Original Research Article

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Incidence and outcome of thyroglossal duct cyst

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ABSTRACT

Background: Thyroglossal duct cyst (TGDC) is the cyst in the cervical midline that arises from the embryonic remnant of the thryroglossal duct. It is most common congenital abnormality in the head and neck region which may present at any age particularly occur in children. The definitive treatment is surgical excision of the cyst and tract.

Methods: It is a cohort retrospective study of 26 cases in the Department of Otorhinolaryngology and Head-Neck surgery, Comilla Medical College Hospital, Bangladesh from 01 July 2016 to 31 June 2019.

Results: Incidence of TGDC was 0.02% out of total outdoor patient and 0.94% in total indoor routine operation. All patient was operated by Sistrunk's procedure and recurrent 2 (7.69%) cases were operated by modified or extended Sistrunk's procedure without complications afterwards. Of them female was 14 (53.85%), male was 12 (46.15%), children were 22 (84.61%), adult were 4 (15.35%). Infrahyoid was 21 (80.76%), surahyoid was 5 (19.24%). The patient presented as painful abscess were 10 (38.46%) and fistula were 3(11.51%), painless cyst was 8 (30.77%) and fistula were 5 (19.24%).

Conclusions: TGDC is common congenital anomaly. It has a various type of presenting feature. Sistrunk's procedure is gold standard surgical treatment procedure. But recurrence cases need modified or extended Sistrunk's procedure to minimize the postoperative complication and manage the patient's hope and requirements.

Keywords: Thyroglossal duct cyst, Sistrunk's procedure, Ultrasonography, Fine needle aspiration cytology

INTRODUCTION

Thyroglossal duct cyst (TGDC) is a most common congenital cystic midline swelling in the head and neck region arising from the ramnant of thyroglossal duct. Thyroglossal duct extends from foramen caecum of the tongue to the isthmus of the thyroid gland. During embryonic stage it descends from the foramen caecum of the tongue through the genioglosus muscle upto hyoid bone. From hyoid bone it descends either in front of hyoid bone or through the hyoid bone or it hooks below and behind the hyoid bone and descends up to the level of the upper border of thyroid cartilage. Fate of the duct is

usually completely atrophies except lower part where it form isthmus of the thyroid gland and pyramidal lobe, if it persists in the region of tongue without descending, it is known as lingual thyroid and may be only thyroid tissue of body or if a portion of duct may remain unobliterated, it gives rise to TGDC. The previous literature shows that TGDC occur in 7% of all population. But in our study it is below 1%. As a congenital lesion it usually occur in infant and children. But surprisingly often it present beyond infancy and early childhood. The cyst is usually midline but in 10 percent cases may present laterally usually on the left. TGDC usually moves with deglutition because the mass is attached to hyoid bone by

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fibrous tissue and moves up on protrusion of the tongue known as tug sign. The size of the cyst varies from 0.5 to 5 cm in diameter and gradually increase in size. Majority of TGDC is infrahyoid and others are suprahyoid. Thyroglossal fistula is the complication of burst infected TGDC or inadvertent incision over the infected cyst for a abscess or incomplete removal of TGDC. Hooding sign is positive in thyroglossal fistula. Investigation include fine needle aspiration cytology (FNAC), ultrasonography (USG) neck, thyroid function test and isotope thyroid scan to detect that it isn't only thyroid tissue of the body. USG confirm that it is cystic lesion. Standard treatment of TGDC is surgery which was described by Sistrunk to removal of cyst along with the tract, body of hyoid bone and core of tongue tissue.

The aim of study was to find out the relative incidence, frequency and presentation of the TGDC and find out the best surgical procedure for it.

METHODS

It is a retrospective study of 26 cases of TGDC in the department of Otolaryngology and Head-Neck surgery, Comilla Medical College, Bangladesh from 01 July 2016 to 31 June 2019. During these three years total outdoor patient were 1,16,128 and in inpatient department 2738 routine operation were performed. Incidence of TGDC out of these patients were calculated by using the statistical software of SAS. All 26 patients were clinically diagnosed as TGDC and confirmed by history, examination and investigations such as FNAC, USG of neck, thyroid function test and isotope thyroid scanning. The following data was collected: age, sex, presenting features, postoperative follow-up and complications. All of the information's were written in the register notebook for future reference. All cases of neck swelling clinically diagnosed as TGDC were included in the study. All cases present with neck swelling diagnosed as Thyroid gland or any other neck swelling like plunging ranula, cervical dermoid, sub hyoid bursal cyst, aneurysm of innominate artery were excluded from the study.

