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A clinico surgical experience of thyroglossal duct cysts in a tertiary care hospital of Southern Odisha

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Abstract---Introduction: The thyroglossal duct cyst (TDC, also known as the thyroglossal tract remnant, or TTR) is a well-known developmental anomaly that affects roughly 7% of the population. It often manifests as a movable, painless lump. Objectives: to report our 2 years of clinical experience with thyroglossal cysts in terms of clinical aspects and surgical findings. Materials and methods: This study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019- June 2021. Results: The majority (72.72%) were under the age of fifteen. Patients aged 16 -30 years made about 24.24% of the patient population. Males made up 63.63 % of the

population, while females made up 36.36%. 88% of patients had neck swelling when they arrived. 15.15% of patients exhibited erythema/redness over swelling, and 18.18% felt tenderness. 15.15% of patients at presentation had painful swelling and deglutination. 18.8% of patients reported having experienced recurrent neck swelling in the previous two years, while 12.12 % only had recurring discharge from the midline neck. The majority of cysts (87.87 %) were subhyoid in site, followed by suprahyoid cysts in 6% of cases, suprasternal cysts in 3 %, and over hyoid cysts in 3%. The majority of the cysts (96.96%) were midline; however one was located on the left side. 88.84% patients had a tract that emerged from the cyst and vanished at the superior edge of the hyoid body, whereas 2 patients (6%) had a patent thyroglossal duct that extended from the cyst to the vallecular mucosa. 1 patient (3%) had a fully patent thyroglossal base of the tongue. 2 patients (6%) had completely absent tract. In 31 individuals (93.93%), the patent duct passed beneath the hyoid body, but it passed through or over the hyoid bone in one patient each. The majority (72.72 %) of cysts were between 1.6 and 3 cm in diameter, while 18.18 % were between 0 and 1.5 cm. 66.66% cysts were firm whereas 33.33% were soft. Conclusion: The most typical congenital abnormalities of the cervical region is a thyroglossal duct cyst. The majority of them have a noticeable midline neck swelling that moves with swallowing and deglutination, most common site being subhyoid.

Keywords---Hyoid bone, Thyroglossal duct, Thyroglossal cyst.

Introduction

Neck masses are frequent observations at all ages, and a wide variety of illnesses are included in the differential diagnosis. Thyroglossal duct cysts (TDCs) make up more than 75% of congenital midline neck masses [2] and are the most frequent congenital malformation of the neck in children [1]. TDCs frequently affect children, but at least half of these cases are diagnosed in the second decade of life, and they can also manifest later in adults [3]. When the thyroid gland descends from the foramen cecum to its final location in the anterior neck, persisting epithelial remains of the thyroglossal duct (TD, or thyroglossal tract (TT)) are present.

The USG neck can be used to detect TDC since it reveals a cystic lesion [4]. A benign TGD cyst can be seen on a CT scan as a midline, fluid-attenuated mass that is situated close to the hyoid bone and has a thin, smooth wall [5]. Dermoid cysts, branchial cysts, hemangiomas, and swollen lymph nodes are among the differential diagnoses. Sistrunk's operation, which involve the excision of the cyst and its tract, the body of the hyoid bone, and the core of tissue along the tract up to the foramen cecum, are used as a form of treatment [6]. When correctly carried out, Sistrunk's procedure has a recurrence rate of less than 3% and typically manifests one year after excision [6].

Objectives

To report our 2 years of clinical experience with thyroglossal cysts in terms of clinical aspects and surgical findings.

Materials and Methods

This study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019-June 2021. The study included thirty four thyroglossal cyst patients. Clinical history, physical examination, FNAC findings, and USG findings indicative of cyst were used to make the diagnosis for each patient. All patients underwent a modified Sistrunk's procedure, in which the cyst, hyoid body, and tract (of whatever length was present) were all removed. The size and location of the cyst, the presence or absence of the thyroglossal tract, and other surgical findings were noted. Cysts were forwarded for histopathologic analysis. Clinical and surgical data from cases were noted and statistically analysed using IBM® SPSS® 23.0, for Windows®, to bring out the results of the study.

Inclusion criteria:

- Fresh cases, a normal thyroid on an ultrasound, and histopathology findings supporting a thyroglossal cyst.
- FNAC suggestive of thyroglossal Cyst.

