

Large thyroglossal duct cyst causing airway compromise: A case report

Ting Ting Chai, Lee Lee Chin, Jothi Shanmuganathan

ABSTRACT

Introduction: A thyroglossal duct cyst (TGDC) is a common congenital neck mass that can occur in both children and adults.

Case Report: This case report presents an adult with a long-standing anterior neck swelling causing dyspnea and dysphagia, detailing the investigation process that led to a diagnosis of TGDC and the surgical intervention performed.

Conclusion: It highlights the importance of diagnosing and treating TGDC, as it has the potential to compromise the airway as it enlarges over time.

Keywords: Airway obstruction, Congenital neck mass, Neck swelling, Thyroglossal duct cyst

How to cite this article

Chai TT, Chin LL, Shanmuganathan J. Large thyroglossal duct cyst causing airway compromise: A case report. Int J Case Rep Images 2024;15(2):117–120.

Article ID: 101482Z01TC2024

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Received: 06 August 2024

Accepted: 10 October 2024

Published: 20 November 2024

doi: 10.5348/101482Z01TC2024CR

INTRODUCTION

Thyroglossal duct cyst (TGDC) is a congenital anomaly that occurs when the thyroglossal duct fails to involute following the descent of the primitive thyroid gland from the foramen cecum at the base of tongue to its eventual pretracheal position in the lower half of the neck, resulting in the formation of a cyst [1]. The cyst can be found anywhere along the thyroglossal duct, most frequently in the midline of the neck in an infrahyoid location. In a case series of 685 patients, the mean diameter of TGDC was 2.1 cm in pediatrics population and 2.8 cm in adults [2]. Here, we present an adult patient with a large TGDC, causing obstructive symptoms.

CASE REPORT

A 42-year-old male presented with a painless anterior neck swelling that had gradually increased in size over a span of six years. Concurrently, the patient reported experiencing worsening hoarseness, dyspnea, and occasional dysphagia, particularly when consuming solid food. There was no significant medical or family history associated with the current presentation.

On physical examination, a soft, non-tender, and mobile swelling, measuring 5 cm × 4 cm, was observed in the anterior neck. The swelling moved with deglutition and tongue protrusion. There were no palpable cervical lymph nodes or associated skin changes. The systemic examination did not reveal any remarkable findings. As the patient reported worsening obstructive symptoms, flexible laryngoscopy was performed, which demonstrated a mass effect from the thyroglossal cyst, causing medialization of the right supraglottic structure at the level of the false cord and narrowing of the airway (Figure 1). The vocal cords were symmetrical and mobile bilaterally.

To further assess the nature of the swelling, approximately 30 cc of straw-colored fluid was aspirated from the swelling and subjected to cytological analysis,

confirming its cystic nature with an absence of malignant cells. The patient's serum thyroid-stimulating hormone (TSH) and free thyroxine (T4) levels fell within the normal range. A computed tomography (CT) scan of the neck was performed, revealing a well-defined unilocular cystic lesion situated in the right paramedian region anterior to the thyroid cartilage, measuring approximately $5.1 \times 4.0 \times 4.2$ cm, with the superior extent abutting the hyoid bone. Posteriorly, this swelling exerted pressure on the laryngopharynx and displaced it to the left, causing significant luminal narrowing. A normal thyroid gland was identified on the scan.

Based on the clinical presentation, radiological findings, and cytological results, a diagnosis of a thyroglossal duct cyst (TGDC) was made. The patient subsequently underwent a Sistrunk procedure, during which a cystic mass measuring $6 \text{ cm} \times 4.5 \text{ cm}$ was excised (Figure 2). In addition, the lesser cornu and the body of the hyoid bone along with the attachment of the duct were removed. Histopathological examination showed cyst wall lined by respiratory-type columnar epithelium and stratified squamous epithelium, with a few clusters of thyroid follicles observed in the wall. This finding is in keeping with a diagnosis of TGDC.

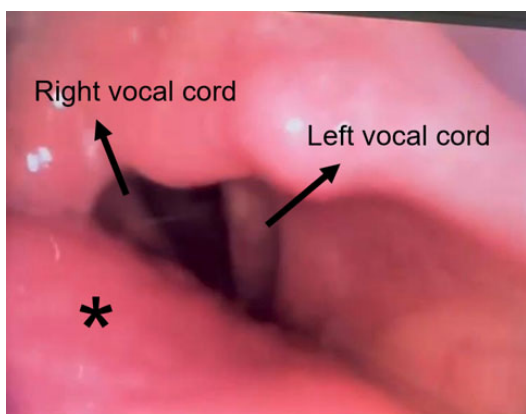


Figure 1: Video laryngoscopy showing medialization of the airway at the level of false cord, due to compression by the TGDC (area marked by *).