RESULTS

During these three years period 1,16,128 patient were attended in the outpatient department with several disease condition. Incidence of TGDC among them is 26 (0.02%) (Figure 1). 2738 routine operation were performed at that time in which TGDC is 26 (0.94%) (Figure 2). But older data and books aren't supported the data where it was 7%. These 26 patients were treated following Sistrunk's procedure. Recurrence after post-operative follow up period is 2 (7.6%) (Figure 3). These two patients were managed by further extended or modified Sistrunk's procedure in which wider block dissection incorporating the infrahyoid region to the thyroid isthmus was excised. They were healthy during follow up without any complication. Female were predominated in our study. 14 (53.85%) patients were female and 12 (46.15%) were male patient; (Figure 4). Most of the patient were children in our study which is 22 (84.61%) and adult is 4 (15.39%) in number (Figure 5). According to WHO and UNICEF upper limit of children age is 18. The mean age is 12.94 years whereas lowest age is 1.5 years and highest age is 40 years. Most of the TGDC was infrahyoid in position, it was 21 (80.76%) and suprahyoid was 5 (19.24%) (Figure 6). The placing of TGDC in midline was 21 (80.76%) and laterally placed 5 (19.24%) whereas left was 4 (80%) and right was 1 (20%) (Figure 7 and 8). Most of our patient's presenting features were painful, infection with abscess formation; they were 10 (38.46%), painless cystic swelling was 8 (30.77%), painless fistula was 5 (19.23%) and painful, infected fistula was 3 (11.54%) (Figure 9).

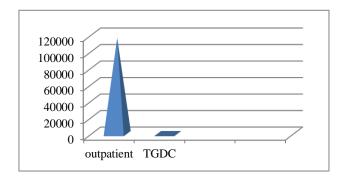


Figure 1: Incidence of TGDC in outpatient department.

(N-116128; TGDC-26:0.02%).

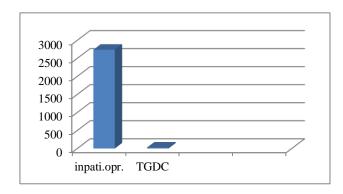


Figure 2: Incidence of TGDC in routine inpatient operation.

(N-2738; TGDC-26:0.94%).

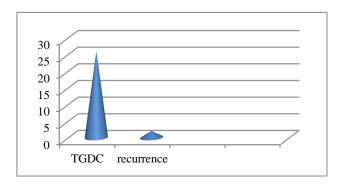


Figure 3: Recurrence after Sistrunk's procedure. (TGDC-26; recurrence-2: percentage-7.69%).

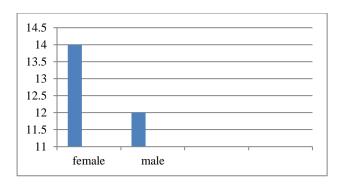


Figure 4: Gender epidemiology.

(N-26; female-14: male-12).

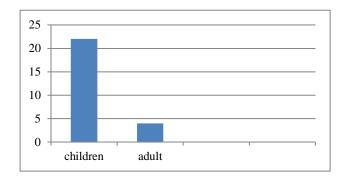


Figure 5: Age distribution.

(N-26; children-22: adult-4).

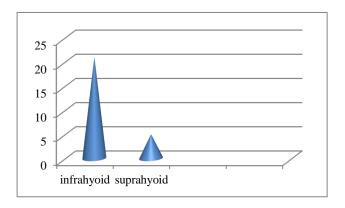


Figure 6: Anatomical distribution.

(N-26; infrahyoid-21: suprahyoid-5).