Exclusion Criteria:

- H/O prior neck surgery,
- any other congenital anomalies

Ethical clearance: The present study was approved by the institutional Ethical Committee of M.K.C.G Medical College and Hospital, Berhampur, on human subject research

Results

The majority (72.72%) were under the age of fifteen.

Patients aged 16 to 30 made about 24.24% of the patient population.

Males made up 63.63 % of the population, while females made up 36.36% (Table 1).

Table 1
Age/sex distribution of patients

Age group	No of patients	Percentage	Males	Females
15	24	72.72	16	8
16-30	8	24.24	5	3
31-45	1	3	-	1

Age group	No of patients	Percentage	Males	Females
>45	0	-	-	-

88% of patients had neck swelling when they arrived. 15.15% of patients exhibited erythema/redness over swelling, and 18.18% felt tenderness. 15.15% of patients at presentation had painful swelling and deglutination. Every patient experienced movement during swallowing and tongue protrusion. 18.8% of patients reported having experienced recurrent neck swelling in the previous two years, while 12.12 % only had recurring discharge from the midline neck. (Table 2)

Table 2
Signs and symptoms of patients (at presentation)

Sign/symptom	No of patients	Percentage
Painless neck swelling	29	88
Tenderness	6	18.18
Erythema/redness over swelling	5	15.15
Painful swelling	5	15.15
Painful deglutination	5	15.15
Movement with protrusion of tongue	33	100
Movement with swallowing	33	100
Recurrent swelling (in past 2 years)	6	18.18
Recurrent Discharge from cyst (in past 2 years)	4	12.12

Cysts were observed in a variety of sites. The majority of cysts (87.87 %) were subhyoid in site, followed by suprahyoid cysts in 6% of cases, suprasternal cysts in 3 %, and over hyoid cysts in 3%. The majority of the cysts (96.96%) were midline; however one was located on the left side (Table 3).

Table 3
Cyst location at surgical exploration

Location	No of patients	Percentage
Suprathyoid	2	6
Subhyoid (thyrohyoid)	29	87.87
Suprasternal	1	3
Overhyoid	1	3
Midline	32	96.96

Location	No of patients	Percentage
Towards left	1	3
Towards right	-	

There were various lengths and regions where thyroglossal ducts were seen to be patent. 88.84% patients had a tract that emerged from the cyst and vanished at the superior edge of the hyoid body, whereas 2 patients (6%) had a patent thyroglossal duct that extended from the cyst to the vallecular mucosa. 1 patient (3%) had a fully patent thyroglossal duct from the cyst to the base of the tongue. 2 patients (6%) had completely absent tract. In 31 individuals (93.93%), the patent duct passed beneath the hyoid body, but it passed through or over the hyoid bone in one patient each. (Table 4).

Table 4
Persistent thyroglossal duct and its course on surgical exploration

Extend	no. of patients	(%)
From cyst to base of tongue	1	3
From cyst to Vallecular mucosa	2	6
Absent tract	2	6
From cyst and disappearing on superior border of hyoid	28	84.84
Location		
Going under the hyoid	31	93.93
Going over the hyoid bone	1	3.03
Going through the hyoid bone	1	3.03

In our study, cyst sizes varied. The majority (72.72 %) of cysts were between 1.6 and 3 cm in diameter, while 18.18 % were between 0 and 1.5 cm. Only one cyst larger than 4.6 cm was observed. 15.15 % of the cysts ruptured during surgery. On palpation, the majority of the cysts (66.66 %) were firm, whereas 33.33 % were soft cysts (Table 5).

