

# Thyroglossal cyst – A retrospective analysis in a tertiary care center



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## ABSTRACT

**Background:** Thyroglossal duct cyst (TGDC), one of the most common congenital neck lesions, is due to the persistence and dilatation of remnants of an epithelial tract, formed during migration of the thyroid in embryogenesis. **Aims and Objectives:** The objective was to study the location of TGDC in different age and sex groups and variations in presentation. **Materials and Methods:** A retrospective study was carried out in the Department of ENT at Assam Medical College and Hospital, Dibrugarh from July 2018 to June 2023. The diagnosis was made on the basis of fine-needle aspiration cytology and ultrasonography. **Results:** A total of 25 cases were analyzed. Majority of them belonged to the age group of 11–20 years. Male: female ratio was 2:3. Nearly 100% of cases had a chief complaint of midline neck swelling that moves with protrusion of the tongue. Most common site of occurrence is the infrahyoid region. Nearly 80% of cases underwent Sistrunk operation. **Conclusion:** Thyroglossal cyst with its varied presentation is notorious for recurrence. Proper evaluation and excision are the keys toward successful outcomes.

**Key words:** Embryological duct cyst; Neck mass, Sistrunk operation

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## INTRODUCTION

A thyroglossal duct cyst (TGDC) is the most common congenital neck mass and the second-most common of all childhood cervical neck masses after cervical lymphadenopathy.<sup>1</sup>

During development, the thyroid descends through the tongue and passes caudally with an intimate relationship to the hyoid bone. It finishes in the anterior neck overlying the trachea and laryngeal cartilage. The duct has been found posterior to the hyoid bone, in one-third of the cases. The duct may fail to involute during the 8–10 weeks of gestation and as a result an abnormal cyst may arise anywhere along the tract and may contain thyroid tissue. The thyroglossal fistula also manifests as anterior midline neck mass from foramen cecum to the thyroid gland, typically before 20 years of age.<sup>2</sup>

In general, the vertical location of TDCs is described as lingual, supra-hyoid (including submental), thyrohyoid (between the hyoid bone and thyroid cartilage), or suprasternal.<sup>3</sup>

Below the level of hyoid bone, it occasionally presents as a mobile, non-tender, non-lobular neck swelling.<sup>4</sup>

Thyroglossal ducts and fistulas are often asymptomatic.<sup>1</sup>

Mass and infection, either as a single or recurrent event, are the two main presenting symptoms of TGDC.<sup>5</sup> Although the TGDC is a congenital anomaly and most commonly presents in a pediatric age group, it is important to realize that it can appear in adults as well.<sup>6</sup> These lesions may harbor thyroid tissue, and as such, they can harbor malignancy.<sup>7</sup>

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## Aims and objectives

To study the location of Thyroglossal duct cyst in different age and sex groups and its variations in presentation.

## MATERIALS AND METHODS

This retrospective study was carried out in the Department of ENT at Assam Medical College and Hospital, Dibrugarh from July 2018 to June 2023.

The aims and objectives were to study the age and sex predilection, and variation in presentation in the neck.

Diagnosis was made on the basis of clinical examination, ultrasonography, and cytological analysis of patients. On ultrasonography, TGDC had a varied appearance ranging from a homogenous anechoic mass with posterior wall enhancement to a pseudo solid mass due to proteinaceous secretions or a mass with a heterogeneous echo pattern due to previous hemorrhage or infection.

All patients diagnosed with TGDC have undergone excision if the site is above the level of the hyoid bone. Whereas those presenting with a thyroglossal cyst at or below the level of hyoid bone underwent a Sistrunk operation, removing the cyst, the duct, and part of the body of hyoid bone up to the foramen cecum, transecting its tract.

The charts prepared were reviewed, and the following information was recorded: age of presentation, sex

**Table 1: Age-wise distribution of cases**

Age (in years)	No. of a midline neck mass	Percentage (%)
1–10	5	20
11–20	6	24
21–30	4	16
31–40	3	12
41–50	3	12
51–60	2	8
>60	2	8

**Table 2: Gender-wise distribution of cases**

Gender	No. of cases	Percentage (%)
Male	10	40
Female	15	60
Total ratio	2:3	

**Table 3: Year-wise distribution of cases in terms of gender ratio**

Year	No. of cases	Male: female ratio
2018	6	1:2
2019	5	2:3
2020	2	1:1
2021	3	1:2
2022	5	2:3
2023	4	1:1

predilection, clinical features, site of the neck mass, pre-operative cytological analysis, surgery performed, and post-operative histopathological diagnosis, and complications. All collected data were fed into the computer for statistical analysis. The Statistical Package for the Social Sciences and Epi Info 2000 programs was used.

