

# A case of dual ectopy thyroid along the thyroglossal tract demonstrated on 99mTc-Pertechnate hybrid single photon emission computed tomography/computed tomography

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## ABSTRACT

Ectopic thyroid tissue (ETT) refers to the presence of thyroid tissue in locations other than the normal anterior neck region between the second and fourth tracheal cartilages. Multiple ectopia of the thyroid is extremely rare. Here we report a case of 10-year-old girl with anterior midline neck swelling and hypothyroidism with dual ectopia of thyroid gland without orthotopic thyroid gland. Planar 99 m-technetium pertechnate scan identified ETT corresponding to the palpable neck swelling. Single photon emission computed tomography/computed tomography (SPECT/CT) demonstrated ETT in two locations, one corresponding to the palpable mass and another in the in the sublingual location. This case thus demonstrates the important role of hybrid SPECT/CT in the identification of dual ectopia along the thyroglossal tract.

**Keywords:** Dual ectopy, ectopic thyroid, single photon emission computed tomography/computed tomography, thyroglossal tract

## INTRODUCTION

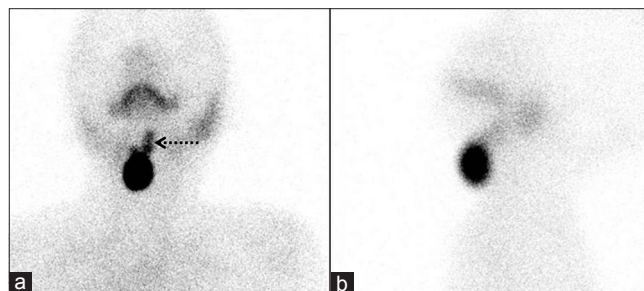
Ectopic thyroid is a developmental anomaly of the thyroid gland in which thyroid tissue is present at sites other than its normal location in the neck.<sup>[1]</sup> It is usually uncommon to have multiple locations of ectopic thyroid tissue (ETT) present simultaneously.<sup>[2]</sup> Prevalence of thyroid ectopia is approximately 1/100,000-300,000 people. Though ETT can manifest at any age it is mostly noted at adolescence. About 65-80% of cases manifesting with ETT are females. Lingual thyroid is the most common ectopic location for the thyroid accounting for 90% of cases. It is very rare to have two ectopic foci of thyroid tissue simultaneously and only a very few cases of dual ectopy have been reported in the world literature. We report a case of dual thyroid ectopy, wherein 99 m-technetium (<sup>99m</sup>Tc) pertechnate hybrid single-photon emission computed tomography/computed tomography (SPECT/CT) played an

important role in demonstrating multiple ectopia of the thyroid gland.<sup>[3-6]</sup>

## CASE REPORT

The present case report is about a 10-year-old girl who presented with anterior midline neck swelling since 6 months, which was gradually increasing in size. On evaluation, she was found to have hypothyroidism without evidence of growth retardation. On local examination, a swelling 2 × 2 cm size, cystic, well-defined with a