Table 5
Surgical findings in patients

Findings	No of patients	Percentage
1. Size of cyst		
0–1.5 cm	6	18.18
1.6–3 cm	24	72.72
3.1–4.5 cm	2	6.06
>4.6 cm	1	3.03

Findings	No of patients	Percentage
2. Rupture during surgery	5	15.15
3. Consistency		
Cystic/soft	11	33.33
Firm	22	66.66

Discussion

The thyroglossal duct, a tiny tubular structure, connects the tongue to the thyroid gland's primordium. It extends ventrally to the primordium of the hyoid bone and caudally in the midline from the foramen caecum of the tongue. Between the eighth and tenth weeks of pregnancy, the thyroglossal duct cysts often diminish and vanish. Failure to involute and atrophy causes a thyroglossal duct to persist as a fibrous cord or a tiny epithelial tube [7]; alternatively, if the duct persists due to ongoing local inflammation or infection, secretions from the epithelial lining may build up and cause the development of thyroglossal cysts [8]. The most typical congenital neck tumour is a cyst in the thyroglossal duct (TDC). In our study, there were 12 girls (36.36%) and 21 boys (63.63%), indicating a male predominance. This male supremacy is consistent with the literature [9]. 72.72 percent of our patients were under the age of 15, while 24.24 percent were between the ages of 16 and 30. Additionally, this fits with the literature [9].

Although the majority of these patients are supposed to be asymptomatic, all of our patients were in fact symptomatic. 88 percent of our patients had painless neck swelling when they first arrived. Only about 41.6 percent of the patients with TDC exhibited normal painless swelling, according to Moorthy et al. study [10], but Kepertis et al. study [9] discovered that 63.6 percent had a palpable midline cystic mass. 18.18 % of our patients reported having experienced recurrent neck swelling in the previous two years. According to a retrospective assessment by Josephson et al. [11], 65.7% of the patients had a mass or recurrent mass.

15.15 % of our patients reported erythema/redness over swelling, and 18.18% patients also felt tenderness. 15.15% of patients had painful swelling and deglutination when they were first seen, while 12.12% just had recurring discharge from the midline neck. In their study, Kepertis et al. [9] discovered that 12.12 percent of patients had a significant cervical infection at the midline necessitating preoperative drainage and antibiotic treatment, and that 24.2% of patients had typical glairy discharge. In all patients, we observed movement during swallowing and tongue protrusion.

Cysts in the thyroglossal duct have been observed in a variety of locations. The bulk of cysts (87.7 percent) were subhyoid in site, followed by suprahyoid cysts in 6% of cases, suprasternal cysts in 3 percent, and overhyoid cysts in 3%. 96.96% of the cysts were in the middle, however one was on the left side. A study by Ali et al. [7] discovered that the most frequent site is suprahyoid, in contrast to our and other studies where the subhyoid region is most prevalent.

84.84% of the patients had a duct visible coming out of the thyroglossal cyst and disappearing at the superior edge of the body of the hyoid, while 2 patients (6%) had a patent thyroglossal duct connecting the cyst to the vallecular mucosa. One patient (3%) had a fully patent thyroglossal duct that entered the base of the tongue from a cyst. Two patients had complete absent tracts (6%). In our study, the patent duct went beneath the hyoid body in 31 cases (93.93%) while it went through or over the hyoid bone in 1 patient each. On the other hand, according to one article [12], when the main duct is discovered, it is usually located either anteriorly or posteriorly to the hyoid in 72% of cases.

According to a standard textbook, thyroglossal duct cysts typically measure 2-4 cm in diameter and grow gradually in size [3], and we share this opinion. The majority (72.72%) of cysts were between 1.6 and 3 cm in diameter, while 18.18% were between 0 and 1.5 cm. Although there are descriptions of gigantic cysts in the literature, we did not come across any enormous thyroglossal cysts [13]. In our evaluation of the literature, we found no studies that analysed cyst sizes. On palpation, the majority of the cysts (66.66%) were firm, whereas 33.33% were soft cysts. 5 of our cysts ruptured during surgery (15.15% of them), compared to 19% in a series by Ubayasiri et al. [14] This emphasises how fragile and soft they are. None of our patients had any malignant changes, according to our research. Only 1% of TDC patients are thought to have malignant alterations, the most prevalent of which is papillary thyroid cancer [10].

Conclusion

The most typical congenital abnormalities of the cervical region is a thyroglossal duct cyst. Children who are male see the highest clustering of cases. The majority of them have a noticeable midline neck swelling that moves with swallowing and deglutination. Occasionally, a cyst might burst as a result of recurrent sinus production. The majority of them are subhyoid in structure. These cysts typically measure 1.5 to 3 cm. Rarely does a patent duct extend all the way to the tongue musculature; instead, it typically ends at the superior border of the cyst.

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