

Thyroglossal Duct Cysts: Site Wise Distribution in the Neck

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ABSTRACT

Aim: To find out site wise distribution of thyroglossal duct cysts in the neck in relation to hyoid bone.

Methods: Study was carried out from June 2007 to December 2012 at departments of ENT, Khalifa Gul Nawaz Hospital Bannu and City Medical centre Dera Ismail Khan. All confirmed cases of thyroglossal duct cysts (TGDCs) of either sex and of any age were included in the study. Data collected included patient's age, gender, and location of the lesion in relation to hyoid bone. Statistical analysis was done using SPSS version 17.

Results: Out of 28 (TGDCs), 18(64.3%) were female and 10(35.7%) male with female-to-male ratio of 1.2:1. Mean age of the patients was 16.14 years±14.59. Most of the TGDCs 15(53.6%) were located in the infrahyoid position followed by supra-hyoid 9 (32.1%) and juxta-hyoid 4(14.3%) respectively.

Conclusion: Most of the TGDCs are located in infra-hyoid position.

Keywords: Thyroglossal duct cyst, congenital anomaly, Sistrunk operation.

INTRODUCTION

Thyroglossal duct cysts result from the dilatation of a remnant at the site where the primitive thyroid descended from its origin at the base of the tongue to its permanent location, low in the neck. Failure of subsequent closure and obliteration of this tract predisposes to thyroglossal cyst formation. It most often occurs before age 20, but may be found in the older population as well^{1,2}.

Thyroglossal duct cysts most often present with a palpable (able to be felt) midline neck mass at or below the level of the hyoid bone. Although these cysts are most commonly found just inferior to the hyoid (66%), they can be located between the tongue and hyoid (25%) and just over 10% are related to the thyroid. The neck mass moves with swallowing. Some patients will have neck or throat pain, or dysphagia (difficulty swallowing). The spectrum of clinical symptoms may be as varied³.

Since the persistent duct or sinus can promote oral secretions, such cysts can become infected. Up to one half of thyroglossal cysts are not diagnosed until adult life. The tract may lie dormant for years or decades until some stimulus leads to cystic dilatation. Infection sometimes causes transient appearance of a mass or enlargement of the cyst, at times with periodic recurrences. Spontaneous drainage occurs in some instances^{4,5}.

Diagnosis is usually made clinically. Ultrasound scanning is the investigation of choice which will confirm the diagnosis and will identify the presence of functioning thyroid in the neck. Thyroid function tests and / or a radioisotope scan may be performed if the patient is clinically hypothyroid or if no thyroid gland is seen on ultrasound scan. A fine needle aspirate is needed to confirm the diagnosis if the mass is suprahyoid to help differentiate it from a dermoid cyst or submental lymph node.⁴ Before thyroglossal duct cysts are excised, it is important to demonstrate that normally functioning thyroid tissue is in its usual location. Thyroid scans and thyroid function studies are ordered preoperatively.

Antibiotics are indicated if there is infection. Definitive surgical management requires excision not only of the cyst but also of the path's tract and branches. The intimate association of the tract with hyoid bone mandates simultaneous removal of the central portion of the hyoid bone to ensure complete removal of the tract (Sistrunk procedure). Recurrence is unlikely after such an operation except with skin involvement and intraoperative cyst rupture^{6,7}.

MATERIAL AND METHODS

This descriptive study was carried out from June 2007 to December 2012 at departments of ENT, Khalifa Gul Nawaz Hospital Bannu and City Medical Centre Dera Ismail Khan. The study was approved by the Ethics and Research Committee of the hospital. All confirmed cases of thyroglossal duct cysts (TGDCs) of either sex and of any age were included in the study. All subjects were admitted a day before surgery. A written informed consent was obtained from each patient or their parents (in case of paediatric patients) that participated in the study. A

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detailed history and physical examination were carried out. Each swelling was examined for site of location in relation to hyoid bone, consistency, fluctuation, transillumination and upwards movement of the swelling with swallowing and on protrusion of the tongue. History of previous surgery was also obtained. Thyroid scan and Ultrasonography and thyroid function tests were done in all cases. FNAC was done to confirm the diagnosis of thyroglossal duct cyst.

Gender and age in years and age grouping were demographic variables. Location of the cysts in relation to the hyoid bone was a research variable. Age in years was analyzed as mean and range. Gender, age grouping and location of the cysts were analyzed as frequency (number) and relative frequency (%). Statistical analysis was done using SPSS version 17.

RESULTS

Out of 28 (TGDCs), 18(64.3%) were female and 10 (35.7%) male with female-to-male ratio of 1.2:1. Mean age of the patients was 16.14 years±14.59. Most of the TGDCs 15(53.6%) were located in the infrahyoid position followed by supra-hyoid 9(32.1%) and juxta-hyoid 4 (14.3%) respectively.

