

Case Report

Unusual Lateral Presentation of Thyroglossal Duct Cyst in a 30 Year Old Male: A Case Report

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Abstract

Background: Thyroglossal duct cyst (TGDC) is the most common congenital anterior neck mass, typically presenting in the paediatric age group as a painless midline swelling. The diagnosis is primarily clinical, supported by imaging modalities and fine needle aspiration cytology for confirmation and exclusion of other pathologies. Classically, TGDC presents as a midline neck swelling that moves with deglutition and tongue protrusion; however, atypical presentations can cause diagnostic uncertainty. **Case Presentation:** In this case report, we describe an atypical presentation of thyroglossal duct cyst in an adult patient presenting with lateral neck swelling. The case highlights the importance of considering TGDC in the differential diagnosis of lateral neck masses and emphasizes the role of detailed preoperative assessment. The patient was successfully managed with surgical excision using the Sistrunk procedure, with favourable outcome. **Conclusion:** Though TGDC may occur at any age, a newly appearing lateral neck mass in adults warrants careful evaluation to exclude neoplastic causes. Rarely, TGDC may present in an unusual location or with acute onset due to infection or rapid enlargement.

1. Introduction

The differential diagnosis of anterior neck swellings varies significantly across age groups. In the paediatric population, congenital lesions predominate, with thyroglossal duct cyst (TGDC) being the most common cause. In contrast, anterior neck swellings in adults are more frequently attributed to thyroid gland pathologies, inflammatory conditions, or neoplastic processes. Thyroglossal cyst is of embryonic-origin cervical mass, and presents as 75% cases in congenital midline neck anomaly [1, 2]. Although TGDC is most commonly diagnosed in children, it may also present in adolescents and young adults (in their twenties), with an overall incidence of approximately 7% in the general population [1, 3].

Clinically, it typically manifests as a painless, cystic midline swelling that moves with deglutition and protrusion of the tongue due to its attachment to the tract remnant. However, atypical presentations, including lateral neck swelling, infection, or rapid enlargement, may occur and pose a diagnostic challenge, particularly in adults where the suspicion of malignancy is higher [4, 5].

TGDCs develop due to aberrations in the embryological formation and regression of the thyroglossal duct. During the fourth week of gestation, the thyroid gland originates at the foramen caecum at the base of the tongue. It then descends inferiorly through the neck via the

thyroglossal duct, passing posterior to the body of the hyoid bone and ultimately reaching its definitive pretracheal position, where it forms the right and left lobes connected by the isthmus [6].

Under normal circumstances, the thyroglossal duct undergoes complete involution by the sixth week of gestation. However, failure of this involution leads to the persistence of epithelial remnants along the tract. These residual epithelial elements can subsequently undergo cystic degeneration and fluid accumulation, resulting in the formation of a thyroglossal duct cyst [3, 6].

Given the variability in clinical presentation, especially in adults, a thorough clinical evaluation supported by imaging and cytological assessment is essential to establish the diagnosis and rule out other differential conditions. Early recognition and appropriate surgical management are crucial to prevent recurrence and complications.

2. Case Report

A 23-year-old male presented in ENT OPD with a 3-month history of swelling on the left side of his neck. Movement with deglutition was present whereas movement with protrusion of the tongue was not well appreciated. No history of pain in swelling, breathing difficulty, changes in voice, addictions, neck trauma or family history of any neck disease was present.

On examination a single well defined, ovoid swelling in left lateral aspect of the neck, of size approx. 3 x 4 cm, superiorly up to the submandibular region inferiorly up to the lower border of the thyroid cartilage and laterally up to the anterior border of the sternocleidomastoid muscle was seen. Surface was smooth, Skin over the swelling was Normal. There was no redness, ulceration, dilated veins, sinus, fistula or scars. No visible pulsations, sinus or fistula were present.

On Palpation inspeactory findings were confirmed. A single ovoid cystic swelling with well-defined margins of approximately 3 x 4 cm in size in left lateral aspect of neck, with no local rise of temperature was present Figure 1. Surface was smooth, non-tender and it was soft to cystic in consistency. Compressibility and transillumination was present, Slip sign was negative, Fluctuation test was negative and reducibility was absent. The swelling was freely mobile in horizontal and vertical plane, not fixed to underlying tissues and skin over the swelling is pinchable. Movement with deglutition was present. Movement with protrusion of tongue was not appreciated. Oral cavity and oropharynx were normal.



Figure 1: Preoperative Picture Showing Swelling in Left side of Neck

On USG Neck a well-defined hypochoic lesion of size 41 x 17 x 38 mm (approx. 14cc) is seen in upper mid neck (paramedial location on left side) with no internal vascularity in CDI and low-level internal echoes along with evidence of thin septa within it and distal enhancement.

NCCT Neck demonstrated a well-defined cystic lesion noted in left lateral neck region, located superior to thyroid cartilage and inferior to hyoid bone Figure 2. The cystic component extends towards the left lateral aspect. The lesion demonstrates fluid attenuation (~31HU), mild peripheral enhancement on post contrast images. Size of lesion is 41.9 x 23.4 x 33.6mm (CCxAPxTR). Features were suggestive of thyroglossal duct cyst.

