



(CASE REPORT)



Management of pediatric thyroglossal duct cyst: A case report

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Abstract

Introduction: Thyroglossal duct cysts are common congenital neck anomalies in children, diagnosed through clinical assessment and ultrasound, and treated with the Sistrunk procedure to prevent complications like infection and malignancy.

Case Description: We present a case of a 4-year-old male patient with a progressively enlarging neck mass for three months. The mass was asymptomatic, did not cause any eating difficulties, and moved upwards during swallowing and tongue protrusion. Upon physical examination, a soft, mobile, cystic mass approximately 3 cm in diameter was identified beneath the hyoid bone. Supporting examinations, including ultrasound and fine-needle aspiration cytology, led to the diagnosis of a thyroglossal duct cyst. The patient underwent a successful Sistrunk procedure, which involved the excision of the cyst along with a portion of the hyoid bone. Postoperative management included administration of intravenous antibiotics and paracetamol, culminating in a full recovery without any signs of infection. The patient exhibited complete wound healing within two weeks. There was no evidence of cyst recurrence during a follow-up examination six months later.

Conclusion: Despite being common, thyroglossal duct cysts require thorough evaluation to avoid misdiagnosis, and are typically identified by a slowly growing midline neck mass that moves with swallowing and tongue protrusion, often near the hyoid bone.

Keywords: Thyroglossal duct cyst; Pediatric; Sistrunk procedure; Congenital anomaly; Case report

1. Introduction

Thyroglossal duct cyst is a common congenital neck pathology in the pediatric population [1]. As a thyroid gland remnant, thyroglossal duct cysts can form anywhere along the embryologic descent of the thyroid [2]. The diagnosis is usually based on clinical assessment, supported by imaging tests such as ultrasound. In the absence of treatment, it can be complicated by infection or fistulization and malignancy. The standard treatment for thyroglossal duct cysts is surgical excision, most commonly performed through the Sistrunk procedure, which involves removal of the cyst along with a portion of the hyoid bone to minimize the risk of recurrence [3].

In this report, we present a case of thyroglossal duct cysts in pediatric patients undergoing the Sistrunk procedure at our institution. This case highlights the importance of thorough clinical and radiological assessment in managing thyroglossal duct cysts and discusses the surgical principles critical to achieving successful outcomes.

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2. Case report

A 4-year-old male patient presented to the ENT-HN outpatient clinic at Prof. Dr. I.G.N.G. Ngoerah General Hospital Denpasar with a three-month history of a midline neck mass. Initially the size of a pea, the mass had progressively enlarged. The patient reported no pain or tightness, and his eating and drinking habits remained normal. His medical history was notably clear of any related issues and no complaints related to the ears, nose, or throat.

The patient's general condition was stable: blood pressure was 120/80 mmHg, pulse rate was 88 beats per minute, respiratory rate was 16 breaths per minute, and body temperature was 36.5°C. ENT examination was unremarkable. A cystic mass, approximately 3 cm in diameter, was palpated in the anterior neck, below the hyoid bone (Figure 1). The mass was well-defined, fluctuant, and moved upward with swallowing and tongue protrusion.



Figure 1 Clinical presentation of the patient showing the mid-anterior cervical mass

Ultrasonography of the neck revealed a cystic lesion consistent with a thyroglossal duct cyst, and the thyroid gland appeared normal bilaterally. Fine-needle aspiration cytology (FNAC) supported the diagnosis of a thyroglossal duct cyst. Based on the clinical history, physical examination, and diagnostic findings, the patient was diagnosed with a thyroglossal duct cyst and scheduled for excision using the Sistrunk procedure.



Figure 2 Thyroglossal duct cyst and tracts excision using Sistrunk procedure

The surgical procedure was performed under general anesthesia. The cyst and its tract were excised up to the base of the hyoid bone, including the central portion of the hyoid bone. The excised tissue was sent for histopathological examination. Postoperatively, the patient received intravenous ceftriaxone 500 mg every 12 hours. Wound care was administered, and upon observation of a dry surgical wound and removal of the drain, the patient was discharged with oral cefadroxil syrup (125 mg twice daily) and paracetamol syrup (125 mg three times daily).

Histopathological analysis confirmed the diagnosis of a thyroglossal duct cyst. At the two-week postoperative follow-up, the surgical wound had healed well without signs of infection, and sutures were removed. At a six-month follow-up, there was no evidence of cyst recurrence.

3. Discussion

Thyroglossal duct cysts represent a prevalent congenital anomaly located in the anterior neck region [1]. Most patients are diagnosed before the age of ten, as seen in our patients, but these cysts can be diagnosed at any age [4]. They seem to affect both sexes almost equally and are estimated to occur in 7% of the general population [5].

