

# A Clinical Study of the Prevalence and Etiology of Pediatric Neck Masses in a Tertiary Care Hospital

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**Abstract:** *Introduction:* Neck mass in pediatric patients is a common presentation in otorhinolaryngology practice. The occurrence of a neck mass in a child is a cause of anxiety to the parents and the numerous etiologies make it a diagnostic challenge for the clinicians. *Methods:* A total of 50 patients, 28 male and 22 female, of the pediatric age group attending the OPD presenting with neck masses were included in this study. In this study, we aimed to evaluate the numerous etiologies of a neck mass which guided us towards the best management of the disease. All data were recorded and statistically analyzed. *Results:* In the majority of cases, neck swelling was present laterally (70%). The neck masses were mainly divided into- congenital (36%), inflammatory (42%), non inflammatory (20%) and neoplastic (2%). Thyroglossal cyst was the most common congenital neck mass, followed by branchial cyst. Reactive lymphadenitis was the overall most common neck mass presentation. *Conclusion:* Neck masses of inflammatory, congenital and neoplastic origin were evaluated in this study.

**Keywords:** pediatric neck masses, thyroglossal cyst.

## 1. Introduction

A child with a neck mass is a common presentation in the pediatric otolaryngology practice and constitutes a major indication for consultation in many centers.<sup>1,2</sup>

Neck masses in the pediatric age group is a matter of great concern and anxiety for the parents.

The apparently visible location of the neck mass with frequently associated cosmetic problem often results in its early presentation.

It also poses a great diagnostic challenge to the clinicians. However, majority of the neck masses in children is benign and follows a benign course.

A proper history, followed by detailed clinical examination is the prerequisite in the management of such cases. The use of diagnostic imaging modalities such as ultrasonography, computerized tomography and other investigations such as fine needle aspiration cytology, Histopathological examination of the excised tissue have come into play and made diagnosis easier.

The spectrum of etiology of neck masses ranges from congenital benign to acquired neoplastic lesions. It is varied and can be related to multiple factors.<sup>3</sup>

Regarding etiology, cervical masses can be didactically classified into three groups: inflammatory or infectious, abnormal embryonic development and neoplastic.<sup>4</sup>

This study was conducted to assess the distribution of neck masses in pediatric patients related to gender, age, etiology and their management in our institute.

## 2. Materials and Methods

A cross-sectional study was conducted in the department of ENT of Jorhat Medical College and Hospital, Jorhat, Assam, for a period of one year. A total of 50 patients in the

pediatric age group presenting to the ENT OPD with complaints of neck masses were included in the study.

A detailed history was taken from the care-takers of the patients and a detailed clinical examination including examination of neck, ENT examination and Systemic examination was carried out.

All the cases were subjected to ultrasonographic evaluation of neck masses, followed by fine needle aspiration cytology (FNAC) as and when necessary. In cases where the diagnosis based on ultrasonography and cytology was inconclusive, excision biopsy was done and histopathological examination of the specimen was carried out using haematoxylin and Eosin staining. Routine blood examinations, including haemoglobin estimation, total leucocyte count, differential leucocyte count with peripheral blood smear study were carried out in all the cases.

The patients were evaluated on the basis of gender, anatomical location, etiology and histological examination of the neck masses.

## 3. Results

Of the 121 pediatric patients that attended the ENT OPD during our study period of one year, 50 of them presented with neck masses. The prevalence is 41.3%. A total of 50 patients were enrolled into the study. Of them 28 were males and 22 females giving a slight male preponderance of 1.2:1.

**Table 1:** Gender distribution of neck masses in pediatric patient.

Gender	No. of Cases	% of Cases
Male	28	56
Female	22	44

The number of lateral neck masses was found to be 35 (70%) whereas the number of midline neck masses was 15 (30%). This is due to a large number of lymphadenitis cases presenting as a mass in the posterior triangle of the neck.

**Table 2:** Anatomical distribution of neck masses in pediatric patient

Site of Neck Mass	Number of Cases	% of Cases
Midline	15	30
Lateral	35	70

There were a higher number of neck masses on the right side as compared to the left side. No specific explanation has been found prevalent regarding this.

