Thyroglossal Cysts

Synonyms: thyroglossal duct cyst

Thyroglossal cysts (TGCs) represent the most common congenital anomaly of the neck.\textsuperscript{[1]} They account for 2-4\% of all neck masses.\textsuperscript{[2]}

Origin and pathophysiology

\begin{itemize}
  \item TGCs arise from a persistent epithelial tract, the thyroglossal duct, formed with the descent of the thyroid from the foramen caecum to its final position in the front of the neck.
  \item The duct so formed can give rise to sinuses, fistulae or cysts.
  \item Symptoms can arise from the swelling itself or from complications, the most significant of which is infection.
\end{itemize}

Classification\textsuperscript{[2, 3]}

TGCs occur in six different variants:

\begin{itemize}
  \item Infrahyoid cysts:
    \begin{itemize}
      \item About 26-65\% of TGCs.
      \item Mostly found in the paramedian position.
    \end{itemize}
  \item Suprahyoid cysts:
    \begin{itemize}
      \item Fewer than 20-25\% of TGCs.
      \item Found in the midline.
    \end{itemize}
  \item Juxtahyoid cysts:
    \begin{itemize}
      \item About 15\% of TGCs.
      \item Found close to the hyoid bone.
    \end{itemize}
  \item Intralingual cysts:
    \begin{itemize}
      \item About 2\% of TGCs.
      \item Found within the tongue.
    \end{itemize}
  \item Suprasternal cysts:
    \begin{itemize}
      \item Fewer than 10\% of cases.
    \end{itemize}
  \item Intralaryngeal cysts:
    \begin{itemize}
      \item Very rare.
      \item These must be differentiated from other intralaryngeal lesions.
    \end{itemize}
\end{itemize}

Epidemiology

\begin{itemize}
  \item TGC was reported as the most common cause of congenital neck swelling (53\%) in a Jordanian study.\textsuperscript{[1]}
  \item They may be found in as many as 7\% of the population.\textsuperscript{[4]}
  \item Most commonly, they present in the first decade of life.
  \item They are, however, also seen in adults.\textsuperscript{[5]}
\end{itemize}
Presentation

TGCs usually present as fluctuant swellings in the midline of the neck along the line of thyroid descent. **NB:** it is important to note that 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:

- TGCs are usually non-tender and mobile.
- Infected TGCs may present as a tender mass.
- A tender infected TGC may be associated with dysphagia, dysphonia, draining sinus, fever or increasing neck mass.
- An infected TGC may present like an upper respiratory tract infection.
- Airway obstruction is possible, particularly with intralingual cysts close to the airway.

Differential diagnosis[^2,^3,^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 sielectasis).
  - Parotid gland (especially tumours in the lower pole).

- **Pharynx:**
  - Pharyngeal pouch.

- **Larynx and laryngomalacia.**[^7]

- **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, TGC may be mistaken for thyroid swelling.[^8]
  - 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.

- **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 TGCs 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:
  - 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
TGCs 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.

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. Endoscopic surgery is occasionally used, particularly when the appearance of the scar is of concern.
Complications

- Before operation, recurrent inflammation associated with infection of a TGC 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 TGC is associated with poor technique, especially failure to follow the surgical principles described by Sistrunk.
  - Rates of recurrence are increased when a TGC is ruptured during dissection.
  - Previous infection, prior incision and drainage procedures and adherence of the cyst to the skin all are 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

The recurrence rate associated with simple excision of a TGC is approximately 50%. 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. [4]

Further reading & references


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