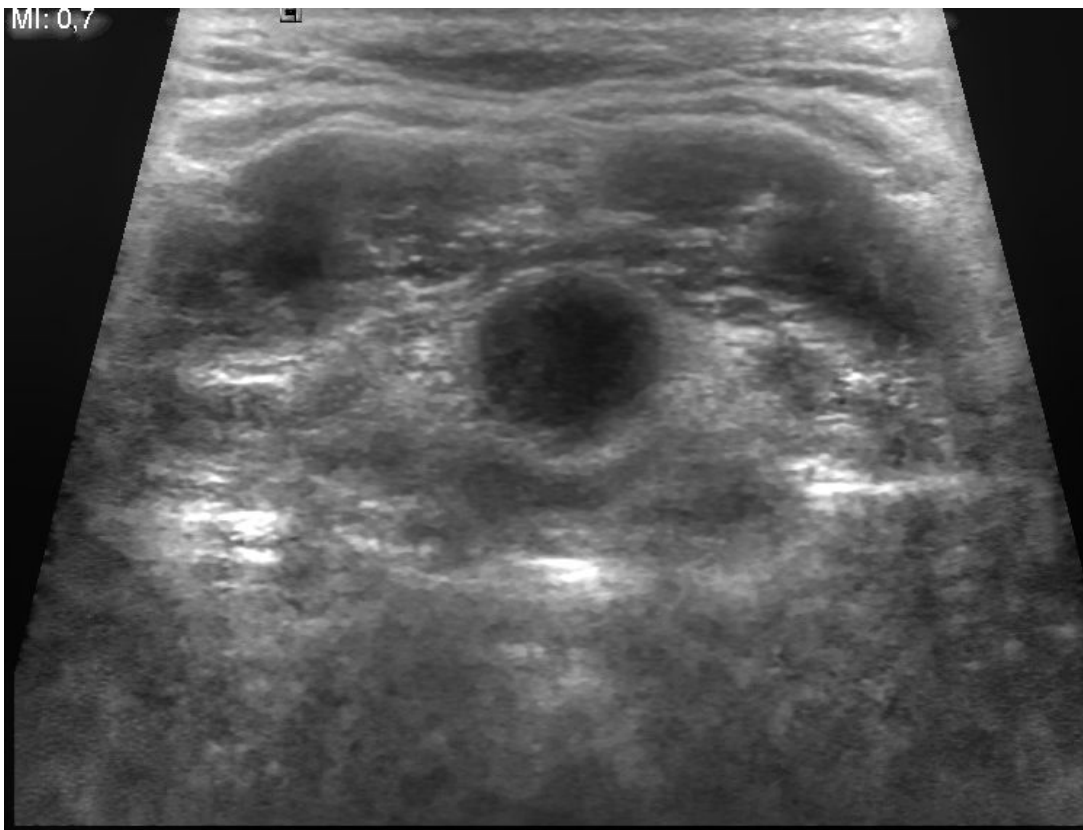


Thyroglossal Cyst — Differential Diagnosis and Complications

[See online here](#)

The thyroglossal cyst forms one of the most common pathologies of the neck after lymphadenopathy. Though it is a benign condition, the complications which might arise because of it are a major concern. This condition is dealt with in a surgical point of view and is discussed in detail in this article.



Definition and Epidemiology of Thyroglossal Cysts

The thyroglossal cyst is a **midline neck swelling** that arises from the remnant of the thyroglossal tract. It is often located below or near the hyoid bone.

The most common population affected with this pathology are children in the first decade of life, with both genders being equally affected.

Etiology of Thyroglossal Cysts

The development of the **thyroid gland** begins at the 4th week of gestation from the floor of the pharynx (the formation of the future tongue) at the site of foramen cecum. The

thyroid first appears as a **median endodermal proliferation** that consists of the **thyroid primordium**. Later, a **ventral diverticulum** is developed that descends at the front surface of the **hyoid bone** and is followed by the **laryngeal cartilage** down into the neck.

The thyroid gland remains connected with the base of the tongue during the time of migration to the neck through the **thyroglossal tract**. After the thyroid gland has reached its destination, the tract normally atrophies and is obliterated. The failure of this obliteration is the reason for the development of a thyroglossal cyst. In addition, the presence of the thyroid gland along the thyroglossal tract leads to the development of **ectopic thyroid tissue**.

The tract may remain **asymptomatic** in many cases until dilation with fluid leads to the development of a cyst. Although almost half of these cysts occur close to or just below the body of the hyoid bone, they may also be found at the base of the tongue or close to the thyroid cartilage.

Symptoms of Thyroglossal Cysts



Image: "Thyroglossal duct cyst" by Klaus D. Peter, Gummersbach, Germany - Own work. License: [CC BY 3.0 DE](https://creativecommons.org/licenses/by/3.0/de/)

Thyroglossal duct cysts often occur in children, but they may present at any age.

The thyroid cyst usually arises within the **midline** (this midline location being an important diagnostic characteristic), presenting as a round, smooth, non-tender mass on palpation but can be painful and tender, if infected. It classically **moves upwards on swallowing and on tongue protrusion**. This classical movement occurs due to its attachment to the hyoid bone. It is, however, important to note that this movement can occur with other midline cysts such as **dermoid cysts**. If the cyst is large enough, it will transilluminate.

The thyroglossal duct cyst often remains dormant for a long time until a **superimposed infection** occurs, thus dilating the duct. The infected cyst may rupture into the overlying skin of the neck, hence presenting as a discharging sinus.

Progression and special forms of thyroglossal cysts

Complications such as **fistula** and **sinuses** arise because of the rupture of the thyroglossal cyst, and they are discussed under the heading of Complications in this article. The size of the thyroglossal cyst can increase, especially when infected, thereby

causing **severe dysphagia** and **breathing difficulty**.