Table 1: Age and gender wise distribution of the patients

Age (yrs)	(n=28)
Male: 10(35.7%)	
01-10	06 (21.4%)
11-15	10 (35.8%)
16-20	06 (21.4%)
Female: 18(64.3)	
21-25	04 (14.3%)
26-30	01(3.55)
31-35	01 (3.55%)

Mean age: 16.14 years ± 14.59

Table 2: Relation of TGDCs to hyoid bone (n=28)

Location of Thyroglossal duct cyst	n	Frequency
Infrahyoid cysts	15	(53.6%)
Suprahyoid cysts	09	(32.1%)
Juxtahyoid cysts	04	(14.3%)

DISCUSSION

TDC is the most common nonodontogenic cyst in the neck, representing approximately 70% of all congenital neck abnormalities. Most commonly, they present in the first decade of life, however they are also seen in adults as well⁶. The age range of our patients is almost similar to that reported in literature⁷. On the other hand in the other study, all of the patients were from adult group¹. While another series included only children⁸.

In the present study, females were more commonly affected than males as supported by similar results reported in literature^{7,8}. But contrary to these reports, more than half of the patients were male as reported in other studies⁹⁻¹¹. No sex predilection has been reported in international literature¹²⁻¹⁴. These differences in gender distribution may be attributed to genetic and geographic differences.

Regarding location, our results showed that most of the TGDCs were midline, approximately similar to the results of 2 previous studies^{13,14}. In our study as well as supported by other researchers^{14,15} most lesions in the off-midline location occurred on the left. This may be explained by the fact that the levator glandulae thyroidea muscle is ordinarily found on the left. The location of TGDCs relative to the hyoid bone was somewhat different i.e., 44% infrahyoid in our study in comparison to another study 38.9% locating at infrahyoid level.¹ About 1% to 2% of TGDCs are reported to be at the base of the tongue¹⁶⁻¹⁸.

The present study is limited because of the small study group. A large sized, prospective, randomized and a multi centre study is recommended to study the location of thyroglossal duct cysts in relation to hyoid bone in the neck.

CONCLUSION

Most of the TGDCs are located in infra-hyoid position in the neck.

REFERENCES

1. Boswell WC, Zoller M, Williams JS, Lord SA, Check W. Thyroglossal duct carcinoma. Am Surg. Sep 1994;60(9):650.
2. Heshmati HM, Fatourech V, van Heerden JA, Hay ID, Goellner JR. Thyroglossal duct carcinoma: report of 12 cases. Mayo Clin Proc. 1997;72(4):315-9.
3. Allard RH. The thyroglossal cyst. Head Neck Surg. 1982;5(2):134-46.
4. Thomas JR. Thyroglossal-duct cysts. Ear Nose Throat J. 1979;58(12):510-4.
5. Koeller KK, Alamo L, Adair CF, Smirniotopoulos JG. Congenital cystic masses of the neck: radiologic-pathologic correlation. Radiographics. 1999;19(1):121-46; quiz 152-3.
6. Prasad KC, Dannana NK, Prasad SC. Thyroglossal duct cyst: an unusual presentation. Ear Nose Throat J. 2006;85(7):454.
7. Mohan PS, Chokshi RA, Moser RL, Razvi SA. Thyroglossal duct cysts: a consideration in adults. Am Surg 2005; 71(6):508-11.
8. Foley DS, Fallat ME. Thyroglossal duct and other congenital midline cervical anomalies. Semin Pediatr Surg 2006; 15:70.

9. Ahuja AF, King AD, Metreweli C. Sonographic evaluation of thyroglossal duct cysts in children. *Clin Radiol* 2000; 55:770.
10. King AD, Ahuja AF, Mok CO, Metreweli C. MR-imaging of thyroglossal duct cysts in adults. *Clin Radiol* 1999; 54:304-8.
11. Türkyilmaz Z, Sönmez K, Karabulut R, Demirgoullari B, Sezer C, Basaklar AC, et al. Management of thyroglossal duct cysts in children. *Pediatr Int* 2004; 46:77-80.
12. Ostlie DJ, Burjonrappa SC, Snyder CL, Watts J, Murphy JP, Gittes GK, et al. Thyroglossal duct infections and surgical outcomes. *J Pediatr Surg* 2004; 39:396-9.
13. Brousseau VJ, Solares CA, Xu M, Krakovitz P, Koltai PJ. Thyroglossal duct cysts: presentation and management in children versus adults. *Int J Pediatr Otorhinolaryngol* 2003; 67:1285-90.
14. Deaver MJ, Silman EF. Infected thyroglossal duct cyst. *West J Emerg Med* 2009; 10: 205.
15. Ali LS, Ahmed Y, Al-ammar. Management of thyroglossal duct cyst. *Open Otolaryngol J* 2008; 2:26-8.
16. Ibrahim M, Hammoud K, Maheshwari M, Pandya A. Congenital cystic lesions of the head and neck. *Neuroimaging Clin N Am* 2011; 2:621-39.
17. Shah R, Gow K, Steven E. Outcome of thyroglossal duct cyst excision is independent of presenting age or symptomatology. *Int J Pediatr Otorhinolaryngol* 2007; 71:1731-5.
18. Marianowski R, Ait Amer JL, Morisseau-Durand MP, Manach Y, Rassi S. Risk factors for thyroglossal duct remnants after Sistrunk procedure in a pediatric population. *Int J Pediatr Otorhinolaryngol* 2003; 67:19-23.