# Squamous cell carcinoma paradox in thyroid

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Squamous cell carcinoma (SCC) in the thyroid is extremely unusual, contributing to less than 1% of all primary thyroid carcinomas. It may be primary SCC of thyroid gland or secondary spread to the gland, owing to direct extension of SCC from neighboring structures or distant metastases. Most of the cases of thyroid malignancy present as a rapidly expanding mass in the neck, followed by symptoms of invasion and compression of nearby structures. This case report presents an atypical presentation of SCC in the thyroid gland. In this study, the patient presented with a huge thyroid swelling, with minimal dysphagia, mimicking a primary thyroid malignancy; unusually, the primary lesion in the esophagus was much smaller and found on endoscopic evaluation.

**Keywords:**
carcinoma, squamous cell, thyroid gland, thyroid neoplasms

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## Introduction

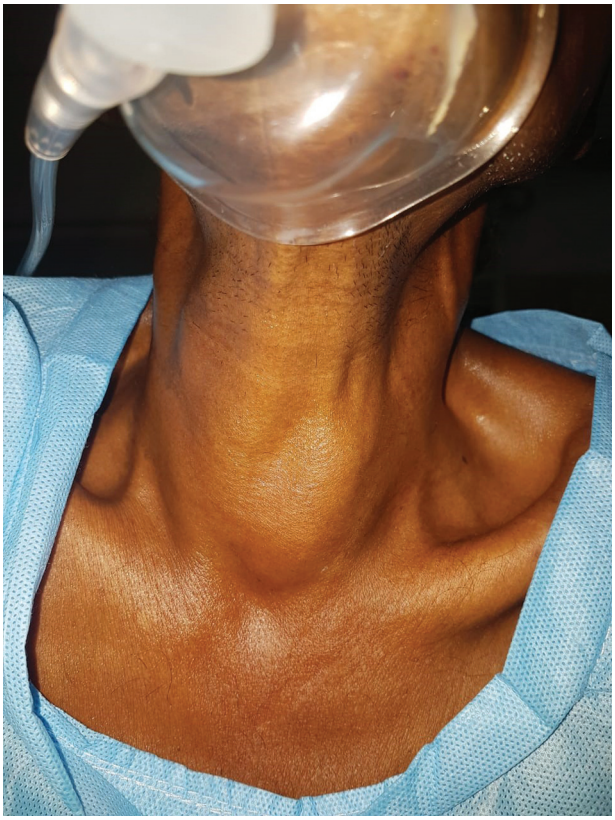
Squamous cell carcinoma (SCC) of the thyroid contributes to less than 1% of primary thyroid carcinomas [1]; it may be a primary SCC or due to direct extension from neighboring structures or distant metastases. Direct extension to the thyroid and metastasis is about 10 times more common than primary thyroid SCC [2]. Diagnosis is typically made in the advanced stage with invasion of contiguous organs or as an incidentaloma with bad prognosis. It is vital to eliminate metastases and direct infiltration from an extrathyroidal primary malignancy [3].

## Case history

A 48-year-old man presented to ENT OPD, with swelling on the left lower neck since 4 weeks, stridor, and difficulty in breathing since 2 weeks (Fig. 1). On probing further, he gave a history of slight difficulty in swallowing solids since 1 week. He was an old case of pulmonary tuberculosis and chronic obstructive pulmonary disease, a chronic smoker, and alcoholic. Clinical examination showed a large irregular fixed hard swelling in the left lobe of thyroid. Skin over the swelling was pinchable. There were no palpable lymph nodes. Videolaryngoscopy revealed left vocal cord palsy with no evidence of primary lesion in the pharynx or larynx. Contrast enhanced computed tomography (CECT) neck and chest indicated a peripherally enhancing lesion with central nonenhancing necrotic areas measuring 6.2×4.2×4 cm, likely arising from left lobe of thyroid, with retrosternal extension. The lesion was seen displacing trachea to the right in the upper thoracic region with indentation of the posterior tracheal margins causing luminal narrowing (Fig. 2). The lesion was also seen to be displacing and compressing the esophagus to the right with minimal engulfment of the margins. Laterally, the lesion was in close proximity with left carotid and jugular vessels, with no evidence of thrombosis. Posterior extent of the lesion was up to the prevertebral and paravertebral space. Moreover, tree-in-bud appearance was noted in the posterior segment of right upper lobe, supero-basal segment of right lower lobe, medial segment of right middle lobe, and apical posterior segment of left upper lobe, suggestive of active pulmonary tuberculosis. Sputum was sent for acid-fast bacilli staining and culture. *Pseudomonas* spp. was isolated, with no evidence of acid-fast bacilli. He was started on appropriate intravenous antibiotics to control the infection. The patient was planned for panendoscopy and biopsy under general anesthesia, but the procedure was deferred owing to unavailability of fitness for surgery in view of persistently low serum potassium values. Before fine needle aspiration cytology could be performed, the stridor worsened and patient underwent emergency tracheostomy under monitored anesthesia care, followed by excision biopsy of the lesion in the left lobe of the thyroid. Surprisingly, the biopsy was suggestive of infiltrating SCC. Flexible upper gastrointestinal endoscopy was performed once the patient was stabilized to look for any evidence of primary tumor. Extrinsic compression with luminal narrowing in the upper esophagus was found.