The highest number of cases were inflammatory in origin at 42% of total cases, followed by congenital 36%, non inflammatory 20% and lastly, neoplastic at 2% of cases.

**Table 3:** Etiological distribution of neck masses in pediatric patient.

	Medial Neck Mass	Lateral Neck Mass	% of Cases
Inflammatory	3	18	42
Non Inflammatory	2	8	20
Congenital	9	9	36
Neoplastic	1	0	2

**Table 4:** Histopathological diagnosis of neck masses in pediatric patient.

Inflammatory	No. of Cases	% of Cases
Reactive non suppurative lymphadenitis	9	18
Suppurative lymphadenitis	5	10
Tubercular lymphadenitis	7	14
<b>Non Inflammatory</b>		
Epidermal inclusion cyst	6	12
Lipoma	4	8
Others	0	0
<b>Congenital</b>		
Thyroglossal cyst	6	12
Plunging ranula	2	4
Ectopic thyroid	1	2
Branchial cyst	4	8
Cystic hygroma	1	2
Lymphangioma	1	2
Fibromatosis coli	3	6
<b>Neoplastic</b>		
Hodgkin's lymphoma	1	2

Reactive non suppurative Lymphadenitis was the most common inflammatory lesion seen in 9 (18%) cases, followed by tubercular lymphadenitis (14%).

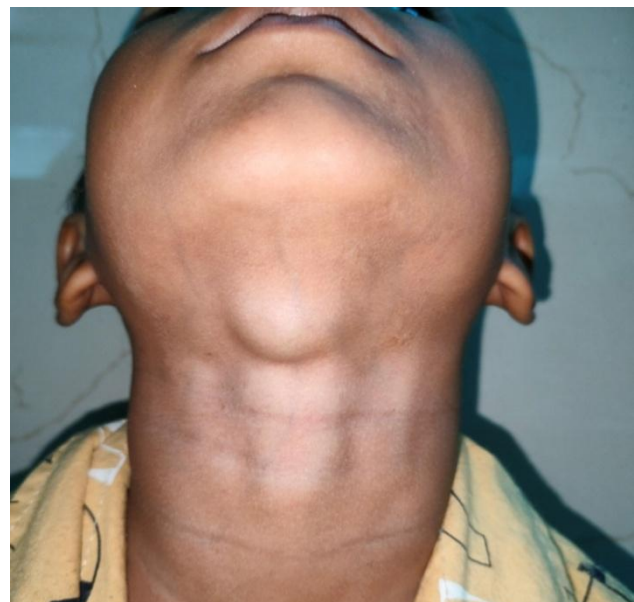
Non inflammatory neck masses like epidermal inclusion cyst and lipoma presenting as neck masses contributed a total of 20% of the total cases.

The most commonly presented congenital neck swelling was thyroglossal cyst with 6 cases (12%), followed by branchial cyst with 4 cases (8%) and fibromatosis coli (6%) and plunging ranula (4%). There was one case each of ectopic thyroid, cystic hygroma and lymphangioma of the neck.

The only neoplastic mass was that of a Hodgkin's lymphoma.



**Figure 1:** Fig showing a case of submandibular neck mass



**Figure II:** Fig showing a case of throglossal cyst



**Figure III:** Figure showing a case of branchial cyst.



**Figure IV:** Figure showing a case of fibromatosis col

#### 4. Discussion

There is a slight male preponderance in the number of cases in our study as compared to the females with 56% and 44% respectively. Ragesh et al in their study noticed that 64% cases were males and the rest 36% were females.<sup>5</sup> Lucumay et al found 71.6% were males and 28.4% were females.<sup>6</sup>

Al Mayoof et al in his study found inflammatory category was the main group accounting 57.8%, followed by the congenital category, neoplastic 12.5%, and then the noninflammatory non neoplastic 4.7%.<sup>7</sup> Sharrif et al<sup>8</sup> in his study concluded that the inflammatory category was the main group accounting for 32 cases (64%). This is quite similar to our study where the inflammatory neck masses constitute 42%, followed by congenital neck masses at 36%, non inflammatory neck masses 20% and lastly the neoplastic masses at only 2%.

