

## Clinicopathological Study of Midline Swelling of the Neck in Rajendra Institute of Medical Sciences, Ranchi

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### Abstract

**Background:** Neck swelling is a very common presentation among patients that we encounter in our day to day life. This is present in wide range of age groups and have multiple differential diagnosis. Therefore this produces a need for the surgeons to properly understand the embryology and anatomy and the various causes in different age groups to reach to apt diagnosis and appropriate management algorithm.

**Method:** A prospective study was conducted in otorhinolaryngology department of Rajendra Institute of Medical Sciences, Ranchi over a period of 18 months from April 2021 to September 2022. A total of 60 patients with midline swelling, who gave consent were evaluated and studied.

**Result:** In our study 60 patients were studied. Thyroid swelling is the most common midline swelling (65%) found in our study followed by Ludwig's angina (20%), thyroglossal cyst (10%) and dermoid cyst (5%). Wide range of age group from 6 years to 70 years presented with midline neck swelling. The midline swelling were of variety of origin from being congenital or acquired, inflammatory or non-inflammatory, benign or malignant. Patients were evaluated to reach a diagnosis. In our study FNAC could not diagnose the papillary and follicular variant of thyroid swelling which was confirmed on postoperative histopathological examination thus showing poor accuracy.

**Conclusion:** Among the midline benign neck swellings, thyroid swelling was found to be the commonest. Thyroid swellings occur more commonly in the females than males. Though FNAC is the most readily available tool for diagnosis but it is not definite for thyroid swelling since aspirate could be taken from the benign site and malignancy could be missed. USG guided FNAC is more effective and safe option. However clinically suspicious malignant cases should be followed up. Treatment of benign neck swelling is surgical excision while in acute case Ludwig's angina, incision and drainage followed by higher antibiotics coverage is effective.

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## Introduction

A lump is the most likely clinical problem to be encountered in the neck. [1] It is present in a wide range of age groups and has extensive differential diagnosis. Younger patients tend to present with inflammatory or congenital swellings, whereas individuals above the age of forty presenting with neck swellings are more likely to have a malignancy of the head and neck. Any neck swelling in the adult population has to be investigated thoroughly as it is considered metastatic until proven otherwise. [2] Every time a surgeon sees a neck mass, he has several questions in his mind like, whether it is congenital or acquired, inflammatory or non-inflammatory; tissue of origin; benign or malignant; primary or secondary lesion; if secondary, then source of primary; or could it be occult primary and what are the required diagnostic tools and treatment etc. [3] Hence, it is of importance to surgeons and clinicians who come across variety of neck swellings day in and out; mainly to understand its embryology and anatomy that aid in making correct diagnosis and following an appropriate management algorithm. Knowledge of patient's age, along with its associated symptoms and anatomical location of the swelling are the main key factors to proceed towards timely action towards management. Equally important are a detailed clinical history and thorough physical examination. Also, radiological studies like ultrasound, CT, PET CT and pathological studies like fine needle aspiration cytology (FNAC), fine needle aspiration biopsy (FNAB) and excision biopsy help us to establish the correct diagnosis and appropriate surgical treatment. Fine needle aspiration cytology (FNAC) is a simple, rapid and cost effective method to sample superficial masses found in the head and neck. [4] It can be both diagnostic and therapeutic in

cystic swellings. [5] Contrast enhanced CT scanning is the best imaging technique for evaluating a neck swelling. [6]. Hence this study is put forward to see the common causes of neck swelling and the clinical profile of the patient.

## Methods

**Study design:** Prospective study was conducted.

**Place of study:** Otorhinolaryngology and head and neck surgery department of Rajendra Institute of Medical Sciences, Ranchi, Jharkhand.

**Study period:** April 2021 to September 2022 (18 months)

**Study technique:** All Patients were evaluated starting with clinical history and examinations. A provisional diagnosis was established and further investigations in the form of Ultrasonography, USG guided fine needle aspiration cytology, complete blood count, blood grouping etc. were carried out on each patient. In some cases special investigations like CT scan neck and MRI neck were also done. After coming to a final diagnosis, surgical excision was the modality of treatment preferred in most cases with all masses sent for histopathological examination.