Another area of irregular nodular-appearing mucosa covered with mucosal plaques was seen at ~25–30-cm level (Fig. 3). Biopsy was taken from both the sites. The report was conclusive of invasive SCC of esophagus. Treatment planned for the patient included Intensity Modulated Radiation Therapy (IMRT) of 70 Gray over 35 cycles with weekly Cisplatin therapy.

**Figure 1**



Photograph showing left-sided neck swelling.

## Discussion

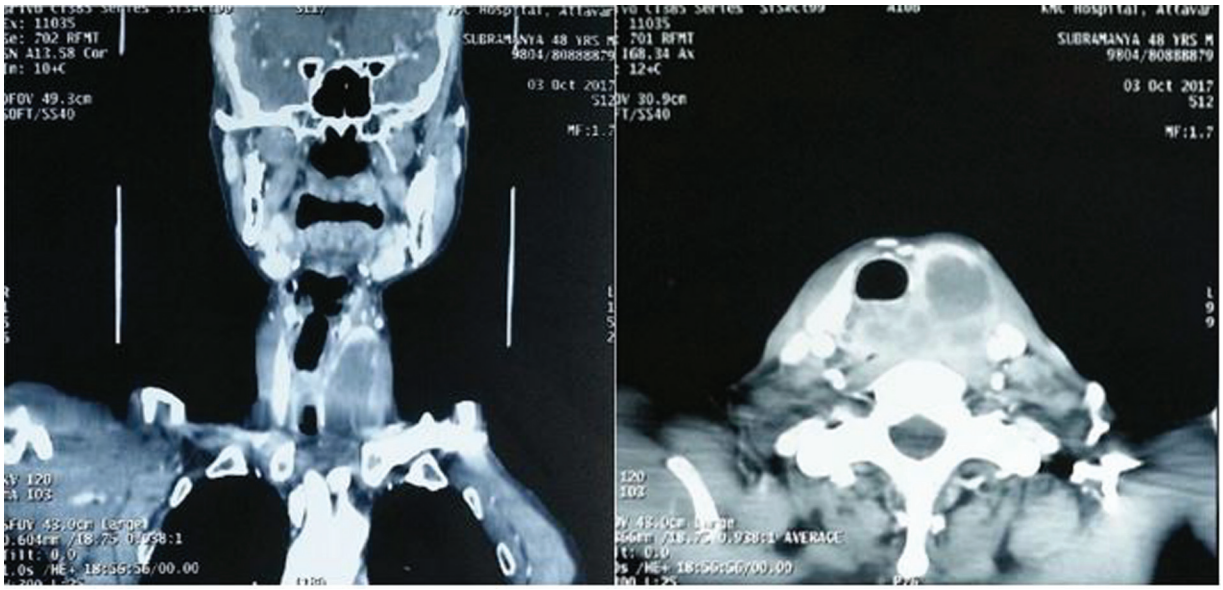
Thyroid swelling is a rare initial manifestation of invasive SCC. The most common form of SCC in the thyroid is direct infiltration from contiguous structures and organs, followed by metastatic spread to the thyroid. Direct extension occurs from SCC affecting the larynx, pharynx, proximal esophagus, trachea, soft tissues or mediastinum; of which, SCCs of larynx and pharynx have higher chances [4].

In this study, the thyroid was infiltrated by primary SCC in the esophagus. Absence of the serosal layer in the wall of the esophagus promotes rapid spread of SCC into the nearby structures in the neck and thorax, including the thyroid gland, trachea, larynx, lung, pericardium, aorta, and diaphragm [5].

