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Enigma in the diagnosis of congenital neck masses: a prospective study

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ABSTRACT

Background: Head and neck swellings are common in routine otorhinolaryngologic practice. This study was done to assess the incidence and varied presentation of different congenital neck swellings.

Methods: Hospital based prospective study done in the Department of Otorhinolaryngology at a tertiary care hospital from January 2017 to December 2018. A total of 28 patients with slow, progressive neck swellings were selected after excluding thyroid swellings and acute inflammatory neck swellings. All patients had no other complaints. After a thorough clinical examination and investigations like ultrasonography, fine needle aspiration cytology and radiological examination, surgery was done, and specimens obtained were sent for histopathological examination. Patients were followed up to 1 year.

Results: 28 patients with congenital neck mass were studied. 15 were thyroglossal cysts, 7 were branchial anomalies, 5 were dermoid cysts and 1 was bronchogenic cyst. The most frequent congenital neck mass was thyroglossal duct cyst and fistula (53.57%) followed by, in descending order, cysts and fistulas of the branchial apparatus (25%), dermoid cysts (17.85%) and bronchogenic cyst (3.5%) respectively.

Conclusions: The overall presentation in terms of age group, location, incidence and clinical features of congenital neck swellings is an enigma to the treating surgeon as well as the pathologist. The prevalence varies largely among centres. A knowledge of the varied differential diagnosis of slow progressive masses in the neck should be kept in mind while planning the surgical procedure for total removal of the lesion to avoid recurrence.

Keywords: Branchial cyst, Bronchogenic cyst, Congenital neck mass, Dermoid cyst, Thyroglossal cyst

INTRODUCTION

Slow, progressive swelling in the head and neck region is one of the common clinical presentations in otolaryngologic practice. Presence of a neck mass poses a diagnostic dilemma for the otolaryngologist. The most common neck masses of non-inflammatory type are believed to be of congenital origin. Although usually present at birth, they can appear at any age. 2

These masses are classified as lateral neck masses (including branchial cyst or fistula), midline neck masses (including thyroglossal duct cyst or fistula, thymic cyst, dermoid cyst, and teratoma of the neck), and masses of

the entire neck (including hemangioma and lymphangioma).²

The commonest congenital neck mass is thyroglossal duct cyst accounting for 70%.³

Although it is a dormant embryological remnant, it can present at any age and requires excision. Branchial cysts and fistulas are well recognized anomalies in the head and neck due to persistence of the remnants of the cleft and pouch.⁴

Dermoid cysts are benign swellings derived from both ectoderm and mesoderm. A congregation of dermal derivatives like hair follicles, sweat and sebaceous glands and fibro adipose tissue along with keratinizing squamous epithelium is typically present.

Due to the diverse location and cosmetic concern associated with these neck masses, patients often present to multiple specialty clinics such as otolaryngologists, plastic surgeons and primary care physicians. Hence knowledge of the evaluation techniques and treatment modalities is of paramount importance.⁵

Aim

The aim of the study was to assess the incidence and varied presentation of different congenital neck swellings.

METHODS

This is a prospective study done in the Department of Otorhinolaryngology at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre from January 2017 to December 2018.

Twenty-eight patients with neck swellings were selected after excluding thyroid swellings and acute inflammatory neck swellings.

Ethical approval was taken. After history taking, each patient was examined thoroughly and subjected for appropriate investigations like fine needle aspiration cytology (FNAC) and relevant imaging modalities. All surgeries were performed under general anesthesia. Specimens obtained were sent for histopathological examination. Post operatively patients were followed up at 1, 6 and 12 months.

Data analysis was done using IBM® SPSS version 23 software. Descriptive statistics was used wherever applicable.

RESULTS

The study group comprised 12 males and 16 females, with a male-to-female ratio of 1:1.3 in age ranging from 8 years to 60 years. The maximum number of cases were seen in the second decade of life (28.57%) and first decade of life (21.42%) respectively as shown in Table 1.

Amongst 28 cases, 15 cases were of thyroglossal cyst (53.57%), 7 of branchial anomalies (25%), 5 of dermoid cyst (17.85%) and 1 bronchogenic cyst (3.5%). There were 21 (75%) midline and 7 (25%) lateral swellings.

Most of the thyroglossal duct cysts were from sub hyoid region. An interesting observation was made in one of the cases which was found to be a sub hyoid bilobed variety. Interestingly, one patient presented as thyroglossal cyst clinically but the specimen on histopathological examination revealed to be a bronchogenic cyst (Figure 1). Modified Sistrunk operation was done in all the cases.

The most frequent lateral neck mass were branchial arch anomalies of the second arch. Table 2 shows the location of various branchial arch anomalies, most of which were located in the upper neck (85.71%).

Table 1: Percentage of cases with age group at presentation.

