

Dual ectopy thyroid - a case report

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Section: Head & neck imaging

Area of Interest: Ear / Nose / Throat

Procedure: Screening

Procedure: Normal variants

Imaging Technique: Ultrasound

Imaging Technique: Ultrasound-Colour Doppler

Imaging Technique: CT-Angiography

Imaging Technique: CT

Imaging Technique: CT-High Resolution

Special Focus: Tissue characterisation Congenital

Case Type: Clinical Cases

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Patient: 7 years, female

Clinical History:

A 7-year-old girl presented to the Department of Paediatrics with a history of difficulty in swallowing and gradually increasing mid-line neck swelling. On examination, two more similar swellings were noted which moved with deglutition and protrusion of the tongue. Swellings were firm in consistency and not hot on palpation.

Imaging Findings:

Ultrasonography (USG) and Contrast enhanced Computed Tomography (CE-CT) show a normal right lobe of thyroid (Fig. 1) with empty left thyroid bed (Figs. 2, 3).

USG: Neck swellings were uniformly hyperechoic compared with sternomastoid; with the same echogenicity as thyroid (Figs. 4, 6, 8), showing normal vascularity on Doppler (Figs. 5, 7, 9).

Unenhanced Computed Tomography (CT): The left thyroid lobe is not seen in the expected position. Well-defined focal small hyperdense mass in the left sub-lingual region (Fig. 10). Second well-defined similar mass in the mid-line anterior to the oropharynx at the base of the tongue (Fig. 12). Third lesion noted in the infra-hyoid, pre-laryngeal region (Fig. 14).

CE-CT: ectopic thyroid tissues appear as well-circumscribed homogeneous moderately enhancing masses (Figs. 11, 13, 15)

Sagittal (Fig. 16) and coronal (Figs. 17, 18) reformatted images confirm above specified anatomical location of respective masses.

Conclusion: Orthotopic right lobe of thyroid with three foci of ectopic thyroid tissue, suggestive of a rare phenomenon called "dual ectopy".

Discussion:

Ectopic thyroid is tissue not located antero-laterally to the second to fourth tracheal cartilages [1]. In our case the right lobe appears normal (Fig. 1), with an empty left thyroid fossa (Figs. 2, 3).

The thyroid anlage appears in the embryo as a midline structure at the foramen caecum of the tongue. From here, it descends in the midline to reach its final position in the mid-neck [2, 3].

Ectopic thyroid tissue can be found within thyroglossal duct cysts, or anywhere along the course of the thyroglossal

duct. Common sites include: foramen caecum (near embryological origin), base of the tongue, anterior tongue, submandibular region, larynx, intra-tracheal, intra-thoracic (mediastinum, heart, lung). [5].

Typically, ectopic thyroid presents as a painless midline neck swelling and can cause dysphagia, inspiratory dyspnoea and stomatolalia due to mass effect. It may coexist with eutopic thyroid or may be the only functioning tissue (in which case it must be preserved) [4].

Any pathology of the thyroid gland can involve ectopic tissue, including benign and malignant conditions.

Indirect clues for confirmation are: separate blood supply of the ectopic gland from extra-cervical vessels, no prior history of malignancy, and normal or absent orthotopic thyroid with no history of surgery [4].

Dual ectopy is a very uncommon condition in which two or more ectopic foci are present simultaneously.

In our case, the first mass is left sublingual (Figs. 4, 5, 10, 11), the second is mid-line, anterior to oropharynx (Figs. 6, 7, 12, 13), and the third is infra-hyoid, pre-laryngeal (Figs. 8, 9, 14, 15) in location. Sagittal (Fig.16) and coronal (Figs. 17, 18) reformatted images confirm above findings.

Sonography shows all three ectopic swellings have the same echogenicity as thyroid (Figs. 4, 6, 8), with normal vascularity on Doppler (Figs. 5, 7, 9).

CT shows mildly increased attenuation (around 110HU) due to intrinsic iodine content (Figs. 10, 12, 14) and homogeneous moderate contrast enhancement (Figs. 11, 13, 15) showing around 150HU attenuation.

Imaging delineates the extension and location of ectopic thyroid tissue, thus contributing to a better pre-surgical evaluation of these cases [5].

Other than lacking the characteristic bilobate shape, ectopic thyroid tissue appears identical to orthotopic thyroid tissue [1].

Asymptomatic euthyroid patients should be followed up.

Patients with high blood TSH levels and swelling should get replacement therapy, which can produce a slow reduction in size.

Obstructive symptoms due to mass effect require surgical intervention [4].