Thyroglossal duct cysts are an embryologic remnant that forms due to obliteration failure of the thyroglossal duct [2]. During the 3 to 4-week embryo development stage, a midline endodermal thickening occurs in the primitive pharynx, which subsequently evolves into a diverticulum known as the foramen cecum linguae. This bilobed structure will protrude into the mesenchymal structure between the first two pharyngeal pouches and form an epithelial fistula, known as the thyroglossal duct, connecting the foramen cecum linguae with the pharynx. Normally, thyroglossal duct should obliterate around the 10th gestational week. However, during the descent of the duct, some epithelial structures may remain within the inferior border of the hyoid bone for unknown reasons, which potentially leading to the formation of thyroglossal duct cysts [6,7].

Various symptoms are associated with thyroglossal duct cysts, including neck swelling, dyspnea, dysphagia, and dysphonia, while a painless anterior neck mass is the most common presentation during physical examination [8]. Thyroglossal duct cysts typically present as mobile midline neck masses near the hyoid bone [2]. Often asymptomatic, but they can present as an abscess or intermittently draining sinus. Vertical movement of the mass with swallowing and tongue protrusion, along with the mass's close proximity to the hyoid bone, is highly indicates of thyroglossal duct cysts [9]. Our patient's presentation was typical, as the mass slowly grew and moved upwards during tongue protrusion and deglutition. The thyroglossal duct cyst of our patients was 3 cm in diameter and it falls within the average size of 2–4 cm [10]. Several factors have been reported as indications for the excision of thyroglossal duct cysts, such as globus sensation, dyspnea, dysphagia, pain due to mass effect, malignancy, and cosmetic defects [3]. In this case, the patients have no complaints other than cosmetic defects.

Further diagnostic imaging should be obtained to rule out other midline neck masses, including dermoid cysts, ectopic thyroid tissue and malignancies, branchial cleft cysts, lymphadenopathy, lymphangioma, lipoma, and teratoma [11]. Main diagnostic methods usually used include neck CT scan, neck ultrasonography, and FNAC. Neck CT is an excellent diagnostic tool for evaluating a neck mass. In children, CT scans are not as frequently performed as in adults because children often require sedation to undergo a scan. Thyroid ultrasonography was the most common test ordered in children because it is the most noninvasive imaging method, does not require sedation, and is cost-effective. It also offers valuable information for identifying both the cyst and thyroid gland. The disadvantages of ultrasonography may include its lack of specificity, a 5% false-positive rate [12]. Fine-needle aspiration is a valuable tool for the differential diagnosis of cyst lesions from a consistent mass, such as ectopic thyroid tissue, lipoma, lymphadenopathy, or even carcinoma. It has a diagnostic sensitivity of 62% and a positive predictive value of 69% for diagnosing thyroglossal duct cysts [13].

Surgical procedure of thyroglossal duct cysts and hyoid bone removal was first proposed by Schlange. Schlange initially proposed a technique to remove the middle third of the hyoid bone and succeeded in decreasing the recurrence rate from 50% to 20% compared with simple cyst drainage [1]. Sistrunk subsequently developed the technique by extending the dissection to the foramen caecum, and the recurrence rate was reduced further. The Sistrunk procedure consists of three major steps: excision of the cyst, excision of the hyoid bone body, and excision of the core tissue surrounding the thyroglossal tract from the tongue muscles close to the foramen caecum [14]. In our patients, the cyst and its tract were excised up to the base of the hyoid bone, including the central portion of the hyoid bone.

The Sistrunk procedure has a reported recurrence rate of about 11% according to the most recent literature [3]. Marianowski et al. (15) reported that young age may be associated with increased recurrence, but our patient had no evidence of cyst recurrence at the six-month post-operative follow-up.

4. Conclusion

We reported a case of a 4-year-old male patient with thyroglossal duct cysts who underwent a Sistrunk procedure with good surgical results and no recurrence found at the 6-month follow-up. Although thyroglossal duct cysts are a common

congenital anomaly, a comprehensive workup should be performed to avoid misdiagnosis with a concomitant different cystic lesion. Key characteristics that strongly indicate typical thyroglossal duct cysts include a slowly growing mass in the anterior midline of the neck that ascends with swallowing and tongue protrusion, along with proximity to the hyoid bone.

Compliance with ethical standards

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Disclosure of conflict of interest

The author reports no conflicts of interest in this work.

Statement of informed consent

Informed consent was obtained from participants included in the study.

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