

## Original Research Article

DOI: <http://dx.doi.org/10.18203/issn.2454-5929.ijohns20192715>

# Thyroglossal duct cyst: myriad presentations

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**Received:** 26 February 2019

**Revised:** 14 April 2019

**Accepted:** 15 April 2019

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### ABSTRACT

**Background:** Thyroglossal duct cysts are the most common midline neck swellings. They are routinely treated by surgeons with simple excision.

**Methods:** We present a retrospective study of a series of 30 cases operated in our hospital over a period of five years and the challenges faced during investigations, surgery and postoperative period. All patients were clinically diagnosed as thyroglossal duct cysts. The diagnosis confirmed with USG Neck and FNAC of the swelling. CECT NECK was used to delineate the normal thyroid and patients were subjected to Sistrunk procedure under general anesthesia.

**Results:** The outcome of all cases was good with one case being a revision surgery and another case going in for delayed healing due to infection. All patients were healthy with no complaints postoperatively.

**Conclusions:** This study validates the Sistrunk surgery as the best method of excision to avoid recurrences. This article highlights the variant presentations of this cyst in our institution and the challenges we faced in diagnosis, during surgery and later as well.

**Keywords:** Thyroglossal duct cysts, Thyroglossal fistula, Sistrunk surgery, Thyroglossal cyst abscess

### INTRODUCTION

Thyroglossal duct cyst (TDC) is a developmental cyst encountered in the neck region. It is a condition arising due to the failure of obliteration of the thyroglossal duct (which forms a bridge between the base of the tongue and the thyroid gland). It is seen in about 7% of the population.<sup>1</sup> The mean age of presentation is 5 yrs but the patients may be from 9 months to old age. Slight female preponderance is noted. The condition is sporadic but rarely could it be familial in prepubescent girls with autosomal dominant inheritance. The ductal cyst often presents as a painless, cystic, mobile, fluctuant and midline swelling of the neck. It moves with deglutition and protrusion of the tongue due to attachment to the hyoid bone and the foramen caecum at the post 1/3<sup>rd</sup> of tongue.

USG Neck and FNAC of the swelling are used to confirm the diagnosis. CECT Neck is indicated in patients with suspicion of malignancy. T3, T4, TSH were evaluated to ensure normal functioning thyroid and its anatomical position confirmed with USG and CECT Neck.

Simple excision leads to 45–55% recurrence rate. Hence the Surgery preferred is complete excision of thyroglossal tract - Sistrunk procedure.<sup>8-10</sup>

Recurrence and infection were the most common postoperative complications.

About 1% of the patients suffering from TDC are noted to have an association with malignancy.<sup>1,2</sup> Up to now one hundred and fifty cases of TDC carcinoma, predominantly papillary type, have been reported.<sup>3</sup>

**Objectives**

To study the various presentations of thyroglossal duct cysts from the information collected from 30 cases of thyroglossal duct cysts that presented in our institution.

**METHODS**

Retrospective study of 30 patients who presented with midline neck swellings at the ENT OP of Sree Balaji Medical College between December 2013 to 2018 (5 yrs). Information collected was analysed using SPSS software.

**Inclusion criteria**

All cases presenting with midline neck swelling clinically diagnosed as thyroglossal duct cyst.

**Exclusion criteria**

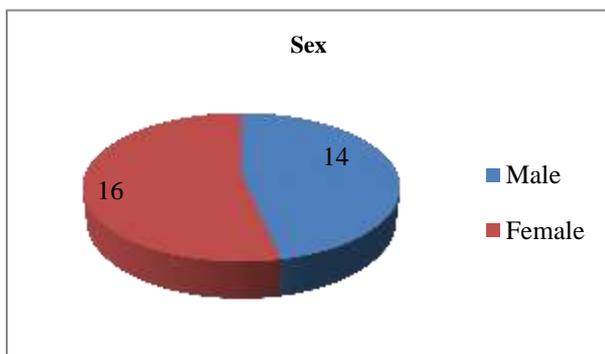
Cases of midline neck swelling clinically diagnosed as thyroid swelling.

