

# Frequency of Thyroglossal Duct Cysts among Benign Cystic Lesions of the Neck

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## ABSTRACT

**Aim:** To determine the frequency of thyroglossal duct cysts among benign cystic lesions of the neck and their clinical presentation and frequency in relation to gender and age in our patients.

**Methods:** This descriptive study was carried out from June 2007 to May 2013 at departments of ENT, DHQ Hospital Lakki Marwat and Mufti Mehmood Memorial Teaching Hospital Dera Ismail Khan. All patients presenting with cystic swellings in the neck, of either sex and of any age were included in the study for the determination of cause and distribution among gender and various age groups. All those cystic neck lesions which turned out malignant on histopathological report were excluded from the study. Each swelling was examined for site, size, number, presence of tenderness, consistency, fluctuation, trans-illumination, upwards movement of the swelling with swallowing and on protrusion of the tongue. Related investigations were carried out in all cases. Thyroid scan, ultrasonography and FNAC were done in each case to reach the diagnosis.

**Results:** Out of 75 benign cystic neck masses, the most frequent ones were thyroglossal duct cysts (fistulas) 32(34.5%), followed by dermoid cysts 14(30.9%). Out of 32 TDCs 19(56.40%) were female and 16(50%) patients presented in the first decade of life. Most of the TDCs 17(53.15%) were located in the infrahyoid position. Mean age of the patients was 11.13 years  $\pm$  4.59 SD, with male-to-female ratio of 1:1.2.

**Conclusion:** Thyroglossal duct cysts are still the commonest cause of benign cystic neck lesions. Disease is relatively more common in females and younger age group.

**Key words:** Benign, cystic neck lesions, thyroglossal duct cysts.

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## INTRODUCTION

Cystic lesions of the head and neck span congenital, developmental, inflammatory, and vascular lesions. Thyroglossal duct cysts (TDCs) are the most common form of congenital neck cysts, as well as the most common cause of midline neck masses<sup>1,2</sup>, accounting for up to 70% of such lesions<sup>3</sup>.

During the 4<sup>th</sup> gestational week, the thyroid primordia, in the floor of the primitive pharynx, grows caudally from the foramen cecum through the prepharyngeal soft tissues along a midline descent, the anterior neck, anterior and in close proximity to the developing hyoid bone, to its eventual destination in the inferior neck. As the developing gland travels caudally, an epithelial tract is left behind that develops into the thyroglossal duct, extending from the foramen cecum, anterior to the hyoid bone, thyrohyoid membrane and possibly embedded in the strap muscles and to the inferior neck in the midline. The thyroglossal duct frequently forms a recurrent

loop behind the hyoid bone. For this reason, TDC can extend through or around the hyoid bone. The duct generally involutes by the 5<sup>th</sup> to 10<sup>th</sup> week of gestation, leaving only a proximal remnant at the foramen cecum, and a distal portion that differentiates into the pyramidal lobe of the thyroid gland<sup>4</sup>.

TGCs are usually non-tender, mobile and moves upwards with swallowing and on protrusion of the tongue. Infected TDCs may present as a tender mass and may be associated with dysphagia, dysphonia, draining sinus, fever, or increasing neck mass. Airway obstruction is possible, particularly with intralingual cysts close to the airway<sup>2,4</sup>.

## MATERIAL AND METHODS

This descriptive study was carried out from June 2007 to May 2013 at departments of ENT, DHQ Hospital Lakki Marwat and Mufti Mehmood Memorial Teaching Hospital Dera Ismail Khan. A total of 75 patients presenting with cystic swellings in the neck, of either sex and of any age were included in the study for the determination of cause and distribution among gender and various age groups. All those cystic neck lesions which turned out malignant on

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histopathological examination were excluded from the study.

The study was approved by the Ethics and Research Committee of the hospital. Informed consent was obtained from all patients that participated in the study. A detailed history and physical examination were carried out. Each swelling was examined for site of location, size, presence of infection, consistency, fluctuation, transillumination and upwards movement of the swelling with swallowing and on protrusion of the tongue. History of previous surgery was also obtained. Thyroid scan and Ultrasonography and FNAC were done in every case while CT-Scan was done where needed.

Gender and age in years and age grouping were demographic variables. Aetiology of benign cystic neck swellings was a research variable. Age in years was analyzed as mean and range. Gender, age grouping and aetiology of benign cystic neck masses were analyzed as frequency (number) and relative frequency (%). Statistical analysis was done using SPSS version 17.

