removal of the tumor and management of potential complications. The decision to proceed with sternotomy rather than a less invasive approach was driven by the mass's size, location, and adherence to vital structures, which necessitated wide exposure for safe resection.

CONCLUSION

In conclusion, this case highlights the diagnostic complexity and therapeutic challenges associated with FTC with retrosternal extension. It underscores the need for heightened clinical vigilance, comprehensive diagnostic workup, and a multidisciplinary approach to management. Through a comprehensive analysis of similar cases documented in existing literature, we can gain a deeper understanding of the distinct characteristics and significant role of personalized diagnostic and treatment approaches in attaining favorable results.

REFERENCES

[1] Grani, G., Lamartina, L., Durante, C., Filetti, S., & Cooper, D. S. (2018). Follicular thyroid cancer and Hürthle cell carcinoma: challenges in diagnosis, treatment, and clinical management. *The Lancet. Diabetes & Endocrinology*, *6*(6), 500–514. https://doi.org/10.1016/S2213-8587(17)30325-X

[2] Pacini, F., Castagna, M. G., Brilli, L., & Pentheroudakis, G. (2012). Thyroid cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of Oncology : Official Journal of the European Society for Medical Oncology*, *23*(7), 110–119. https://doi.org/10.1093/annonc/mds230

[3] Saggiorato, E., Pompa, R. De, Volante, M., Cappia, S., Arecco, F., Tos, A. P. D., Orlandi, F., & Papotti, M. (2005). Characterization of thyroid "follicular neoplasms" in fine-needle aspiration cytological specimens using a panel of immunohistochemical markers: a proposal for clinical application. *Endocrine-Related Cancer*, *12*(2), 305–317. https://doi.org/10.1677/erc.1.00944