Diagnosis of Thyroglossal Cysts

It is clinically important to take a careful history and a thorough physical examination in order to make the correct diagnosis.

Important clinical features that assist in differentiating thyroglossal cysts from other neck masses are the size, site, shape of the mass, consistency, compressibility, fixation to the overlying skin or deep structures, transillumination, pulsation or the presence of a bruit.

Thyroid imaging (ultrasound, CT scan) and **thyroid function tests** should be carried out to delineate the anatomy of the normal thyroid gland and thyroglossal cyst. These will reveal a well-circumscribed midline cyst related to the hyoid bone. Though not required routinely, imaging techniques such as the **thyroid scintigraphy (Radioactive iodine or technetium)** or **high-resolution ultrasonography** can be employed for defining the anatomy of the normal gland and also, for identifying the ectopic thyroid tissue.

The fine needle aspiration (FNA) and **removal of the fluid from the cyst** help to identify the diagnosis and to exclude other possibilities.

Differential diagnosis of thyroglossal cysts

The diagnosis, which presents as a **lump in the neck**, forms the important differential diagnosis of the thyroglossal cyst. Other diagnoses include:

- Lymph nodes
- [Goiter](#)
- Dermoid cyst
- Lipomas
- Branchial cleft cyst
- Enlarged lymph node
- Ectopic thyroid anomalies which are odontogenic in origin.

As with any other mass, its characteristics remain quite important in aiding its description and potential diagnosis.

Branchial cleft cysts

These are, commonly, the remnants of the second branchial cleft. Usually, they present as fluid-filled cysts lined by squamous epithelium. They occur in the upper neck, often in the third decade of life, **laterally in the anterior triangle** and are filled with a turbid fluid containing **cholesterol crystals**.

Branchial cleft cysts are smooth, fluctuant, soft, painless masses that may transilluminate. Ultrasound and fine-needle aspiration aid in the diagnosis.

Lipomas

Lipomas are benign fatty lumps and are usually superficial and smooth, with ill-defined edges. On examination, they are not fixed to the overlying skin or underlying deeper structures, which helps in the differentiation.

Dermoid and sebaceous cysts

These may also present as midline neck swellings, just like thyroglossal duct cysts,

although they are usually less tethered to the underlying tissue. Dermoids are congenital inclusions found at sites of embryological fusion. Sebaceous cysts appear as firm, round, mobile subcutaneous nodules with a characteristic central punctum. The treatment of all of the above differential diagnoses is the surgical based excision.

Cystic hygroma

These usually present in the neonate or in early infancy and consist of large cysts filled with clear lymph.

The swelling occurs **laterally** in the **posterior triangle** and may be bilateral with the following characteristics: It is brilliantly translucent (a feature that distinguishes it from other neck masses). It increases in size when the child coughs or cries. On palpation, it is soft and partially compressible.

Lumps within the thyroid gland

They present as neck swellings and include thyroid cysts, adenomas and malignancy, all of which commonly present as a single thyroid nodule.

Treatment of Thyroglossal Cysts

Treatment of thyroglossal duct cysts includes **incision of the entire thyroglossal tract**, a procedure known as the **Sistrunk's operation** (resection of the central portion of the hyoid bone, together with the thyroglossal cyst, with extent of the dissections occurring as far as the back of the tongue).

The indication for doing surgery include:

1. Occurrence of any complications (mentioned below)
2. Cosmetic purposes.

The operation prevents recurrences since it involves the removal of the entire duct.

Complications of Thyroglossal Cysts



[Image:](#) "Post surgery infection on a Thyroglossal Cyst;

The complications that may occur with a thyroglossal cyst include:

1. **Thyroglossal cyst carcinoma:**

Though very uncommon, this is one of the dreadful complications of thyroglossal cysts. The tissue from which cancer arises, in most cases is developed out of the ectopic thyroid tissue. This requires an **extensive dissection surgery**, covering the places where cancer has spread, along with the removal of the lymph nodes.

2. **Infection:**

An infection results in the characteristic **enlargement of the cyst**, in addition to difficulty in swallowing and breathing. There will be a major rim enhancement. The drastic and fearful complication, in this case, is the spreading of the infection and the fluid to the adjacent structures in the neck. This condition is treated with antibiotics and pain killers.

3. **Thyroglossal fistula:**

The rupture of the thyroglossal cyst, or the incomplete removal of the thyroglossal cyst during the time of the surgery, results in the formation of a fistula.

Prevention of Thyroglossal Cysts

As thyroglossal cysts are a birth defect, there is no preventive strategy in avoiding the occurrence of this condition in a person. However, prevention can be carried out in terms of **preventing complications**.

Adequate aseptic precautions and removal of a cyst which has grown to a significant extent help in preventing future complications of infection. The **FNAC and clinical examination for the lesion mass**, thereby noting down any abnormal increase in the size, help in the prevention of advanced complications like that of **malignant cancer**, thereby curing the lesion at an earlier stage.

References

Carlson, B. M. (2014). Development of the head and the neck. In Human Embryology & Developmental Biology. Elsevier Saunders.

[Thyroid Anatomy](#) via medscape.com

Jones, N. (2005). Lumps in the Head, Neck and Skin. In A. Goldberg, & G. Stansby, Surgical Talk: Revision in Surgery (p. 197). Imperial College Press.

Sinnatamby, C. S. (2011). Head and neck and spine: Thyroid gland. In Last's Anatomy, Regional and Applied (p. 339). Churchill Livingstone Elsevier.

Williams, N. S., Bulstrode, C. J., & O'Connell, P. R. (2013). Pharynx, Larynx, and Neck. In Bailey's and Love Short Practice of Surgery (pp. 700-702). CRC Press.

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