



Thyroglossal Duct Cyst and Sistrunk: A Case Series

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Abstract:

Objectives: The purpose of this article is to describe a modified surgical approach to the thyroglossal duct cyst (TGDC) where the incision is given at the upper pole of the cyst which offers easy cephalic dissection which is at times difficult and requires multiple incisions like Sistrunk operation. Further it gives better cosmetic results with no recurrence. **Study Design:** A total of 48 patients with the diagnosis of TGDC were assigned from September 2012 to October 2014 to have either Sistrunk (n=20) or Sistrunk with modified incision (n=28) after clinical and radiological assessment. Ease of resection, recurrence rate and cosmetic outcome were noted. **Results:** There was no significant difference in the rate of complications and operative time of the procedure between the two procedures. There was statistically significant difference in recurrence rate in Sistrunk procedure (3/20) as compared to Sistrunk procedure with modified incision (0/28) (P=0.04). All of whom presented with an infected neck mass, were treated with Sistrunk procedure with modified incision. **Conclusions:** Modified incision gave good results in our series with decrease operative time of the procedure, allows the surgeon to achieve and maintain an excellent exposure at the level of hyoid as well as foramen caecum making it easy for complete excision and decrease recurrence rate. Further it has better cosmetic outcome as the high scar is not visible as it merges within Langers lines.

Key words: Thyroglossal cyst, Cysts, Dissection, Neoplasm Recurrence, Operative Time, Hyoid Bone.

Introduction

The thyroglossal duct cyst (TGDC) is a well recognized developmental abnormality which arises in some 7% of the population [1]. This is the most common type of developmental cyst encountered in the neck region accounting for 2%-4% of all neck masses [2]. Most commonly, they present in the first decade of life. However, they are also seen in adults. Of these, 30% are discovered by the age of 10, 20% from 10 to 20 years, 15% in 30's; and 35% after

30 years [1]. TGDC develop from remnants of the thyroid anlage, descending from the foramen caecum on the base of the tongue between the fourth and seventh weeks of development [3]. Thyroid remnants may persist at any site along this route and form cysts or fistulas [4]. TGDC usually present in young children, although they may be found in patients of any age. The most common clinical presentation of TGDC is a gradually enlarging painless mass in

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Received: June 13, 2015 | **Accepted:** July 8, 2015 | **Published Online:** July 30, 2015

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Conflict of interest: None declared | **Source of funding:** Nil | **DOI:** <http://dx.doi.org/10.17659/01.2015.0083>

the midline of the neck in children or young adults [5]. The cyst is usually 2 to 4 cm in diameter, non-tender and mobile. An infected TGDCs presents as a tender mass and is associated with dysphagia, dysphonia, draining sinus, fever, or increasing neck mass and can cause cosmetic deformity. Very rarely, malignancy may occur in less than 1% cases [6].

Methods

Fourty eight (54% females) consecutive patients with the diagnosis of thyroglossal cyst were managed from September 2012 to October 2014 in the Department of Otolaryngology, Pt. B D Sharma PGIMS Rohtak, India. The study had its approval from the ethical committee of the hospital.

The patient's age ranged from 10 to 35 years; mean age was 22.5 years suggesting a bimodal distribution. Fourty patients (83%) of them presented with a palpable, asymptomatic midline neck mass while 8 patients (17%) presented with large midline swelling with symptoms; infection, pain and dysphagia. Fourty one (85%) patients had swelling adjacent to hyoid bone, 2 (4%) patient had swelling above the level of hyoid bone, while 5 (11%) patients presented with swelling between hyoid and thyroid gland. Duration of the chief complaint was variable between 10 months to 10 years.

The diagnosis was confirmed with clinical examination, ultrasonography and fine needle aspiration cytology. Thyroid hormone profile, systemic examination and investigations revealed no abnormalities. Local examination revealed non-tender midline cystic neck mass and movement with deglutition. The mass was non-mobile in the lateral plane, but moved in the vertical plane, suggestive of thyroglossal cyst.

Twenty patients (7 males & 13 females) were treated with Sistrunk procedure, 3 patients

presented with recurrence (15%) that was higher than previous studies which may be explained because of small available sample data [Table 1]. Incision for simple excision and Sistrunk are shown in Fig.1. All patients with recurrence presented with an infected neck mass and were treated with a second Sistrunk procedure. Twenty eight patients (15 males & 13 females) were treated with modified surgical approach where incision is given at upper pole of the cyst [Fig.2] which offers easy cephalic dissection which is at times difficult and required multiple incisions like Sistrunk operation. Further it gives better cosmetic results with no recurrence.

