

**Fine Needle Aspiration Cytology in Neck Swellings: A Retrospective Study**Mary Nirmala S<sup>1</sup>, M. Kavitha<sup>2</sup>, D. Ranjit Kumar<sup>3</sup><sup>1</sup>Department of ENT, Govt Kilpauk Medical College, Poonamallie High Road Kilpauk, Tamilnadu Chennai<sup>2</sup>Associate Professor, Department of ENT, Govt Mohan Kumaramangalam Medical College, Salem<sup>3</sup>Associate Professor, Department of ENT, Government Theni Medical College

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**Abstract:**

The Neck masses are relatively common pathology. These neck masses are evaluated by clinical history and examination with the aid of investigations like FNAC, USG and CT of the region and excision biopsy. Fine Needle Aspiration Cytology (FNAC) is a very simple, quick, inexpensive and minimally invasive technique used to diagnose different types of swellings like lymph node, thyroid, soft tissue and salivary glands in the Neck region.

**Objectives:** It is to assess the frequency and incidence of different sites, age, sex and distribution of inflammatory, benign and malignant lesions.

**Methods:** A retrospective study was conducted in the Department of Otorhinolaryngology at Government Kilpauk medical College and Govt. Royapettah hospital, Chennai from the period of Jan 2020 to December 2022. Patients between the ages of 18 years to 85 years were enrolled into the study. A total of 200 patients with a Neck swelling underwent FNAC. Fine needle aspiration diagnosis was correlated with detailed clinical findings and investigations.

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**Introduction**

A swelling is the most likely clinical problem to be encountered in the Neck region [2]. The evaluation of a neck mass is a common clinical dilemma and a condition to which clinicians routinely encounters. The differential diagnosis in a patient presenting with Neck mass is often extensive and will vary with age, sex and site. These neck masses are evaluated by a detailed clinical history and examination with the aid of investigations like FNAC, U SG and CT of the region and excisional biopsy. The common pathologies encountered in the Neck region presenting as a lump are lymphadenitis (specific and non-specific, acute and chronic and reactive), metastatic carcinoma, lymphoproliferative lesions, thyroid swellings (goitre, nodules and cysts and carcinoma), salivary gland swellings (sialadenitis, adenomas and carcinomas) and the skin and soft tissue lesions like lipoma, epidermal (keratinous, dermoid) cysts, benign adnexal tumours, etc.

Fine needle aspiration cytology is a simple, quick and inexpensive method that is used to sample superficial masses like those found in the neck and is usually performed in the outpatient department. It causes minimal trauma to the patient and carries virtually no risk of complications. Masses located within the region of the neck, including salivary

gland and thyroid gland lesions can be readily diagnosed using this technique [3,4]. FNAC is both diagnostic and therapeutic in a cystic swelling. Fine needle aspiration cytology does not give the same architectural detail as histology but it is quick, relatively painless, requires no anaesthetic, the complications of biopsy are avoided and it can provide cells from the entire lesion as many passes through the lesion can be made while aspirating[5].

The purpose of this study was to see the frequency and distribution of various pathologies detected on FNAC in patients presenting with neck swellings and to evaluate the role of FNAC in their diagnosis. It is enrolled from the analysis that FNAC is a safe, simple and rapid method that can be performed in diagnosing wide range of neck swellings.

**Material and Methods**

Place and type of study-It is a retrospective study carried out in the Department of Otorhinolaryngology Government Kilpauk Medical College & Hospital & Government Royapettah hospital, Chennai from January 2020 to December 2022. We used fine needle biopsy/cytology with aspiration technique in this study. Detailed clinical history of all the patients were taken related to neck swellings and relevant questions were asked to

extract the etiology and also about present, past and family history of tuberculosis and history of sexual exposure for syphilis and AIDS. Patients were explained about the procedure in detail and its advantages and their written consent about the same was taken. The technique was performed in the outpatient department with minimal trauma to the patient without any risk of complication. The area to be aspirated was cleaned with spirit the swelling was fixed with one hand and a 22- 23 gauge needle was inserted at convenient angles to the lesions and multiple hits were made within the lesion with sufficient negative pressure. The needle was removed after releasing the negative pressure and then pressure was applied to the area of aspiration after applying cotton over it to avoid bleeding or hematoma formation. The material obtained was immediately fixed in methanol for routine haematoxylin and eosin stain and few slides were stained with Pap stain as per the requirement. In this retrospective study, FNAC was performed in 200 OPD patients presented with swellings in the neck regions, All the cases of neck swellings send for FNAC from surgical departments of the hospital were included. Age less than 18 years and more than 85 years, acute inflammatory condition, swelling associated with pain, swelling < 2cm were excluded from the study.

Statistical method used was frequency distribution of various parameters using tables. Statistical Analysis was done and percentages were calculated for estimating frequency of various pathological conditions detected on FNAC in patients presenting with head and neck swellings.

### Discussion

FNAC, one of the simple, quick and cost- effective methods of evaluating superficial masses found in the neck. This technique is outpatient department based and causes minimal trauma to the patient.