Differential Diagnosis List: Dual ectopic thyroid with orthotopic right lobe, Thyroglossal duct cysts without thyroid tissue, Lymphangioma, Minor salivary gland tumours, Midline branchial cysts, Epidermal and sebaceous cysts, Haemangioma, Adenoma, Fibroma, Lipoma

Final Diagnosis: Dual ectopic thyroid with orthotopic right lobe

References:

Zander DA, Smoker WR (2014) Imaging of ectopic thyroid tissue and thyroglossal duct cysts. *Radiographics* 2014;34:37-50 (PMID: [24428281](#))

Di Benedetto V. (1997) Ectopic thyroid gland in the submandibular region simulating a thyroglossal duct cyst: a case report. *Journal of Pediatric Surgery* 32 1745–1746. (doi:10.1016/S0022-3468(97)90522-4) (PMID: [9434015](#))

Babazade F, Mortazavi H, Jalalian H & Shahvali E. (2009) Thyroid tissue as a submandibular mass: a case report. *Journal of Oral Science*. *Journal of Oral Science* 2009 : 51 655–657. (doi:10.2334/josnurd.51.655) (PMID: [20032623](#))

George Noussios, Panagiotis Anagnostis, Dimitrios G Goulis, Dimitrios Lappas (2011) Ectopic thyroid tissue: anatomical, clinical, and surgical implications of a rare entity. *European Journal of Endocrinology* *European Journal of Endocrinology* (2011) 165 375–382 (PMID: [21715415](#))

Canan Altay, Nezahat Erdo?an, ?ebnem Karasu, Engin Uluç, Ay?egül Sars?lmaz, Berna Mete (2012) CT and MRI findings of developmental abnormalities and ectopia varieties of the thyroid gland. *Turkish Society of Radiology Diagn Interv Radiol* 2012; 18:335–343 (PMID: [22328282](#))

Figure 1

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Description: Normal right lobe of thyroid **Origin:** Bhanupriya Singh, Department Of Radiology, VIMS, Ahmednagar, India.

Figure 2

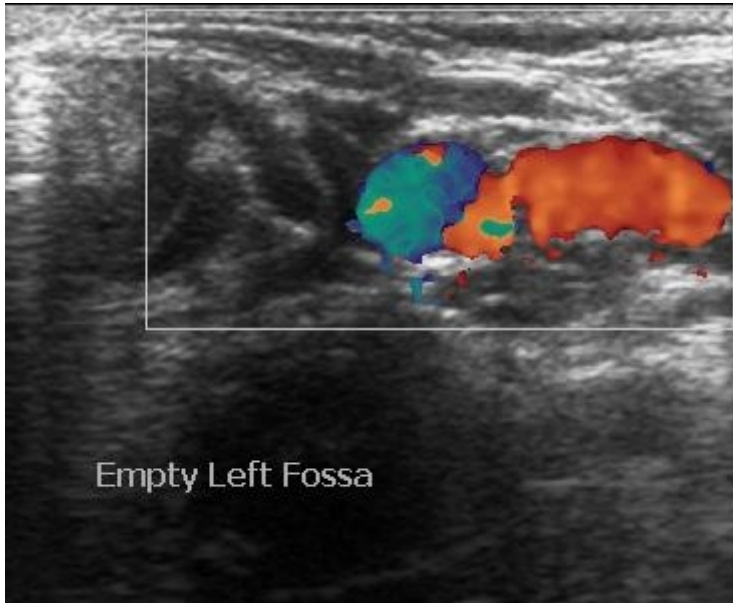
a



Description: Empty left thyroid fossa **Origin:** Bhanupriya Singh, Department of Radiology, VIMS, Ahmednagar, Maharashtra

Figure 3

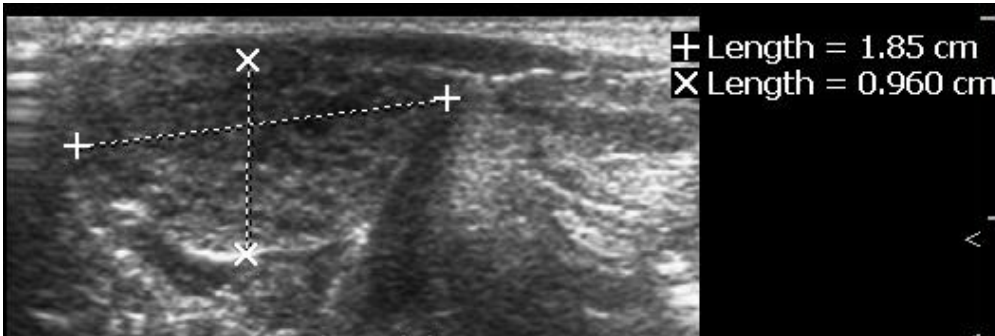
a



Description: Empty left thyroid fossa **Origin:** Bhanupriya Singh, Department of Radiology, VIMS, Ahmednagar, India