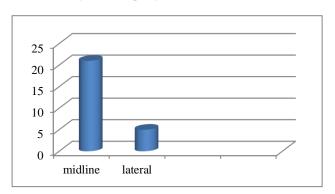


Figure 7: Site distribution.

(N-26; midline-21: lateral-5).

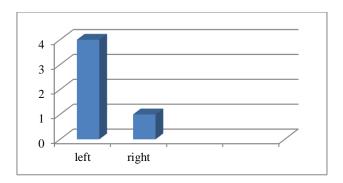


Figure 8: Lateral site distribution.

(N-5; left-4: right-1).

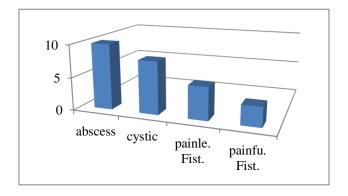


Figure 9: Presenting features.

(N-26; abscess-10: cystic-8: painless fistula-5: painful fistula-3).

DISCUSSION

The primordium of thyroid gland is tubular like structure with tongue known as thyroglossal duct. In normal development this duct descends through the tongue and passing caudally with an intimate relationship to the hyoid bone and finishing in the anterior neck overlying the trachea and laryngeal cartilage. In around the one third of cases the duct has been found posterior to the hyoid bone which has important implication in surgical treatment. The duct may fail to involute during the week 8-10 of gestation and as a result an abnormal cyst may arise anywhere along the tract. 10 There are various types of anterior midline cystic swelling like plunging ranula, cervical dermoid, sub hyoid bursal cyst and aneurysm of the innominate artery but TGDC is most common anterior midline cystic swelling.¹¹ The gold standard surgical management approach of TGDC is the Sistrunk's procedure. Before 1883 incision and drainage is done by the surgeon where recurrence is about 50%. 12 After 1883 Schlange describe the removal of cyst with mid portion of hyoid bone decrease the recurrence rate upto 20%. 13 In 1920 Sistrunk describe his procedure where the recurrence rate is 4-11% which is same in our study. After recurrence we followed the modified or extended Sistrunk's procedure which shows no recurrence is similar to Patel et al series of study. 15 Gender epidemiology shows female preponderance in our study which is also similar to Eyzawiah et al series. 16 But some other study like Meanakshi et al study shows male

preponderance.¹⁷ About anatomical location infrahyoid is the most presentation of our study which is supported by almost all other series. 18,19 Anterior midline location is most of our patient if presentation is laterally left side is more (80%) which is supported by Scott-Brown's Otorhinolaryngology Head and Neck Surgery, Eight Edition.²⁰ The presenting symptom and sign were variable in different studies, they may be present with infected abscess formation, fistula or discharging sinus or painless cystic swelling. In our study inflammation with abscess formation is highest presentation while other study reports most of the swelling is painless cystic swelling whereas it was our 2nd most presentation.²¹ Kepentis et al study shows that painful, tender and discharging fistula is the presenting feature which is also near to our study.22 About investigation we investigated all patient with FNAC, USG of neck, Thyroid function test and Isotope thyroid Scanning which is supported by almost all research study. FNAC is simple invasive procedure to cellular pathology of benign or malignant lesion.²³ USG of neck shows the lesion is cystic and the thyroid gland is normal location and entity other than the cystic lesion.24 The need of thyroid function test and isotope thyroid scanning is done routinely to rule out an only functioning thyroid tissue should not be excised.25

CONCLUSION

Most of our patient was children and presenting with various types of clinical features. Invariably their anatomical position was anterior in midline and infrahyoid. Usual Sistrunk's procedure was following as a primary treatment. Recurrence cases were handled by following extended or modified Sistrunk's procedure with en block anterior neck dissection. So Sistrunk's procedure is the best method for treatment of TGDC and modified Sistrunk's procedure is option for treatment of recurrence cases of TGDC.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Marshall SF, Becker WF. Thyroglossal Cysts and Sinuses, Ann Surg. 1989;129:642-51.
- 2. Mondin V, Ferlito A, Muzzi E, et al. Thyroglossal duct cyst:personal experience and literature review. Auris-Nasus Larynx 2008;35:642-651.
- 3. Allard RH. The Thyroglossal cyst. Head-Neck Surg. 1982;5:134-46.
- 4. Pollock WF, Stevenson EO, Cysts and sinuses of the thyroglossal duct. Am J Surg. 1966;112:225-32.
- 5. Baily BJ, Johonson JT. Head and Neck Surgery-Otolaryngology. 4th ed. Chapter 86. Lippincott Williams & Wilkins; 2006.