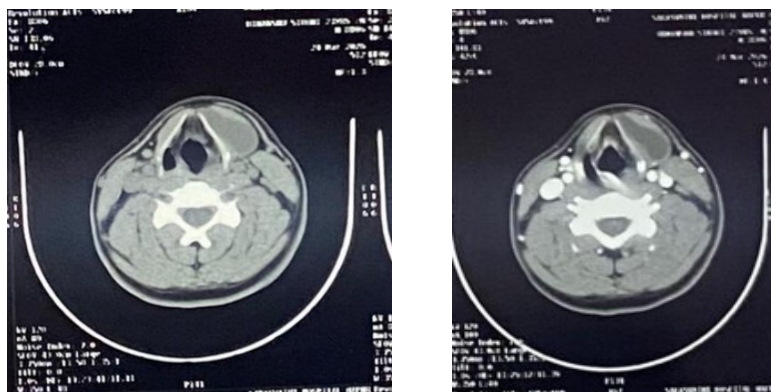


Figure 2: NCCT Scan Neck Demonstrating Lesion in Left Lateral Side of Neck

FNAC smear shows few benign looking ciliated columnar epithelial cells and metaplasia squamous cells along with occasional squamous epithelia cells with thick proteinaceous background, suggestive of benign cystic lesion possibly thyroglossal cyst.

The Patient was taken in OT under GA, placed in supine position with neck slightly extended. The thyroglossal tract was identified and followed up to hyoid bone Figure 3A and 3B.

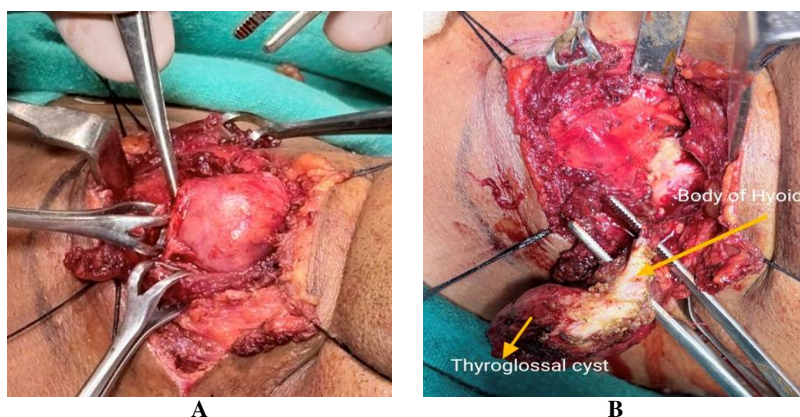


Figure 3: Intraoperative Picture Showing Cyst, Tract and Hyoid Bone

Hyoid bone was skeletonised. Thyroglossal cyst with its tract and body of hyoid bone removed in toto and sent for histopathological examination Figure 4. Haemostasis was secured. Post operative was uneventful.



Figure 4: Excised Specimen

Gross examination revealed cystic tissue piece with attached hyoid bone measuring 3 x 3.5 x 1.5cm. cyst cavity is filled with thick white fluid. Wall thickness is 0.2cm to 0.3cm.

Microscopy impression revealed left thyroglossal cyst Figure 5.

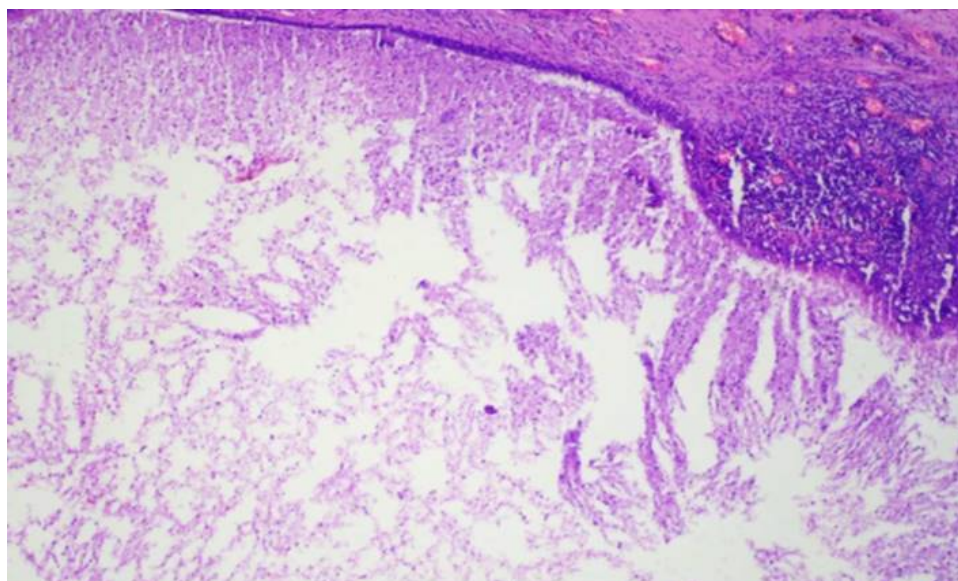


Figure 5: Microphotograph Showing Cyst Wall, Epithelial Lining and Surrounding Stroma

