

Case Report

Coexisting Congenital and Lymphoid Pathologies: A Case Report of Thyroglossal Duct Cyst and Adenotonsillar Hypertrophy in a 5 Year Old Child

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Abstract

Thyroglossal duct cyst (TGDC) is the most common congenital midline neck swelling in children. It typically presents as a painless, cystic swelling that moves with deglutition and tongue protrusion. Adenotonsillar hypertrophy, on the other hand is one of the most common causes of upper airway obstruction in the paediatric population. However their coexistence is rarely reported and may pose diagnostic and management challenges. We report a case of a 5-year-old male child who presented with a midline neck swelling along with symptoms of upper airway obstruction due to grade III adenotonsillar hypertrophy. He underwent simultaneous adenotonsillectomy and Excision of the thyroglossal duct cyst by the Sistrunk procedure under general anaesthesia. The postoperative period was uneventful, with no recurrence on follow-up. This case highlights the importance of comprehensive evaluation and simultaneous management of coexisting airway and congenital neck pathologies.

1. Introduction

Thyroglossal duct cyst (TGDC) is the most common congenital anomaly of the neck, accounting for approximately 70% of midline neck masses in children [1, 2]. It arises due to the persistence of the thyroglossal duct, an embryological structure that forms during the descent of the thyroid gland from the foramen cecum at the base of the tongue to its final pretracheal position in the neck [3]. Normally, this duct undergoes complete involution by the 10th week of gestation; failure of this process results in cyst formation anywhere along the thyroglossal tract [4].

TGDC typically presents as a painless, cystic midline swelling in the neck that characteristically moves with deglutition and protrusion of the tongue, owing to its attachment to the hyoid bone and tongue base [5]. It most commonly presents in the first decade of life, although it may remain asymptomatic until later years or become apparent following infection [6]. Secondary infection, sinus formation, and, rarely, malignant transformation are known complications [6].

The standard treatment for TGDC is the Sistrunk procedure, which involves excision of the cyst along with the central portion of the hyoid bone and the entire tract up to the foramen cecum. This technique significantly reduces recurrence rates compared to simple cyst excision [7].

Adenotonsillar hypertrophy is another common condition in the pediatric population and represents the leading cause of upper airway obstruction in children [8]. It manifests clinically with mouth breathing, snoring, sleep-disordered breathing, and recurrent infections. Adenotonsillectomy remains the treatment of choice in symptomatic cases and has been shown to significantly improve airway function and quality of life [9].

The coexistence of thyroglossal duct cyst with significant adenotonsillar hypertrophy requiring surgical intervention is uncommon and poses a unique clinical scenario. Simultaneous surgical management under a single anesthetic exposure is advantageous in reducing overall morbidity and healthcare burden.

2. Case Report

A 5-year-old male child, Baby Hamza, presented with a swelling in the midline of the neck since 1 year. The swelling was gradually increasing in size and was not associated with pain or discharge. The child also had complaints of mouth breathing, snoring, and disturbed sleep suggestive of upper airway obstruction.

On examination: A midline neck swelling was present just below the hyoid bone Figure 1, The swelling was cystic, non-tender, and moved with deglutition and tongue protrusion, No signs of infection were noted. Oropharyngeal examination revealed: B/L Grade III tonsillar hypertrophy.



Figure 1: Preoperative photographs demonstrating a midline neck swelling in the subhyoid region, characteristic of thyroglossal duct cyst

Routine blood investigations were within normal limits. X-ray soft tissue Neck lateral view was done which showed grade 3 adenoid hypertrophy Figure 2. Ultrasonography of the neck showed a well-defined cystic lesion in the midline consistent with thyroglossal duct cyst, Thyroid gland was normal in position. A diagnosis of Thyroglossal duct cyst and Grade III adenotonsillar hypertrophy was made.



Figure 2: Lateral radiograph of the neck demonstrating enlarged adenoid tissue causing significant narrowing of the nasopharyngeal airway

The patient underwent Simultaneous Adenotonsillectomy and Sistrunk Procedure under GA reducing multiple hospital admissions and anaesthesia exposure. After Adenotonsillectomy Figure 3, the adenoid tissue and both tonsils were sent for Histopathological examination Figure 4.

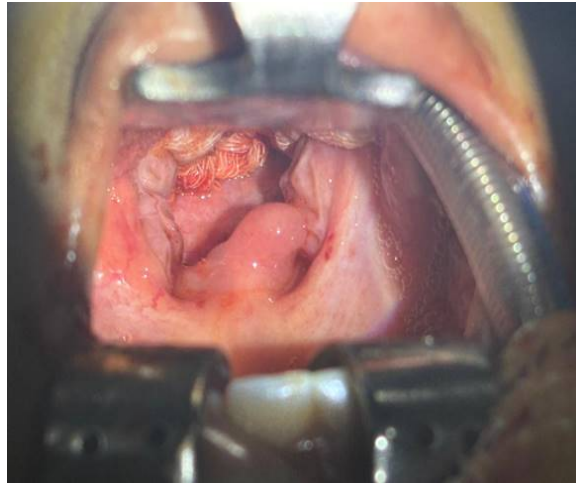


Figure 3: Intraoral photograph demonstrating bilateral enlarged tonsils (Grade III) with significant reduction in oropharyngeal airway space

