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Case Report

Computed Tomography Fistulography in the Diagnosis of Thyroglossal Fistula: A Case Report

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Abstract:

Thyroglossal cysts, when ruptured due to infection or surgical intervention, often result in discharging sinuses or thyroglossal fistulas. While spontaneous rupture is common, the formation of a true fistulous tract connecting the base of the tongue to the neck and skin surface is less frequent. To prevent recurrences, complete excision of the tract and its branches is essential. Computed tomography (CT) fistulography emerges as the preferred diagnostic modality for visualizing thyroglossal fistulas and their branching patterns, thereby facilitating meticulous surgical planning. By employing this advanced imaging technique, surgeons can ensure the successful removal of the entire tract, minimizing the risk of future complications.

Key words: *Thyroglossal fistula, complete excision, recurrence, CT fistulography*

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Introduction:

Thyroglossal duct cyst is the most common congenital midline swelling of the neck^{1,2}. The

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thyroglossal tract represents remnants from the embryological migration of thyroid tissue from the foramen cecum to the thyroid fossa³. Typically, thyroglossal cysts rupture spontaneously, either due to infection or iatrogenic causes, presenting as a discharging sinus or thyroglossal fistula^{2,4}. The term thyroglossal fistula is often used inaccurately to describe a discharging sinus; however, a true fistulous tract connecting the base of the tongue to the skin surface of the neck is rare, with only a few cases reported in the literature^{1,4}.

Clinically, differentiating between a sinus and a fistula can be challenging. While a sinography or fistulography may be useful, the facial bones often obscure the exact location of the opening at the foramen cecum. A computed tomography fistulography (CTF), however, is particularly helpful in tracing the entire tract from the neck to the tongue, as well as identifying any abnormal locations or branching of the tract⁵.

We hereby report a case of thyroglossal fistula with CT fistulography findings in an adult female patient.

Case Description:

A 55-year-old female presented with a discharging opening on the front of her neck for the past 5 years. The discharge increased with swallowing and tongue protrusion. She had a history of swelling in the same region 30 years ago, which became infected and

spontaneously ruptured 5 years prior. On clinical examination, a midline pinhole discharging opening was observed in the anterior neck at the level of the thyrohyoid region, which moved with deglutition and tongue protrusion. The discharge was watery and increased during meals. The skin surrounding the opening appeared normal, with no erythema or edema. Oropharyngeal examination showed no swelling, erythema, or discharge at the posterior part of the tongue.

The patient had no history of dysphagia, halitosis, or respiratory distress. Clinically, a diagnosis of thyroglossal fistula was considered. A conventional fistulogram was performed, during which the patient reported an altered taste sensation as the dye reached the base of her tongue.



Fig.-1: Discharging opening in the anterior neck located at the level of the thyrohyoid region.

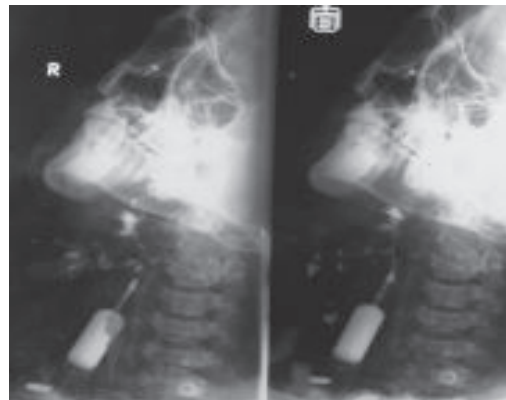


Fig.-2: Fistulogram showing the tract extending from the front of the neck towards the oral cavity, though the exact location at tongue base is obscured by the facial bones.

Ultrasonography showed a normally located thyroid gland. A CT fistulography was then performed, which revealed a hyperdense linear tract—a patent thyroglossal duct—extending from the neck skin to the posterior third of the tongue.