Figure 2: Intraoperative picture showing the TGDC.

DISCUSSION

Thyroglossal duct cysts (TGDCs) are one of the commonest congenital masses in the neck. Roughly 7% of the population possesses TGDC [3]. The age at which TGDCs are typically presented exhibits a bimodal distribution, occurring most commonly in the first and fifth decades of life. There is a male predominance during childhood, while in adulthood, it is more commonly observed in females [2].

Ultrasound can aid in distinguishing between solid and cystic neck lesions. Once it is determined that a lesion is cystic, the location of the swelling will further help differentiate the nature of the lesion [4]. The majority of TGDCs are located in the midline, while the rest are found on either the left or right side of the midline [2, 5]. In relation to the hyoid bone, over three quarters of the TGDCs were infrahyoid and the remaining were suprahyoid [2]. The differential diagnosis for cystic neck lesions includes ranula and dermoid cyst, usually found in the midline, and branchial cyst and lymphangioma, typically located in the lateral neck [4].

The lining of the TGDC is formed by respiratory epithelium, squamous epithelium, or a combination of both, as demonstrated by our patient. In approximately 70% of TGDCs, ectopic thyroid gland tissue can be found in the wall of the cysts or in the surrounding soft tissue. In roughly 3% of the cases, thyroid carcinoma may be found, with the majority (more than 99%) being papillary thyroid carcinomas [6].

Patients with TGDCs frequently present with mass and cyst infections. Less commonly, they may experience cutaneous fistula, dysphagia, dysphonia, or airway obstruction [5]. While study had shown that adults are significantly more likely than children to present with symptoms other than mass or infection, such as pain, difficulty swallowing, hoarseness, and the development of a fistula. There are few case reports detailing airway compression caused by TGDCs in adults [5]. This atypical manifestation has primarily been reported in very young children, and there have been a few case reports regarding upper airway obstruction and difficult airway during anesthesia in neonates with TGDCs [7, 8].

With regard to the location of the cyst, cases of airway obstruction caused by lingual TGDCs have been documented, while airway compressions resulting from TGDCs originating from other locations are not commonly observed [9]. In our patient, the TGDC was located just below the hyoid bone, and its expansion over the years had resulted in medialization and narrowing of the supraglottic region, leading to dyspnea.

Although very rarely reported, a TGDC can have fatal consequences in adults as well. In the event of an acute respiratory infection, airway narrowing from a TGDC may adversely affect the patient's outcome, as demonstrated in a case report where a man's sudden demise was attributed to the combined effects of lobar pneumonia

and the presence of a 3 cm × 2 cm (in cross-section) TGDC compressing the upper airway [10].

CONCLUSION

Thyroglossal duct cysts are one of the most common congenital neck masses and should be considered in patients presenting with midline neck swellings. Given the potential for mass effect on the airway and the risk of recurrent infection, surgical intervention should be considered in patients with TGDC. Timely intervention can prevent severe outcomes, such as airway compromise.

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Author Contributions

Ting Ting Chai – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Lee Lee Chin – Conception of the work, Design of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Jothi Shanmuganathan – Conception of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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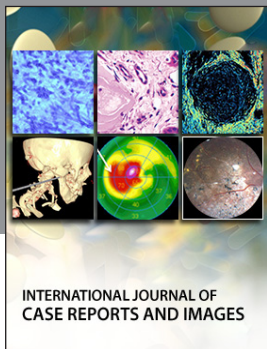
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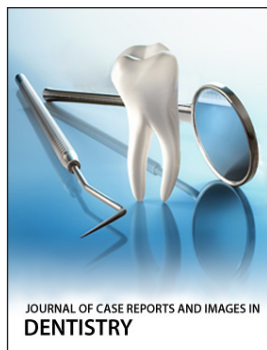
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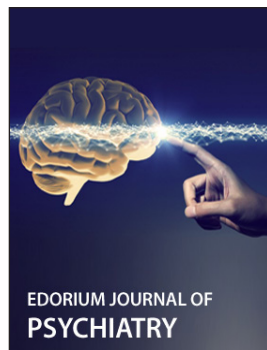
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