The data regarding 30 cases of clinically diagnosed as thyroglossal duct cysts was analysed using PSP software. In all the cases clinical diagnosis was confirmed with FNAC of the swelling and USG Neck was done to ascertain the normal position of thyroid. Thyroid function tests were also done to ensure normal functioning thyroid. CECT Neck was done in selected cases where difficult surgery or malignancy was suspected. After thorough investigations and anesthetic fitness, patients underwent. Complete excision of thyroglossal tract and cyst – Sistrunk procedure. Postoperative care was given, sutures removed on 7th POD and patients were followed up.

**RESULTS**

**Sex distribution**

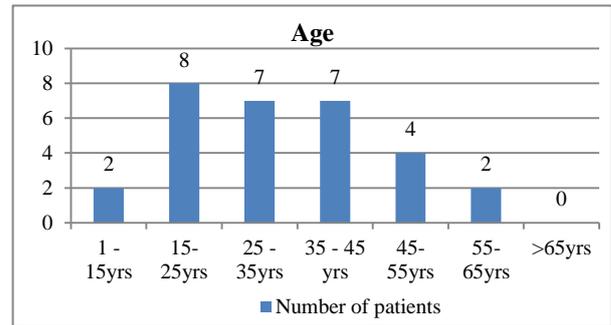
The general norm is female predilection and but we had a slight male predominance in our study population.



**Figure 1: Sex distribution of patients.**

**Age distribution**

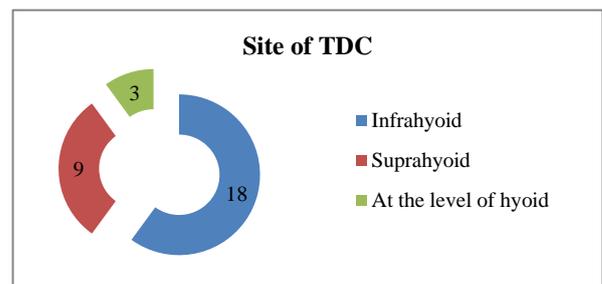
The average age of patient was 30 yrs.



**Figure 2: Age distribution of patients.**

**Site of thyroglossal cyst**

Only 9 cases had a suprahyoid presentation. The majority of cases 18 had infrahyoid presentation. Only 3 cases presented with swelling exactly at the level of hyoid bone.

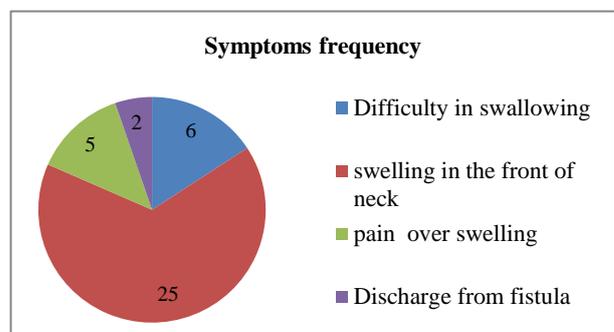


**Figure 3: Sites of TDC.**

**Symptoms**

The most prominent complaint was asymptomatic swelling over the front of neck.

11 patients had no comorbidities whereas diabetes, hypertension, hypothyroidism and bronchial asthma were common medical conditions suffered by the patients.



**Figure 4: Presenting symptoms.**

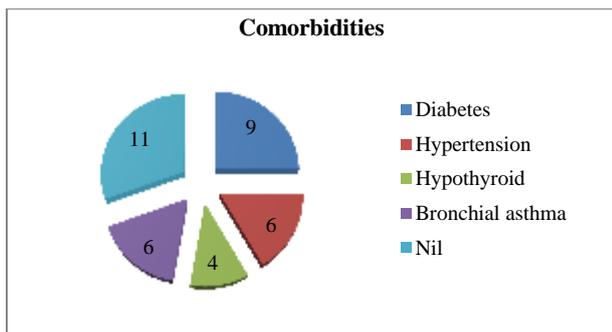


Figure 5: Co morbidities.

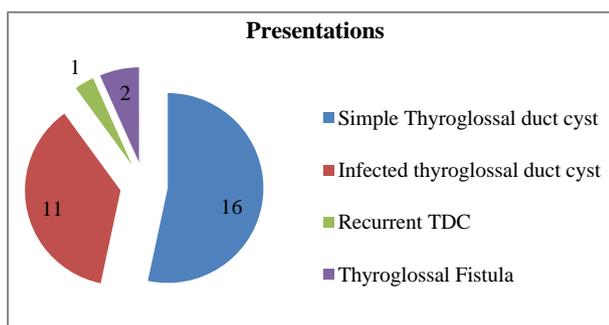


Figure 6: The myriad presentations.

