

Original Article

Thyroglossal cysts and fistulae

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Abstract:

Objective: This study aimed to observe the different diagnostic approaches and differential diagnosis of 20 cases of thyroglossal cysts and fistulas managed surgically.

Methods: The medical records of patients treated for thyroglossal cysts in the department of Ear, Nose, Throat Surgery at regional hospital of CMH Dhaka, Comilla, Rangpur and Ibn Sina Medical College and Hospital Dhaka, from 2002 to 2009 were reviewed. History and examination reports were studied. Their medical records were reviewed for clinical presentations, investigations, operative findings, histopathology and treatment outcome. After a clinical diagnosis, they had individualized investigations (USG, MRI, radio iodine scan, FNAC etc) prior to the Sistrunk's operation. This was a retrospective study.

Results: In this study the site of presentation of thyroglossal duct cysts were 15% suprahyoid, 80% thyrohyoid and 5% supra sternal. Present study revealed that 95% swelling were in the midline. 50% of the study cases of swellings were 1-2 cm, 60% swellings were soft and cystic moved with swallowing, 30% were firm but mobile. Skin was free in 80% cases and 20% had sinuses. 60% cysts contained fibrous tissue and 30% cysts contained thyroid tissue. At an average follow up of 2 years, all are asymptomatic and well.

Conclusion: Although the clinical and histological presentations of these 20 cases are not rare, they do illustrate how varied thyroglossal cyst can be with respect to patient age, anatomic site or associated sign and symptoms.

Key Words: Thyroglossal cyst, Sistrunk's operation.

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Introduction:

Thyroglossal cysts and fistulas constitute the most common anomaly in thyroid development and are generally considered to be distinct clinical entities. They are common congenital lesions presenting as midline soft cystic neck masses that move cranially on deglutition and protrusion of the tongue or as a midline fistula resulting from secondary infection and rupture of the cyst.

The thyroid anlage arises from the floor of the primitive pharynx between the tuberculum imper and the posterior third of the tongue during fourth week of intrauterine life. Originally hollow, it becomes solid as it migrates to the lower neck. The lower end divides into two portions that become the thyroid lobes. The sinus tract should atrophy at the 6th week

(5th to 10th weeks) but if it persists it becomes the thyroglossal duct in which a cyst can develop. The hyoid develops later on and joins from lateral end to medial resulting the tract running through the bone, sometimes penetrating the hyoid bone.^{1,2} Apart from this, the thyroglossal tract lies ventral to the body of hyoid bone and thyrohyoid membrane. There is no internal opening of the tract as the tongue and foramen caecum develops at a later date. Thyroid tissue may be present in the cyst wall up to 60% of cases. Lymphoid tissue which is responsible for repeated infections and variable amount of fibrous tissue depending upon degree of infection are also present in the cyst wall. The cyst contains thick viscous mucous. The epithelial lining is either pseudostratified ciliated columnar, simple columnar, flattened squamous epithelium. Various types of malignancies like adenocarcinoma, squamous cell carcinoma, and papillary carcinoma have been reported.³⁻⁶

Methods:

Patients of this retrospective study included twenty cases reported during 8 years period from January 2002 to December 2009 to the department of Ear, Nose, Throat Surgery, regional hospitals of Combined Military Hospital (CMH) Dhaka, CMH Comilla, CMH Rangpur and in Ibn Sina Medical College Hospital, Dhaka. The subjects of the study were of different age group, both male and female; all of them had a swelling in front of the neck. These study cases were diagnosed, investigated, treated and followed up for 2 years. The cases were diagnosed on the basis of clinical presentation; history regarding presence of other congenital abnormalities in the patient or in their family, physical examination of the neck, ear, nose and throat, general clinical investigations. Ultrasonography is an ideal initial technique for the differential diagnosis of a neck mass. Other tests like Radio isotope scanning of thyroid gland, thyroid hormone assay, MRI,

FNAC were done prior to the Sistrunk's operation. Histopathological examinations were done after surgical excision in all the cases. The results have been analyzed.

