

# Thyroglossal Duct Cyst & Sistrunk, a Case Series; Personal Experience and Literature Review

## 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 upper pole of cyst 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.

**Study Design:** A total of 48 Patients with the diagnosis of TGDC were assigned from sep 2012 to oct 2014 to have either sistrunk (n=20) or sistrunk with modified incision (n=28) after clinical and radiological assessment in the department of otolaryngology, Pt. B.D Sharma PGIMS Rohtak, Haryana. 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 and were treated with a second Sistrunk procedure.

**Conclusion:** Modified incision gave good results in our series with decrease operative time of the procedure, allow 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 lingers lines.

**Keywords:** Thyroglossal cyst; Sistrunk Operation; Modified incision

## Research Article

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## Introduction

The thyroglossal duct cyst (TGDC) is a well recognized developmental abnormality which arises in some 7% of the population [1], represents 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 that descend from the foramen caecum on the base of the tongue between the fourth and seventh weeks of development [3]. The thyroid primordium passes either anterior, posterior, or through the hyoid bone in its descent in the midline of the neck. 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 the midline of the neck in children or young adults [5]. The cyst is usually 2 to 4 cm in diameter. TGDCs are usually non-tender and mobile. A infected TGDCs present as a tender mass and may be associated with dysphagia, dysphonia, draining sinus, fever, or increasing neck mass. They can cause cosmetic deformity. Very rarely, malignancy may occur in less than 1% cases [6]. On physical examination, the mass is typically located in the midline of the anterior neck and moves

upward with tongue protrusion, a reflection of its connection with the foramen caecum. TGDCs are associated with an increased incidence of ectopic thyroid tissue. Occasionally, a lingual thyroid can be seen as a flattened strawberry-like lump at the base of the tongue. A thyroglossal cyst is lined by pseudostratified, ciliated columnar epithelium while a thyroglossal fistula is lined by columnar epithelium. Most TGDC present in the midline near the level of the hyoid bone.

Based on the study by Allard, 60% of TGDC were located adjacent to the hyoid bone, 24% were between the hyoid and base of the tongue, 13% were between the hyoid and pyramidal lobe of the thyroid gland, and 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 treated surgically as described by Sistrunk [8]. He described his procedure by excision of the cyst in continuity with the central part of the body of the hyoid bone and a core of tongue muscle up to the foramen caecum. 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 [9].

## Method

Forty eight consecutive patients of with the diagnosis of thyroglossal cyst were managed from sep 2012 to oct 2014 in the department of Otolaryngology, pt. B D Sharma PGIMS Rohtak. Twentey six (54%) were females and 22(46%) were males (Figure 1).

Age ranged from 10 to 35 years; mean age was 22.5 years (Figure 2). Which demonstrates 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 (Figure 3).

Fourty one (85%) patients have swelling adjacent to hyoid bone, 2 (4%) patient had swelling above the level of hyoid bone, while 5 (11%) patient presented with swelling between hyoid and thyroid gland (Figure 4).

The diagnosis was confirmed with clinical examination, ultrasonography and fine needle aspiration cytology. Thyroid hormone profile done in all patients was normal. Systemically examination and investigations revealed no abnormalities.

Local examination revealed non-tender midline cystic neck mass and move with deglutition. The mass is not mobile in the lateral plane, but moves in the vertical plane, specific feature suggest thyroglosal cyst.

Twenty patients (7 males & 13 females) was treated with sistrunk [8,10] procedure, 3 patients (1 male & 2 females ) presented with recurrence (15%) that was higher than previous studies. Which may be explained because of small available sample data (Figure 5). (Table 1) Incision for simple excision and sistrunk [8,10] shown (Figure 6) All of whom with recurrence presented with an infected neck mass and were treated with a second Sistrunk procedure.

Twenty eight patients ( 15 males & 13 females) was treated with modified surgical approach where incision gives at upper pole of the cyst (Figure 7) 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 sistrunk procedure with modified incision (0/28) (P = 0.04).