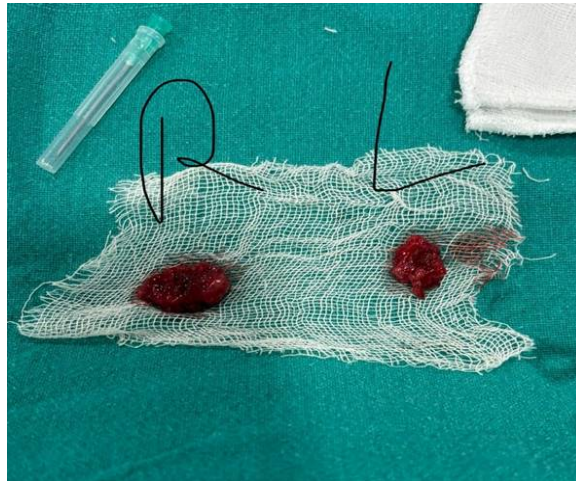


Figure 4: Postoperative specimen demonstrating excised bilateral tonsillar tissue

Also in the same sitting Excision of thyroglossal duct cyst by Sistrunk procedure under general anesthesia was carried out Figure 5.



Figure 5: Intraoperative photograph demonstrating pre-incision skin marking over the midline neck corresponding to the thyroglossal duct cyst prior to Sistrunk procedure

Intraoperatively The cyst was identified and dissected, The central portion of the hyoid bone was removed, The tract was excised completely Figure 6, 7. No intraoperative complications were encountered.

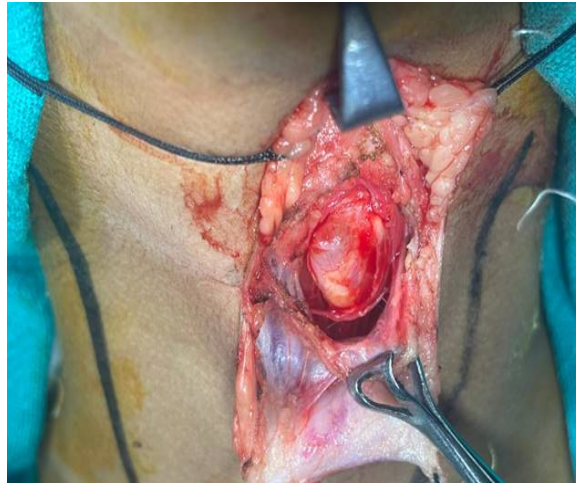


Figure 6: Intraoperative photograph demonstrating a well-defined cystic lesion in the midline consistent with thyroglossal duct cyst, exposed following subplatysmal flap elevation during Sistrunk procedure

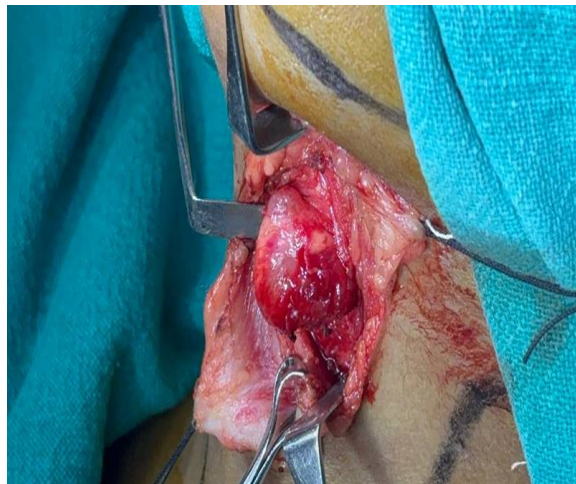


Figure 7: Intraoperative photograph demonstrating a well-defined cystic lesion consistent with thyroglossal duct cyst following dissection and exposure during Sistrunk procedure

The thyroglossal cyst was Excised in toto and sent for histopathological examination Figure 8 in the same sitting. On Histopathology cyst cavity was filled with thick whitish fluid and features were consistent with inflamed thyroglossal duct cyst with no evidence of granuloma or malignancy Figure 9.