## RESULTS

In our study, we found that the second decade of life comprised 24% of the cases (Table 1). Whereas the first decade of life comprised 20% of cases and the third decade of life had 16%. The 4<sup>th</sup> and 5<sup>th</sup> decades comprised 12% of cases and the 6<sup>th</sup> and 7<sup>th</sup> decades had 8% of cases, respectively.

Table 2 shows the Male: female ratio was 2:3. According to Table 3, the year 2018 showed a maximum number of six cases, with Male: female ratio of 1:2. On the other hand, the year 2020 showed a minimum number of two cases, with Male: female ratio of 1:1.

Among the symptoms, midline swelling that moves on protrusion of the tongue was the most common presentation in almost 100% of cases, whereas pain over swelling comprised 32% of cases, and 8% presented with fever due to infection, as depicted in table 4. Dysphagia with foreign body sensation comprised 4% of cases.

According to Figure 1, out of 25 cases, 80% underwent sistrunk operation as shown in Figure 2, while 20% underwent excision. The most common site of occurrence was found to be

**Table 4: Most common presenting symptom**

Symptoms	No. of cases	Percentage
Midline swelling	25	100
Pain over swelling	8	32
Fever due to infection	2	8
Dysphagia	1	4

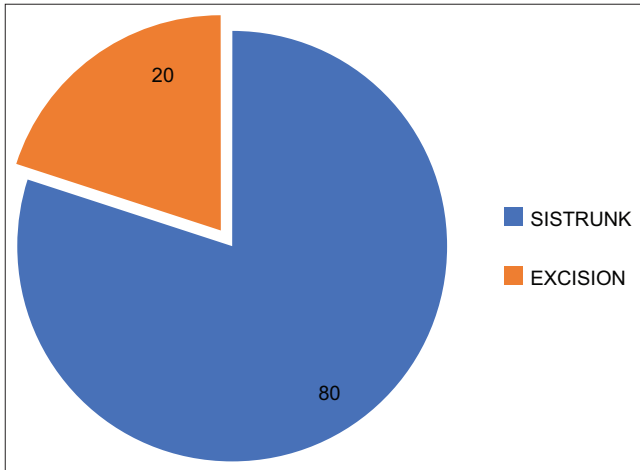
**Table 5: Most common location of the cyst**

Site	No. of cases	Percentage
Sublingual	1	4
Suprahyoid	4	16
Infrayoid	14	56
At the level of thyroid cartilage	6	24

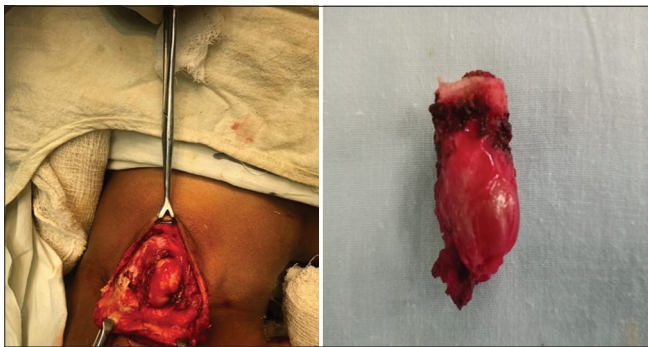
**Table 6: Correlation of FNAC with H.P.E**

No. of cases	FNAC	H.P.E	Percentage
24	Thyroglossal cyst	Thyroglossal cyst	96
1	Thyroglossal cyst	Papillary carcinoma of the thyroid	4

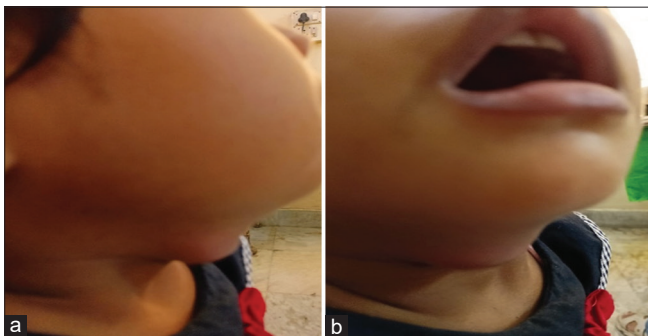
FNAC: Fine needle aspiration cytology, H.P.E: Histopathological examination