Figure 4

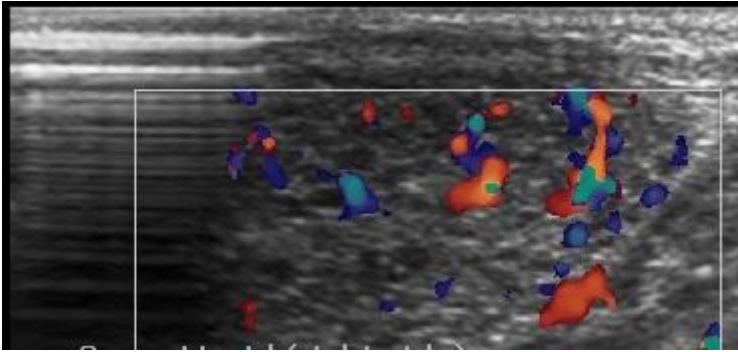
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Description: Well-defined hyper-echoic focus in left sub-lingual region. **Origin:** Bhanupriya Singh, Dept Of Radiology, VIMS, Ahmednagar, India

Figure 5

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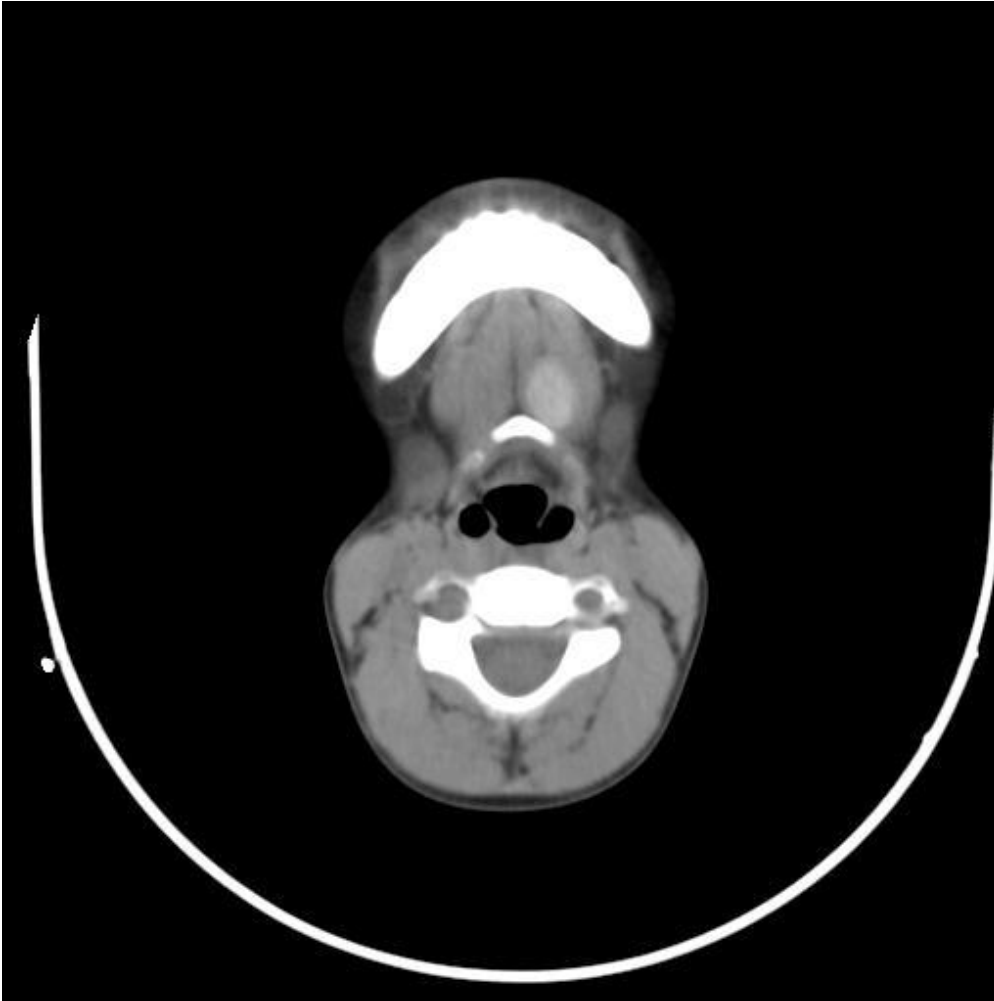


Description: Well-defined hyper-echoic focus in left sub-lingual region, showing normal vascularity.

