

# Dual ectopic thyroid in the presence of atrophic orthotopic thyroid gland in a patient with acquired hypothyroidism: Evaluation with hybrid Single-Photon Emission Computed Tomography/Computed Tomography

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## ABSTRACT

Ectopic thyroid tissue (ETT) refers to all cases in which the thyroid gland is present at a location other than its usual site. The prevalence of ETT is approximately one per 100,000 to 300,000 persons and is reported to occur in one in 4,000 to 8,000 patients with thyroid disease. Multiple ectopia of thyroid is extremely rare. Multiple ectopia in the presence of orthotopic thyroid gland is extremely rare. We report a 13-year-old boy with stunted growth and developmental delay caused due to acquired hypothyroidism. Technetium scan performed as per management protocol identified dual ectopia of thyroid. The role of hybrid Single-Photon Emission Computed Tomography/Computed Tomography (SPECT/CT) in the localization of the sites of ETT is also highlighted.

**Keywords:** Ectopic thyroid, multiple ectopia, SPECT/CT, sub-lingual thyroid, thyroglossal cyst

## INTRODUCTION

Ectopic thyroid is a developmental defect of thyroid gland that leads to presence of thyroid tissue at sites other than its normal cervical location. It is very rare to have two ectopic foci of thyroid tissue, and only a very few cases of dual ectopia have been reported in the world literature. In 70% of cases of ectopic thyroid, the normal thyroid gland is absent. It is extremely rare to have dual ectopic thyroid with a normally located thyroid gland.<sup>[1]</sup>

## CASE REPORT

A 13-year-old boy presented with stunted growth and poor school performance. A thorough clinical history revealed that initial

motor and social developments as a child were within limits. However, the boy was stunted. Local examination of the neck was unremarkable. His Thyroid-stimulating hormone (TSH) was >100 IU/ml. Thyroid antibodies was significantly elevated. His serum free T3 and free T4 were low. An ultrasonogram (USG) of the neck was performed which showed atrophic orthotopic thyroid gland.

Technetium thyroid scan [Figure 1] was performed to evaluate the functional status of the orthotopic thyroid gland. Planar image anterior view (a) and face turned to the right (b) shows 2 foci of tracer uptake in the upper part of the neck. No tracer uptake was noted in the expected location of orthotopic thyroid gland. SPECT CT showed atrophic thyroid gland without any technetium uptake (c) and localized the ectopic thyroid tissues (ETT) to the sub-hyoid location (d) and suprahyoid locations (e). The patient is being managed with thyroxine replacement.

## DISCUSSION

Thyroid gland is a derivative of foregut and its original position is marked by the foramen cecum at the junction of anterior two-thirds and posterior one-third of the tongue. An evagination

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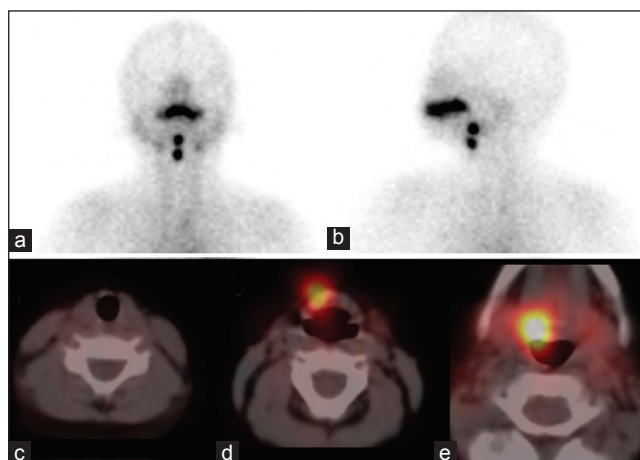


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**Figure 1:** Images were acquired 20 minutes after intravenous injection of  $\text{NaTcO}_4$ . Planar image anterior view (a) and face turned to the right (b) show 2 foci of tracer uptake in the upper part of the neck. No tracer uptake was noted in the expected location of orthotopic thyroid gland. SPECT CT showed atrophic thyroid gland without any technetium uptake (c) and localized the ectopic thyroid tissues to the sub-hyoid location (d) and suprahyoid locations (e)

appears between the first and second pharyngeal pouches at about 4 weeks of gestational age. This evagination forms a tube, descends inferiorly and anteriorly to pass anterior to the hyoid bone descends and forms the lateral lobes of thyroid. The thyroglossal duct marks the pathway from the pharynx to the anterior neck.<sup>[2]</sup> Simultaneous presence of multiple ETT is highly unusual.<sup>[3]</sup> Most ectopic thyroid glands are asymptomatic. Ectopic thyroid tissue may be present in variety of locations: Sublingual region, high cervical, mediastinal, or intracardiac locations. Ninety percent of the ectopic thyroid glands are noted in the sublingual region. The next common site of ectopic thyroid is high cervical location.<sup>[3]</sup> Very few cases of multiple thyroid ectopia have been published.<sup>[1-7]</sup> Hybrid SPECT/CT is useful in cases of multiple ectopia of thyroid gland for accurate localization.<sup>[8,9]</sup>

Autoimmunity is one of the causes of acquired hypothyroidism. Chronic inflammation due to auto-antibodies gradually

destroys the thyroid follicles and lead to hypothyroidism. These patients can be adequately treated with thyroid hormone replacement.

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