Figure 8: Gross specimen showing excised thyroglossal duct cyst following Sistrunk procedure, demonstrating a well-defined cystic lesion

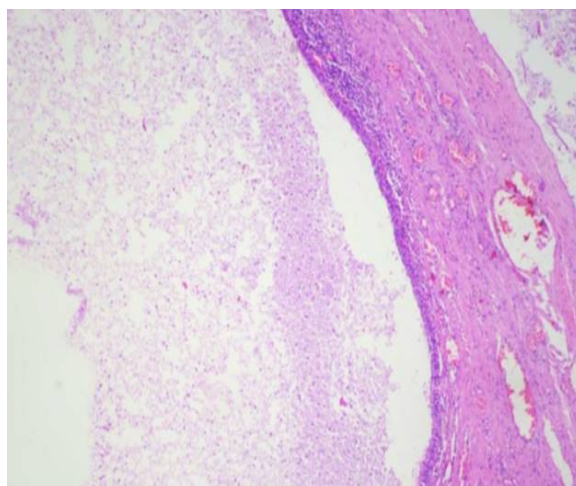


Figure 9: Microphotograph showing cystic cavity with epithelial lining and surrounding stroma

Postoperative period was uneventful. The patient showed improvement in breathing and sleep. Wound healing was satisfactory. No recurrence was noted on follow-up.

3. Discussion

Thyroglossal duct cyst represents the most common congenital midline neck mass in the pediatric population and arises from remnants of the thyroglossal tract [1, 3]. The tract typically extends from the foramen cecum at the tongue base to the thyroid gland, explaining the characteristic movement of the cyst with swallowing and tongue protrusion [5, 10]. The majority of TGDCs are located in close relation to the hyoid bone, which is a key surgical landmark [11, 12].

The clinical diagnosis of TGDC is primarily based on history and physical examination [10, 13]. However, imaging modalities such as ultrasonography are useful in confirming the cystic nature of the lesion and ensuring the presence of a normally located thyroid gland [14, 15]. In our case, ultrasonography demonstrated a well-defined midline cystic lesion, supporting the diagnosis.

The Sistrunk procedure remains the gold standard for management, as it addresses both the cyst and the tract, including the central portion of the hyoid bone. Recurrence rates following simple cyst excision have been reported to be as high as 40–50%, whereas the Sistrunk procedure significantly reduces recurrence to less than 5% [7, 16]. Complete excision of the tract is essential to prevent recurrence.

Adenotonsillar hypertrophy is a leading cause of pediatric airway obstruction and is frequently associated with symptoms such as snoring, mouth breathing, and sleep-disordered breathing [8, 9]. In the present case, the presence of grade III adenotonsillar hypertrophy warranted surgical intervention.

The coexistence of TGDC and adenotonsillar hypertrophy in a pediatric patient is unusual and rarely reported in the literature. Although both conditions are individually common, their simultaneous occurrence may have important clinical implications. In such cases, overlapping symptoms particularly airway related complaints may lead to diagnostic delays in identifying the neck mass. Furthermore, the presence of adenotonsillar hypertrophy may influence perioperative airway management and anesthetic considerations [8].

From a surgical point of view, the decision to perform simultaneous versus staged procedures should be individualized. Combined surgery may reduce the need for multiple hospital admissions and anesthesia exposures, however, it requires careful planning, particularly in younger children with compromised airways. Performing adenotonsillectomy in the same sitting as the Sistrunk procedure offers the advantage of a single anesthetic exposure, reduced hospital stay, and improved patient compliance.

Another important consideration is the need for thorough preoperative evaluation to rule out ectopic thyroid tissue, especially in TGDC cases, and to assess airway patency in children with significant adenotonsillar enlargement. Failure to recognize these factors may increase the risk of perioperative complications.

This case highlights the importance of a comprehensive head and neck examination in pediatric patients presenting with airway symptoms, as well as the need to consider the possibility of coexisting pathologies. Reporting such associations contributes to the existing literature and may aid clinicians in better diagnostic and management strategies.

This case underscores the importance of recognizing coexisting pathologies in pediatric patients and adopting a multidisciplinary approach to management. Early diagnosis and appropriate surgical intervention result in excellent outcomes with minimal complications.

4. Conclusion

Thyroglossal duct cyst is the most common congenital midline neck lesion in children and typically presents with characteristic clinical features that aid in diagnosis. This case highlights the importance of a thorough clinical evaluation in identifying coexisting conditions such as adenotonsillar hypertrophy, which may significantly contribute to airway obstruction. Simultaneous surgical management with adenotonsillectomy and Sistrunk procedure under a single anesthetic exposure is safe, effective, and advantageous in reducing overall morbidity and hospital stay. Early diagnosis and appropriate surgical intervention result in excellent outcomes with minimal recurrence. Awareness of such combined presentations can help clinicians plan optimal management strategies and avoid unnecessary delays in treatment.

Article Information

Ethical Approval: Ethical approval was not required for this case report according to the policies of the relevant institution.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report.

Consent for Publication: Written informed consent was obtained from the patient for publication of the case details and any accompanying images.

Patient Privacy: All identifying information has been removed to protect the patient's privacy.

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Author Contributions: A.K. - Definition of intellectual content, Literature survey, Prepared first draft of manuscript, Implementation of study protocol, Data collection, Data analysis, Manuscript preparation, Manuscript Revision; G.S. - Concept, Design, Clinical protocol, Data collection, Manuscript Revision; N.S. - Design of study, Manuscript preparation; S.J. - Manuscript editing, Review and Article submission; M.S. - Literature survey, Manuscript review; N.A. - Literature survey, Manuscript review.

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