Primary SCC in the thyroid is extremely rare; the origin is stated to be from the remnants of thyroglossal duct, ultimobranchial body, and unconvincingly from metaplastic squamous epithelium. Encasement of esophagus due to primary thyroid SCC is more likely than invasion, with a fat plane between the lesion and the esophagus, which helps confirm the tumor origin from the thyroid rather than the esophagus itself [2].

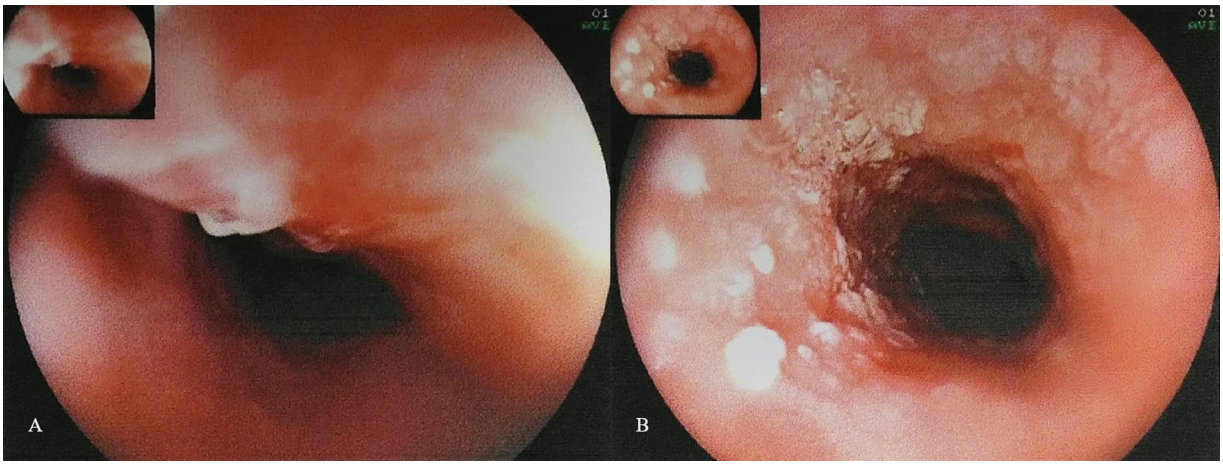
The incidence of metastatic SCC in thyroid is 2–3%; the primary sites being lungs, head and neck, and upper

**Figure 2**



CECT image of the lesion – coronal and axial views.

**Figure 3**




Endoscopic photograph of lesion at (a) upper and (b) midesophagus.

gastrointestinal tract. Although the thyroid gland has a rich vasculature, the frequency of metastasis is low [2]. The pathogenesis of secondary involvement of thyroid has multiple theories, like seeding occurring owing to rich lymphatic and blood supply of thyroid. On the contrary, another theory postulates that in spite of good vascularity, the high flow rate and velocity prevents tumor deposition. Furthermore, the high content of iodine and oxygen may hinder tumor growth unless a disease process like adenomatous change or thyroiditis alters the parenchyma, thus promoting tumor proliferation [6].

Most of the cases of thyroid malignancy present as a rapidly expanding mass in the neck, followed by symptoms of invasion and compression of nearby structures [1]. In this study, the patient presented with a huge thyroid swelling, with minimal dysphagia, mimicking a primary thyroid malignancy; unusually, the primary lesion in the esophagus was much smaller and found on endoscopic evaluation.

Secondary spread to the thyroid is more responsive to treatment than primary thyroid SCC, which has a poor prognosis irrespective of therapy [4]. Death mainly occurs owing to respiratory obstruction as a result of tracheal compression or direct infiltration [1].

It is imperative to identify the primary site of malignancy as treatment strategy is based on the location and stage of the primary lesion, and the existence of metastases [2].

Ideal treatment of primary thyroid SCC is surgery with adjuvant chemoradiation. However, some studies claim that the tumor is comparatively radioresistant with an unfavorable response to chemotherapy, leaving complete surgical removal the only chance of extending patient survival [1]. On the contrary, the overall outcome of surgical management for carcinoma of esophagus is poor, in spite of the low postoperative mortality rates. Chemoradiation before surgery (neoadjuvant therapy) or after surgery (adjuvant therapy) has been suggested to improve surgical outcomes [7].

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**Conflicts of interest**
There are no conflicts of interest.

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