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*Original Article*

# Clinicopathological Study of Thyroglossal Cyst

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***Abstract:***

***Background:*** *Thyroglossal cyst is a congenital malformation that occurs due to incomplete closure of the thyroglossal duct. Apart from quiescent embryological remnant, it presents clinically as a midline cystic swelling that moves with tongue protrusion; present at any age, often requires surgical excision.*

***Objective:*** *To evaluate the clinical features and treatment outcomes of patients with a thyroglossal duct cyst.*

***Material and methods:*** *This observational study was carried out in the Department of Surgery, Dept. of Otolaryngology, Ibn Sina Medical College, Dhaka, A total 40 cases of both sexes with the age 6-67 years, during the period of 2013 to 2018 (5 years)*

***Results****: A total 40 cases of thyroglossal cyst with mean age of 24.37 years were included in study. Of the total 40 cases, 20 (50%) patients were male and 20(50%) were female. Most common clinical presentation was painless midline cystic swelling was the main complaint in 30 patients (75%), followed by dysphagia 5 (12.5%), Sore throat 3 (7.5%) and globus 2 (5%) in descending order. Most common location of cyst was in infrahyoid region in 26 patients (65%), suprahyoid in 14 patients (35%).*

***Conclusion:*** *The most common presentation of thyroglossal cyst is a midline cystic swelling that moves with tongue protrusion. The standard surgical approach to thyroglossal cyst is Sistrunk's operation with low recurrence rate. Malignancy within thyroglossal cyst is very rare but should be rule out in all cases.*

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**Introduction:**

The thyroglossal cyst is a well-recognised developmental abnormality which arises in some 7% of the population. Consequently, it represents the most common type of developmental cyst encountered in the neck region.[1] Thyroglossal cysts are usually considered to be a benign embryonic malformation where the thyroglossal duct fails to obliterate after descent of the thyroid gland.[2]

During development, the thyroid gland reaches its final position in front of the

trachea and 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. However, if the thyroglossal duct is not obliterated, the secretory epithelium of the thyroglossal duct may result in a thyroglossal cyst. Thyroglossal cysts may be observed at any age, but most are noted during childhood.[3,4]

Thyroglossal cysts can be found anywhere in the midline from the submental region to the suprasternal notch, but are most commonly located halfway between these extremes, near the hyoid bone.[3] The cyst usually presents itself as a painless, asymptomatic midline swelling and may cause a neck mass or a nodule, which occasionally may become infected and rarely gives rise to carcinoma.[3,4]

On physical examination, thyroglossal cysts present as nodular swelling in neck that move with swallowing or protrusion of the tongue.[5] Simple incision and drainage or partial resection of a thyroglossal duct cyst virtually always leads to recurrence. Therefore, complete excision of cyst with the Sistrunk's procedure is the recommended surgical approach.[6] This study to evaluate the clinical features and treatment outcomes of patients with a thyroglossal duct cyst.

**Methods:**

This cross sectional observational study was carried out in the Department of Surgery, Dept. of Otolaryngology, Ibn Sina Medical College, Dhaka. A total 40 cases of both sexes with the age ranged from 6 to 57 years, during the period of 2013 to 2018 (5 years) included patients of clinically diagnosed thyroglossal cyst. A detailed history and thorough physical examination was done. A semi-structured proforma was made to collect all necessary information of patient. Ultrasound studies were done in all cases to confirm the cystic nature of lesion and the presence of normal thyroid gland at its normal site. Thyroid function test was also done in all cases to access the function of thyroid gland. Management was mainly surgical, most common performed surgery was Sistrunk's operation in 38 cases as a primary surgery and in two cases as a second time surgery for recurrent cases following excision of cyst in first operation. One patient underwent total thyroidectomy as found to be malignant on biopsy. Followup was done up to six months for any complications and/or recurrence.

**Results:**

**Table I :**
*Demographic characteristics*

| Characteristics | Frequency | Percentage |
|---|---|---|
| Age in years | | |
| ≤10 | 2 | 5 |
| 11-20 | 10 | 25 |
| 21-30 | 23 | 57.5 |
| 31-40 | 2 | 5 |
| 41-50 | 2 | 5 |
| 51-60 | 1 | 2.5 |
| Mean±SD | 24.37±10.17 | |
| Sex | | |
| Male | 26 | 65 |
| Female | 14 | 35 |

**Table II :**
*Clinical presentation of thyroglossal cyst*

| Clinical presentation | Frequency | Percentage |
|---|---|---|
| Cystic neck swelling | 30 | 75.0 |
| Dysphagia | 5 | 12.5 |
| Sore throat | 3 | 7.5 |
| Globus | 2 | 5.0 |

**Table III :**
*Site distribution of thyroglossal cyst*

| Site distribution | Frequency | Percentage |
|---|---|---|
| Suprahyoid | 14 | 35 |
| Infra hyoid | 26 | 65 |