## Inclusion criteria

All the patients presenting with midline neck swelling in ENT department, RIMS, Ranchi

## Exclusion criteria

- Critically ill patients who are not fit for surgery.
- Patient not willing for surgery.

## Aims and Objectives

- 1.) To identify the common causes of midline neck swelling in our set up.

- 2.) To analyse the discordance between the FNAC and postop histopathological findings.
- 3.) To analyse the clinical profile of the patient presenting with midline neck swelling.

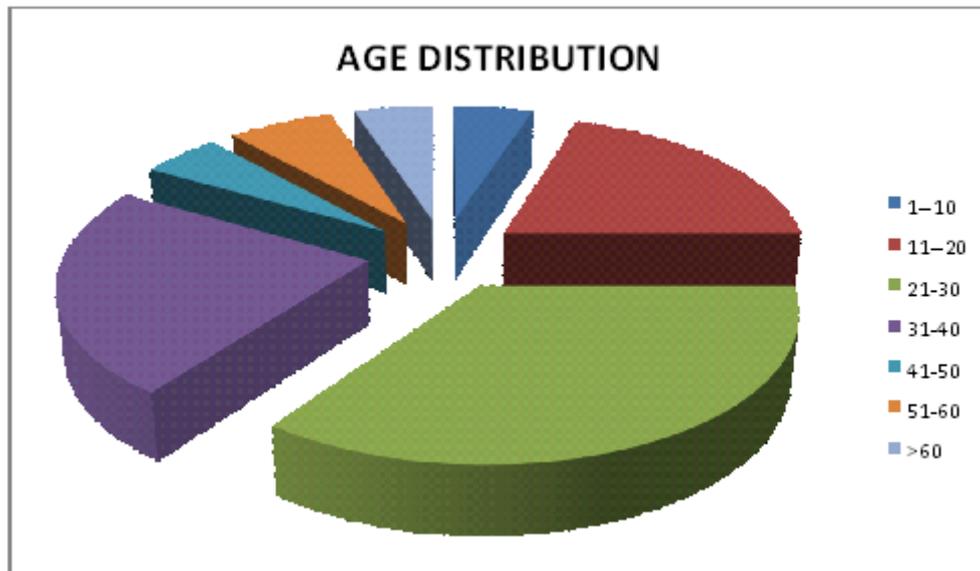
**Results and Observtions**

Neck masses are very frequently encountered in the outpatient department at a hospital and offer a diagnostic challenge for the surgeon. Thyroid mass especially colloid goitre is the most frequently encountered neck mass.

