

# Congenital Midline Neck Swellings In Children – A 10 Year Experience

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## ABSTRACT

Midline congenital neck mass is not a rare entity in children presenting to Otorhinolaryngology and Paediatric surgery department, but nothing significant is mentioned in literature, especially in our country. This study is an attempt to highlight the incidence of midline congenital neck masses and importance of early diagnosis and timely medical or surgical intervention. Cross sectional retrospective study conducted at Department of Paediatric Surgery-Otorhinolaryngology, Pt. B.D. Sharma Post-graduate Institute of Medical Sciences, Rohtak, Haryana. Data of all children below the age of 18 years presenting with congenital neck mass to our institute from January 2004 to December 2014 was retrospectively analysed with regards to age, gender, types of swelling, location and the investigations performed. Data was presented in the form of tables, diagrams and pie charts. 67 patients with different congenital neck swellings were studied. Out of these most frequent were thyroglossal duct anomalies 37 (55.2%) followed by dermoid cysts 16 (23.9%), lymphangiomas 7 (10.45%) and haemangiomas 4 (5.9%). Other rare swellings included cervical teratoma, ectopic thyroid and giant congenital hamartoma with one case each. Congenital midline neck masses constitute less talked about but important clinical entity. These masses pose diagnostic, therapeutic and surgical challenges to many clinicians. Hence, for proper management, sound knowledge of these masses and adequate surgical skills are necessary prerequisites.

**KEY WORDS :** Congenital neck mass, Thyroglossal cyst, Dermoid cyst

## Introduction

Neck masses in children is a common presentation in paediatric surgical centres [1-2]. These are usually either congenital/

developmental, inflammatory/reactive or neoplastic [3]. Congenital neck masses commonly include thyroglossal cysts, branchial cleft anomalies, dermoid cysts and vascular malformations. Other rare lesions are cervical teratomas, ectopic thyroid, midline cervical clefts [4]. Thyroglossal duct cyst is the most common midline neck mass accounting for 70% of the congenital neck anomalies [5-6]. Correct diagnosis, and complete surgical excision require accurate knowledge of these neck masses. The objective of this study was to determine frequency of various types of congenital midline neck swellings, their age & gender distribution and outcome of surgical management in terms of recurrence.

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## Material and Methods

A retrospective study was conducted between 2004 & 2014 to analyze the midline congenital neck masses in paediatric age group in our institute. Records of patients for detailed history and examination were retrieved from Department of paediatric surgery, PGIMS Rohtak and were analyzed and statistical analysis was done.

## Observations

Within 10 years period, total 67 cases of midline neck masses were found. Out of these, most frequent were thyroglossal duct anomalies 37 (55.2%) followed by dermoid cysts 16 (23.9%), haemangiomas 4 (5.9%) and lymphangiomas 7 (10.45%). Other rare swellings included cervical teratoma, ectopic thyroid and giant congenital hamartoma with one case each (Fig. No.1).

Age of presentation varied from 4 days to 15 yrs, majority of them lying in 4 to 6 years group closely followed by 0 to 2 yrs age group (Fig.No. 2). There was a male preponderance with 42 males and 25 females giving M:F ratio of 1.68:1 (Fig.No. 3).

Out of 37 cases of thyroglossal duct anomalies, 19 cases (51.35%) were of thyroglossal fistula (Fig.4a) and 18 cases (48.65%) were of thyroglossal cyst (Fig.4b). All cases of thyroglossal fistula were iatrogenic in origin (i.e.) due to inadvertent incision and drainage of thyroglossal cyst abscess. Thyroglossal duct anomalies were more common in males with 25 cases (67.6%) as compared to 12 female cases (32.4%) with sex ratio of 2.1:1. Predominant position was infrahyoid (59.4%) in 22 cases followed by suprahyoid (29.7%) in 11 cases, juxtahyoid (8.1%) in 3 cases and suprasternal (2.7%) in 1 case. Mean age of the patients with thyroglossal duct anomalies was 7.15 years (Table No. 1).

In present series, 16 cases of dermoid cyst were reported (Fig 4c). Majority were in age group of 4 to 6 years with equivocal sex distribution with 8 cases each (Table No. 2).