## Discussion

Surgical excision of the thyroglossal duct cyst (TGDC) is commonly indicated in patients with throgllossal cyst presented as mass in midline neck with or without mass effect (dysphagia, dyspnea, pain), or cosmetic reason or recurrent Infection. Proposed removal of the central portion of the hyoid bone in continuity with thyroglossal duct cyst, which results in reducing the recurrence rate to approximately 20%. Sistrunk [8] advocated the additional contiguous removal of a core of tissue through

the base of the tongue; he originally recommended excision of the foramen cecum but modified his procedure at a later date to transection in the submucosal plane to avoid entrance into the oropharynx [8,11,12]. This form of the Sistrunk procedure remains the treatment of choice for thyroglossal duct cysts up to date. The recurrence rate with this procedure drops to 3% to 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, allow the surgeon to achieve and maintain an excellent operative exposure and view. These procedures are associated with diminished blood loss, and lower operative time, better cosmesis and less scarring.

Here we describe the distinct advantage of sistrunk operation with modified incision that was given at upper pole of cyst. It allow the surgeon to achieve and maintain an excellent operative exposure and view dissection of hyoid and foramen ceacum, enblock removal of specimen and less operative time (Figure 8) Additionally, post operative followup of these patient reveaeled 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.

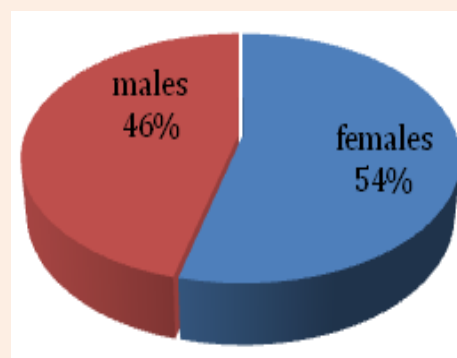


Figure 1: Showing sex distribution of the patients.

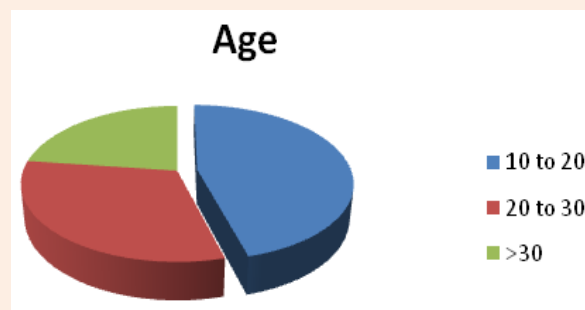


Figure 2: Showing age distribution of the patients.

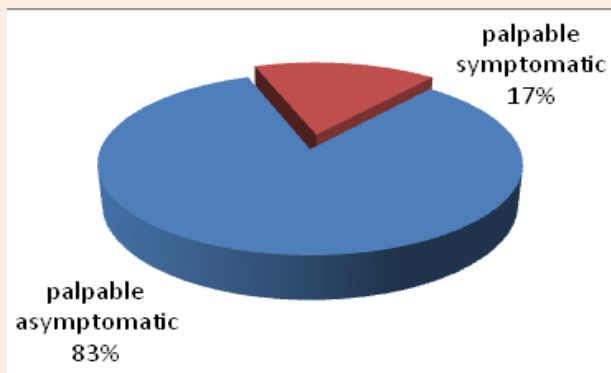


Figure 3: Showing distribution of swelling according to symptoms of the patients.

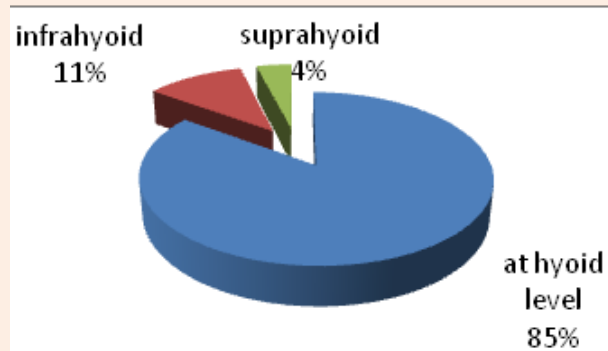


Figure 4: showing distribution of swelling related to hyoid bone.