Origin: Bhanupriya Singh, Dept of Radiology, VIMS, Ahmednagar, India

Figure 6

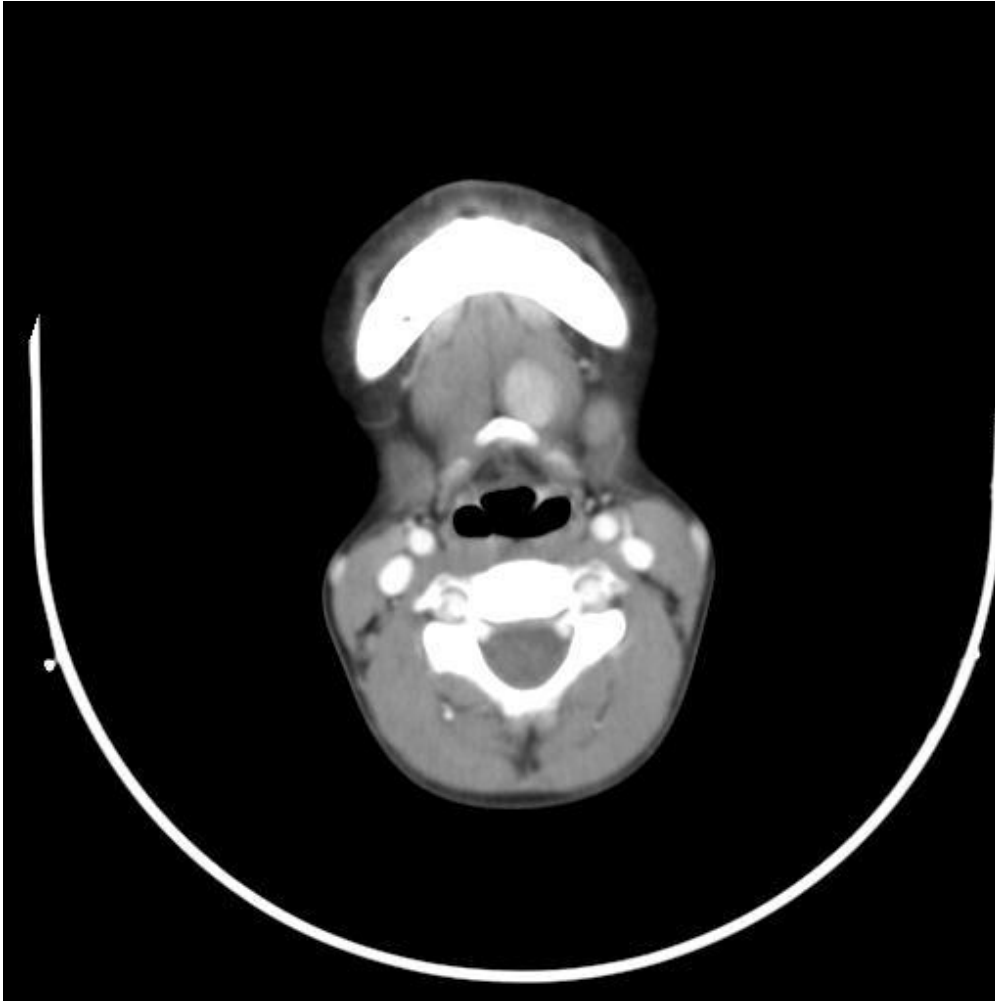
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Description: Well-defined hyperdense lesion seen in the left sublingual region (due to intrinsic iodine content in thyroid tissue), showing plain computed tomography 123HU (Hounsfield unit). **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 7

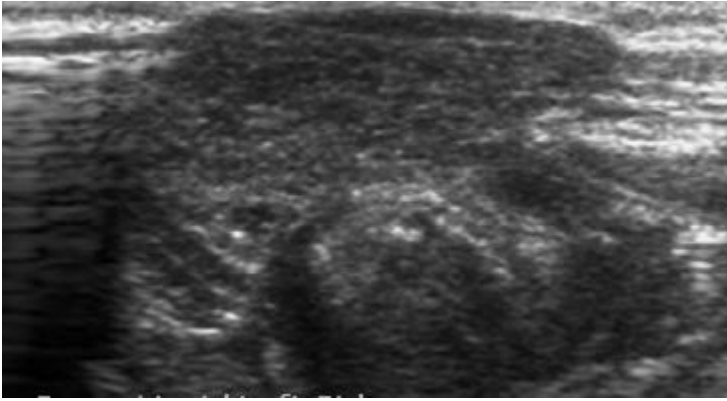
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Description: Well-defined hyperdense lesion in left sublingual region, showing 156HU (moderate enhancement). **Origin:** Bhanupriya Singh, Dept of Radiology, VIMS, Ahmednagar, India