The main cause of neck mass was reactive (nonsuppurative) lymphadenitis which was seen in 9 patients (18%). This is similar to the study conducted by Al-Mayoof<sup>7</sup> and studies at other centres in developing countries. The reason for this is the higher incidence of infections in developing countries like India, Kenya, Iraq. Tubercular cervical lymphadenitis constituted 7 cases (14%) of the total cervical masses. Similar findings were noticed by Russel and Gregory.<sup>9</sup>

The commonest congenital neck swelling was thyroglossal cysts (12%), followed by branchial cyst (8%). This is similar to a study by Batikhe MY et al where the most common congenital mass found was thyroglossal cyst (30.6%).<sup>10</sup> Although rare, thyroglossal duct cysts are the most common clinically significant congenital thyroid lesion and the most common congenital cause of anterior neck swellings in children. These are said to have neither sex predilection nor hereditary predisposition.<sup>11,12</sup>

#### 5. Conclusion

The neck masses require a detailed clinicopathological evaluation. This is because of two main reasons, one being the cosmetic aspect and the other being the possibility of the

lesion being malignant. The lesions in the neck are visible to the patient and others and causes great anxiety to the patient and parents. Some of the swellings can attain a large size and lead to cosmetic concern. For a clinician, a neck lesion could be a sign of deep seated pathology and should never be ignored.

The differential diagnosis of neck masses is of utmost importance in medical practice. Due to its high prevalence and large amount of diagnostic possibilities involved, it can become a diagnostic challenge even for the most expert clinicians.

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#### References

- [1] Turkington JRA, Paterson A, Sweeney LE, Thornbury GD. Neck masses in children. *Br J Radiol.* 2005;78(925):75-85
- [2] Tracy TF, Muratore CS. Management of common head and neck masses. In *Seminars. Pediatric Surg.* 2007;16(1):3-13
- [3] Hopewell B, Schneider R, Gov-Ari E. Accuracy of preoperative diagnosis of pediatric neck masses. *American Acad Otolaryngol Head Neck Surg.* 2012;147:227-31
- [4] Gosche JR, Vick L. Acute, subacute, and chronic cervical lymphadenitis in Children. *Semin Pediatr Surg* 2006; 15(2): 99-106
- [5] Ragesh KP, Chana RS, Varshney PK, Naim M. Head and neck masses in children: A clinicopathological study. *Indian J Otolaryngol Head Neck Surg.* 2002;54(4):268-71
- [6] Lucumay EM, Gilyoma JM, Rambau PF, Chalya PL. Paediatric neck masses at a University teaching hospital in northwestern Tanzania: a prospective analysis of 148 cases. *BMC Res Notes.* 2014;7(1):772
- [7] Al-Mayoof, Ali F. Neck masses in paediatric population: An experience with children attended the Central Teaching Hospital of Pediatrics in Baghdad 2008-2009. *Afr J Paediatr Surg.* 2015;12:36
- [8] Shariff MA. Etiopathological study of pediatric neck masses in a rural population. *Int J Otorhinolaryngol Head Neck Surg* 2018;4:1206- 11
- [9] Russell J. Ord, Gregory J. Matz. Tuberculous Cervical Lymphadenitis. *Arch Otolaryngol.* 1974;99(5):327-9
- [10] Batikhe MY, Harb TT. Surgical causes of neck masses in pediatrics: management and outcome. *Int Surg J* 2019;6:503-7
- [11] Maitra A, Abbas AK. Thyroid gland. In: Kumar V, Abbas AK, Fausto N, Aster JC, eds. *Robins and Cotran Pathologic Basis of Diseases.* 7th ed. Philadelphia: Elsevier Saunders; 2004. 1155-226
- [12] Thyroid and Parathyroid glands. In: Badoe EA, Archampong EQ, da Rocha-Afodu JT, eds. *Principles and Practice of Surgery in the Tropics.* 3rd ed. Accra: Ghana Publishing Co.; 2000: 315- 334.