**1.) Age and Sex Distribution**

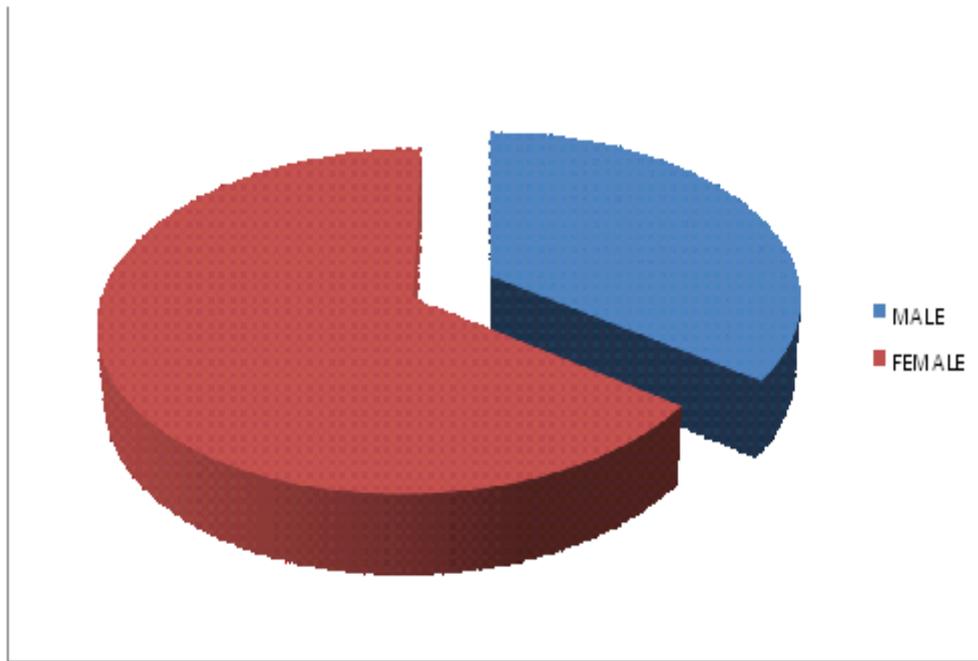
**Table 1: Age distribution**

AGE(IN YEARS)	NO. OF CASES	PERCENTAGE (%)
1-10	3	5
11-20	12	20
21-30	21	35
31-40	14	23.33
41-50	3	5
51-60	4	6.67
>60	3	5



**Table 2: Sex distribution**

	No. of Cases	Percentage (%)
Male	21	35
Female	39	65



**Table 3: Lobe of thyroid**

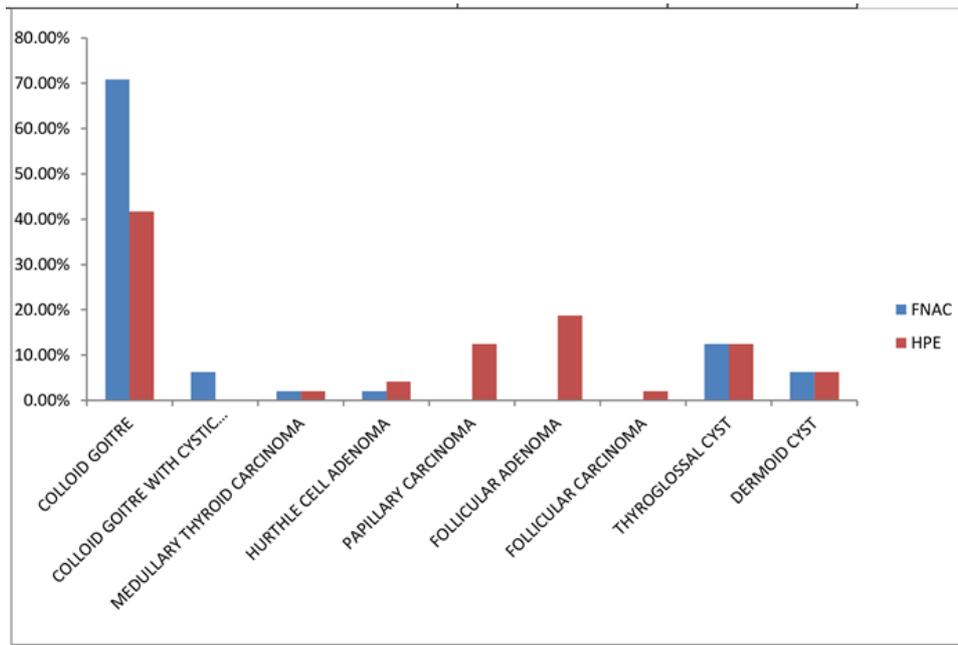
Side	No. of Patients	Percentage (%)
Right	30	76.92
Left	9	23.08

**Table 4: FNAC report**

	No. of Patients	Percentage (%)
Colloid Goitre	34	56.67
Colloid Goitre With Cystic Changes	3	5
Medullary Thyroid Carcinoma	1	1.67
Hurthle Cell Adenoma	1	1.67
Thyroglossal Cyst	6	10
Dermoid Cyst	3	5
Ludwigs Angina	12	20

**Table 5: HPE report**

HPE	No. of Patients	Percentage (%)
Colloid Goitre	20	41.67
Follicular Adenoma	9	18.75
Hurthle Cell Adenoma	2	4.17
Non Invasive Follicular Thyroid Neoplasma	1	2.08
Follicular Variant of Papillary CA	6	12.5
Medullary Carcinoma	1	2.08
Thyroglossal Cyst	6	12.5
Dermoid Cyst	3	6.25



## Discussion

In this study there were 60 patients were studied. Out of 60 patient most common midline swelling was thyroid swelling, 39 out of 60 patients (65%) which is consistent with other studies by Russel RCG, Hanif MA (15,16), 12 out of 60 (20%) patients with ludwig's angina, 6 (10%) thyroglossal cyst and 3 (5%) with dermoid cyst.

