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Prospective Study of Thyroglossal Cysts

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Abstract
Objectives: *Our study was done on 15 cases of Thyroglossal cysts during a period of three years from January 2014 to March 2017. All the cases were treated surgically by Modified Sistrunk's operation under general anaesthesia after investigating them thoroughly. A follow-up period of 6 months to 1 year was done to assess any short-term or long-term complications including recurrence.*
Materials And Methods: *15 Patients of Thyroglossal cysts presented to the Department of ENT, GGH, Guntur during a period of three years from January 2014 to March 2017. Of these patients, 11 were males and the remaining 4 were females. The age of the patients ranged from 1 year to 56 years. All the patients were investigated for complete blood chemistry, urine analysis, chest x-ray, ECG, Thyroid profile (serum T3, T4, TSH levels estimation), ultrasonography of the neck and FNAC of the swelling. All of them were treated by Modified Sistrunk's operation under general anesthesia. The cyst along with its tract, the central part of the body of hyoid bone and a core of tissue deep to the hyoid bone adjacent to the tract were excised. The excised cyst and its tract were sent for histopathological examination to determine its exact nature.*
Results: *Of the 15 patients selected for our study, 11 patients were males and 4 were females. Their ages ranged from 1 year to 56 years. The cysts were located in the midline in 8 cases and in the rest of 7, the cysts were off the midline (6 were to the left and 1 to the right). They were mostly situated below the hyoid bone (14 cases). In 1 case, it was situated just above the hyoid bone. All the patients were treated surgically by the Modified Sistrunk's operation. A post-operative follow-up period of 6 months to 1 year was uneventful without any short term or long term complications or recurrence. All the cases healed well with a thin scar.*
Conclusion: *Thyroglossal cysts are the most common midline neck masses of congenital origin and hence require proper attention. The Modified Sistrunk's operation is still the treatment of choice advised for all cases of thyroglossal cysts, especially in cases where there is a relatively rapid increase in size over a short period of time or in cases with secondary infection. A follow-up period of 6 months to 1 year showed excellent results without any complications or recurrence.*
Keywords*: FNAC, Thyroid profile, Sistrunk's operation.*

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I. Introduction

A Thyroglossal cyst can be defined as an irregular neck mass or a lump which develops from cells and tissues left over after the formation of the thyroid gland during the developmental stages[1]. They are the most common cause of congenital midline neck masses and are generally located caudal to the hyoid bone. They can occur anywhere along the path of the thyroglossal duct, from the base of the tongue to the suprasternal notch[2] and hence, they can be intralingual (2.1%), suprahyoid (24.1%), thyrohyoid (60.9%) or suprasternal (12.9%) [8.] They most often present as an asymptomatic, palpable, midline, neck swelling in the region of the hyoid bone and are smooth, cystic and fluctuant. They can be tense when wedged between the hyoid and thyroid cartilage. The infected thyroglossal cysts can be painful. 90% of the cysts lie in the midline, 10% are off the midline; of these latter cases, 95% are on the left and 5% are on the right side. They are more common in adults, even though they are congenital. They move upwards during deglutition and on protrusion of the tongue because of their attachment to the hyoid. Complications like infection of the cyst (causing dysphagia or airway obstruction) or fistula formation (due to spontaneous rupture, incision or inadequate removal of the cyst) can occur. As thyroid tissue is present in the cyst wall in more than 60% of the cases, thyroid carcinoma also can arise (papillary carcinoma - 85% or follicular adenocarcinoma - 15%). The squamous elements present in the cyst wall may very rarely give rise to squamous carcinoma. During the fourth week of intrauterine life, the thyroid anlage forms as an outpouching from the floor of the pharynx between the tuberculum impar (a median eminence between the lingual swellings) and the posterior-third of the tongue. It enlarges caudally as a bilobed diverticulum following the descent of the heart and great vessels and grows into the loose parapharyngeal

