Sublingual thyroglossal duct cyst (SLTGDC): An unusual location
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1. Case report

A 6-year old male child from the low socio economic status, resident of rural area presented to the department of Oral & Maxillofacial Surgery with the chief complain of swelling under the tongue for 6 months and difficult in breathing during sleep for 1 month. He also had difficulty in speech and swallowing. There was a history of two previous surgeries for the same problem 3-years and 6 months back, the records of which were not available. Although by history the procedures seemed to be carried trans-orally. Oral examination revealed a marked midline swelling of the floor of the mouth extending bilaterally, with normal overlying mucosa (Fig. 1). On examination no neck scars were evident which could suggest any trans-cervical approach or sistrunk procedure. There was midline sublingual scar present which could have been due to incision and drainage or incomplete enucleation of the lesion. Examination of the neck was normal. In particular no obvious sub mental swelling could be appreciated. An Ultrasound of the neck revealed normal thyroid gland. Advanced imaging of the lesion like MRI or CT was not possible due to associated postural dyspnea and lack of an intubation facility at the center. Relevant preoperative investigations were normal. The intubation was anticipated to be difficult and appropriate.
provisions were made by the anesthetic team accordingly. The initial surgical plan was decompression of the swelling along with possible exploration to relieve the postural dyspnea. Under general anesthesia a midline sublingual incision was given and layer wise dissection was done to reach the lining of the cyst (Fig. 3). The inferior extent of the lesion was found to be extending up to the mylohyoid. The lining was dissected away to reach superiorly and posteriorly towards the intrinsic muscles of the tongue. The sac narrowed towards the superior aspect in the form of a cul-de-sac to terminate over the dorsal surface of the posterior 2/3rd of the tongue. There was no identifiable tract and the sac plunged into the mylohyoid muscle. The intraoperative findings and the yellowish color of the cystic fluid provisionally established it to be a thyroglossal duct cyst. The cyst was removed in totality from the foramen cecum to floor of the mouth. The surgical specimen (Fig. 4) was sent for histopathological examination, which showed it to be a cystic structure lined by pseudo-stratified to cuboidal epithelium. At places squamous metaplastic changes were also evident (Fig. 5). These histopathological findings confirmed the diagnosis of thyroglossal cyst established during the surgery. Three months postoperative USG finding are shown in (Fig. 6).

2. Discussion

Thyroglossal duct cyst (TGDC) is usually considered to be a benign embryonic malformation where the thyroglossal duct fails to obliterate after the descent of the thyroid gland [6]. The thyroid gland is originally located in the floor of the pharynx, between the tuberculum impar and the copula, during the 4th week of fetal life [7]. During development, the thyroid gland reaches its final position in front of the trachea. It leaves the thyroglossal duct, a narrow canal with an epithelial lining along the descending route of the thyroid gland. Normally, the thyroglossal duct completely disappears before the 10th week [7,8]. However, if the thyroglossal duct is not obliterated, the secretary epithelium of the thyroglossal duct may result in a TGDC.

TGDC is the second most common pediatric neck mass after lymphadenopathy [9]. Thyroglossal duct remnants occur in approximately 7% of the population, although only a minority of these becomes symptomatic [9]. TGDCs may be observed at any age, but most commonly they are noted during childhood, usually by 5-years of age. TGDCs are present at birth in approximately 25% of the cases; one third become apparent after the age of 30 [7]. Unlike most thyroid disorders which are found more frequently in females [7], TGDCs are found with equal frequency in both sexes. Thyroglossal cyst occurs in 6 different locations [10] viz. infrahyoid cysts (26–85% of TGDCs), suprathyroid cysts (20–25% of TGDC), juxthyroid cysts (15% of TGDCs), Intralingual cysts (2% of TGDCs), Suprasternal cysts (fewer than 10%), intralaryngeal cysts (very rare) [10]. This case had a location of TGDC which is also very rare.

