

## Cytological Spectrum of Lesions in Neck Swelling with Histopathological Correlation in RUHS Medical College and Hospital

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### Abstract

Neck swellings are very frequently visited condition in surgery and ENT OPDs. The differential diagnosis in these cases is often extensive and vary with age, sex, and site. The swellings around neck range from enlarged lymph nodes, to salivary glands diseases, cysts, lipomas, and thyroid lesions. FNAC is a good tool to evaluate neck lesions. The use of FNAC in the investigation of head and neck masses has become an acceptable and widely practised minimally invasive technique with a larger acceptance by the patients.

**Method:** All the FNAC and respective biopsies received at our department between Jan 2019 to Dec 2021, retrospective from Jan 2019 to Dec 2020 and prospective from Jan 2021 to Dec 2021 were included in our study as per inclusion and exclusion criteria.

**Results:** We included 200 patients by simple random sampling. The age ranged from 10 to 78 years (median age = 48 years). Most common age group was 51-60 years with 48 (24%) cases followed by 41 – 50 years with 38 (19%) cases. There were 126 male patients 74 female patients with male: female ratio of 1.7: 1. Lymph nodes were the commonest involved in 96 (48%) cases, followed by thyroid and salivary glands lesions with 30 (15%) and 28 (14%) cases respectively. The sensitivity in cases of lymph node lesions was found to be 84.58%, whereas specificity of 97.62% with accuracy in diagnosis of 95.62%. In cases of aspirations of thyroid gland, the sensitivity was 100% and specificity of 77.9%. In salivary glands aspirates out of 28 cases, 18 cases showed infective and benign lesions and 10 cases of malignant lesions. In miscellaneous cases (n=76) it showed, 26 cases of cystic lesions, 20 cases of lipoma in different areas of neck region. Histopathological correlation was available in 76 cases. The overall sensitivity of diagnosing malignant lesions by FNAC in the present study was 83.33% and specificity was 91.29%.

**Conclusion:** The sensitivity and specificity of FNAC is fair enough with lot of advantages. FNAC provides a reliable method of investigating neck swellings, the efficacy of which approaches that of other similar diagnostic procedures and in the present study.

**Keywords:** Neck Swelling, cervical lymphadenopathy, FNAC, Cytology

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### Introduction

Neck swellings are very frequently visited condition in surgery and ENT OPDs. The differential diagnosis in these cases is often

extensive and vary with age, sex, and site [1]. The swellings around neck range from enlarged lymph nodes, to salivary glands

diseases, cysts, lipomas, and thyroid lesions. Neck masses can be evaluated by detailed clinical history and examination along with investigations like fine needle aspiration cytology, radiological tests like sonography and CT scan. In case of any malignancy suspected, the confirmation is done by a histopathological examination.

Fine Needle Aspiration Cytology (FNAC) is a simple, and inexpensive technique that is used to investigate superficial masses. The procedure is simple and can be easily carried out in outpatient. It causes minimal trauma and pain to the patient and carries minimal risk of complications [1]. The use of FNAC in the investigation of head and neck masses has become an acceptable and widely practised minimally invasive technique with a larger acceptance by the patients [2].

The most common pathological lesions encountered in the head and neck region are enlarged lymph nodes, due to reactive or infective lymphadenitis, metastatic carcinoma, and lymphoproliferative lesions. Other common causes of swellings in neck region are 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 [3].

## Method

This is a one year prospective and two years retrospective study between Jan 2019 to Dec 2021, retrospective from Jan 2019 to Dec 2020 and prospective from Jan 2021 to Dec 2021, at the Department of Pathology, RUHS Medical College and Associated Group of Hospitals, Jaipur. We included 200 patients as per the sample size calculated in our study by stratified random sampling. The FNAC smears from the patients attending the hospitals and who undergo subsequent excision biopsy of neck swellings and sent to our department constituted the material for study.