connective tissue. As it moves down, it leaves a tract behind. The hyoid bone develops later and joins from lateral to medial. The tract may be caught in this, resulting in the tract running through the bone. More commonly, however, the hyoid rotates to achieve its adult position and draws the thyroglossal tract posteriorly and cranially at the inferior edge of its body. The rest of the thyroglossal tract lies ventral to the body and the thyrohyoid membrane[8]. The thyroglossal tract normally atrophies and disappears between the fifth and tenth week, but the caudal attachment may remain as the pyramidal lobe of the thyoid gland. Any part of the tract can persist, resulting in a cyst, sinus or a fistula. Most fistulae are acquired, following rupture or incision of an infected cyst or after incomplete removal. A thyroglossal cyst is lined by pseudostratified, ciliated, columnar epithelium while a thyroglossal fistula is lined by columnar epithelium. Diagnosis is usually done by physical examination. Thyroid function tests must be done. Ultrasonography of the neck should be performed to determine the extent of the cyst and also to know the presence of normal thyroid gland. FNAC of the cyst reveals its cellular features. A thyroglossal cyst has to be removed by Sistrunk's operation (either classical or modified). The classic Sistrunk's procedure included excision of one quarter inch of the central portion of the body of hyoid bone along with the thyroglossal cyst and its tract (which can be multiple) and one eighth inch diameter core of tissue (tongue muscle) at 45 degree angle above the hyoid, up to the foramen caecum including the mucosa, closure of the cut ends of hyoid bone and placement of a drain [3,4,5,6,8]. The Modified Sistrunk's operation is a similar procedure but dissection is not done through the mucosa. This surgery is relatively safe and results in 95% cure rate [7]. A recent paper analyzed 24 research studies on different treatment complications of thyroglossal cysts and reported a total minor complication rate of 6% for this surgery.

II. Materials And Methods

The present study was conducted on 15 patients of thyroglossal cysts, who presented to ENT department, GGH, Guntur, during a period of three years from January 2014 to March 2017. Of them, 11 patients were males and 4 were females. The age of the patients ranged widely from the youngest being 1 year of age to the oldest being 56 years. They were thoroughly examined clinically. All of them presented with a complaint of swelling in front of the neck which was slowly increasing in size, as the only complaint. They were all investigated by complete blood chemistry, urine analysis, chest x-ray, ECG, thyroid profile including serum T3, T4, and TSH estimation, ultrasonography of the neck and FNAC of the swelling and were admitted in the hospital. All the patients were selected for surgery after doing pre-anesthetic check up and obtained an informed consent, either from the patient or from their parents. Modified Sistrunk's operation under general anesthesia was done in all the cases. The transverse incision was placed over the middle of the swelling and extended to either side. Skin along with the subcutaneous tissue was elevated as a single flap well above and below the swelling. The cyst was identified and delineated along with its tract. The hyoid bone was defined and the central portion was cleared off its attachments. One-fourth of the central portion of the body of the hyoid was cut with scissors and removed. A core of tissue on either side of the tract, deep to the hyoid was cut. The cyst along with its tract and surrounding core of tissue was removed in toto. The remnant parts of the body of hyoid were sutured together and the wound closed in layers. The excised cyst along with its tract was sent for histopathological examination to confirm our diagnosis and to exclude any co-existing malignancy (especially in adult patients).

Clinical photos of few patients of our series



III. Results And Observation

This is a prospective study done in 15 cases of thyroglossal cysts, who presented to ENT department, GGH, Guntur during a period of 3 years. The majority of patients were males, amounting to 11 in our series (73.33%). The rest 4 patients were females (26.66%), (Table-1). The male to female ratio was 2.75:1 (11:4). The age of the patients ranged widely from the first decade to the sixth decade. The youngest patient was 1 year of age and the oldest was 56 years. Table - 2 shows the age distribution of patients in our study. Most of the thyroglossal cysts were situated in the midline of the neck, 8 cases (53.33%). In 7 cases, they were on one side of the midline (46.66%), (Table-3). Of these latter 7 cases, 6 were situated on the left side (85.71%) and 1 on the right side of midline (14.28%), (Table-4). The majority of the cysts were sited below the hyoid bone, between it and the thyroid cartilage in 14 cases (93.33%) and the cyst was situated just above the hyoid in 1 patient (6.66%), (Table-5). All the patients were treated by Modified Sistrunk's operation after thorough investigations. The excised tissues were subjected to histopathological examination. The patients were followed for a period of 6 months to 1 year to assess any short or long term complications or recurrence.3.

Table - 1 : Sex distribution

Sex of the patients	Number of patients	Percentage
Males	11	73.33%
Females	4	26.66%

Table - 2 : Age incidence

Age group	Number of patients	Percentage
1 to 10 years	9	60%
11 to 20 years	2	13.33%
21 to 30 years	1	6.66%
31 to 40 years	2	13.33%
41 to 50 years	Nil	---------
51 to 60 years	1	6.66%

Table - 3 : Site of the cysts

Site of the cyst	Number of patients	Percentage
Midline of the neck	8	53.33%
Off the midline	7	46.66%

