

## Thyroglossal Cyst - A Rare Presentation in Suprasternal Notch with Embryological Basis

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### Abstract

Thyroglossal cyst is seen in approximately 7 % of the population. It is the most common congenital anomaly of neck and it is found anywhere between base of the tongue and the level of 1st tracheal ring. Most cases are diagnosed before 10 years of age. Classically, the swelling moves with protrusion of the tongue and deglutition. Radiologically, most of the cysts demonstrate a tract with communication to hyoid bone or thyroid gland. Our case report is that of a 45 year old lady who had a thyroglossal cyst in the suprasternal notch, which is an unusual presentation. However, it had no thyroglossal tract identified radiologically, intra operatively or by histopathology.

**Keywords:** Suprasternal presentation, Thyroglossal cyst, Thyroglossal tract aberration.

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### Introduction

Thyroglossal cysts are the most common congenital cysts occurring as a result of failure in obliteration of thyroglossal duct in the neck.<sup>[1,2]</sup> Sex incidence is equal. It classically presents as a painless midline neck mass in the first decade of life. Our patient is a 45 year old lady, which is not a common age group for the presentation. Almost all the thyroglossal cysts move with protrusion of tongue and deglutition, but it did not move so in our case. Thyroglossal cysts are found usually within 2 cm of hyoid bone with some variations reported.<sup>[3-6]</sup> 20-25% of the presentations are at the suprahyoid region, 15-20 % at the level of hyoid and 25-65 % at the infra hyoid level.<sup>[7]</sup> Our patient has presented with the cyst at the suprasternal region, which is a rare site.

### Case summary

A 45 year old lady presented with a painless swelling in the midline of the anterior aspect of neck just above the sternal notch. The swelling, with 3 years duration had no increase or decrease in size. She had no pain or any other significant symptoms. On examination, there was a 4 x 3 cm spherical, non tender swelling with well defined margins in the supra sternal region. The lower border of the swelling was clearly visible and was not moving with the protrusion of tongue and deglutition. It became less prominent on extending the neck. There were no other masses or cervical nodes palpable. Ultrasonography of the neck revealed an anechoic cyst with no communication to the thyroid gland. Fine needle aspiration cytology

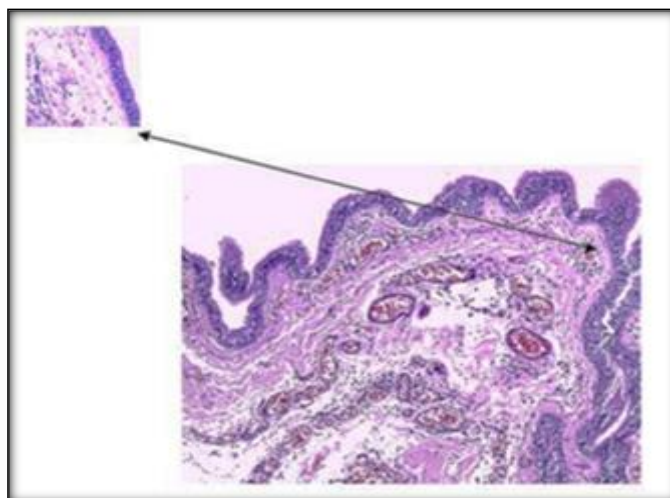
findings were suggestive of a thyroglossal cyst. Computerised tomography scan of the neck showed a well defined hypoechoic lesion in the suprasternal notch beneath the strap muscles suggestive of thyroglossal cyst. Our working diagnosis was a dermoid cyst though imaging and cytology findings were in favour of a thyroglossal cyst. After obtaining anaesthetic fitness, the patient was posted for excision biopsy under general anaesthesia. Intra operatively, a 4 x 3 cm globular swelling was found underneath the strap muscles in the suprasternal region, 3 cm inferior to the thyroid gland [Figure1].



**Figure 1: Intra operative picture showing a 4x3 cm size cyst**

No demonstrable tract was identified and the cyst was excised in its entirety.

To our surprise, histopathology features were compatible with the diagnosis of thyroglossal cyst. There was a fibro collagenous cyst lined by pseudo stratified ciliated columnar epithelium with inflammatory infiltrates, lymphoid aggregates, congested blood vessels and skeletal muscle bundle. [Figure 2]



**Figure 2: Inset (40x magnification) shows fibro collagenous cyst wall lined by pseudo stratified ciliated columnar epithelium. The sub epithelial stroma shows mild chronic inflammation**

However, there were no thyroid follicles or a demonstrable tract. Post operative recovery was uneventful. She will be on follow-up.

## DISCUSSION

### Embryological significance

Thyroglossal duct cysts are the most common midline congenital neck masses and account for 55 % of all neck masses in the new born. Between the 4th and 7th weeks of embryonic life, an endodermal bilobed diverticulum develops between the 1st and 2nd pharyngeal arches and descends from the foramen caecum to the level of 1st tracheal ring or even upto the sternum. It usually obliterates during the 10th week of development.<sup>[8]</sup> Thyroglossal duct cysts develop anywhere in this embryological descent pathway.