Clinical details of the patients were recorded, including age, sex, habits, clinical examination, site of biopsy, type of biopsy and clinical diagnosis. Three to four FNAC smears were prepared from the patient's sample. Two smears were air dried and stained with MGG stain and 2 smears were wet fixed with 95% methanol and stained with H&E stain. Biopsies were grossed as per institutional protocols and processed with wax block method. Three-to-five-micron thin sections were prepared and stained with H&E stain.

## Results

In the present study we included 200 patients who presented to our department for FNAC by simple random sampling. The age ranged from 10 to 78 years (median age = 48 years). Most common age group was 51-60 years with 48 (24%) cases followed by 41 – 50 years with 38 (19%) cases. [Figure 1] There were 126 male patients 74 female patients with male: female ratio of 1.7: 1. [Figure 2]

Out of total 200 samples received lymph nodes were the commonest involved in 96 (48%) cases, followed by thyroid and salivary glands lesions with 30 (15%) and 28 (14%) cases respectively. Other 46 patients with palpable lesions in the neck regions apart from lymph nodes, thyroid and salivary glands were cystic lesions, and lipoma. [Table 1]

Out of 96 cases of lymph node lesions, 71 cases were diagnosed as benign and infective lesions, 2 cases of Hodgkin's Lymphoma, 1 case of Non-Hodgkin's Lymphoma and rest 22 were metastatic deposits. In infections and benign lesions, most common finding was chronic nonspecific lymphadenitis with 31 (32.29%) cases followed by TB lymphadenitis with 23 (23.96%) cases. Reactive lymphadenitis was diagnosed in 17 (17.71%) cases. [Table 2] Two case of Hodgkins lymphoma was diagnoses, out of these one was nodular sclerosis variant on histopathology and other one was mixed cellularity type. One case was diagnosed as

Non-Hodgkin’s lymphoma. Out of 22 cases of metastatic deposits, 14 were squamous cell carcinoma as primary, 7 of adenocarcinoma and 1 case of metastatic small cell carcinoma. The histopathological correlation in cases of lymph nodes was available in 45 cases. The discrepancy in diagnosis of lymph node lesions on FNAC is shown in Table 3. The sensitivity in cases of lymph node lesions was found to be 84.58%, whereas specificity of 97.62% with accuracy in diagnosis of 95.62%.

In cases of aspirations of thyroid gland, there were 25 benign thyroid lesions and 5 malignant thyroid lesions. [Table 2] Most common benign lesion was goitre in 14 (7%) cases followed by acute and subacute thyroiditis in 5 cases. In 5 malignant lesions 3 were of papillary type and 2 cases of

follicular type. Histopathological correlation was available in 11 cases. One case diagnosed as colloid goitre on FNAC was reported as anaplastic carcinoma of Thyroid. The sensitivity in cases of thyroid gland was 100% and specificity of 77.9%. In salivary glands aspirates out of 28 cases, 18 cases showed infective and benign lesions and 10 cases of malignant lesions. Histopathological correlation was available in 7 cases.

In miscellaneous cases (n=76) it showed, 26 cases of cystic lesions, 20 cases of lipoma in different areas of neck region. Histopathological correlation was available in 76 cases. The overall sensitivity of diagnosing malignant lesions by FNAC in the present study was 83.33% and specificity was 91.29%.