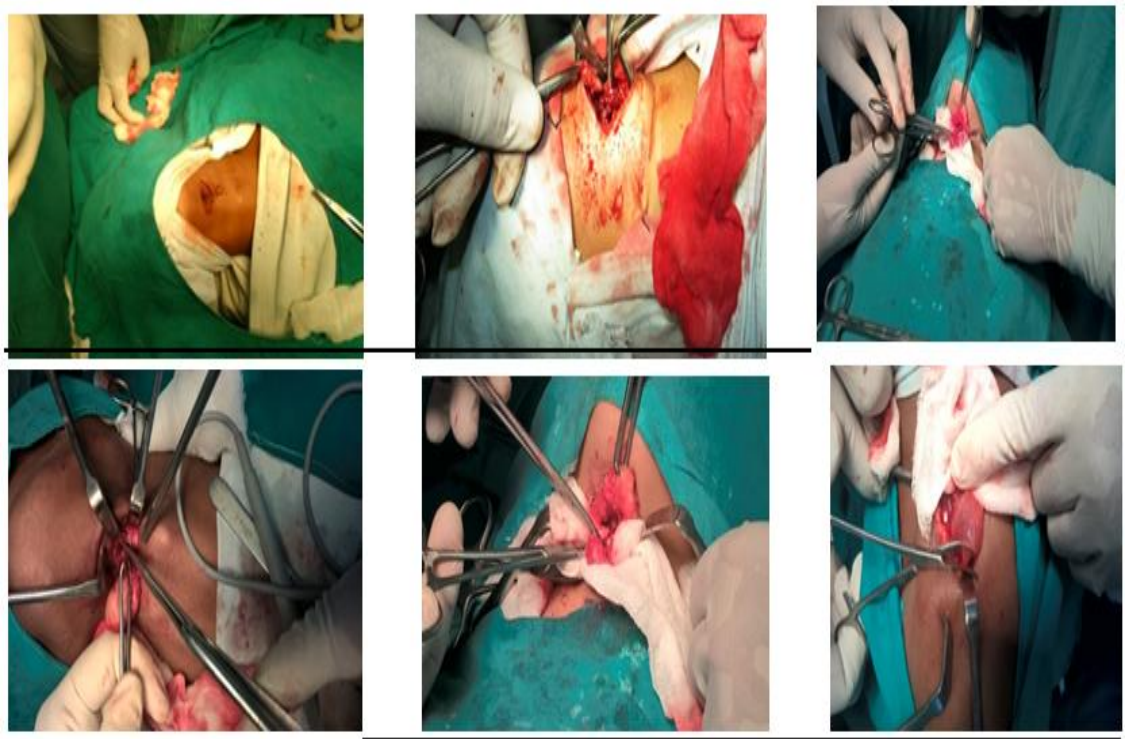
Table - 4 : Laterality of the cysts

Site of the cyst	Number of patients	Percentage
Right side of midline	1	85.71%
Left side of midline	14	14.28%

Table - 5 : cysts in relation to hyoid bone

Site of the cyst	Number of patients	Percentage
Above the hyoid	1	6.66%
Below the hyoid	14	93.33%

Few intra-operative photographs



IV. Discussion

A total number of 15 cases of thyroglossal cysts were diagnosed, investigated and treated at GGH, Guntur, during a period of 3 years. Thyroglossal cysts are the most common congenital, midline cysts of the neck. However, they may also present on either side of the midline of the neck, more often onto the left side. They are situated commonly below the hyoid bone, between it and the thyroid cartilage, on the thyrohyoid membrane and are usually asymptomatic. The disease does not show any predilection towards any sex. The male predominance observed in our study may only be an incidental finding. They should be treated by Modified Sistrunk's operation, whenever a patient seeks medical advice (even though being asymptomatic at the time of presentation), as they are prone to become symptomatic in later period. It may be necessary to do surgery for cosmetic purpose also. This surgery is still considered as a good option to treat thyroglossal duct cysts. Apart from cure, this is a safe procedure with minimal or no complications. The chances of recurrence are also minimal as the entire tract along with the cyst is excised. The rare possibility of developing a carcinoma is also totally eliminated by this procedure. The resulting thin scar can easily be camouflaged by using cosmetics.

V. Conclusion

Our prospective study of thyroglossal cysts reiterates that these are not uncommon and may present at any age from childhood to adult life, albeit the congenital nature of the disease. They most commonly present as swelling in the midline of the neck or off the midline (more so to the left side), and are usually asymptomatic but may grow in size slowly. Whenever diagnosed, they must be treated by the well established Modified Sistrunk's operation (complete excision of the cyst, its tract, central one-fourth part of the body of hyoid and a core of tissue along the tract deep to the hyoid) which ensures complete cure with minimal or no complications or recurrence.

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