The most common congenital lesions found in the pediatric population are thyroglossal duct cyst.[7] In our study 6 out of 60 (10%) patient were diagnosed with thyroglossal cyst and 3 out of 60 (5%) patients had dermoid cyst. Irani et al study showed 9% had thyroglossal duct cysts. Hudise et al study showed most common congenital mass was thyroglossal cyst 24.2% and dermoid 1.6%.

12 out of 60 patients presented with acute and emergency condition and was diagnosed with ludwig's angina. A study done by Fakir et al on 50 cases of Ludwig's angina showed neck swelling, pain in neck and fever in 100% cases, whereas dysphagia was present in 80%.[7] In another study done by V Sharma fever and neck swelling was present in 100% cases, halitosis was present in 68% cases,

difficulty in swallowing was present in 63.8% of cases, hoarseness of voice was present in 61.7% cases. Trismus was present in 36.2% of cases and respiratory difficulty in 8.5% of cases. [8] In this study 100% patients presented with midline neck swelling and pain and poor oral hygiene leading to halitosis. Immediate incision and drainage was done and higher antibiotic coverage was given. Documented Studies have shown LA to be commoner among the male gender [9,10]. Botha and Colleagues reported a male to female ratio of 2.32:1 while Mahmud *et al*, reported a male to female ratio of 5.5:1. Ludwig's Angina tends to affect a wide age range [11,12]. Most cases of Ludwig's angina are said to arise from an odontogenic source with some findings as high as 90% in the adult population. [13]. In our study male to female ratio is 3:1. The involved age group ranged from 25 years to 55 years. All the patients showed poor oral hygiene and dental caries. 5 out of 12 patients had diabetes mellitus. In another study entitled deep neck infections: analysis of 185 cases, 34.1% had underlying systemic disease of which 88.8% had diabetes mellitus, 9.5% had chronic renal failure, 4.8% had liver cirrhosis, 2.4% had myelodysplastic

syndrome and 1.2% had gastric malignancy.[14]

65% of the patient presented with thyroid swelling. Our study showed female preponderance with male female ratio of 1:2.9. This is consistent with other studies by Russel RCG, Hanif MA, Siddique A, Watkinson JC. [15,16,17,18] Wide range of age groups were involved ranging from 18 years to 70 years with maximum number of patients between age 21 to 30 years and involving mainly the right lobe of thyroid. These findings are in similarity with Patel et al. [19]. Most common presentation in our study was neck swelling(100%) followed by dull ache(10.26%). Keshri et al also had similar finding with neck swelling in 100% patients while 15% of them had pain. [20] In Patel et al study 100% had neck swelling but only 1% had associated pain In FNAC , 34 out of 39 patients finding was colloid goitre followed by colloid goitre with cystic changes. . Findings are comparable with Gupta et and Golder et al in which diagnosed colloid goiter came out to be 52% and 70% respectively [21,22]. While in Patel et al colloid goiter was diagnosed in 61% patients followed by nodular goiter in 19% patients. On FNAC reporting 1 out of 39 patient was diagnosed with hurthle cell adenoma and 1 out of 39 with medullary thyroid carcinoma and 3 patients with colloid goitre with cystic changes. None of the patients in our study was diagnosed with follicular or papillary variant in FNAC report. This is inconsistent with other studies. This may be due to small sample size.

On HPE reporting 20 out of 39 patients were diagnosed with colloid goitre (51.28%) followed by follicular adenoma 9 out of 39 patients (23.08%) which is similar to Rahul Chetan et al study. [23] 5.13% with hurthle cell adenoma that is 2 out of 39 patients and 1 patient was diagnosed with medullary thyroid carcinoma and one with follicular carcinoma. Most of the HPE findings were

inconsistent with FNAC leading to poor accuracy. [24]

### Conclusion

From our study, it can be concluded that most common midline swelling is thyroid swelling and most common congenital swelling is thyroglossal cyst. Midline swelling involved wide range of age groups including both benign and malignant swelling as well as acute emergency cases.

Though FNAC is the most readily available tool for diagnosis but it is not definite for thyroid swelling since aspirate could be taken from the benign site and malignancy could be missed. USG guided FNAC is more effective and safe option. However clinically suspicious malignant cases should be followed up. Due to small sample size, the result may not be conclusive therefore further studies should be carried out.

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