

## Special Article - Thyroid Anatomy

## Neoplastic Lesions in Ectopic Thyroid

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## Editorial

Thyroid gland during embryogenesis passes from the base of the tongue to its final pre-tracheal location in the anterior part of neck. Ectopic Thyroid Tissue (ETT) may be encountered in any location on the path of migration of the thyroglossal duct from the foramen cecum on the dorsal part of tongue up to the media stinum. ETT is rare condition, with a documented incidence of 1 in 300,000. The ectopic thyroid was first described in 1869, by Hickman in a newborn [1]. According to dysembryonic theory, the aberrant or abnormal migration of primitive thyroid structures during intrauterine life is the cause of ectopic thyroid, which results from anomalous cell migration or cell differentiation [2].

Most frequently encountered, location of ETT is as a lingual thyroid; when the gland fails to descend from the starting point of descend. In 70% of the cases this may be the only thyroid tissue with no thyroid gland in the neck. On occasion sin complete descent of the gland with final high resting point may result in sublingual ETT. The location of sublingual ETT may be suprahyoid, infra hyoid or rarely at the level of the hyoid bone [3]. It can be noted that ETT may coexist with normally located thyroid gland or it can be the only recognizable thyroid tissue. ETT can be associated with similar pathological processes as normal thyroid tissue which includes: inflammation, hyperplasia, and rarely neoplastic transformation. Genetic research has revealed that the gene transcription factors TITF1 (NKX2-1), FOXE1 (TITF2) and PAX8 are necessary for thyroid morphogenesis and differentiation. Mutation in these genes is implicated in abnormal migration of the thyroid. It has also been documented in gene-targeting experiments that FOXE1 is essential for thyroid migration and that mice homozygous for FOXE1 mutations show a sublingual thyroid [4].

When we consider neoplastic lesions in ETT, the tumors reported in the ectopic locations have been papillary carcinomas, mixed follicular and papillary carcinomas or Hurthle cell tumors [5]. The diagnosis of follicular thyroid carcinoma needs evidence of vascular invasion and unequivocal capsular infiltration, while papillary carcinoma is diagnosed on the basis of nuclear features like: enlarged nuclei, nucleargrooves, intra nuclear inclusions, optically clear chromatin and psammoma bodies. The benign lesion i.e thyroid adenoma has been rarely reported. We have documented a case of follicular adenoma in a case of sublingual thyroid [6]. A rare case of clear cell type of follicular adenoma have been described in the literature [7].

It may be emphasized that, depending on location, thyroid ectopic sites are classified as: medial ETT, lateral ETT and mixed ETT.

**A) Medial-lingual thyroid:** (the most common type, accounting for 90% of all cases); – is caused by persistence of thyroglossal duct residues (which can be divided in to suprahyoid or sublingual, intrathyroid or juxtathyroidectopies); – intrathyroid. Mediastinal (true mediastinalgoitre) and endo-thoracic (heart, pericardium and diaphragm) ectopies;

**B) Lateral (lateral cervical):** Subdivided into par jugular, par carotid and submandibular;

**C) Mixed,** the unusual cases of so-called “dual ETT”, and “scattered thyroid” (multiple sites of thyroid parenchyma dispersed in the prethyroid muscles or cervical fascia, and parajugular location with no lymph nodal involvement) [8]. The thyroid neoplasm's in ETT therefore are likely to be encountered in varied sites. This poses diagnostic difficulties and challenges in therapeutic management.

In clinical practice thyroid lesions are investigated with hormonal status i.e. thyroid function tests, imaging studies like sonography, Computed Tomography (CT), Magnetic Resonance Imaging (MRI) and Fine Needle Aspiration Cytology (FNAC). However ETT with neoplastic lesion may not be suspected. Hence, it is particularly important to have ETT as one of the differential diagnoses in all cases presenting with swellings in the head and neck region. This can avoid inadvertent removal of ETT leading to significant hypothyroidism which has been documented in the literature [6]. Although thyroid scintigraphy is the best method for identifying sites of functioning thyroid tissue, it is not done as routine investigation.

The experience gained from reports of neoplastic lesions in ectopic thyroid, highlight the fact, when confronted with mass lesion in the trajectory of the thyroglossal duct from the foramen cecum to the mediastinum, one should include thyroid function tests, ultrasonography as part of pre-operative work up.

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