Table No. 1: Age distribution of Thyroglossal duct anomalies

Age group (in years)	No of cases
0-2	2
2-4	6
4-6	6
6-8	5
8-10	7
10-12	6
12-14	4
14-16	1

Table No. 2 : Age distribution of Dermoid cysts

Age group(in years)	No of cases
0-2	0
2-4	3
4-6	7
6-8	2
8-10	2
10-12	2
12-14	0

Congenital midline vascular swelling was not a rare entity in our study. 4 cases of haemangioma (Fig.4d) were reported with 2 cases each in 0-2 year and 2 -4 year age group with no gender predilection. Major presenting complaint was ulceration and bleeding in 75% cases. 7 cases of lymphangioma were reported out of which 2 cases showed cervico-mediastinal extension. Cysts were infected in 3 cases (Fig.5a) and non-infected (Fig.5b) in remaining 4 cases.

Sex ratio was 2.5:1 and presenting age group was 0-2 years in all cases.

One case each of ectopic thyroid (8 yr male), cervical teratoma (4 day female) (Fig.5c) and giant congenital hamartoma (Fig.5d) was also reported.

Diagnosis was mainly clinical though ultrasonography and Fine Needle Aspiration Cytology(FNAC) was done to confirm the diagnosis. FNAC was particularly relevant to rule out ectopic thyroid, as misdiagnosed excision can lead to permanent hypothyroidism. CT scan provides additional information regarding extent and inner composition of mass. Chest X-Ray is important in cases of cystic hygroma to rule out the mediastinal extension. All the patients diagnosed with Thyroglossal cyst/fistula underwent Sistrunk procedure under general anaesthesia. In this procedure, cyst was removed along with central portion of hyoid bone with meticulous excision of persistent thyroid duct upto foramen caecum. In patients of dermoid cysts, haemangioma, lymphangioma and others, simple surgical excision was done.

Regular follow up was done monthly for 1 year for any recurrence or fistula formation. 3 cases of recurrent Thyroglossal fistula were recorded who were re-operated after 1 year.

## Discussion

Congenital neck masses are the most common non-inflammatory neck swellings. Nothing significant is documented in the literature till date regarding midline congenital neck swellings. Thus we compared our results with the data on congenital neck swellings in toto. Siddique et al studied 36 patients and showed thyroglossal cyst (58.33%) to be the commonest midline neck swelling followed by branchial cysts (19.44%), haemangiomas (8.33%), lymphangiomas (8.33%) and dermoid cysts (5.55%) [7]. Another study by Al Khateeb et

al on 252 cases also revealed thyroglossal cyst (53%) as the most frequent swelling followed by branchial cysts (22%), dermoid cysts (11%), haemangiomas (7%) and lymphangiomas (6%) [8]. Results of our study were found to be consistent with previous studies in terms of thyroglossal cyst. However, second most common midline swelling was dermoid cyst in our study in contrast to branchial cyst which was second most common swelling in all other studies [7-9].

Patients varied in age from 4 days to 15 yrs, majority of them lying in 4 to 6 years group in our study. Siddique et al [7] reported this to be 6 to 8 years while Ayugi et al [10] found it to be 0-2 years. Our study showed a male preponderance with M:F ratio of 1.58:1 which is in agreement with Siddique et al ratio of 1.11:1. However Al Khateeb et al [8] found out a female predilection with a ratio of 1:1.2 while Ayugi et al [10] had an equivocal distribution (M:F=1:1).

Thyroglossal cyst represents most common congenital midline neck swelling. It arises from persistent thyroglossal duct. Thyroglossal fistulae on the other hand are acquired following rupture or incision of infected thyroglossal cyst. Thyroglossal duct anomalies were more common in males with 25 cases (67.6%) as compared to 12 female cases (32.4%) with sex ratio of 2.1:1. In other published series, sex ratio was 1.1:1 [7] and 1:1 [11-12].

Mean age of the patients with thyroglossal duct anomalies was 7.15 years as compared to 7.8 years, 37.6 years and 15.4 years in studies by Ayugi et al [10], Tarcoveanu E et al [13] and Al Salem et al [14], respectively. Predominant position was infrahyoid (59.4%) in 22 cases followed by suprahyoid (29.7%) in 11 cases, juxtahyoid (8.1%) in 3 cases and suprasternal (2.7%) in 1 case. These findings were similar to Siddique et al [7] and Shih-Tsang L et al [12]. Thyroglossal cyst frequently gets infected

leading to iatrogenic fistula formation. Thus in authors opinion, thyroglossal cyst should be excised as early as possible.