3. Discussion

Thyroglossal duct cysts (TGDCs) represent the most common congenital neck masses, accounting for approximately 70% of such lesions, followed by branchial cleft anomalies [7, 8]. They arise due to incomplete involution of the thyroglossal duct during embryogenesis, leading to persistence of epithelial remnants that may later undergo cystic degeneration, secretion, and inflammation [7, 9]. Although classically considered a pediatric condition, TGDCs can present at any age, with increasing recognition of adult presentations and a reported bimodal age distribution [8, 10].

Clinically, TGDCs typically present as painless, midline neck swellings located near the hyoid bone, demonstrating characteristic mobility with deglutition and tongue protrusion. [8, 9]. However, atypical presentations are increasingly reported, particularly in adults, where diagnostic ambiguity is greater due to a wider range of differential diagnoses including thyroid nodules, lymphadenopathy, dermoid cysts, and malignancies [2, 9]. In the present case, the patient was an adult male with a left-sided lateral neck swelling of acute onset, representing a distinctly atypical presentation.

Lateral deviation of TGDC is uncommon but well documented in literature. Such lesions may occur along the anterior border of the sternocleidomastoid muscle and can closely mimic branchial cleft cysts, posing a diagnostic challenge [3, 7]. Studies have shown that adult patients are more likely to present with infrahyoid and laterally placed cysts, often with larger lesion sizes compared to pediatric cases [11]. Furthermore, progressive enlargement, infection, or accumulation of secretions may lead to lateral displacement of an initially midline cyst, explaining such unusual presentations [9].

The embryological descent of the thyroid gland from the foramen caecum to its final pretracheal position explains the potential occurrence of TGDCs anywhere along this tract [2, 3]. While most cysts are located in the midline, approximately 38% may be slightly off-midline, typically adjacent to the thyroid cartilage or deep to strap muscles [3]. In rare instances, TGDCs may even present as intrathyroidal lesions or mimic pretracheal lymph nodes, further complicating diagnosis [7, 12].

Adult presentation of TGDC is relatively uncommon and often associated with delayed diagnosis due to its indolent growth pattern [13, 14]. In addition, the risk of malignancy, although low (<1%), increases with age, necessitating thorough evaluation of adult patients presenting with neck masses [13, 15]. The acute onset in case may be attributed to secondary infection, inflammation, or sudden increase in cystic content, which has been described as a potential cause of rapid enlargement in previously asymptomatic lesions [1, 15].

Radiological imaging plays a crucial role in diagnosis, particularly in atypical cases. Ultrasonography is usually the first-line modality; however, its limitations in delineating deeper or complex lesions make contrast-enhanced CT or MRI essential in selected cases [7, 16]. TGDCs typically appear as well-defined cystic lesions, often closely related to the hyoid bone, which is a key diagnostic feature [3, 16]. In the present case, imaging findings, along with anatomical correlation, were instrumental in suggesting the diagnosis despite the unusual lateral location.

Fine needle aspiration cytology (FNAC) serves as an adjunct in preoperative evaluation, although its sensitivity is moderate and findings may overlap with other cystic lesions such as branchial cleft cysts [7, 9]. Cytologically, TGDCs are characterized by columnar or cuboidal epithelium, occasionally with inflammatory changes, which may further obscure diagnosis in infected cases [7, 17].

The differential diagnosis of a lateral neck cyst in adults is broad and includes branchial cleft cyst, dermoid cyst, lymphangioma, cystic metastasis, and thyroid lesions [3, 16]. Differentiation is primarily based on location, imaging characteristics, and relationship to anatomical landmarks such as the hyoid bone and thyroid gland [18]. The presence of a tract extending toward the tongue base or close association with the hyoid bone strongly favours TGDC [3].

Surgical excision remains the definitive treatment, with the Sistrunk procedure being the gold standard due to its low recurrence rates (<3–6%) compared to simple excision [13, 15]. This technique involves removal of the cyst along with the central portion of the hyoid bone and the tract up to the base of the tongue, addressing the embryological basis of the disease [14, 15]. In atypical cases, where preoperative diagnosis is uncertain, careful surgical planning is essential to avoid incomplete excision or unnecessary thyroid surgery [7].

4. Conclusion

In summary, although TGDC is classically a midline paediatric lesion, it can present atypically in adults as a lateral neck swelling, mimicking other pathologies. This case highlights the importance of considering TGDC in the differential diagnosis of lateral neck masses, particularly when imaging demonstrates a relationship with the hyoid bone. A high index of suspicion, combined with appropriate imaging and histopathological confirmation, is essential for accurate diagnosis and optimal management.

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Disclaimer (Artificial Intelligence): The author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.), and text-to-image generators have been used during writing or editing of manuscripts.

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