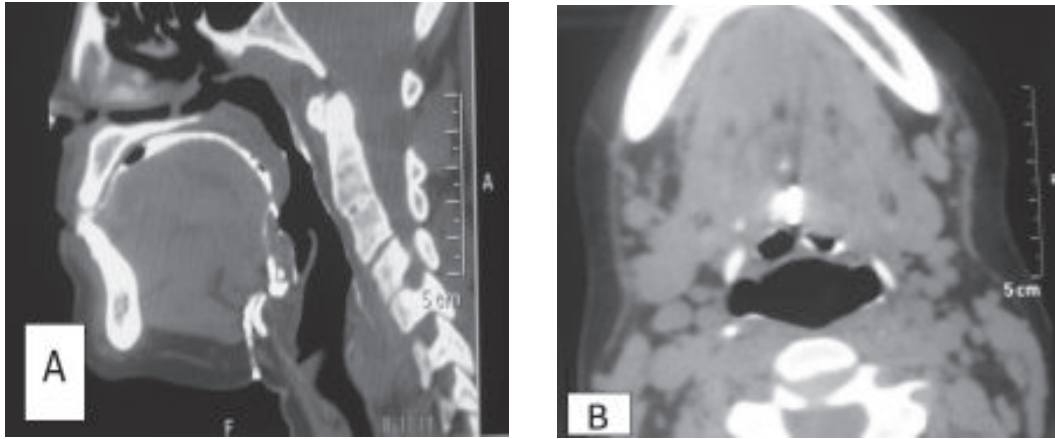


Fig.-3: CT Fistulogram

A. Sagittal section demonstrating the fistula tract as a hyperdense shadow extending from the anterior neck to the foramen cecum at the base of the tongue (yellow chevron). Contrast dye spillage into the oropharynx is evident (red arrow). B. Axial section revealing hyperdense contrast within the foramen cecum at the base of the tongue (yellow arrow).

No additional abnormalities were found in the neck. The patient underwent a Sistrunk operation with complete excision of the tract. Post-operative follow-up was uneventful, and histopathological examination confirmed the presence of a thyroglossal tract. Thus, the diagnosis of a true thyroglossal fistula was established.

Discussion:

Thyroglossal duct cysts account for 70% of all congenital neck masses derived from thyroglossal remnants and are most seen in childhood^{4,6}. The thyroglossal duct originates at the foramen cecum at the base of the tongue and descends midline through the tongue muscles, passing anterior to, through, or behind the hyoid bone, and terminating at the thyroid gland isthmus^{5,6}. Normally, this tract becomes obliterated early in fetal development. During this process, the duct does not communicate with the skin, making a fistulous connection between the foramen cecum and the neck extremely rare^{1,4,6}.

However, remnants of the duct may persist anywhere along its pathway from the foramen cecum to the thyroid gland, often in multiple locations, which can lead to recurrence if only the cyst is excised⁶.

The most common presenting feature of a thyroglossal fistula is discharge from a fistulous opening in the anterior part of the neck⁵. Studies show that only about one-fourth of cases present with a discharging sinus, typically due to spontaneous rupture or inadequate surgical management⁴.

For complete excision of the thyroglossal tract, detailed anatomical knowledge of the neck is essential, and computed tomography fistulography (CTF) plays a crucial role in this regard. While conventional fluoroscopic fistulography can help identify the tract, it does not provide cross-sectional imaging^{4,5}. A CTF scan is useful for visualizing the cutaneous end of the fistulous tract⁴. Magnetic resonance imaging (MRI) can help delineate the neck anatomy and surrounding

structures^{4,5}. However, this modality alone may not provide a complete view of the tract's patency, full course, and potential ramifications. This is where CTF offers significant advantages, as it provides multiplanar, multisectional, high-resolution images that are cost-effective and more accessible for surgeons compared to MRI. Although some authors have discussed the role of MRI in evaluating thyroglossal fistulas, its exact utility remains unclear⁵. MRI was not used in the current case due to cost considerations.

Conclusion:

To ensure proper surgical treatment and prevent recurrence, it is essential to accurately delineate the fistulous tract and its branches. Therefore, CT fistulography should be the preferred diagnostic tool for identifying thyroglossal fistulas.

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