Infection and abscess formation are frequent complications due to a communication between the cyst and the mouth which leads to contamination by the oral flora. This is the most common presentation in adults [11]. One fourth of the patients present with a draining sinus that results from either spontaneous drainage or surgical drainage of an abscess [12]. These lesions can also fluctuate in size, Other rare presentations can be severe respiratory distress or sudden infant death syndrome due to lesions at the base of the tongue, a lateral cystic neck mass, an anterior tongue fistula or coexistence with branchial anomalies [12]. The two most common complications of TDC are infection and malignancy. The latter occurs in 1–4% of cases [5,13].
A sublingual cyst differs from a classical thyroglossal cyst in many ways. First, it does not present as a neck swelling, secondly the chief complaint is different. The common differential diagnoses of such a swelling include dermoid cyst, infected lymph node, lipoma, sebaceous cyst, branchial cyst laryngocele and cystic hygroma \[14\]. Lymph nodes are often multiple and hypo echoic and show the presence of an echogenic hilus. On aspiration there is cheesy secretion from a dermoid cyst, purulent secretion from an infected lymph node, and air from laryngocele. The aspirated material shows fat globules and cholesterol crystals in a branchial cyst \[15\]–\[17\]. Lipoma has slippery edges and sebaceous cyst has a doughy feel. In cystic hygroma trans illumination is brilliantly positive as compared to TGDC. Eric et al., stated that in a high percentage of cases (1–2\%) the thyroglossal cyst is associated with an ectopic thyroid which may be the only thyroid tissue present. Hence preoperative thyroid scan is mandatory to prevent post-operative hypothyroidism. In most cases, ultrasound supplemented by fine needle aspiration cytology is adequate for pre-treatment assessment \[18\]. FNAC serves as a complementary diagnostic method to histopathological examination \[14,19\]. The cytological findings of a thyroglossal cyst are similar to those of a thyroid cyst. However, squamous epithelial cells are usually not seen in a thyroid cyst. This may be the only significant cytomorphologic difference between a thyroglossal duct cyst and a thyroid cyst \[15\]. A detailed histological examination is essential not only to establish the diagnosis of TGDC but also to rule out carcinoma. No ectopic thyroid hygroma \[14\].

Fig. 3. A midline sublingual incision was given and layer wise dissection was done to reach the lining of the cyst.

Fig. 4. The surgical specimen.

Fig. 5. Squamous metaplastic changes are evident.

Fig. 6. Three months post-operative USG. Post operative follow up high resolution ultrasonography image of the floor of mouth showing complete removal of the large cystic lesion. An irregular median scar is seen at the operative site (arrow).
was found in our patient. On ultrasonography, TGDC is highly variable in echogenicity. On CT scan, a TGDC cyst is seen as a well-circumscribed, low-density lesion with a smooth, thin wall. Rim contrast enhancement may also be observed [20]. MRI shows the typical appearance of a simple cystic swelling which is hypo intense in T1 weighted image and hyper intense in T2 weighted images. However, CT and/or MRI scan are rarely needed in the preoperative assessment of a suspected TGDC.

A thyroglossal cyst presenting in the neck is managed surgically to prevent infection, for cosmetic purpose and to prevent the development of carcinoma in 1%-2% of cases [1]. A “Sistrunk” procedure is the recommended procedure of choice [21]. This technique involves removal of the central portion of the hyoid bone. This procedure has successfully reduced the rate of recurrence compared to local excision of the cyst [1, 7, 10]. The recurrence rate following this procedure is 5%-10% [21]. Endoscopic surgery is occasionally used, particularly when the appearance of scar is concern [22]. In our subject local excision of the cyst was done rather than the Sistrunk procedure. Three months follow up did not show any clinical evidence of recurrence. This was also verified with USG (Fig. 6). It may suggest that atypically presenting TGDC like an intralingual or a sublingual TGDC does not require Sistrunk procedure. This can be the subject for further study on a larger sample population.

References