

Thyroglossal cysts

Synonyms: thyroglossal duct cyst

The thyroglossal duct connects the thyroid to the tongue between the fourth and seventh weeks of development. This duct passes through the muscles of the tongue and then anterior to the hyoid bone and larynx and normally involutes by the tenth week of development. It is thought that a thyroglossal duct cyst (TGDC) represents a segment of the duct that fails to regress and consequently differentiates into epithelial-lined cysts^[1].

Symptoms can arise from the swelling itself or from complications, the most significant of which is infection.

Classification^[2] ^[3]

TGDCs occur in six different variants:

- Infrahyoid cysts:
 - About 26–65% of TGDCs.
 - Mostly found in the paramedian position.
- Suprahyoid cysts:
 - Fewer than 20–25% of TGDCs.
 - Found in the midline.
- Juxtahyoid cysts:
 - About 15% of TGDCs.
 - Found close to the hyoid bone.

- Intralingual cysts:
 - About 2% of TGDCs.
 - Found within the tongue.
- Suprasternal cysts:
 - Fewer than 10% of cases.
- Intralaryngeal cysts:
 - Very rare.
 - These must be differentiated from other intralaryngeal lesions.

Epidemiology^[1]

- Thyroglossal duct cysts are the most common congenital abnormality of the neck, accounting for approximately 70% of congenital neck lesions.
- Two thirds of thyroglossal duct anomalies are diagnosed within the first three decades of life, with more than half being identified before 10 years of age.
- They may be found in as many as 7% of the population^[4] .
- They account for 2-4% of all neck masses^[2] .

Presentation

TGDCs usually present as fluctuant swellings in the midline of the neck along the line of thyroid descent. The cyst moves upwards when the patient protrudes the tongue. This occurs because it is attached to the thyroglossal tract which attaches to the larynx by the peritracheal fascia. Other features:

- TGDCs are usually non-tender and mobile.
- Infected TGDCs may present as a tender mass.
- A tender infected TGDC may be associated with dysphagia, dysphonia, draining sinus, fever or increasing neck mass.

- An infected TGDC may present like an upper respiratory tract infection.
- Airway obstruction is possible, particularly with intralingual cysts close to the airway.

Differential diagnosis^[2] ^[3] ^[5] ^[6]

The differential diagnosis of a [lump in the neck](#) requires knowledge of anatomy and the possible pathological swellings which can arise. Note that some of those listed are more likely to lie laterally in the neck (rather than in the midline of the thyroid descent).

- Skin and superficial fascia:
 - [Lipoma](#).
 - [Sebaceous cysts](#).
- Lymph nodes:
 - Infective.
 - Malignant and reticuloses.
- Lymphatics:
 - Cystic hygroma.
- Vascular:
 - Carotid body tumour.
 - Carotid aneurysm.
 - Haemangiomas.
- Salivary glands:
 - Submandibular gland (tumour or sialoadenitis).
 - Parotid gland (especially tumours in the lower pole).

- Pharynx:
 - [Pharyngeal pouch](#).
- Branchial arch remnants. These are usually of the second arch (90-95%):
 - Branchial cysts (smooth, soft masses in the lateral neck and located anterior and deep to the sternocleidomastoid muscle).
- Thyroid swellings:
 - Within the thyroid, TGDC may be mistaken for [thyroid swelling](#).
 - Ectopic thyroid (more common in women and 90% arise within the tongue).
- Thymic swellings:
 - More often in men.
 - Slow-growing mass, usually in the first decade of life.
- Sternomastoid tumours:
 - Present in the first two months - lateral neck (within the muscle).
 - They resolve by six months.
- TGDC carcinoma^[7] :
 - Although TGDCs are relatively common, malignancies within these lesions are infrequent.
 - TGDC carcinoma has a very low rate of mortality.
- Cervical teratomas:
 - Rare.

- Dermoid cysts:
 - The most common form of teratoma.
 - Mostly ectodermal content.
 - The majority occur on the floor of the mouth but 25% occur in the lateral neck or midline regions.

Investigations^[8]

The diagnosis can usually be made from the history and a careful neck and physical examination. Always palpate the thyroid gland during the physical examination. If the gland cannot be palpated, ultrasonography, thyroid scanning or CT scanning may be helpful. Diagnosis can usually be achieved on an outpatient basis.

- TFTs are performed. However, ectopic thyroid gland cannot be ruled out even in the presence of normal TSH levels and a clinically euthyroid history. Therefore, ultrasonography, CT scanning, thyroid scanning or MRI may be needed to identify a normal thyroid gland.
- Ultrasound is the most commonly used investigation. Ultrasound and CT scanning are the investigations of first choice:
 - Ultrasound can distinguish solid from cystic components.
 - CT scanning shows the capsular enhancement.
- A fistulogram may show the course of the tract.
- Thyroid scanning may be used to demonstrate any functioning ectopic thyroid. Ectopic thyroid tissue may accompany TGDCs in their location along the line of embryological thyroid descent. This can also be used to demonstrate normal thyroid position and function before removal of any thyroid tissue which may accompany the cyst.

- Other investigations^[9] :
 - In a patient with a history of recurrent lateral neck abscess, in which a branchial cleft anomaly with a possible internal sinus opening is suspected, a barium swallow may provide helpful information.
 - Direct laryngoscopy if a metastatic cervical neck cyst secondary to an unknown primary squamous cell carcinoma is suspected.
 - Direct laryngoscopy with hypopharyngoscopy and barium swallow are often useful with a history of recurrent lateral neck abscess when a branchial cleft anomaly with an internal sinus opening is suspected.