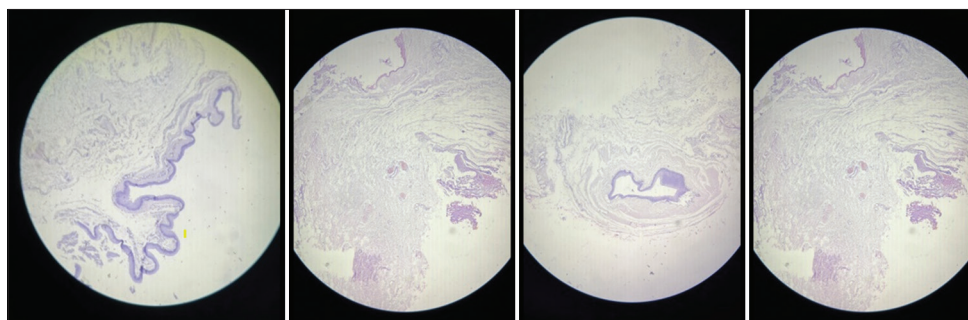
**Figure 1:** Graphical representation of operative procedures performed



**Figure 2:** Sistrunk operation in a subhyoid thyroglossal cyst



**Figure 3:** (a and b) Location of the thyroglossal cyst in a pediatric patient



**Figure 4:** Histopathological images of thyroglossal cyst

infrahyoid region (Figure 3) in 56% of cases, as shown in Table 5. Suprahyoid region had 16% of cases, while 24% of cases, thyroglossal cyst was found at the level of thyroid cartilage.

However, one case was detected in sublingual region. Table 6 shows the correlation of fine-needle aspiration cytology (FNAC) with histopathological examination (H.P.E). Thyroglossal cyst was proved by both FNAC and H.P.E in 96% of cases (Figure 4).

One case stunningly came out to be papillary carcinoma of the thyroid in Post-operative H.P.E.

## DISCUSSION

Our study highlights that most of the thyroglossal cysts (24%) presented in the second decade of life, which is similar to the study done by Ali et al.,<sup>3</sup> where the mean age of presentation was 24.1 years.

This congenital neck mass showed female preponderance with a ratio of 2:3, which is discordant with the study done by Brousseau et al.,<sup>5</sup> there was no sex predilection.

Of various clinical features, midline swelling that moves with protrusion of the tongue was found in almost all cases, which is similar to the study done by Ewing et al.,<sup>6</sup> where the most common presentation was painless midline mass.

Infrahyoid/Subhyoid region presented with 48% of cases, which is similar to the study of Taha et al.,<sup>4</sup> with nearly (70.2%) of cases.

Post-operative H.P.E reports confirmed the diagnosis of 96% of thyroglossal cyst cases which were pre-diagnosed by fine needle aspiration cytology. Out of which one case turned out to be papillary carcinoma of the thyroid which is similar to the study done by Gómez-Álvarez et al.,<sup>8</sup> where they conducted a case series analysis on a thyroglossal cyst in which two cases, one suprahyoid and other anterior midline mass, turned out to be malignant.

In our study, pre-operative diagnosis was based on fine-needle aspiration cytology and ultrasonography of neck mass.<sup>9,10</sup> Out of 25 cases, 80% underwent Sistrunk operation and 20% (those cases with sublingual and suprahyoid presentation) underwent simple excision after conservative management to subside the inflammation.<sup>11</sup>

### Limitations of the study

This study was carried out for a period of 5 years and a limited data could be gathered during that period due to a smaller number of cases. If the study could be done for a longer period, then we would have been able to give a better clear picture of the clinical spectrum of the disease.

## CONCLUSION

TGDC remains one of the most common congenital neck masses, featuring with mobile midline neck swelling that moves with protrusion of the tongue. Appropriate diagnostic measures and complete removal of its duct by Sistrunk operation when its site of location is at, or below hyoid bone is of utmost importance. Simple excision of the cyst with transection of the duct can be done in cases of suprahyoid or sublingual thyroglossal cyst. In rare instances, malignancy was reported in one case which underwent excision. However, the incidence of malignancy in some suprahyoid cases of thyroglossal cysts remains controversial and needs further research studies.

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