Imaging of the Lingual Thyroid: A Case Report and Management

Ravinder Kumar, Abhishek Bhargava, Gagan Jaiswal

ABSTRACT

Lingual thyroid is a rare developmental abnormality characterized by the failure of the thyroid gland, or remnants, to descend from anywhere along its embryologic path of origin at the foramen cecum to its normal eutopic pretracheal position. Awareness of the anatomic course of the embryologic thyroid primordium, typical and atypical locations of ectopic thyroid tissue may aid in diagnosis. The reported incidence of lingual thyroid is 1 in 100,000, and it is more common in females, with a female to male ratio ranging between 3:1 and 7:1. Lingual thyroid located at the base of tongue often present with hypothyroidism, usually asymptomatic but may cause dysphonia, dysphagia, upper airway obstruction, and hemorrhage. In the current case report, we present the imaging characteristics of lingual thyroid occurring in a 12-year-old female patient. Partial endoscopic removal of lingual thyroid was performed, followed by substitutive exogenous thyroid hormone therapy. The purpose of this study is to discuss the radiological characteristics and therapeutic issues in the management of lingual thyroid.

Keywords: Dysphagia, Dyspnea, Imaging, Lingual thyroid.

CASE REPORT

A 12-year-old female presented with a mass at the dorsal aspect of posterior tongue, which had been present for many years with the sensation of a foreign body. The patient also referred to having dysphagia and dyspnea, especially at night. She was normotensive and nondiabetic. She was a known case of hypothyroidism. Upon examination, the patient presented a solid, nontender, sessile, hyperemic pink, spherical mass measuring 4 cm in diameter, covered with intact mucosa, located at the base of the tongue, occupying the oropharynx and obstructing the visualization of the larynx. Examination of the neck revealed no cervical lymphadenopathy and no palpable thyroid gland in the expected cervical location. The serum thyroid profile of the patient showed normal FT3 and FT4 (0.84 ng/mL and 6.56 ng/mL respectively) and elevated thyroid stimulating hormone (TSH) levels (90 ug/mL). Cervical ultrasonography and computed tomography (CT) examination suggested a well-defined and heterogeneous/hypoechogeneous mass, measuring 21 × 19 × 23 mm in size with distinct margins restricted to the base of the tongue and absence of the thyroid gland in the normal eutopic pretracheal position. In Figures 1 and 2, CT examination revealed aberrant thyroid tissue as a high density mass in the region of the tongue base, and CT scan with intravenous contrast showed homogenous contrast enhancement of the aberrant mass. A thyroid scan with technetium Tc-99m sodium was performed showing a marked midline focal area of isotope uptake in the region of tongue base, thus representing a lingual thyroid. There was no thyroid uptake in the neck.
Partial endoscopic removal of lingual thyroid was performed using standard micro-laryngoscopic surgical approach using a bivalve Weerda-type laryngoscope and a Zeiss microscope. The removal of prominent part of thyroid gland achieved sufficient airway space. Postoperative histopathological examination further confirmed ectopic thyroid tissue. Surgery and postoperative recovery was uneventful. By the 6th postoperative day, soft oral feeding was started and the patient was discharged. Substitutive hormone therapy was commenced in order to maintain the euthyroid state. Since at a 6-month follow-up control, postoperative imaging findings showed no evidence of disease with normal lingual mucosa, regular follow-up was advised.

**DISCUSSION**

Ectopic thyroid gland is a rare embryological aberra-
tion resulting from incomplete descent of the thyroi-
d gland from the foramen cecum to its original position in
pretracheal region in the lower neck.\(^1\) Lingual thyroid is
defined as the presence of thyroid tissue in the midline at
the base of the tongue anywhere between the circumval-
late papillae and the epiglottis. Previous studies reported
that 33 to 62% of all patients with ectopic thyroid showed
hypothyroidism with increased levels of TSH.\(^3,8\) Imaging
technics, such as thyroid scan with Tc-99m or iodine-123 or
iodine-131, CT and magnetic resonance imaging are
frequently used for the exploration of a lingual thyroid,
topographic diagnosis and confirm the presence or
absence of orthotopic thyroid gland. Due to the rarity
of this anatomical and clinical entity, there is no consensus
about the optimal therapeutic strategy. Most lingual thy-
roids are asymptomatic and euthyroid and requires no
therapy, except for the regular follow-up. Patients with
mild symptoms and hypothyroidism, can be treated suc-
cessfully by levothyroxine replacement therapy (LT4),
leading to partial involution of lingual thyroid volume.\(^9\)
Ablative radiiodine therapy (I-131) is an alternative
approach recommended in geriatric patients or those who
are deemed unfit for surgery. This treatment should be
avoided in children and young adults as thyroid tissue is
often hypoactive and the systemic doses of radiiodine
required are generally high. As in our case, the high
doses required have potentially deleterious effects on
the gonads or other organs.\(^10\) Literature search showed
surgical treatment of lingual thyroid in the neck depends
on the parameters, such as patient’s age, size of the lesion,
severity of local symptoms (oropharyngeal obstruction,
dysphonia, and dysphagia), associated complications
(hemorrhage, ulceration, malignancy, or cystic degenera-
tion), and functional thyroid status.\(^9,11,12\) Several surgical
approaches for lingual thyroid have been discussed in
the literature, including surgical resection of the mass
with external approaches, such as transoral ablation of
the mass and the transhyoid, suprathyroid and lateral
pharyngotomy. The former is usually preferred for small
masses and successful outcomes may be achieved by
using laser diiodine, monopolar coagulation, or the CO\(_2\)
laser. Soft diet is usually tolerated sooner than in other

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**Fig. 1:** Lingual thyroid in a 12-year-old female child with a history of dysphagia and dyspnea. Axial contrast-enhanced CT examination of neck suggests well-defined, sharply enhancing, homogenous, high density mass in the region of tongue. The posterior median sublingual mass measures 21 × 19 × 23 mm with absence of the thyroid gland in the normal eutopic pretracheal position.

**Fig. 2:** Sagittal contrast-enhanced CT image of the same 12-year-old female child shows aberrant thyroid tissue in the base of the tongue that obscures the epiglottic vallecula and displaces the epiglottis, causing narrowing of oropharynx and mild stenosis of larynx.
external approaches. Also, it avoids injury to deep neck structures; thus, possible complications, such as lingual nerve injury, deep cervical infections, fistula formation, and visible scar, are avoided.\textsuperscript{13} The latter approaches with temporary preoperative tracheotomy can probably provide better control of bleeding and are recommended for larger masses.\textsuperscript{11,12} In case of large lesions, younger patients or lesions deeply located in the caudal part of the base of the tongue, total thyroidectionomy is recommended because of risk of malignant transformation.\textsuperscript{14} However, in our opinion, transplantation of the thyroid tissue is not necessary, substitutive hormone replacement therapy with regular monitoring could be the most appropriate choice.

**CONCLUSION**

Findings in this case emphasize the rarity of the lesion and the significance of detailed clinical, radiological, and therapeutic analysis. Our child was managed with partial endoscopic removal of lingual thyroid, followed by substitutive exogenous thyroid hormone therapy instead of radiiodine ablation. The clinician should take into account the potential of this rare entity in any child's hypothyroidism and differentiate it from other masses in the neck and distant sites.

**REFERENCES**