Figure 8

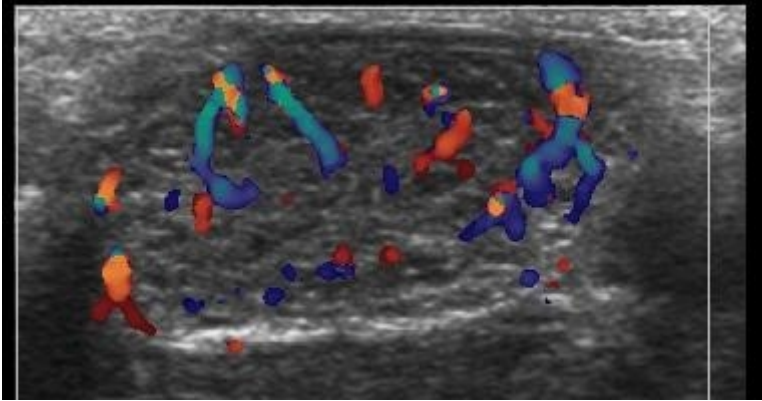
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Description: Ultrasonography midline neck showing well-defined echogenic mass. **Origin:** Bhanupriya Singh, Dept of Radiology, VIMS, Ahmednagar, India

Figure 9

a

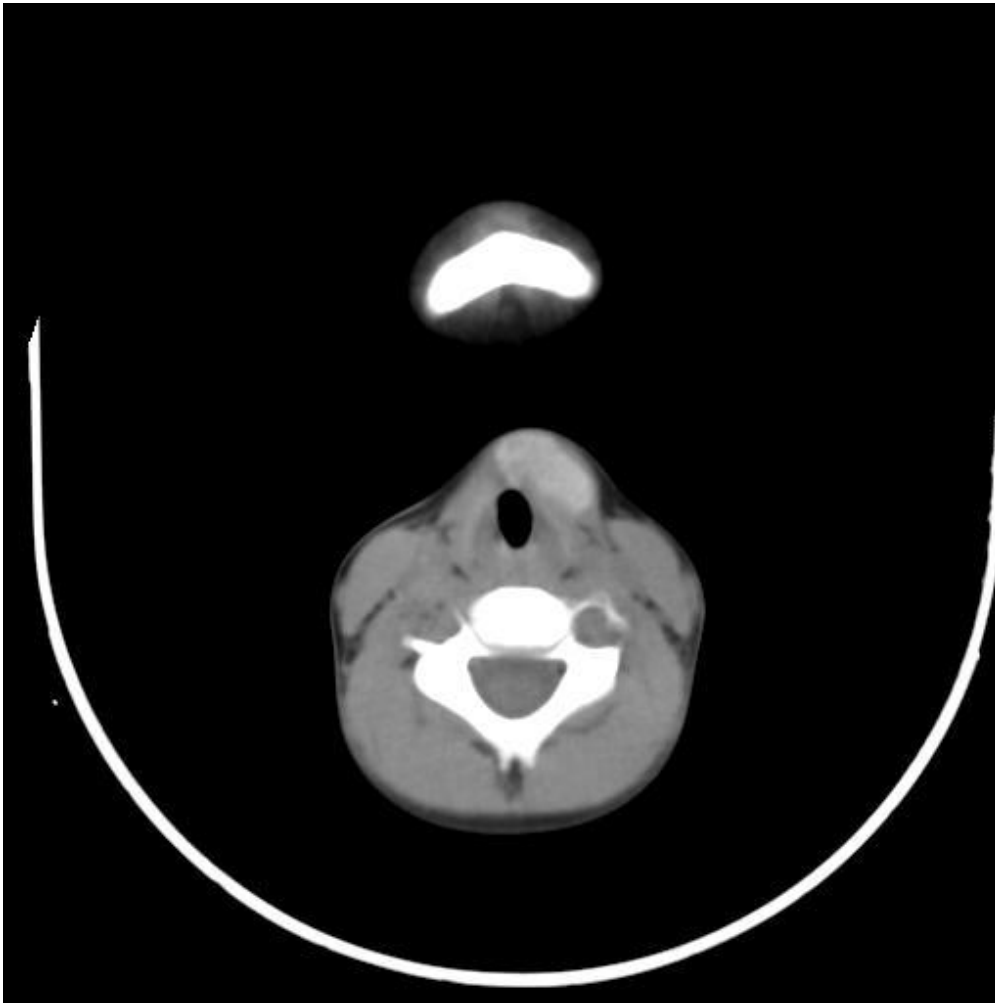


Description: Ultrasonography midline neck demonstrates echogenic mass, showing normal vascularity.