Age group	Number of cases	%		
0-10	6	21.42		
11-20	8	28.57		
21-30	5	17.85		
31-40	5	17.85		
41-50	3	10.71		
51-60	1	3.57		
Total	28	100		

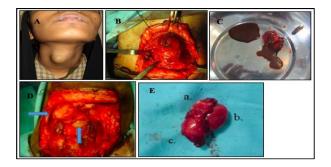


Figure 1: (A-C) Bronchogenic cyst which presented to us as thyroglossal cyst; (D and E) bilobed thyroglossal cyst.

E-a: Hyoid bone; b and c: The two lobes below the hyoid.

Branchial anomalies were excised, and their tract was traced till the aerodigestive system where their origin was present. The cut section was partially brownish in colour with mucoid material within the cystic cavity, the cyst wall was very thick with papillary projections (Figure 2).

Table 2: Location of neck mass with frequency in percentage.

Neck region	Lesion	Patients	%	
	Thyroglossal cyst (fistula)			
Midline	Subhyoid	14	93.33	
	Suprahyoid	1	6.66	
	Histopathology- thyroglossal cyst	15	100	
	Dermoid (location)			
	Thyroid	3	60	
	Sublingual	2	40	
	Histopathology:			
	Epidermoid	2	40	
	Dermoid	3	60	
Lateral (branchial cyst)	Upper neck	6	85.71	
	Lower neck	1	14.28	
	Cysts	6	85.71	
	Fistula	1	14.28	

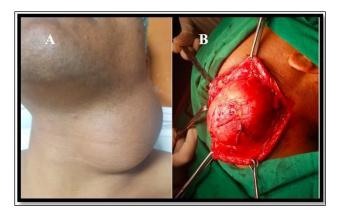


Figure 2: (A) Pre and intra-operative; (B) branchial cyst.

Dermoid cysts were 5 in number (17.85%). 2 were reported as epidermoid cyst and 3 were dermoid on histopathology. Two were in the sublingual region and 3 were in the thyroid region. One case which was clinically mimicking a thyroid swelling with retrosternal extension on computed tomography was later reported as an infected dermoid cyst on FNAC. Intraoperatively, varied amounts of cartilage, hair follicles and purulent paste like material along with cystic areas were seen as shown in Figure 3 (B, D, F).



Figure 3: (A and B) Dermoid cyst; (C and D) infected dermoid which presented as thyroid swelling; (E and F) sublingual dermoid.

All patients were followed up to one year and no recurrence was noted.

DISCUSSION

Midline and lateral regions of the neck have distinct developmental differences and knowledge of this is helpful to differentiate a midline lesion from a lesion in the lateral cervical region.

In our study majority of the patients presented during their decade. It differs from study to study. In different articles it is suggested as 7.8 years, 37.6 years, and 15.4 years indicating the variable age at which they present to the clinician due to their asymptomatic nature. 6-8

The male to female ratio was 1:1.3 which is comparable to the study of Mazharul et al.⁹

Most of the studies showed thyroglossal cyst is the commonest congenital neck swelling. 3,6,10 The origin of the cysts was similar to study done by Mazharul et al, and Shih-Tsang et al, in which thyrohyoid was noted in 71.43% and 74% and suprahyoid in 14.29% and 22% respectively. 9,11 Association with malignancy preclude these lesions from being overlooked. 12

Bilobed thyroglossal cyst is a rare clinical entity with no recent reported cases in literature.

The second branchial cleft system contributes to more than 90% of the anomalies which is consistent to this finding. Although a background idea about the tentative tract is paramount, patients usually undergo revision surgeries due to the atypical course of the fistula. The recurrence rate is 3% for a primary lesion and 22% with previous surgery. All cases had no recurrence.

Dermoid cysts are located in different parts of the body, but only 7% occur in the head and neck.⁵ Authors found an incidence of 17.85% at authors centre. The histopathological results were similar to Mazharul et al.⁹ Recurrence causes a cosmetically deforming scar. Hence, the importance to establish a diagnosis and plan total excision is important.⁵

The majority of bronchogenic cysts are located in the mediastinum and the lung parenchyma. However, various ectopic locations exist. In the neck, they are rare and very difficult to diagnose preoperatively. One of this case which presented as a thyroglossal cyst clinically was paradoxically reported as a bronchogenic cyst on histopathological examination. There are only 31 cases reported till 2011.

CONCLUSION

The overall presentation in terms of age group, location, incidence and clinical features of congenital neck swellings is an enigma to the treating surgeon as well as the pathologist. The prevalence varies largely among centers. Knowledge of the varied differential diagnosis of masses and associated cosmetic concerns of the patient

should be kept in mind while planning surgical procedure for total removal of the lesion thus preventing recurrence.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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