

## Retrosternal Ectopic Thyroid Mimicking Esophagus in Tc-99m Pertechnetate Thyroid Scan

### Abstract

Abnormal Pertechnetate distribution can occur due to many reasons such as retrosternal extension of ectopic thyroid gland, ectopic functioning thyroid gland, physiological uptake in esophagus, teratoma having functioning thyroid tissue component, metastatic lymph nodes and sequestered thyroid nodule. We present a case of thyrotoxicosis with hyper functioning thyroid gland and two abnormal foci of uptake in the mediastinum in a linear fashion that mimicked esophageal activity. These foci persisted even after consuming water. SPECT localised these foci in retrosternal and likely to be ectopic functioning thyroid. Retrosternal ectopic thyroid tissue may not usually be detected on Tc-99m scan due to attenuation of low-energy gamma rays by sternal bone. However, hyperfunctioning tissue enabled visualization of the retrosternal ectopic thyroid.

**Keywords:** Ectopic thyroid tissue, mediastinal ectopic, thyroid scan

Abnormal pertechnetate distribution in mediastinum can occur due to reasons such as retrosternal extension of ectopic thyroid gland, physiological uptake in esophagus, ectopic functioning thyroid gland, teratoma having thyroid tissue component, metastatic lymph nodes, and sequestered thyroid nodule. Ectopic thyroid tissue can be found anywhere along the thyroglossal tract.<sup>[1]</sup> The thyroid gland originates from the thyroid primordium seen at the junction of the 1<sup>st</sup> and 2<sup>nd</sup> pharyngeal pouch. It descends from the foramen cecum, penetrates the mesoderm to lie anterior to the pharyngeal gut, and then it descends caudally. Thyroid primordium usually maintains a close contact with the bulbus cordis. During the unfolding of the embryo, the bulbus cordis will become the thoracic structure. Due to its close proximity with the thyroid primordium, it can drag it into the mediastinum.<sup>[2]</sup>

Physiological uptake in esophagus can be differentiated from other causes by acquiring another image after the patient consumes water. Gamma rays from Tc-99m pertechnetate concentrating in functioning ectopic thyroid tissue may be attenuated by the overlying bones. However, if significant concentration of the tracer occurs in the ectopic thyroid tissue such as in a hyperfunctioning gland, it is likely to be visualized.

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In a thyroid scan of a patient with thyrotoxicosis, two foci of uptake were noted in the mediastinum distributed in a vertical fashion as seen in Figure 1. It mimicked esophageal activity but did not show any change even after the patient drank water. The lower border of the thyroid gland was visualized on inspection and palpation of neck and hence less likely to be retrosternal extension of goiter. Single-photon emission computed tomography images [Figure 2] identified two focal areas of uptake in the retrosternal area, thus ruling out esophageal distribution. The ectopic tissue was in discontinuity with the thyroid gland but was mimicking esophageal activity on planar images. The confusion with esophageal activity occurred because of the linear distribution of the ectopic thyroid tissue. Retrosternal ectopic thyroid tissue may not usually be detected on Tc-99m scan due to attenuation of low-energy gamma rays by sternal bone. However, hyperfunctioning tissue enables visualization of the retrosternal ectopic thyroid. The findings may be of significance if a thyroidectomy is planned because there is a possibility of recurrent disease in mediastinum.

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### Conflicts of interest

There are no conflicts of interest.

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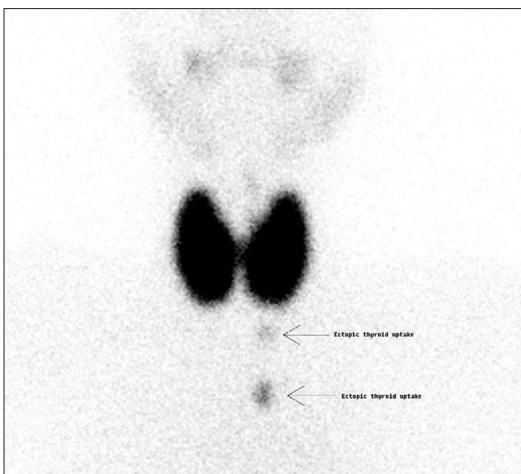


Figure 1: Tc-99m pertechnetate thyroid scan showing increased tracer uptake in the thyroid gland and two separate focal tracer uptakes are noted below the thyroid gland slightly left to the midline

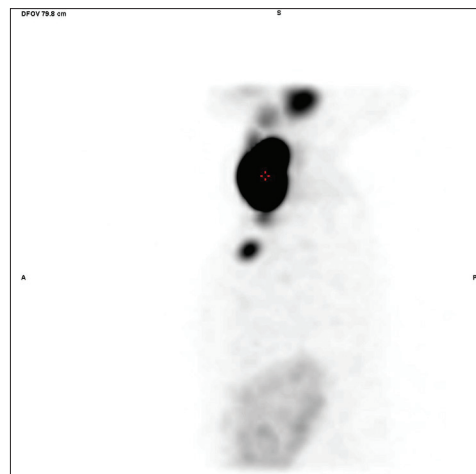


Figure 2: Single-photon emission computed tomography image shows that the uptake is actually seen anteriorly in the superior mediastinal region

## References

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