Origin: Bhanupriya S, Dept of Radiology, VIMS, Ahmednagar, India

Figure 10

a



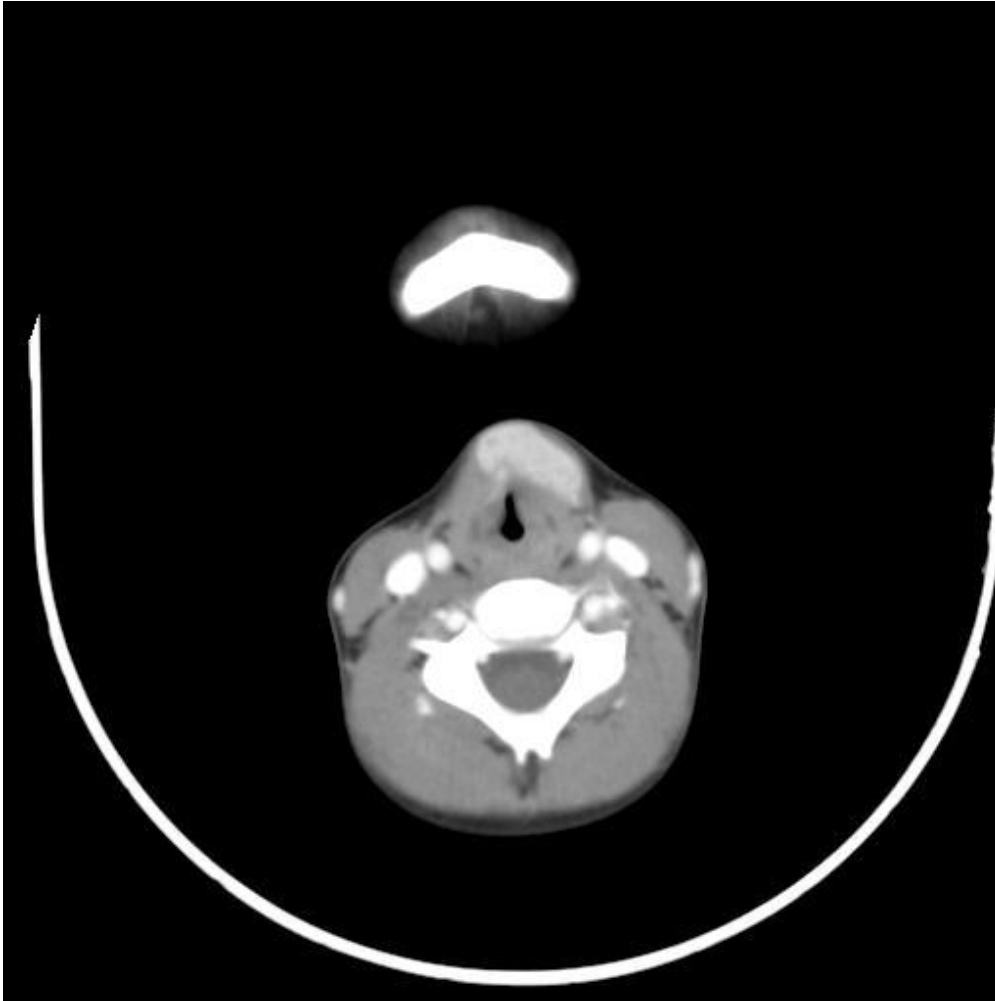
Description: Well-defined midline neck swelling; anterior to oropharynx.

Hyperdense on plain CT (due to intrinsic iodine content in thyroid tissue), showing 105HU. **Origin:**

Bhanupriya Singh, Dept of Radiology, VIMS, Ahmednagar, India.

Figure 11

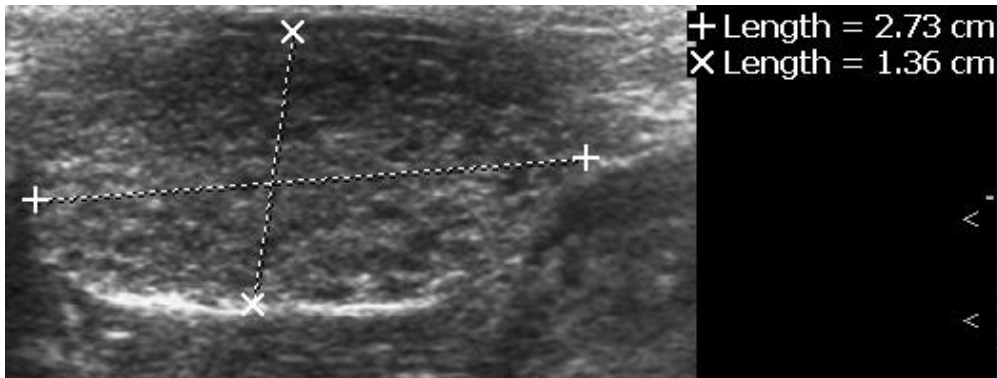
a



Description: Well-defined hyperdense mid-line neck swelling (anterior to oropharynx) showing 137HU (moderate enhancement). **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 12