It is useful in early differentiation of benign from malignant pathology and thus greatly influences the planned treatment. It reduces the cost of hospitalization to the patients. It is the technique which has high degree of accuracy. However doubtful lesions should always be correlated in biopsy specimen study.

Further immunohisto-chemistry and other molecular diagnostic methods helps in arriving at the definite diagnosis. It can be both diagnostic and therapeutic in case of cystic swellings. So, we undertook the present study to assess the incidence and nature of various Neck swellings by FNAC. There were no complications of FNAC procedure in Neck swellings.

**Table 1: Distribution of lesions as per tissue involved and gender**

	Female	Percentage (%)	Male	Percentage (%)
Thyroid	48	24	18	9
Salivary glands	02	01	01	0.5
Skin and subcutaneous tissue	09	4.5	15	7.5
Lymph node	59	29.5	45	22.5
Inconclusive	02	01	01	0.5
Total	120	60	80	40

The females are affected more than males in study done by Sanghvi AKB et al [11] and Kapoor S. et al [12] similar to our study. According to Menon et al thyroid swellings are very common in India and can be detected as palpable masses in as much as 12% of the population [1]. But in our study, lymph node swellings were more common followed by thyroid, skin and soft tissue lesions as in Rathore et al study[15].

**Table 2: Age distribution**

Age(years)	No. of cases	Female	Male
00-10	02	02	00
11-20	26	16	10
21-30	36	20	16
31-40	41	25	16
41-50	33	22	11
51-60	40	24	16
61-70	17	10	07
71-80	4	01	03
81-90	01	00	01
Total	200	120	80

The most common age group encountered in our study is 30-60 years and least number of patients seen in infants and old age.

**Table 3: Distribution of various lymph node lesions**

Lesions	Female	Male
Chronic granulomatous lymphadenitis	06	05
Lymphoproliferative	10	09
Reactive lymphadenitis	18	15
Acute suppurative	06	04
Hemorrhagic lymphadenopathy	16	12
Metsastasis	3	3
Total	59	48

In our study, we found that reactive lymphadenitis is common among lymph nodal involvement (28%), as in the Study done by Sanghvi AKB et al [11], Shobha et al [6] and Shekhar et al[7]but in contrast to our study, Tuberculous lymphadenitis is common in Modi et al study[17]. Metastasis was the commonest malignant lesion in study done by Sanghvi AKB et al [11] and Afnan Gul et al [14] in contrast to our study.

**Table 4: Distribution of various Thyroid gland lesions**

Lesions	Female	Male
Colloid cyst	08	03
Colloid goiter	34	15
Follicular neoplasm	03	02
Hurthle cell neoplasm	02	00
Papillary neoplasm	00	01
Total	47	21

As stated above, we found that colloid goitre was the commonest diagnosis among thyroid lesions which is similar to study done by Sreedevi et al[8] and Sanghvi AKB et al [11]. Female to male ratio in thyroid gland lesion was 10:1 in study by Patel D. et al [14] and 5:1 by Prasad et al [16] but we found 2:1 in our study.

**Table 5: Distribution of various skin and subcutaneous lesions**

Lesions	Female	Male
Lipoma	05	10
Keratinous cyst	01	00
Epidermoid cyst	03	05
Total	09	15

Among the skin and subcutaneous lesions, we found that lipoma was common in our study as similar to padia et al [18] study.

**Table 6: Distribution of salivary gland lesions**

Lesion	Female	Male
Pleomorphic adenoma	02	01
Total	02	01

In our study, the pleomorphic adenoma is common among salivary gland lesions as similar to that of Padia et al[18],AfnanGul et al[14] and Modi et al[17] study.

**Table 7: Showing comparison of distribution of neck swellings between our study and national and international studies**

	Lymph node%	Thyroid%	Salivary gland%	Skin and soft tissue%
Our study	53.5	34	1.5	12
Shobha[6]	86	-	12	02
Shekhar H.[6]	42	18	15.5	17.5
Sreedevi[8]	50.32	44.07	3.28	2.3
Pathak[9]	61.2	19.2	6.7	12.9
S.khetrapal[10]	64.1	16.9	4.1	13.8
SanghviAKB[11]	41	37	5	7
Kapoor S.[12]	43	34	15	8
Patel D.[13]	64	22.8	4.8	2

From our study, we found that FNAC is simple, inexpensive and minimally invasive investigation for differential diagnosis of neck lesions. It this technique has the advantage of giving rapid results with less physical trauma to the patients. Females

are affected more than males and the age group predominantly involved is 30-60 years. Lymph node involvement is more common among the neck swellings of which reactive lymphadenitis dominates. Colloid goiter is more common in

thyroid lesions. Female to male ratio is 2:1. Lipoma found to be the commonest among the skin and subcutaneous lesions. Pleomorphic adenoma predominates in salivary gland lesions.

#### Conflict of interest

The authors declare that they have no conflict of interest.

This article does not contain any studies with human participants or animals performed by any of the authors.

Retrospective study using hospital records.

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