



Ectopic thyroid presenting as supraclavicular mass: A case report and literature review

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ABSTRACT

Ectopic thyroid tissue most commonly presents along the midline neck, from the base of tongue to the mediastinum, as a result of embryologic descent of the gland. When thyroid tissue is found in unusual locations, there is concern for malignant metastases, particularly in areas with rich lymphatic or vascular networks. A 76-year-old female presented with a large multinodular thyroid and a separate left shoulder mass. She reported a distant history of thyroid surgery in Haiti. After a workup including CT of the neck and FNA biopsy, both masses were resected. Histopathological examination revealed both masses to be benign multi-nodular goiters. To the authors' knowledge, this is the first report of ectopic thyroid tissue within the deltopectoral musculature. While there are a number of possible explanations, the most likely etiology in this case is the seeding of thyroid tissue during parathyroid auto-transplantation 30 years prior to presentation.

1. Introduction

Ectopic thyroid tissue is a rare condition, usually resulting from abnormalities in embryologic development, differentiation, and migration of the thyroid gland [1]. Thus, the most frequent locations for ectopic thyroid tissues are along the path of embryological descent along the midline, starting at the base of tongue [1,2]. However, reports exist of ectopic thyroid tissue in other locations of the body, including the axilla, chest, abdominal/visceral organs, and pelvis [1].

When ectopic thyroid tissue is found in a location not consistent with embryologic development, the primary concern is for malignant metastasis, especially in a patient with thyroid mass. An appropriate workup must include some combination of scintigraphy, ultrasonography or computed tomography (CT), and fine needle aspiration (FNA) [3]. When the ectopy is inconsistent with thyroid embryogenesis, imaging such as CT and MRI and tissue cytology with FNA are essential in differentiating benign and malignant lesions [3].

For cases of benign thyroid tissue found in unusual locations, it remains unclear if these lesions represent metastatic thyroid carcinoma that has involuted, seeding of thyroid tissue from prior neck surgery, or local tissue metaplasia [4,5]. In patients with prior history of thyroid surgery, another possibility is seeding of normal thyroid tissue during parathyroid auto-implantation [6]. In this article, we present a rare case

of multi-nodular thyroid goiter consisting of two distinct masses, one in the neck and one in the left shoulder. To the authors' knowledge, this is the first report of ectopic thyroid tissue within the deltopectoral musculature.

2. Case presentation

An otherwise-healthy 76-year-old female presented to the clinic in late November 2016 complaining of a large neck mass with associated dysphagia and discomfort when laying flat. She also noted a lump in her left anterior shoulder that was associated with pain in her left arm. Both masses had been slowly increasing in size for many years. The patient had undergone thyroid surgery in Haiti in the 1990s, but could not recall any details about the diagnosis or procedure. Her family was also unable to obtain records related to the prior surgery.

At the time of evaluation, the patient denied symptoms suggestive of abnormal thyroid hormone function, including palpitations, change in weight or appetite, sweating, hair or skin changes, fatigue, difficulty sleeping, or increased sensitivity to heat or cold. She had no documented history of abnormal thyroid function, and was not taking medications for thyroid hormone replacement or suppression.

Physical examination was notable for a significantly enlarged, nodular thyroid with an overlying, well-healed, horizontal scar. There

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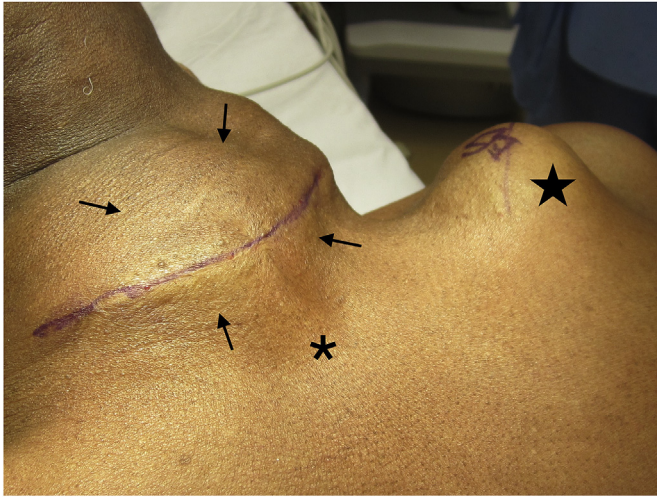


Fig. 1. Nodular anterior neck mass (arrows) with separate left supraclavicular mass (star). The sternal notch is marked with an asterisk to identify the midline.

was also a round mass overlying the left clavicle, in the region of the delto-pectoral groove, measuring approximately 7 cm by 7 cm (Fig. 1). Flexible laryngoscopy demonstrated full vocal fold motion bilaterally.

A CT scan of the neck with contrast showed an enlarged, heterogeneously enhancing thyroid with associated displacement of the trachea, and a mass anterior and inferior to the left clavicle, concerning for malignancy with metastasis (Fig. 2). Thyroid function tests revealed the following: TSH- 0.520 miU/L (0.55–4.78 ref) and thyroxine 0.70 ng/dL (0.89–1.76 ref).

The patient underwent fine needle aspiration biopsy of both the thyroid and supraclavicular mass, both of which were read as suspicious for follicular neoplasm, consistent with a Bethesda IV classification.