Results:

The results have been furnished in tabulated form. The lowest and highest age limits found in this series were 3 years to 36 years respectively.

Table-I
Age incidence (n=20)

Age in years	Numbers	%
01-10	10	50%
11-20	6	30%
21-30	3	15%
31-Above	1	05%
Total	20	100%

Maximum numbers of patients were between the age of 01 to 10 years (table-I).

Table-II
Sex distribution (n=20)

Sex	Number	%
Male	12	60%
Female	08	40%
Total	20	100%

The patient comprising the study consisted of 12 male and 8 female patients.

Table-III
Site of thyroglossal cyst (n=20)

Site	No of patients	%
1. Intralingual	0	0
2. Supra hyoid	3	15%
3. Thyrohyoid	16	80%
4. Suprasternal	1	5%
Total	20	100%

In this series according to the site of presentation 15% suprahyoid, 80% thyrohyoid, and 5% suprasternal cysts were found. No intralingual cyst was present.

Table-IV
Consistency and mobility of cyst

Type of swelling	Mobility	No of cases	%
1. Soft, cystic	mobile all sides	12	60%
2. Firm	mobile	6	30%
3. Tense, hard	Restricted side to side movement	2	10%

Table-V
Presentation of thyroglossal cyst

Presentation	No of case	%
1. Swelling	20	100%
a. Midline	19	95%
b. Slightly left	1	5%
2. Pain	5	25%
3. Sudden increase in size	5	25%
4. Intermittent discharge (sinus)	4	20%
a. Incisional	3	75%
b. Spontaneous	1	25%

20% cases gave previous history of operation of which 80% were due to non adherence to Sistrunk's procedure, 20 % was due to incomplete removal of the cyst.

Skin was free in 80% of cases, 20% had sinuses. Local temperature was not increase. The swelling moved upwards during swallowing and on protrusion of tongue (positive Tug sign). There was no palpable lymph node and thyroid gland was also not palpable. Signs of hyperthyroidism or hypothyroidism were absent.

Haematological examinations were within normal limit. Serum thyroid hormone levels and TSH level were normal. Radioisotope scanning of the thyroid gland showed no abnormality with thyroid gland in normal position. Ultrasonography is the initial diagnostic modality of choice for a clinically suspected thyroglossal cyst. CT- scan and MRI play only a supplementary role in more accurately delineating the anatomy of the lesion. FNAC and histopathological examinations revealed features of thyroglossal duct cysts. Cystic spaces lined with columnar with/or squamous epithelium were found in all cases. 60% cyst contains fibrous tissue. 30% of the cysts contained thyroid tissue. Lymphoid tissue was present in the cyst wall of 60% of cases.

Table-VI
Causes of recurrence (n=4)

Causes	No of patients	%
1. Non adherence to Sistrunk's procedure	3	75%
2. Incomplete removal	1	25%
Total	4	100%

Treatment was done by surgical excision under general anesthesia. Sistrunk's procedure was followed in all the cases except one in which recurrence occurred due to incomplete removal of the cyst in spite of Sistrunk's operation. Recurrence occurred in 75% cases where Sistrunk's procedure was not followed and in one case recurrence occurred due to incomplete removal of the cyst (Table-VII).

In this series all the cases were treated by surgical excision under general anesthesia. Sistrunk's procedure was followed. Post operative period was uneventful.

Discussion:

Thyroglossal cyst is a congenital anomaly that arises from an epithelial remnant of the thyroglossal duct and is the common midline neck cyst. The most common clinical presentation of a thyroglossal cyst is a gradually enlarging painless mass at the anterior neck. No sex predilection has been reported and the mean age at presentation is 5 years (age range: 4 months to 70 years). Patient may also present in adult life.^{6, 8} In this series most of the patients (75%) were of 5-20 years of age. One patient was 3 years of age; one patient was 36 years of age. 25% of patient was above 4 years to 8 years of age group. Thyroglossal cyst becomes apparent in 2-4 years old child when baby fat subsides and irregularities of the neck are more readily apparent. Among the female, younger patients relatively reported earlier (between 5-16 years) probably due to their anxious parents. In this series male patient reported for treatment in any time of their life but only one female patient reported after the age of 16 which reflects our poor socioeconomic condition and reluctance of the female patient to be operated upon once they are married. The cyst may be 2.1% intralingual, 24.1% suprahyoid, 60.9% thyrohyoid, and 12.9% suprasternal.⁸ In this study, we found 15% suprahyoid, 80% thyrohyoid, and 5% suprasternal position of the cyst.

