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Diagnosis and Management of Lingual Thyroid: A Concise Clinical Review

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Abstract

The lingual thyroid is the most common form of ectopic thyroid tissue, resulting from failed descent of the thyroid primordium to the neck. It may be asymptomatic or cause local obstructive, hemorrhagic, or endocrine problems relevant to dental practice. This review summarizes the clinical presentation, diagnostic pathways, and management options with evidence from recent literature. The key diagnostic steps are careful oropharyngeal inspection, thyroid function tests, ultrasound of the neck to document the absence of an orthotopic gland, and radionuclide imaging, preferably hybrid SPECT/CT or planar scintigraphy, to confirm functional ectopic tissue and anatomy. Medical (thyroxine) suppression is the first-line treatment for small, symptomatic lesions and hypothyroidism. Surgery (transoral, transhyoid, or transoral robotic approaches) is indicated for airway compromise, bleeding, suspicion of malignancy, or failed conservative therapy. Radioactive iodine ablation is an option for selected, non-surgical patients. The risk of malignancy is low, but documented, and multidisciplinary planning is required. Dentists should recognize lingual masses and refer to an endocrine/imaging workup before biopsy or excision. Most cases are managed conservatively with endocrine follow-up, while surgery or radioiodine is reserved for selected indications.

Keywords: ectopic thyroid, lingual thyroid, thyroid gland, oral lesion, tongue swelling, oropharyngeal mass

Introduction

The lingual thyroid represents ectopic thyroid tissue at the base of the tongue (foramen cecum–vallecula region) and accounts for the majority of clinically recognized ectopic thyroids. Its estimated prevalence is low (classically ~1:100 000), with a strong female predominance; presentation ranges from incidental asymptomatic masses to dysphagia, dysphonia, bleeding or obstructive sleep symptoms, and hypothyroidism when orthotopic tissue is absent [1-3]. For dentists and oral surgeons, the lingual thyroid is important because it may mimic other tongue-based lesions (benign or malignant), bleeding may complicate dental/oral procedures, and systemic thyroid status affects perioperative care

and healing. Early recognition and appropriate referral for endocrine and imaging assessments avoid inadvertent biopsy/excision of sole-functioning thyroid tissue [4,5].

Clinical presentation

Most lingual thyroids are asymptomatic or produce non-specific local complaints, such as foreign-body sensation, globus, dysphagia (especially solids), muffled voice, snoring, or progressive obstruction. Episodes of bleeding or hemoptysis are less common but have been reported [3,5-6]. Up to half of the patients may have hypothyroidism at diagnosis because ectopic tissue is often the only functioning thyroid tissue; therefore, thyroid function tests (TSH, free T4) are obtained for all suspected cases [4,7]. Red flags requiring urgent referral include signs of airway compromise, progressive dysphagia/odynophagia, significant bleeding from the tongue base, rapid growth, and suspicious features on imaging [6,8].

Presentation	Frequency / notes	Dental relevance
Asymptomatic incidental tongue-base mass	Common in case series	Avoid blind biopsy; refer for endocrine workup.
Foreign-body sensation / globus / dysphagia	Common	May mimic oral-pharyngeal pathology; consider ENT/referral.
Bleeding from tongue base	Uncommon but reported	Dental manipulation can precipitate bleeding - urgent referral.
Hypothyroidism (overt/subclinical)	Up to ~50% when no orthotopic gland	Affects healing, anaesthesia; test TSH prior to surgery.

Table 1: Common presentations and immediate dental considerations.

Diagnostic pathway:

1. **Clinical examination**: Careful inspection of the tongue base and flexible nasoendoscopy when available. If a midline tongue-based mass is suspected, *a blind biopsy is not performed* before imaging and thyroid function testing [1,4].
2. **Thyroid function tests** — TSH and free T4 to assess hypothyroidism/subclinical disease; abnormalities influence management (replacement vs suppression) [4,9].
3. **Neck ultrasound** — first-line to document the presence/absence of an orthotopic thyroid in the anterior neck; if no gland is seen or hypoplastic, a high index of suspicion for ectopia [10].
4. **Radionuclide imaging** — 99mTc-pertechnetate or I-123 planar scintigraphy confirms functional ectopic thyroid tissue; SPECT/CT (hybrid) adds precise anatomical localization and is increasingly recommended [11-12].
5. **Cross-sectional imaging** (CT/MRI) is used when surgical planning is required or to assess extent/airway compromise and to exclude other head-and-neck pathologies [8].

Fine-needle aspiration (FNA) or biopsy is reserved for lesions with radiologic features suspicious for malignancy, and only after confirming that the lesion is not the only functioning thyroid (to avoid removing sole thyroid tissue unintentionally) [8,13].

Management:

A. Conservative / medical therapy

- Thyroxine replacement is indicated for hypothyroid patients and often reduces the size of ectopic tissue by TSH suppression in symptomatic but non-obstructive lesions. Several case series and reports have shown symptom improvement and mass shrinkage with levothyroxine [9,14-15].

B. Radioactive Iodine (RAI)

- I-131 ablation has been used for patients who are unfit for surgery or refuse surgery, and hybrid imaging and uptake measurement guided dosimetry. RAI can reduce lesion size and symptoms, but is contraindicated in young children and during pregnancy, and lifelong thyroid replacement is required after ablation when the ectopic tissue is the only functioning gland. Evidence comprises of a small series of case reports showing efficacy in selected cases [11-12,16].

C. Surgery

- Indications: airway compromise, severe or progressive dysphagia/odynophagia, recurrent bleeding, failure of suppression/RAI, or confirmed/suspected malignancy. Approaches include transoral excision including transoral robotic surgery (TORS), transhyoid (lingual approach with neck incision), and lateral pharyngotomy depending on the size and surgeon's expertise. Minimally invasive transoral techniques and TORS provide excellent exposure, with no external scars and shorter recovery in selected patients. Published case series and reports have documented the safe outcomes when performed by experienced teams [13,17-18].

D. Malignancy risk and follow-up

- Thyroid carcinoma arising in the lingual thyroid is uncommon (estimated to be ~1%) but has been reported (mostly papillary/follicular variants), and histopathology is the gold standard; therefore, suspicious lesions should be investigated and managed according to thyroid cancer protocols with multidisciplinary input. Lifelong endocrine follow-up is required whenever the ectopic tissue is the only functioning thyroid or when ablative/surgical therapy removes the functioning tissue [8,13].

Conclusion

For dentists and clinicians, lingual thyroid is an uncommon but important differential diagnosis for a midline tongue-based mass. The clinical priority is to avoid blind biopsy and initiate an endocrine and imaging pathway (TSH, neck ultrasound, radionuclide imaging/SPECT–CT) that establishes whether the lesion is functioning thyroid tissue and orthotopic thyroid is present. Most patients are managed conservatively with levothyroxine and surveillance, and surgery or radioiodine is reserved for obstructive symptoms, bleeding, or suspected malignancies. Multidisciplinary care (dentistry/oral surgery, ENT, endocrinology, and nuclear medicine) ensures safe evidence-based outcomes.

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