THYROGLOSSAL DUCT CYST

Definition: Thyroglossal duct cyst (TDC) is the most common developmental nonodontogenic cyst in the neck, usually presenting as an asymptomatic anterior midline neck mass at the level of the thyroid.

Etiology and Epidemiology: TCDs account for around 40% of cervical malformations in children with peak incidence occurring during the first three decades of life. This anomaly has been attributed to the persistence of the tract formed during migration of the rudimentary thyroid gland between the base of the tongue and the anterior cervical region. Residual epithelial elements that do not completely atrophy may give rise to cysts in childhood or adult life in the posterior portion of the tongue (lingual thyroid) or in the neck itself.

Clinical Presentation: The cyst usually presents as a painless, asymptomatic midline swelling below the hyoid bone. It may be observed at any age. TDCs are present at birth in approximately 25% of cases. Approximately 30% of these cases are found in patients under the age of 10 years, and a similar percentage of cases are found in patients older than 30 years. Unlike most thyroid disorders in which females predominate, the gender incidence is equal for TDCs. They can be found anywhere in the midline from the submental region to the suprasternal notch but are most commonly located halfway between these extremes, near the hyoid bone. It has been reported that 80% of TDCs are juxtaposed to the hyoid bone, 2% lingual, and 7% in a suprasternal location. Only 1% of TDCs are lateral to the midline. Thyroglossal duct cysts are round with a smooth surface and are well defined. With swallowing or protrusion of the tongue, a TDC classically rises in the neck as a result of the cyst being anchored to the hyoid bone and muscles of the tongue. It is usually 1 to 2 cm in diameter, slightly mobile, and nontender unless secondarily infected. If they are infected, drainage through a sinus tract may occur. Approximately 1% of TDCs may undergo neoplastic change, 85% of which are papillary adenocarcinomas.

Histopathology: Microscopic findings vary depending on the location of the cyst. Lesions occurring above the level of the hyoid bone will demonstrate a lining chiefly of stratified squamous epithelium. A ciliated or columnar type epithelium usually is found in cysts occurring below the hyoid bone. The supporting wall of the cyst consists of fibrous tissue and frequently contains heterotopic thyroid tissue and accumulations of other chronic inflammatory cells.

Imaging Characteristics: The most common preoperative investigations requested are ultrasound and radioisotope scans. Preoperative imaging in patients with presumed TDC can document the presence of a normal thyroid gland and exclude the possibility of ectopic thyroid tissue mimicking a TDC. High resolution computed tomography scans are important for assessing the location, extent, and cystic nature of the lesion, especially when encroachment on and destruction of the larynx is suspected.

Diagnosis: A pathognomonic sign is the upward thrust of the mass when the patient protrudes the tongue, which demonstrates the connection of the thyroglossal duct and the tongue. Biopsy by fine needle aspiration and histologic examination confirms the diagnosis.

Differential Diagnosis:
- Dermoid cyst
- Ectopic thyroid tissue
- Lipoma
- Sebaceous cyst
- Lymph node
- Branchial cleft cyst
- Autoimmune thyroiditis
Treatment: Treatment is complete surgical excision. It is often recommended that the central portion of the hyoid bone be removed (Sistrunk’s operation) in an effort to eliminate any residual thyroglossal tract epithelium and avoid recurrence. Indications for excision may include cosmetic appearance, recurrent infections, sinus or fistula formation, and the risk of malignant transformation. When carcinoma is found in a TDC, wider resections (which may include strap muscles, thyroid, larynx, or base of tongue) are recommended. Neck dissection is reserved for cases with nodal metastasis. Postoperative radiation therapy is recommended for larger lesions, positive surgical margins, or extensive nodal disease. Strict follow-up is recommended for prolonged periods of time, because local recurrences are common and could occur many years after the initial treatment.

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