Dermoid cysts are slow growing benign tumors which may occur in midline of the neck. In the neck, dermoid cysts are usually firm lumps attached to the overlying skin. In present series, 16 cases of dermoid cyst were reported. Majority were in age group of 4 to 6 years. This is contrary to Shih-Tsang et al [12] study which states that dermoid usually presents in second and third decade. There was no gender predilection.

Congenital midline vascular swelling also was not a rare entity in our study. Haemangioma being the commonest benign tumor of infancy, affects head and neck in 14 – 20% of cases. Lymphangiomas are degenerative lesions arising from lymphatics and can be classified as simple lymphangiomas, cavernous lymphangiomas and cystic hygromas. A cystic hygroma is the most common form of lymphangioma and constitutes about 5% of all benign tumors of infancy and childhood and is thought to arise from an early sequestration of embryonic lymphatic channels [11]. All cases were in age group of 0 to 4 years equally presenting in both the sexes. Siddique et al showed that 66.67% cases reported at time of birth and the remaining in second decade with M:F= 2:1 [7]. According to Krol et al, infantile haemangioma typically appears in first few weeks of life and proliferates for weeks to several months [15]. In our opinion haemangioma of neck should also be excised as early as possible since all these cases present with bleeding and ulceration

### Conclusion

Congenital midline neck masses constitute less talked about but important clinical entity. These masses pose diagnostic, therapeutic and surgical challenges to many clinicians. Hence,

sound knowledge of these masses, timely intervention and adequate surgical skills will not only ensure proper management but also improve the final outcome as well as prognosis. This will go a long way in improving the expectancy and quality of life in these cases.

### Figure legends

Figure 1: Different types of congenital midline neck swellings. The above table shows thyroglossal cyst to be commonest swelling (55.2%) followed by dermoid cyst (23.9%).

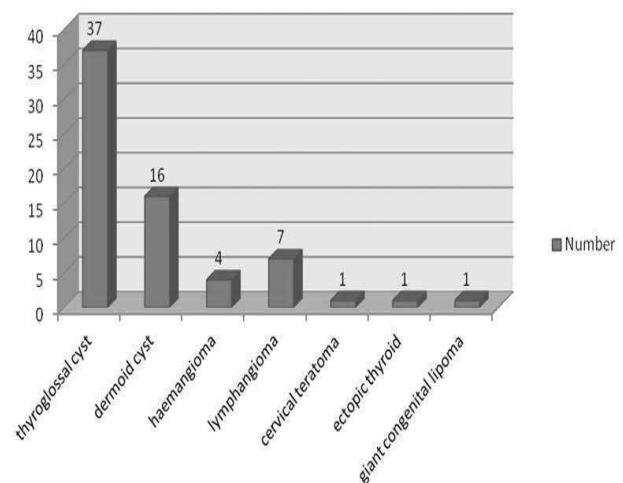


Figure 2: Age distribution of patients with congenital neck swellings

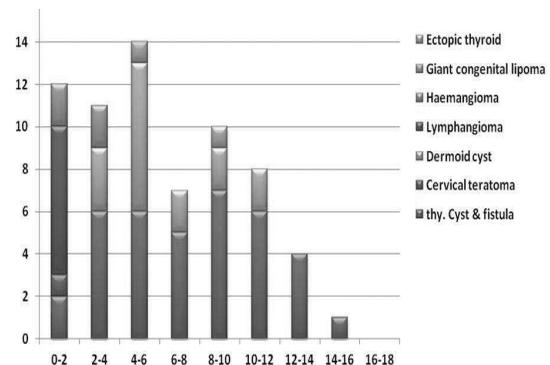


Figure No.3: Sex distribution of patients with congenital neck swellings

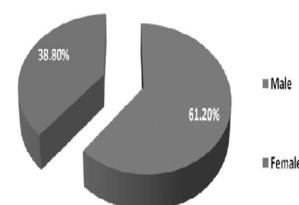


Figure No.4: a) Thyroglossal Fistula, b) Thyroglossal Cyst, c) Dermoid, d) Haemangiom

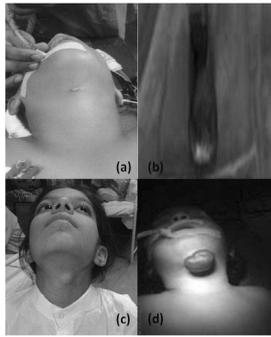


Figure No. 5: a) midline cystic hygroma (infected), b) midline cystic hygroma (non-infected), c) cervical teratoma, d) congenital giant hamartoma



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