- 6. Santiago W, Rybak LP, Bass RM. Thyroglossal duct cyst of the tongue. J Otolaryngol. 1985;14:261-4.
- Mickel RA, Calcaterra TC. Management of recurrent Thyroglossal duct cysts. Arch Otolaryngol. 1983;109:34-6.
- 8. Baatenburg de Jong RJ, Ronge RJ, Lameris JS, Knegt P, Verwoerd CDA. Ultrasound Characteristics of Thyroglossal duct anomalis. ORL. 1993;55:299-302.
- 9. Brown PM, Judd ES. Thyroglossal duct cysts and sinuses; Result of radical(sistrunk) operation. Am J Surg. 1961;102:495-501.
- Ali AA, Al-Jandan B, Suresh CS, Subae A. The relationship between the location of thyroglossal duct cysts and epithelial lining. Head Neck Pathol. 2013;7(1):50-53.
- 11. Wordsworth DT, Siejel MJ. Thyroglossal duct cysts: Variability of Sonographic findings. AJR Am J Roentgenol. 1994;169:1475-7.
- 12. Wagner G, Medina JE. Excision of thyroglossal duct cyst:The sistrunk's procedure. Open Tech Otolaryngol. 2004;15:220-3.
- 13. Schlange H. Ueber die Fistula congenital. Arch Klin Chir. 1893;46:390-2.
- 14. Sistrunk WE. The surgical treatment of cysts of the thyroglossal tract. Ann Surg. 1920;71:121-4.
- 15. Patel NN, Hartley BE, Howard DJ. Management of thyroglossal tract disease afterfailed sistrunk's procedure. J laryngol Otol. 2003;117:710-2.
- Hassan E, See GB, Aziz DA. Thyroglossal Duct Cysts-A Ten Years Retrospective View. Eastern J Med. 2014;19:112-118.
- 17. Meenakshi S, Rajasekar MK. Thyroglossal duct cyst:Myriad presentation. In J Otorhinolaryngol Head Neck Surg. 2019;5(4):973-7.
- Menamara K, Olaleye O, Smith J, Karamchandani D, Watkinson J. A rare case of a concurrent large thyroglossal duct cyst with a base of tongue haemangioma. BMJ Case Rep. 2011;bcr1020103393.
- Josephson GD, Spencer WR, Josephson JS. Thyroglossal duct cyst:The New york Eye and Ear Infirmary experience and a literature review. Ear Nose Throat J. 1998;77(8):642-4.
- Trimble KG, McCadden L. Scott-Brown's Otorhinolaryngology Head & Neck Surgery. Eighth Edition. Volume-2. Section-1. Chapter-41. CRC Press; 2018: 470-471.
- 21. Oslie DJ, Burjonrappa SC, Snyder CL. Thyroglossal duct infections and surgical outcomes. J Pediatr Surg. 2004;39:396-9.
- 22. Kerpentis C, Anastasiadis K, Lambropoulos V. Diagnosis and Surgical approach of thyroglossal duct cyst in children:Ten years data review. J Clin Diagn RCS. 2015;9(12);13-5.
- 23. Dedivitis RA, Camargo DL, Peixoto GL, Weissman L, Guimaraes AV. Thyroglossal duct:A review of 55 cases. J Am CoII Surg. 2002;194:274-7.
- 24. Lim-Dunham JE, Feinstein KA, Yousefzadeh DK, Ben-Amit. Sonographic demonstration of a normal

- thyroid gland exclude ectopic thyroid in patients with thyroglossal duct cyst. AJR Am J Roentgenol. 1995;164:1489-91.
- 25. Radkowski D, Arnold J, Healy GB. Thyroglossal duct remnants-Pre operative evaluation and management. Arch Otolaryngol head Neck Surg. 1991;117:1378-81.

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