There was no significant difference in the rate of complications and operative time of the procedure between the two procedures. There was statistically significant difference in recurrence rate in Sistrunk procedure (3/20) as compared to the procedure with modified incision (0/28) ($P=0.04$).

Discussion

The thyroglossal duct cyst (TGDC) represents the most common type of developmental cyst encountered in the neck region. On physical examination, the mass is typically located in the midline of the anterior neck which moves upward with tongue protrusion, reflecting connection with foramen cecum. TGDCs are associated with an increased incidence of ectopic thyroid tissue. A thyroglossal cyst is lined by pseudostratified, ciliated columnar epithelium

Table 1: Demographic distribution between the two groups.

	Modified Surgical Approach (n=28)	Sistrunk Operation (n=20)
Mean Age	19	22
Sex	15 M, 13 F	7 M 13F
Clinical Presentation	Asymptomatic	Symptomatic
Location	Hyoid bone 90% Suprahyoid 10%	Hyoid bone 85% Infrahyoid 15%
Recurrence	0 (0 %)	3 (15%)



Fig.1: Incision for Sistrunk procedure.

while a thyroglossal fistula is lined by columnar epithelium. Based on one study 60% of TGDC were located adjacent to the hyoid bone, 24% between the hyoid and base of the tongue, 13% between the hyoid and pyramidal lobe of the thyroid gland, with the remaining 3% were intralingual [4].

In most circumstances clinical history and physical examination are sufficient to make a correct preoperative diagnosis. Imaging, on the other hand, is important to confirm the diagnosis, to identify the presence of functioning thyroid tissue in the neck, and to detect any possibility of malignant change within the cyst [7]. TGDC should be differentiated from various neck swelling in midline or lateral part of neck, like: lipoma, sebaceous cysts, dermoid cysts, infective lymphadenopathy and thyroid swelling [8].

Surgical excision of the thyroglossal duct cyst (TGDC) is commonly indicated in patients with thyroglossal cyst presenting as mass in midline neck with or without mass effect (dysphagia, dyspnea, pain), or cosmetic reason or with recurrent infections. It had been proposed that removal



Fig.2: Modified incision at upper level of the cyst.

of the central portion of the hyoid bone should be done in continuity with thyroglossal duct cyst, which results in reducing the recurrence rate to approximately 20%. It was later advocated, the additional contiguous removal of a core of tissue through the base of the tongue upto the foramen caecum as described by Sistrunk [9].

This operation was later modified with recommendation of the transection to be carried in the submucosal plane to avoid entrance into the oropharynx [10-12]. This form of the Sistrunk procedure remains the treatment of choice for thyroglossal duct cysts upto date. The recurrence rate with this procedure drops to 3%-4% [13] as compare to the local cyst excision that is associated with a higher recurrence rate [14]. Surgical incisions to access to head neck lesions have rapidly evolved from traditional incisions along natural skin creases or aesthetic units to more cosmetically acceptable incisions in the local region or from remote locations that permit comprehensive surgery. These access incisions are often smaller with excellent operative exposure and view, associated with diminished

blood loss, lower operative time and better cosmetic results.

Here we describe the distinct advantage of Sistrunk operation with modified incision that was given at upper pole of cyst. It allows the surgeon to achieve and maintain an excellent operative exposure and view dissection of hyoid and foramen caecum, en-block removal of specimen and less operative time [Fig.3]. Additionally, post-operative follow-up of these patient revealed better cosmetic results, as scar is lying high, even not visible or merge within langers line. There was statistically significant difference in recurrence rate in Sistrunk procedure as compared to Sistrunk procedure with modified incision.

Conclusion

Modified incision gave good results in our series with decrease operative time of the procedure, allowing the surgeon to achieve and maintain an excellent exposure at the level of hyoid as well as foramen caecum making it easy for complete excision and decrease recurrence rate. Further it has better cosmetic outcome as high scar is not visible as it merges within the Langers lines.

Acknowledgments

We gratefully thank the Department of Otolaryngology and Head and Neck Surgery, Pt. B.D Sharma, PGIMS Rohtak, as well as the patients who have voluntarily collaborated to this survey.

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Fig.3: En-block removal of thyroglossal cyst with duct remnant and central part of hyoid bone via Sistrunk procedure using incision at upper pole of mass.

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