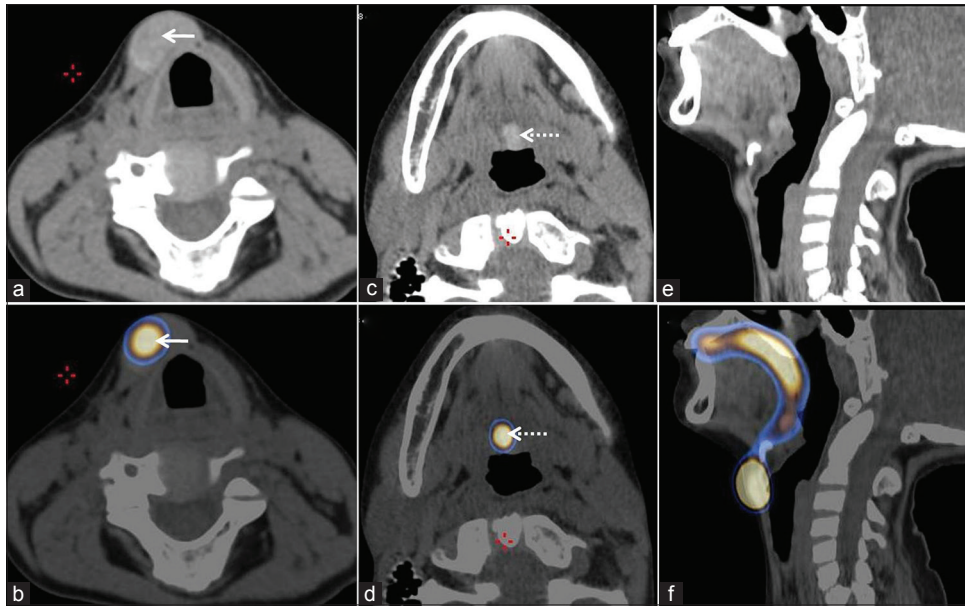
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**Figure 1:** 99m-technetium-pertechnate thyroid scan anterior (a) and lateral (b) view revealing a midline focus of tracer uptake corresponding to the palpable neck swelling suggestive of ectopic functioning thyroid tissue. No tracer uptake was noted in the region of the thyroid bed. In addition, a small linear streak of tracer activity was seen to extend superiorly (a-arrow)

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**Figure 2:** Computed tomography (CT) and hybrid single photon emission computed tomography/CT images of the neck revealing ectopic thyroid tissue on the right side of the thyroid cartilage, in the sub-hyoid location (a and b; arrow) and in the midline floor of the mouth (c and d; broken arrow). Furthermore, tracer was seen to extend along a tract which was well appreciated in sagittal images (e and f)

smooth surface neither compressible nor reducible was palpated just below the hyoid bone, which was moving up with protrusion of tongue and with deglutition, but was not trans-illuminant. Serum biochemistry revealed T3 = 86 ng/dL (normal, 70-200 ng/dL), T4 = 4.3 µg/dL (normal, 4.5-12.5 µg/dL) and thyroid-stimulating hormone level of 27 µIU/mL (normal, 0.5-4.7 µIU/mL). With a provisional diagnosis of sub-hyoid thyroglossal cyst, patient was referred for a technetium thyroid scan to rule out functioning thyroid tissue in the cyst.  $^{99m}\text{Tc}$ -pertechnetate thyroid scan revealed a midline focus of tracer uptake corresponding to the palpable neck swelling suggestive of ectopic functioning thyroid tissue. No tracer uptake was noted in the region of the thyroid bed. In addition, a small linear streak of tracer activity was seen to extend superiorly [Figure 1] from the ETT in the neck. SPECT/CT of the neck revealed ETT on the right side of the thyroid cartilage, in the sub-hyoid location; in addition to this another ectopic rest of thyroid tissue was noted in the midline floor of the mouth. Tracer was also seen to extend along a tract, which was well-appreciated on sagittal section [Figure 2]. Patient was started on thyroid supplementation therapy.

## DISCUSSION

The thyroid gland develops from the foregut. It descends to its normal cervical position by a circuitous route. Its original position is marked by the foramen caecum at the junction of anterior two-thirds and posterior one-third of the tongue. An evagination appears between the first and second pharyngeal pouch at 4 weeks of gestational age which lengthens to form a tube and descends inferiorly and anteriorly to pass anterior to the hyoid bone and forms the lateral lobes of the thyroid. The pathway from the pharynx to the anterior neck is marked by the thyroglossal duct.<sup>[7]</sup> It is very unusual for multiple ectopic thyroids rests to be present simultaneously. Very few cases of multiple

thyroid ectopia have been published.<sup>[8-10]</sup> Hybrid SPECT/CT may be useful in accurate localization of ectopic thyroid rests and to differentiate from other causes of midline cervical masses.

In our case report, planar thyroid scintigraphy showed single ectopic thyroid at the sub-hyoid location but on hybrid SPECT/CT, we found dual ectopia along the thyroglossal tract. In evaluating thyroid ectopy, SPECT/CT may thus have an incremental value over planer scintigraphy for accurate localization of ectopic thyroid rests which may influence patient management.

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