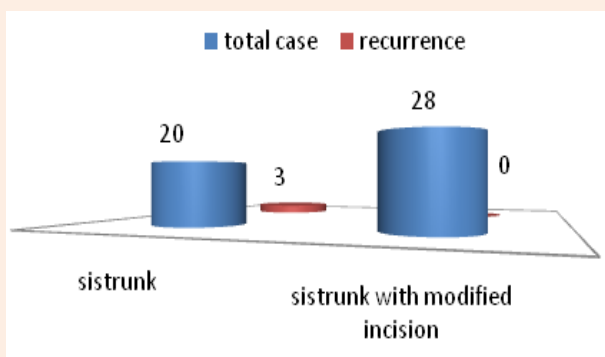


Figure 5: Showing surgical procedures and their recurrence rate.

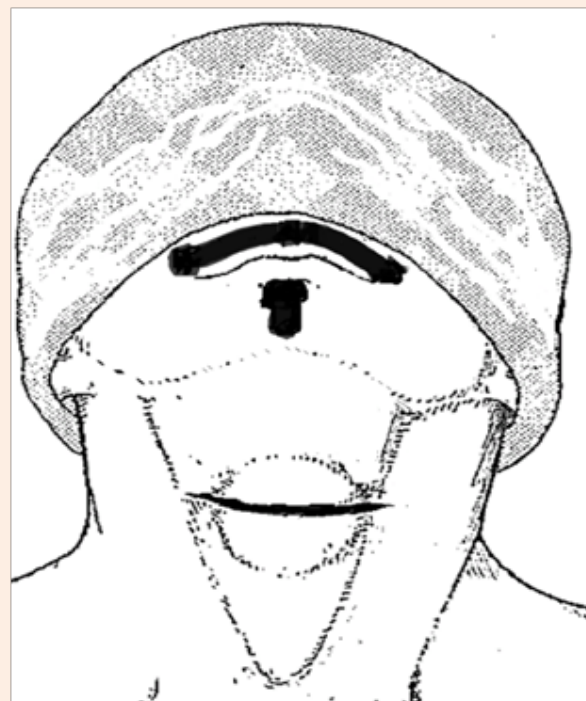


Figure 6: Showing incision for sistrunk procedure .

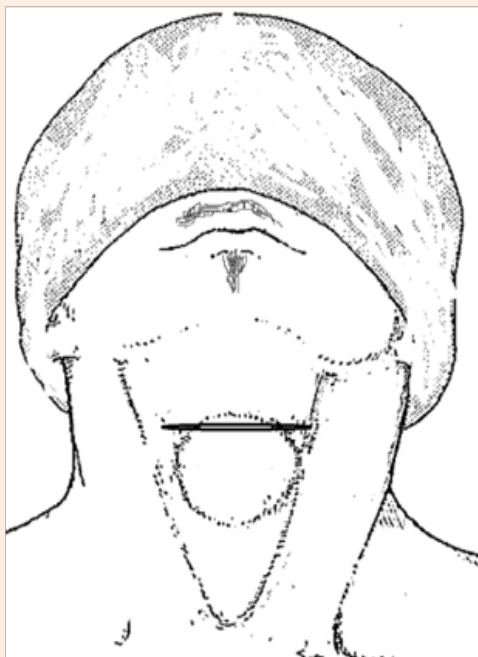


Figure 7: Showing modified incision at upper level of the cyst.



Figure 8: Showing enblock removal of thyroglossal cyst with duct remnant and central part of hyoid bone via sistrunk procedure using incision at upper pole of mass.

**Table 1:** Showing surgical procedures and recurrence rate.

Procedure	Male	Female	Recurrence
Sistrunk	7	13	3 (15%)
Sistrunk with modified incision	15	13	0
Total	22	26	3

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