Associated diseases

- Thyroid disease (particularly myxoedema and, rarely, carcinoma).
- Recurrent infections of thyroglossal fistula.
- Other thyroglossal duct disorders (including ectopic thyroid).

Management

TGDCs should be surgically removed. This is because:

- Surgery provides a pathological diagnosis.
- Infection can cause acute pain and other complications (including airway obstruction and dysphagia).
- They can cause cosmetic deformity.
- Very rarely, malignancy may occur^[10] .

The surgical treatment of choice is Sistrunk's operation, in which an en block resection of the sinus tract and the midportion of the hyoid bone is performed^[4] . Endoscopic surgery is occasionally used, particularly when the appearance of the scar is of concern^[11] .

Complications

- Before operation, recurrent inflammation associated with infection of a TGDC is not uncommon. When infection is present, the cyst may enlarge and an abscess may form. Spontaneous rupture with secondary sinus tract formation can also occur. This can lead to worse outcomes following surgery.
- Complications after surgery include infection, haematoma and recurrence. Note that:
 - Recurrence of a TGDC is associated with poor technique, especially failure to follow the surgical principles described by Sistrunk.
 - Rates of recurrence are increased when a TGDC is ruptured during dissection.
 - Previous infection, prior incision and drainage procedures and adherence of the cyst to the skin are all associated with an increased rate of rupture with dissection.
 - Wound infections can also occur when the cyst is ruptured or when the pharynx is entered.

Prognosis^[4]

The recurrence rate with a formal Sistrunk's procedure is approximately 6%.

Recurrence can be reduced by a modification of Sistrunk's method which involves central neck dissection.

Further reading

- [Karmakar S, Saha AM, Mukherjee D](#); Thyroglossal cyst: an unusual presentation. *Indian J Otolaryngol Head Neck Surg.* 2013 Jul;65(Suppl 1):185-7. doi: 10.1007/s12070-011-0458-5. Epub 2012 Jan 6.
- [Amos J, Shermetaro C](#); Thyroglossal Duct Cyst. *StatPearls* 2021.

References

1. [Corvino A, Pignata S, Campanino MR, et al](#); Thyroglossal duct cysts and site-specific differential diagnoses: imaging findings with emphasis on ultrasound assessment. *J Ultrasound*. 2020 Jun;23(2):139-149. doi: 10.1007/s40477-020-00433-2. Epub 2020 Feb 12.
2. [Thyroglossal Duct Cyst](#); LearningRadiology, 2015
3. [Mittal MK, Malik A, Sureka B, et al](#); Cystic masses of neck: A pictorial review. *Indian J Radiol Imaging*. 2012 Oct;22(4):334-43. doi: 10.4103/0971-3026.111488.
4. [Ubayasiri KM, Brocklehurst J, Judd O, et al](#); A decade of experience of thyroglossal cyst excision. *Ann R Coll Surg Engl*. 2013 May;95(4):263-5. doi: 10.1308/003588413X13511609958613.
5. [Narayana Moorthy S, Arcot R](#); Thyroglossal duct cyst-more than just an embryological remnant. *Indian J Surg*. 2011 Jan;73(1):28-31. doi: 10.1007/s12262-010-0171-8. Epub 2010 Dec 14.
6. [Meier JD, Grimmer JF](#); Evaluation and management of neck masses in children. *Am Fam Physician*. 2014 Mar 1;89(5):353-8.
7. [Rayess HM, Monk I, Svider PF, et al](#); Thyroglossal Duct Cyst Carcinoma: A Systematic Review of Clinical Features and Outcomes. *Otolaryngol Head Neck Surg*. 2017 May;156(5):794-802. doi: 10.1177/0194599817696504. Epub 2017 Mar 21.
8. [Joseph J, Lim K, Ramsden J](#); Investigation prior to thyroglossal duct cyst excision. *Ann R Coll Surg Engl*. 2012 Apr;94(3):181-4. doi: 10.1308/003588412X13171221589892.
9. [Jun HH, Kim SM, Lee YS, et al](#); Cervical bronchogenic cysts mimic metastatic lymph nodes during thyroid cancer surgery. *Ann Surg Treat Res*. 2014 May;86(5):227-31. doi: 10.4174/astr.2014.86.5.227. Epub 2014 Apr 24.
10. [Kinoshita N, Abe K, Sainoo Y, et al](#); Adenosquamous carcinoma arising in a thyroglossal duct cyst: report of a case. *Surg Today*. 2011 Apr;41(4):533-6. doi: 10.1007/s00595-010-4287-z. Epub 2011 Mar 23.
11. [Cai Q, Huang X, Liang F, et al](#); Endoscope-assisted concurrent resection of thyroglossal duct cysts and benign thyroid nodules via a small submental incisions. *Eur Arch Otorhinolaryngol*. 2014 Jun;271(6):1771-5. doi: 10.1007/s00405-013-2688-5. Epub 2013 Oct 1.

Disclaimer: This article is for information only and should not be used for the diagnosis or treatment of medical conditions. Egton Medical Information Systems Limited has used all reasonable care in compiling the information but makes no warranty as to its accuracy. Consult a doctor or other healthcare professional for diagnosis and treatment of medical conditions. For details see our [conditions](#).

Last updated by: Dr Colin Tidy, MRCP 20/09/2021	
Peer reviewed by: Dr Laurence Knott 20/09/2021	Next review date: 19/09/2026

View this article online at: patient.info/doctor/thyroglossal-cysts

Discuss Thyroglossal cysts and find more trusted resources at [Patient](https://patient.info).



To find out more visit www.patientaccess.com
or download the app



Follow us