**RESULTS**

Out of 75 benign cystic neck masses, 26 (47.2%) were located laterally and 20 (36.4%) lying in the midline. While 9(16.4%) lesions were involving the entire neck the most frequent cystic lesions were thyroglossal duct cysts (fistulas) 32 (34.5%), followed by dermoid cysts 14(30.9%), cysts (fistulas) of the branchial apparatus 11(14.5%), lymphangiomas 7 (10.9%), sebaceous cyst 6(5.5%) and hemangiomas 5 (3.6%). Out of 32 TDCs 19(56.40%) were female and 16 (50.00%) patients presented in the first decade of life. Most of the TDCs 17(53.15%) were located in the infrahyoid position. Infection was present in 09 (28.10%) patients at the time of presentation. Only 05 (15.60%) patients gave a history of surgical intervention in the past. The mean age of patients was 11.13 years±14.59 SD. Female to male ratio was 1.2:1.

Table 1: Aetiological distribution of patients with benign cystic neck lesions (n=75)

Diagnosis	Frequency	Relative frequency
Thyroglossal duct cysts	32	34.55%
Dermoid cysts	14	30.90%
Branchial cysts	11	14.55%
Lymphangiomas	07	10.90%
Sebaceous cysts	06	05.50%
Haemangiomas	05	03.60%

Table 2: Various characteristics of patients with thyroglossal duct cysts (n=32)

Characteristics	Frequency and relative frequency
Male	13(43.60%)
Female	19(56.40%)
<b>Age Ranges (in years)*</b>	
0–10 years	16 (50.00%)
11–20 years	08 (25.00%)
21–30 years	05 (15.60%)
□ 30 years	03 (09.40%)
<b>Site of Thyroglossal duct cyst</b>	
Infrahyoid cysts	17 (53.15%)
Suprahyoid cysts	09 (28.10%)
Juxtahyoid cysts	04 (12.50%)
Suprasternal cysts	02 (06.25%)
Infected cysts	09 (28.10%)
Associated with fistula/sinus	11 (34.40%)
H/O Previous surgery	05 (15.60%)

Female to male ratio = 1.44: 1, \*11.13 years ± 14.59 SD

**DISCUSSION**

Thyroglossal duct cysts are still the commonest cause of benign cystic neck lesions. Disease is relatively more common in females and younger age group<sup>5</sup>.

In our study, females were more commonly affected than males. These results are in agreement with the literature reports<sup>6,7,8,10,11</sup>. Another study has reported disease exclusively in females<sup>12</sup>. But contrary to these reports, more than half of the patients (58.2%) were male in a study by Simon and his colleagues<sup>9</sup>. No sex predilection has been reported by Allard<sup>13</sup>. These differences in gender distribution may be attributed to genetic and geographic differences. The age range of our patients is almost similar to that in the study by Shah R et al<sup>11</sup>. On the other hand in the study by King AD et al, all of the patients were from adult group<sup>14</sup>. Both the above studies also had female preponderance like our study.

Regarding location, our results showed that most of the TDCs were midline, approximately similar to the results of 2 previous studies<sup>15,16</sup>. In studies by us and other researchers<sup>16,17</sup> most lesions in the off-midline location occurred on the left. This may be explained by the fact that the levator glandulae thyroidea muscle is ordinarily found on the left. The location of TDCs relative to the hyoid bone was somewhat different i.e., 53.15% infrahyoid in our study in comparison to another study 38.9% locating at infrahyoid level<sup>1</sup>. 1% to 2% of TDCs are reported to be at the base of the tongue<sup>18</sup>.

The recurrence rate for thyroglossal duct cysts after a Sistrunk operation is 5% compared with 20% if the hyoid cartilage is not removed<sup>19</sup>. In our study 15.6% of the patients gave a positive history of surgery in the past including incision and drainage as well as complete excision of the cyst. Contrary to these, two other studies have reported a recurrence rate of 3.4% and 10.8% after Sistrunk operation<sup>3,20</sup>.

Our higher reports are due to the combined recurrence rates after incision and drainage as well as Sistrunk operation. Skin Involvement by the cyst, lobulation of the cyst, rupture of the cyst, and failure to follow the principle advocated by Sistrunk will increase the chances for recurrence after surgical intervention<sup>21</sup>.

The incidence of preoperative infection was 28% in our series, much higher than previously reported 22%.<sup>8</sup> But contrary to our reports Simon et al have reported higher results (40.8%) than ours<sup>3</sup>.

**Limitation:** The present study is limited because of the small study group. A large sized, prospective, randomized and a multi centre study is recommended to study the clinical presentation of thyroglossal duct cysts.

## CONCLUSION

Thyroglossal cysts are still the commonest cause of benign cystic neck lesions. Disease is relatively more common in females and younger age group.

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