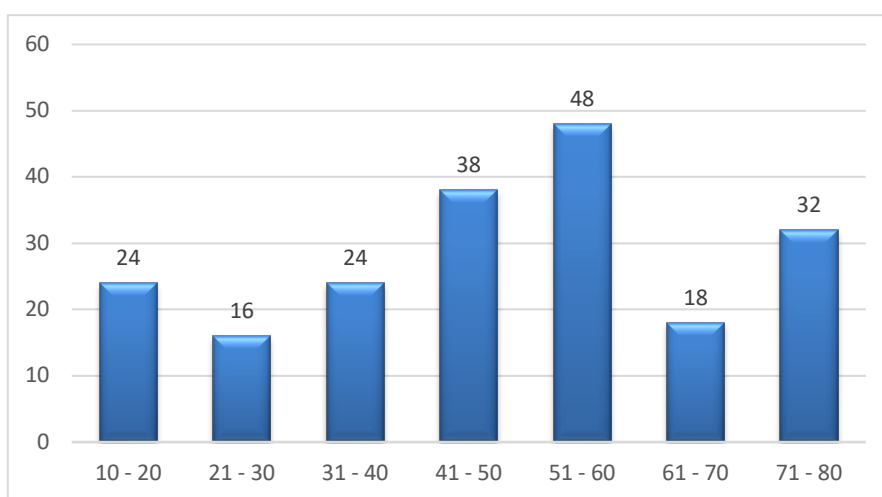


Figure 1: Age group wise distribution of cases.

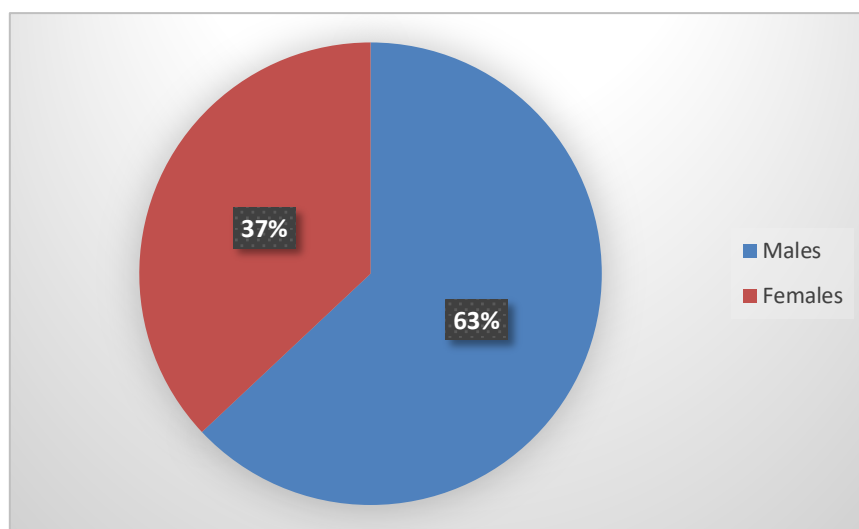


Figure 2: Sex wise distribution of cases.

**Table 1: Distribution of cases based on site of lesion.**

Site of FNAC	No. of Patients	Percent
Lymph Node	96	48.0%
Salivary Glands	28	14.0%
Thyroid	27	13.5%
Cysts	25	12.5%
Lipoma	24	12.0%
	200	

**Table 2: Distribution according to site of lesion**

	No. of Cases	Percent
<b>LYMPH NODE LESIONS</b>		
Chronic Non-specific Lymphadenitis	31	32.29%
Tubercular Lymphadenitis	23	23.96%
Reactive Lymphadenitis	17	17.71%
Hodgkin's Lymphoma	2	2.08%
Non-hodgkin's lymphoma	1	1.04%
Metastatic tumours	22	22.92%
	<b>96</b>	
<b>THYROID</b>		
Benign lesion (Goitre)	14	46.67%
Colloid goitre with cystic changes	4	13.33%
Thyroiditis	5	16.67%
Lymphocystic thyroiditis	2	6.67%
Papillary lesion	3	10.00%
Follicular Lesion	2	6.67%
	<b>30</b>	
<b>SALIVARY GLANDS</b>		
Chronic Sialadenitis	12	42.86%
Granulomatous sialadenitis	6	21.43%
Pleomorphic adenoma	8	28.57%
Adenocystic Carcinoma	1	3.57%
Mucoepidermoid carcinoma	1	3.57%
	<b>28</b>	
<b>OTHERS</b>		
Lipoma	20	43.48%
Benign cystic lesion	9	19.57%
Thyroglossal cyst	7	15.22%
Dermoid Cyst	6	13.04%
Brachial cyst	4	8.70%
	<b>46</b>	