### Clinical Significance

Approximately 2% of the cysts are intra lingual, a quarter of all cases are suprahyoidal and the most of the rest are thyrohyoidal.<sup>[9,10]</sup> Studies have reported suprasternal location as 12.9% and 5.3%.<sup>[9,10]</sup> Rare presentations in mediastinum and even in the anterior 2/3 of tongue have been reported.<sup>[3-6]</sup> Typically, they present in the first decade of life as a painless midline mass near the hyoid bone which classically elevates with the protrusion of the tongue and deglutition. Ultrasound of the neck can diagnose thyroglossal duct cysts with a sensitivity of 84.2%.<sup>[11]</sup> Cytology has a sensitivity of 62% in detecting the cysts.<sup>[12]</sup> The cysts usually have colloid, phagocytes, cholesterol crystals and ciliated columnar epithelium.<sup>[12]</sup> Pseudostratified ciliated columnar epithelium or squamous epithelium with thyroid tissue have also been reported.<sup>[13]</sup> Gostimir et al concluded that thyroglossal duct cysts do not have a uniform cytological picture.<sup>[8]</sup> Classically, the treatment is surgical excision of cyst along with the unobliterated tract and the mid portion of hyoid bone with ligation of the duct near the foramen caecum.<sup>[11,13]</sup> However, most surgeons avoid excising the foramen caecum with a rim of mucosa to prevent post operative pharyngo cutaneous fistula. Recurrence rates are around 1.9% to 5.3 %.<sup>[11]</sup> Whereas recurrence rates for patients undergoing simple cyst excision goes up to 55.6% most of which occurs before 1 year.<sup>[10]</sup>

## CONCLUSION

Thyroglossal duct cysts typically present anywhere between the foramen caecum and the level of the 1st tracheal ring, with the classical description of moving while protruding the tongue and deglutition, with most presentations in the first decade of life. Our case is a rare presentation at an older age, at an unusual site and with no identifiable tract. This emphasizes the need to consider the diagnosis of thyroglossal cyst while evaluating midline neck masses.

## REFERENCES

1. Mittal, M. K., Malik, A., Sureka, B., &Thukral, B. B. (2012). Cystic masses of neck: A pictorial review. *The Indian journal of radiology & imaging*, 22(4), 334–343. <https://doi.org/10.4103/0971-3026.111488>
2. Thompson LD, Herrera HB, Lau SK. A Clinicopathologic Series of 685 Thyroglossal Duct Remnant Cysts. *Head Neck Pathol*. 2016 Dec;10(4):465-474. Doi: 10.1007/s12105-016-0724-7. Epub 2016 May 9. PMID: 27161104; PMCID: PMC5082048.
3. Chon SH, Shinn SH, Lee CB, Tae K, Lee YS, Jang SH, Paik SS. Thyroglossal duct cyst within the mediastinum: an extremely unusual location. *J Thorac Cardiovasc Surg*. 2007 Jun;133(6):1671-2. Doi: 10.1016/j.jtcvs.2007.02.012. PMID: 17532987.
4. Granato F, Roberts F, West D. A thyroglossal duct cyst of the anterior mediastinum. *Ann Thorac Surg*. 2011 Sep;92(3):1118-20. Doi: 10.1016/j.athoracsur.2011.02.048. PMID: 21871315.

5. Alavi A, AsadiGharabaghi M. Thyroglossal duct cyst presenting as a large isolated mass within the middle mediastinum. *BMJ Case Rep.* 2015;2015:bcr2015209643. Published 2015 Apr 9. Doi:10.1136/bcr-2015-209643
6. Korbi, Amel El et al. "A rare location of thyroglossal duct cyst in a newborn." *The Pan African medical journal* vol. 31 104. 10 Oct. 2018, doi:10.11604/pamj.2018.31.104.14777
7. Soni S, Poorey VK, Chouksey S. Thyroglossal Duct Cyst, Variation in Presentation, Our Experience. *Indian J Otolaryngol Head Neck Surg.* 2014;66(4):398-400. Doi:10.1007/s12070-014-0724-4
8. Mikac G, Biukovic M. Cytological analysis of thyroglossal duct cysts. *Med Pregl.* 2016 Oct;69(5-6):135-139. doi: 10.2298/mpns1606135m. PMID: 29693839.
9. Allard RH. The thyroglossal cyst. *Head Neck Surg.* 1982 Nov-Dec;5(2):134-10. 46. Doi: 10.1002/hed.2890050209. PMID: 7169333.
11. Rohof D, Honings J, Theunisse HJ, Schutte HW, van den Hoogen FJ, van den Broek GB, Takes RP, Wijnen MH, Marres HA. Recurrences after thyroglossal duct cyst surgery: Results in 207 consecutive cases and review of the literature. *Head Neck.* 2015 Dec;37(12):1699-704. Doi: 10.1002/hed.23817. Epub 2014 Sep 25. PMID: 24985922.
12. Kepertis, Chrysostomos et al. "Diagnostic and Surgical Approach of Thyroglossal Duct Cyst in Children: Ten Years Data Review." *Journal of clinical and diagnostic research : JCDR* vol. 9,12 (2015): PC13-5. Doi:10.7860/JCDR/2015/14190.6969
13. Shahin A, Burroughs FH, Kirby JP, Ali SZ. Thyroglossal duct cyst: a cytopathologic study of 26 cases. *Diagn Cytopathol.* 2005 Dec;33(6):365-9. Doi: 10.1002/dc.20346. PMID: 16299737.
14. Hirshoren N, Neuman T, Udassin R, Elidan J, Weinberger JM. The imperative of the Sistrunk operation: review of 160 thyroglossal tract remnant operations. *Otolaryngol Head Neck Surg.* 2009 Mar;140(3):338-42. Doi: 10.1016/j.otohns.2008.12.002. PMID: 19248939.