Although another case was suspected as suprasternal presentation later on found as a cold nodule of the thyroid isthmus which has been excluded from this study. Since opening is always secondary due to spontaneous or surgical drainage after infection.^{9, 10} Ninety five per cent cases present with a painless cystic lump that moves on swallowing or protruding the tongue (Tug sign). In our study

all the patients presented with swelling in front of neck. 75% patient did not complain of pain, 25% suffered from pain. Size suddenly increases of 25% of case. Intermittent mucoid discharge was present in 20% cases. If uninfected the cyst may be soft, fluctuant and mobile in all direction but more often it is so tense that is seen solid and many appear as fixed. This study reveals 60% soft, cystic mobile in all side, 30% firm but mobile and 10% tensed cysts with side to side restricted movement. When infected, the lump will be painful, the patient will have odynophagia and overlying skin will be red.

Thyroglossal cyst should be differentiated from a dermoid cyst, branchial cleft cysts, hemangioma and infected lymph node, lipoma, minor salivary gland tumour, sebaceous cyst, cartilaginous tumour of the thyroid, hypertropic pyramidal lobe, lingual thyroid adenoma.

We consider ultrasonography to be the initial diagnostic modality of choice for a clinically suspected thyroglossal cyst⁷. CT-scan and MRI play only a supplementary role in more accurately delineating the anatomy of the lesion and are unnecessary routinely. Radioisotopic scanning (¹³¹I) should be considered in all suprahyoid and intrahyoid lumps in addition to FNAC. In 65-75% of patients with a lingual thyroid, there is no other thyroid tissue. Serum thyroid hormones assay and TSH level should be estimated. In this series all this investigations were done. Study for Cytokeratin, Carcinoembryonic antigen may be done to differentiate squamous cell carcinoma.⁴

Treatment should be done by excision including the body of the hyoid bone between the lesser horns to avoid damage to the hypoglossal nerve, after the tract has been dissected to this area, Some authors

suggested that not only the body of the hyoid but a core of tissue between this and the foramen caecum should be removed. Sistrunk still has his name applied to the present day operation of choice, has adopted this suggestion.^{11 - 14} The body of the hyoid between the lesser horns is divided. A segment of muscles were removed in continuity with the bony segments. The core was removed in a line drawn at 45° to the body of the hyoid aiming at foramen caecum. There is no need to open in to the oral cavity. In this series Sistrunk's operation were done in all cases.

It is unwise to open an infected cyst. It should be aspirated with a wide bore needle to improve antibiotic penetration and allow resolution with a view to removal later on. In case of recurrence, if hyoid bone is not removed (85% recurrence) Sistrunk's procedure has to be carried out in case of sinus, the opening of the sinus is to be excised in an ellipse; a double Z-plasty often gives a better cosmetic result than simple closure.

In case of squamous cell carcinoma in a thyroglossal cyst, radical operation employing Sistrunk's procedure with bilateral neck dissection should be done after preoperative radiotherapy in case of papillary carcinoma (most common). A recent review from Slone Kettering suggests treatment should be with Sistrunk's operation and thyroid suppression with thyroxin.¹⁵

Conclusion:

Thyroglossal cyst is a congenital condition commonly occurs in children usually in the midline of the neck, may also present in adult life. Diagnosis should be made in a midline swelling which moves on swallowing and

moves upwards on protrusion of the tongue characteristically. The clinical and histological presentations are not rare; they do illustrate how varied thyroglossal cysts can be with respect to patient age, anatomic sites, or associated signs and symptoms.

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