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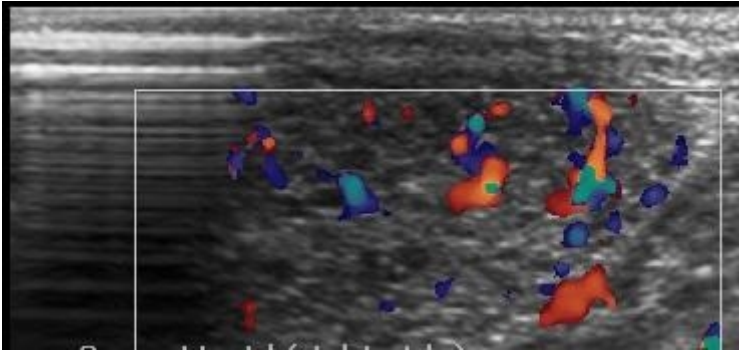


Description: Infra-hyoid, pre-laryngeal region ultrasonography showing well-defined echogenic mass.

Origin: Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 13

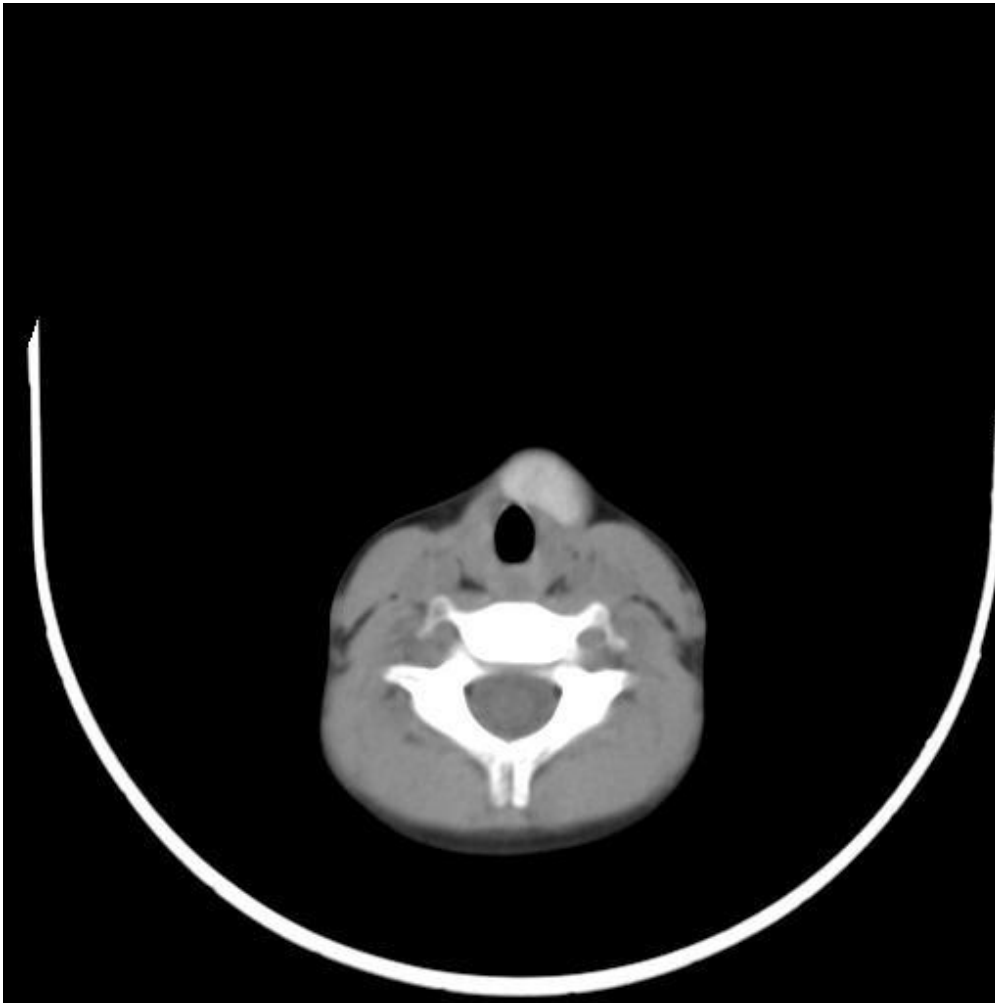
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Description: Well-defined, echogenic mass in infra-hyoid, pre-laryngeal region; showing normal vascularity on colour Doppler. **Origin:** Bhanupriya Singh, Dept. of radiology, VIMS, Ahmednagar, India