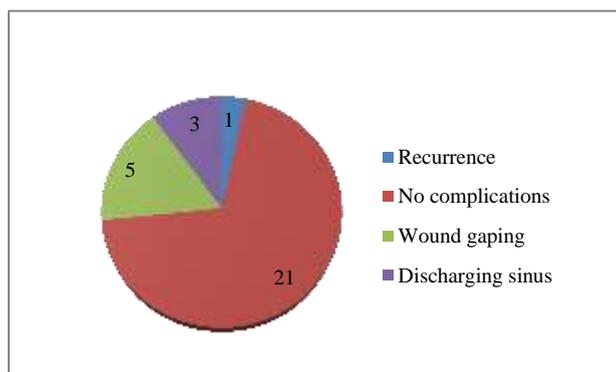


Figure 7: Postoperative complications encountered.

**Myriad presentations**

The surgery – Sistrunk operation is a procedure that is commonly followed and guarantees complete resection of the tract. This is an easy procedure since the cyst is enclosed by layers of the deep cervical fascia and there is no question of fibrosis or inflammation distorting the anatomy. Hence clean dissection and complete resection of the tract including the portion of Hyoid through which the tract passes is possible. Complete resection of suprahyoid and infrahyoid portions of the thyroglossal cyst is mandatory in all cases of thyroglossal duct cyst in order to avoid recurrence.

Our study included few cases of complicated thyroglossal duct cysts – abscess, recurrence and thyroglossal duct fistula, the presentation was unique and diagnosis itself

was a challenge. Further surgery was also complicated by fibrosis secondary to inflammation or scarring and the complete excision of the tract required precision and careful identification of the tract with Methylene Blue Dye.<sup>11</sup> Though majority of cases were routine thyroglossal duct cysts where Sistrunk excision was sufficient, there were a few challenging cases we would like to highlight and discuss about.



Figure 8: Infected thyroglossal duct cyst – clockwise from top CECT of neck showing abscess (arrow) and necrosis, intraoperative methylene dye injection at site of fistula, HPE report, preoperative presentation, Pus on incision and drainage, completely healed neck 4weeks after surgery.



Figure 9: Recurrent thyroglossal cyst - remnants removed, suprahyoid position of remnants and scar.



**Figure 10: Pre and postoperative picture of thyroglossal fistula, fistulogram, specimen with core of tongue tissue and part of hyoid bone.**

## DISCUSSION

Thyroglossal duct cysts were more common in males in our study. Few authors mention that there is no sex predilection.<sup>10,11</sup> 10 out of 30 patients were below 25 yrs category means around 33% occurs in children and young adults.

Similar retrospective studies show that infrahyoid is the most common location.<sup>6</sup> In this study 60% of all cysts were infrahyoid in location, 30% were suprahyoid and 10% were at the level of the hyoid. In our study we had cysts only in Infrahyoid, suprahyoid and at level of hyoid locations – other studies have documented suprasternal and intra intralingual positions as well.<sup>13,14</sup>

The USG and FNAC were used as first line investigation in all patients to confirm the diagnosis. The CECT was ordered in two patients to add clarity because there was ambiguity. A patient was severely hypothyroid and CECT was done to confirm the position and state of normal thyroid tissue. Another patient had an infected thyroglossal duct cyst and CECT helped us identify the extent of infection. Fistulogram was done in one patient to identify extent of thyroglossal tract.

The routine thyroglossal cyst is an innocuous swelling in the midline. When presenting as abscess, fistula the confusion in diagnosis arises. The CECT, fistulogram and post op HPE helps to clinch the diagnosis. These are the myriad presentations encountered in our series.