**Table 3: Cytology histopathology discrepancy in our study**

FNAC Diagnosis	Total Cases where cyto-histocorrelation available	Discrepant Diagnosis on Histopathology	No. of Cases	Accuracy
Reactive Lymphadenitis	6	TB Lymph Node	1	93.33%
		Metastatic Deposit	2	
Chronic non-specific lymphadenitis	9	TB lymph node	2	93.75%
		NHL	1	

### Discussion

FNAC is a simple, quick, and cost-effective method to sample superficial masses in the neck. This technique is performed in the outpatient clinic, causes minimal trauma to the patient [4]. FNAC is particularly helpful in the workup of cervical masses and nodules as biopsy of cervical lymphadenopathy should not be done until all diagnostic modalities have failed to establish diagnosis [5].

As shown in table no. 3, the case distribution in different studies, lymph nodes and thyroid are the most common new swellings encountered in OPDs. In our study lymph nodes were the most common cases which agrees with study of Soni S *et al* [6] whereas Pradip Kumar Khokle *et al* [7] reported thyroid lesions as most common followed by lymph nodes.

**Table 4: Comparison of previous studies with the present study**

	Total	Lymph Nodes	Salivary Gland	Thyroid	Other
Soni S <i>et al</i> [6]	59	28	13	14	4
Pradipkumar Khokle <i>et al</i> [7]	100	28	17	40	15
Present Study	200	96	28	30	46

In our study in all lymph node lesions, benign lesions outnumbered malignant lesions. We reported 71 (73.9%) benign lesions and only 25 malignant lymph node lesions. Khiery and Ahmed [8] study, also revealed that majority of lymph nodes were benign in origin and most common is tuberculous lymphadenitis followed by reactive lymphadenitis which is partly in agreement to our study as chronic nonspecific lymphadenitis was the most common benign lesion in our study followed by tubercular lymphadenitis. Ahmad *et al* [1] observed Tuberculous lymphadenitis was the commonest diagnosis (36%) followed by reactive/non-specific lymphadenitis (18%). Various studies show that tubercular lymphadenitis and non-specific lymphadenitis are still the most common encountered lesions of neck nodes.

In our study out of 30 cases of thyroid swelling, we observed 83.33% benign and 16.66% malignant lesions. The histopathological correlation was available in 8 cases. Out of 11 cases, 6 were diagnoses correctly on histopathological examination whereas one case of colloid goitre was diagnosed as anaplastic carcinoma and one as follicular carcinoma of thyroid. In our study we calculated overall diagnostic accuracy of FNAC in thyroid lesions as 89% with sensitivity of 100% specificity of 78%, PPV = 87% and NPV = 100%. In the study done by Sikder MAH *et al* [9] on 100 cases, 76 (76%) were non neoplastic, 24 (24%) were neoplastic, of which 20 (90.903%) were papillary carcinoma and 2 (9.10%), medullary carcinoma. In the study of Sengupta A *et al* [10], in FNAC, preponderance of the cases

(75.84%) was colloid goitre followed by granulomatous thyroiditis; follicular carcinoma was noted in 7.30 percent and anaplastic carcinoma in 3.37 percent of cases. The overall prevalence of malignancy was 11.24 percent diagnosed by HPE and 9.55 percent by FNAC. Sensitivity was 90 percent while specificity was 100 percent; accuracy was 98.88 percent. Our study agrees of most previous studies in terms of FNAC of thyroid lesions. [9,10]

In cases of lipoma the diagnostic accuracy in our study was calculated as 100% and all cases were reported as lipoma on histopathological examination also. In cases of benign cystic lesions on FNAC

### Conclusion

The sensitivity and specificity of FNAC is fair enough with lot of advantages. FNAC provides a reliable method of investigating neck swellings, the efficacy of which approaches that of other similar diagnostic procedures and in the present study.

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