Figure 14

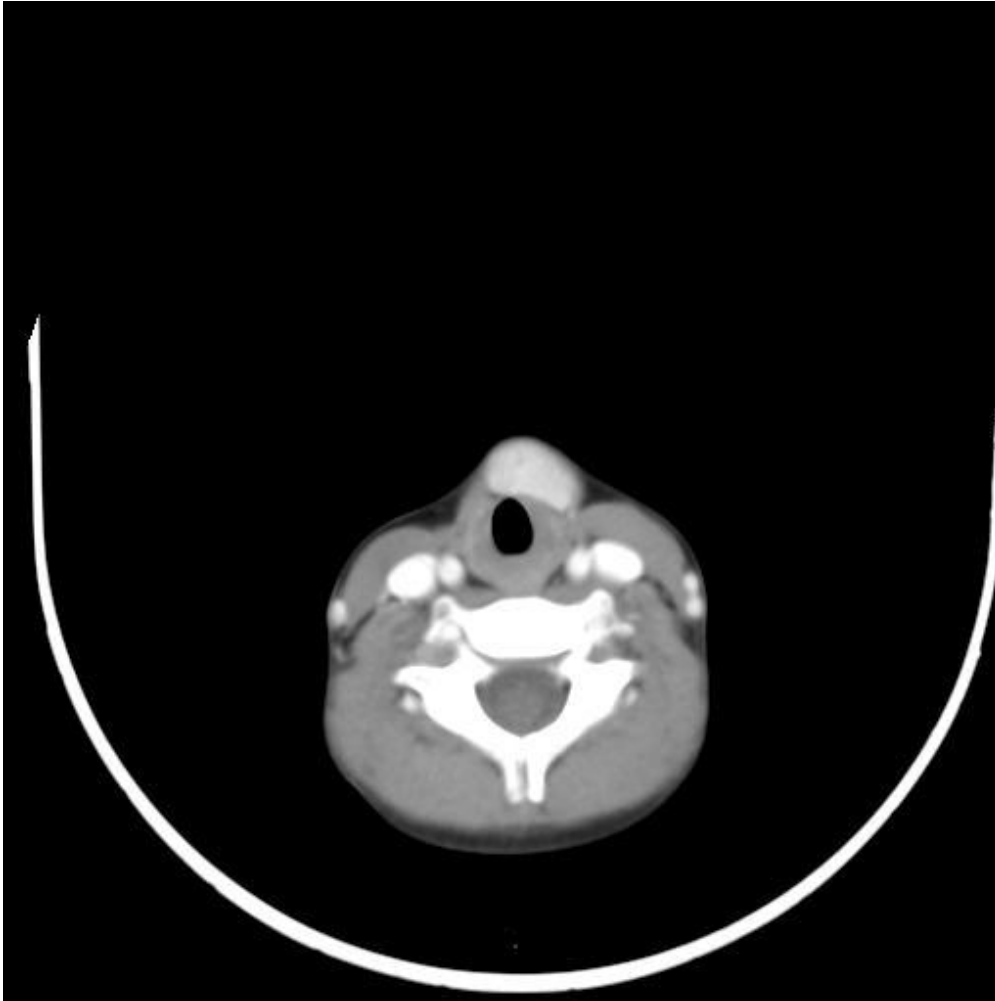
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Description: Well-defined infra-hyoid, pre-laryngeal neck swelling is hyperdense on plain CT (due to intrinsic iodine content in thyroid tissue), showing 116HU. **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 15

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Description: Well defined infra-hyoid, pre-laryngeal mass; showing 157HU(moderate contrast enhancement) **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 16

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Description: Three well-defined hyperdense masses at sub-lingual level, anterior to oropharynx and infra-hyoid pre-laryngeal level; showing moderate contrast enhancement. **Origin:** Bhanupriya Singh, Dept. Of Radiology, VIMS, Ahmednagar, India

Figure 17

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Description: Well defined hyperdense mass anterior to oropharynx , showing moderate contrast enhancement. **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India

Figure 18

a



Description: Two well-defined hyperdense masses noted at sublingual level and infra-hyoid prelaryngeal level; showing moderate contrast enhancement. **Origin:** Bhanupriya Singh, Dept. of Radiology, VIMS, Ahmednagar, India