**Table IV :**
*Detailed histopathological examination*

| | Frequency | Percentage |
|---|---|---|
| Acute inflammation | 4 | 10 |
| Chronic inflammation | 24 | 60 |
| Columnar epithelium | 12 | 30 |
| Squamous epithelium | 11 | 27.5 |
| Ciliated epithelium | 9 | 22.5 |
| Not classified | 8 | 20.0 |
| Thyroid tissue | 15 | 37.5 |
| Papillary thyroid carcinoma | 1 | 2.5 |

**Discussion:**

Most common congenital anomaly in relation to thyroglossal duct is the thyroglossal cyst located around region of the hyoid bone. Surgical excision of the thyroglossal cyst is commonly indicated in patients with throglossal cyst presented as mass in midline neck with or without pressure effect like difficult in swallowing breathing, pain or cosmetic reason or recurrent Infection. Removal of thyroglossal cyst along with tract and portion of hyoid bone (Sistrunk operation) results in reduction recurrence rate to 3%-4% compared to local excision which has got high recurrence rate.[7] Till date Sistrunk operation remains surgery of choice for thyroglossal cyst.[7]

In this study shows the thyroglossal cysts are seen most commonly in below the age of 23 years. 57.5% of the cases are seen below the age of 21-30 years. The average age at the time of operation was 23.16 ± 1.13 years, ranging from 6 to 56 years. Therefore, the findings of the study are in well agreement with the findings of the other research works (Yaman et al.).[8] There was slight male predominance in our study i.e. 25 (65%) were females and 124 (35%) were males. Similarly, in the study by Lin et al.[9] these rates were 42.5% and 32%, respectively. Nevertheless, Hirshoren et al.[10] reported an 80% occurrence of thyroglossal duct cysts in subjects less than 20 years old.

In this study painless midline cystic swelling was the main complaint in 30 patients (75%), followed by dysphagia 5 (12.5%), Sore throat 3 (7.5%) and globus 2 (5%) in descending order. According to Maran et al 90% of thyroglossal cyst lies in midline and 10% lies on one side of the midline (mostly on left side). Pounds et al study says about 15 to 50% are at the level of hyoid bone, 20 to 25% are suprahyoid, and 25 to 65% are infrahyoid.[11,12] In these case series, 21 cases (64%) were situated infra hyoid region and 11 cases (34%) were supra hyoid. 30 cases (96%) were midline swelling and 2 cases (4%) were situated laterally on left side. Generally, thyroglossal duct cyst moves with deglutition and on protrusion of the tongue. Infection can sometimes cause the transient appearance of a mass or the enlargement of the cyst, at times with periodic recurrences.[13]

In this series the most common location of cyst was in infrahyoid region in 26 patients (65%), suprahyoid in 14 patients (35%). Though the diagnosis of thyroglossal cyst is mainly clinical, ultrasonography is of great help. In this study, all patients were subjected to ultrasonography not only for the diagnostic purpose, but also to evaluate normal thyroid gland in the neck. All patients were subjected for thyroid profile along with routine blood investigation. Cyst may be found anywhere from base of tongue to manubrium. Singh

et al.[6] study shows the most common location of cyst was in infrahyoid region in 17 patients (56.66%), suprahyoid in 10 patients (33.33%), two patients (06.66%) with cyst on juxtahyoid on left side of neck and one patient (03.33%) in suprasternal region. Another study Asmat et al.[14] in 2007 studied 41 cases of thyroglossal cyst and observe that cyst was most commonly located in infrahyoid region.

This study shows, among histologically diagnosed 10% cases were acute inflammation, 60% were chronic inflammation, 30% were columnar epithelium, 27.5% were squamous epithelium, 22.5% were ciliated epithelium, 20% were not classified, 37.5% were thyroid tissue and 2.5% were papillary thyroid carcinoma. The results in the present study were consistent with those other literature.[15] Thyroid tissue is a frequent component of the cyst, but its absence does not exclude a diagnosis of thyroglossal duct cyst.[16,17] Chronic or acute inflammation was found in 72.2 % of cases. Von Bismarck and Hollwarth[18] reported that they found chronic inflammation in 45% of noninfected cysts. According to the histopathological findings, the epithelial linings of the cyst may be pseudo stratified columnar, ciliated columnar, squamous, simple cuboidal, or transitional epithelium. According to Ducic et al there is 1% chance of malignant transformation in thyroglossal cyst.[6] So histopathological examination of surgical specimen is mandatory.

**Conclusion:**

Thyroglossal cyst is the most common congenital neck mass and carcinomas rarely develop in the cysts. It is located anywhere from base of tongue to manubrium, but commonly in infrahyoid region. Diagnosis is mainly clinical. There is no recurrence in our study following Sistrunk's procedure after followup period of 6 months. Malignant transformation should be ruled out in all cases of thyroglossal cyst.

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