Total thyroidectomy and excision of the left supraclavicular mass was performed. The thyroidectomy was performed without complication through the prior incision. Aside from the superficial, subcutaneous tissues, minimal scarring or fibrosis was noted. There were no abnormal-appearing lymph nodes. The left shoulder mass was removed through a separate incision (Fig. 3). The mass was found to be adherent to the clavicular periosteum and appeared to be invested in the superficial aspect of the pectoralis major muscle. Surgical pathology for both specimens revealed benign, multi-nodular goiters (Fig. 4).

3. Discussion

Ectopic thyroid tissue is a rare finding, with a prevalence of approximately 1 per 100,000–300,000 people [2]. The majority of cases are attributed to abnormalities in the embryologic development, differentiation, and migration of the thyroid gland. However, thyroid ectopy must always be distinguished from metastasis of thyroid cancer, seeding of thyroid tissue during surgery, teratomatous thyroid tissue, and local tissue metaplasia [1,7].

Normal embryological development of the thyroid begins approximately on the 24th gestational day as a group of endodermal epithelial cells in the foramen cecum of the tongue [1]. Between the 5th and 7th gestational weeks, the median thyroid anlage descends anterior to the pharyngeal gut to its final location anterolateral to the trachea, usually between the 2nd and 5th tracheal rings [1]. There is also questionable evidence supporting lateral thyroid anlagen as components of the ultimobranchial bodies of the 4th pharyngeal pouch, which ultimately joins the median thyroid anlage as parafollicular or C cells and possibly thyroid follicular cells [1].

The most common location for ectopic thyroid tissue is along the midline of the neck, due to the migratory path of the thyroid gland

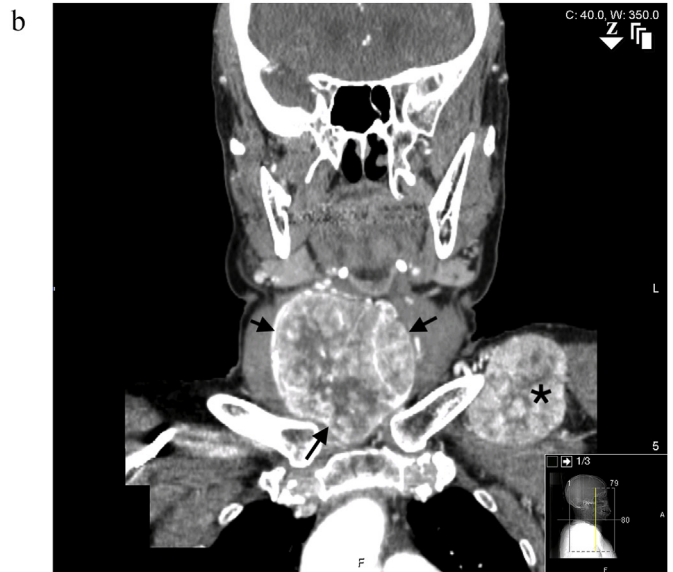
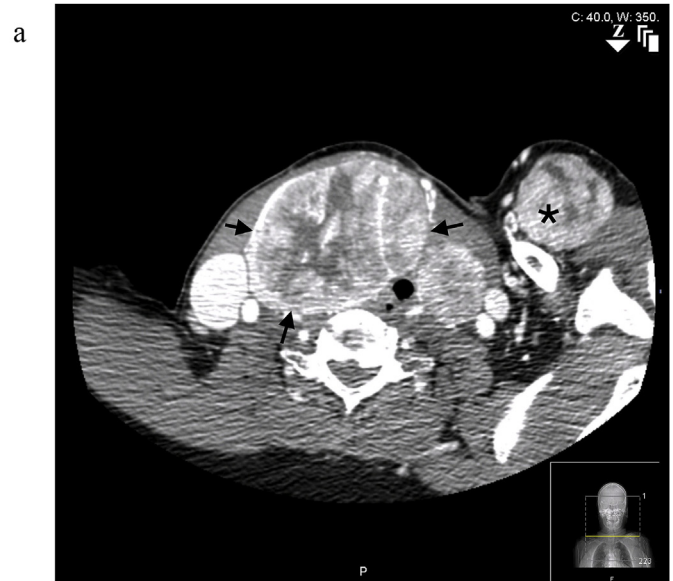


Fig. 2. (a): Axial CT with contrast demonstrating enlarged, heterogeneously enhancing thyroid (arrows) and an ectopic mass anterior and inferior to the left clavicle (asterisk). (b): Coronal CT with contrast demonstrating enlarged, heterogeneously enhancing thyroid (arrows) and an ectopic mass anterior and inferior to the left clavicle (asterisk).

during embryonic development. The thyroglossal duct describes the narrow tube connecting the foramen cecum to the thyroid gland, which normally obliterates by gestational day 40 [8]. Failures of obliteration can lead to predictable locations for ectopic thyroid tissue, such as the base-of-tongue, or the mediastinum [1]. However, case reports of ectopic thyroid tissue have reported unusual locations including submandibular, lateral cervical, axillary, cardiac, trachea, esophageal, duodenum, gall bladder, pancreas, ascending aorta, adrenal gland, iris of eye, vaginal wall, and the ovaries [4,5,7,9–17]. Aberrant thyroid tissue in the submandibular and lateral neck regions has been attributed to impaired migration of lateral thyroid anlagen, displacement of the median thyroid anlage during embryologic descent, tissue spreading during surgery on an orthotopic thyroid, and metastasis of thyroid carcinoma [1,8]. Thyroid tissue found in locations that cannot be explained by embryogenesis, such as the iris of the eye or vaginal wall,

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