The simple excision of thyroglossal cyst leads to recurrence due to microscopic remnants of the thyroglossal tract– hence Sistrunk surgery is the

recommended procedure.<sup>4,6,10</sup> In our series, we completely excised all the cysts. We included a portion of the adjacent hyoid bone in all cases where the tract could be traced through above and below the hyoid. In 2 suprahyoid cases, we were unable to trace the tract near the hyoid and hence did not include the bone. Also coring of the tongue tissue was not done routinely but only in one case where the tract could be traced upto the foramen caecum.<sup>10</sup> Respect to fascial planes and complete hemostasis ensures minimal morbidity after surgery. Methylene blue was used to identify the tract in 5 cases.<sup>11</sup> It is not very commonly used though.

Postoperative complications most commonly encountered are infection, recurrence. Infection (27%) presented as wound gaping (15%) and post operatively discharging sinus (6%) and they were treated conservatively with dressing and antibiotics. Other complications mentioned are laryngotracheal Injury and Hypoglossal nerve injury.<sup>10</sup> The incidence of these complications is around 10%. In our study, overall incidence of complications was 30% which is higher than most studies – however the majority due to infection were conservatively treated. The recurrence rate in our study however was 3.33% which is almost the same as reported in a few similar studie.<sup>16</sup> However world over the recurrence rate reported varies between 2-10% of cases.<sup>6,10,17</sup>

## Case discussion

The patient was a 25 yr old male with neck swelling, fever for past 1week. History of neck swelling for past 1yr which he tried to get evaluated. He had been suggested CECT Neck and FNAC of the swelling as primary investigations elsewhere and both suggested thyroglossal cyst. He reported to our hospital with fever with chills, painful and extremely tender neck swelling and neck movement restriction – 3 days following FNAC. CECT neck was repeated and it showed infected thyroglossal cyst with abscess formation and he was started on broad spectrum antibiotics (Piperacillin Tazobactam) empirically. The dilemma was whether to incise and drain (it could potentially become a thyroglossal fistula) or wait for spontaneous resolution in response to antibiotics. Patient had severe pain and restriction of neck movements worsened and he also developed trismus. Incision and drainage of the abscess was done. Around 50 ml of pus was drained and sent for culture and sensitivity. Patient's pain and tenderness improved but induration over the abscess area persisted. Culture revealed methicillin resistant *Staph aureus* and appropriate antibiotics were started and he was taken up for surgery 2 weeks later – after scar of I&D healed completely. Methylene blue injected through a small granulation tissue in the scar.<sup>11</sup> Skin crease incision made along the scar and all stained areas and tract incised in toto along with portion of hyoid bone. Surgery was very challenging because the entire neck area had fibrosis of muscles of the neck and loss of fascial planes due to the inflammation. There was a lot of muscular and fascial

necrosis with exuberant granulation tissue. Intraoperative blood loss was also slightly higher than for straightforward surgery. Tract dissected in toto and wound sutured. The postop period was uneventful and patient made a complete but slightly delayed recovery. Postoperative period was a little turbulent with poor healing of incision, mild gaping but later completely healed.

Such a case has rarely been reported spontaneously.<sup>15</sup> Similarly Chandanwale et al mentions 4 out of 13 cases to have spontaneous infection.<sup>16</sup> Most of the cases are of spontaneous infection and *Staph epidermidis*, *H. influenza* and *Staph aureus* are the common pathogens. Infection after FNAC is often unreported. This case is a clear indication of importance of strict aseptic precautions during invasive procedures- FNAC is the first line investigation of most head and neck swellings and infection is a real complication we may encounter.<sup>6,10</sup> The setting of infection delays the procedure and adds to morbidity due to the procedure. It delays the wound healing and the increases scarring.

## CONCLUSION

This is a unique study that provides data from South India. Thyroglossal duct cysts are a commonly encountered neck swelling but the different presentations pose a challenge to the surgeon. In this study there was slight male predilection with increased incidence in children and young adults. All patients underwent USG and FNAC as primary diagnostic investigations. CEFT neck and fistulogram were done in selected cases. Sistrunk procedure provides a highly effective method for permanently excising a thyroglossal duct cyst eliminates the chance of recurrence. Infection and recurrence were the most common postoperative complications encountered with incidence of 27% and 3% respectively. The infected thyroglossal duct cyst abscess was one rare entity encountered in our study.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Meenakshi S, Rajasekar MK. Thyroglossal duct cyst: myriad presentations. *Int J Otorhinolaryngol Head Neck Surg* 2019;5:973-7.