

## CYTOLOGICAL EVALUATION OF PALPABLE HEAD & NECK LESIONS IN TERTIARY CARE CENTRE OF CHHATTISGARH

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### Abstract

**Background:** Head and neck swellings are frequently encountered in clinical practice. With vital structures situated in head and neck region, complete excision biopsy would may later lead to complications. So, FNAC has become the primary investigation of choice in the evaluation of head and neck swellings. The aim of study was to evaluate cytological spectrum of palpable head and neck lesions and classify them as neoplastic and non-neoplastic lesions. **Materials and Methods:** Total 331 patients presenting with palpable head and neck lesions giving consent were included in study over a period of one year. Smears were prepared and stained and underwent microscopic examination. **Result:** Most common age group of presentation was 16-30 years of age. There was female preponderance. Lymph nodes were most common sites to get involved in 39.27% cases followed by thyroid in 34.74% cases. Reactive lymphadenitis was the most common pathological lesion followed by granulomatous lymphadenitis. Most common thyroid lesions were colloid goitre followed by lymphocytic thyroiditis. In salivary lesions most common was pleomorphic adenoma. **Conclusion:** FNAC can be used as a first line of investigation in the diagnosis of head and neck swellings complemented with detailed clinical history, meticulous clinical examination and radiological examination.

## INTRODUCTION

Head and neck swellings are frequently encountered in clinical practice and are responsible for significant number of morbidities and mortalities. The close proximity of various types of tissues at this site and a wide range of primary and metastatic neoplasms make it one of the most interesting and challenging for cytological diagnosis.<sup>[1,2]</sup> Neoplasms of neck region account for majority of cancers in India accounting for 23% of all cancers in males and 6% in females. The increased prevalence of malignancies in neck area compared to other areas may be due to use of tobacco in various forms, poor oral hygiene, and viral infections.<sup>[3,4]</sup>

With vital structures situated in head and neck region, complete excision biopsy would may later lead to mortality or may later lead to its invasion into deeper tissue.<sup>[5-7]</sup> This is why, in the last two decades, FNAC has become the primary investigation of choice in the

evaluation of head and neck swellings because of its high degree of diagnostic accuracy, cost-effectiveness & minimal disruptive nature of the procedure. It may help in triage of neoplastic and non-neoplastic lesions and thus helps to avoid unnecessary surgeries in non-neoplastic lesions thus expediting the process of management of malignant lesions.<sup>[8-10]</sup> In case of cystic swellings in the neck, FNAC can be both diagnostic as well as therapeutic. The technique can be performed in the outpatient department and causes minimal trauma to the patient with virtually no complications & risks involved.<sup>[3,11,12]</sup>

The intricate anatomy of head & neck region often results in puzzling circumstances in diagnosing these lesions. The patient's age, location, size, onset, and duration of a swelling are important clues for making a specific differential diagnosis. The common lesions include enlargement of lymph nodes (lymphoproliferative disorder, acute or chronic inflammatory process, or infiltration by metastatic

malignant cells), thyroid gland (goiter, thyroiditis, benign and malignant tumours), salivary glands (sialadenitis, cysts, benign and malignant tumors), and various cysts like thyroglossal and branchial cysts, epidermoid and dermoid cysts, and lipomas. Neoplasia makes a significant differential diagnostic consideration because especially neck mass is most often the first and sole representation of this process. The increased prevalence of malignancies in neck area compared to other areas may be due to use of tobacco in various forms, poor oral hygiene, and viral infections.<sup>[3,4,12,13]</sup>

FNAC helps in detecting recurrences or emergence of new malignancies after treatment, obviating the need of any surgical intervention in most cases.<sup>[14]</sup>

The present study is undertaken to study the spectrum of various head and neck lesions on cytological examination.

#### **Aim & Objectives**

**Aim:** To study cytological spectrum of palpable head and neck lesions.

#### **Objectives**

- To study and classify palpable head & neck lesions as neoplastic and non-neoplastic lesions by cytological examination.
- To study and classify palpable head & neck lesions on basis of anatomical site.
- To study demographic profile of study population.

#### **Inclusion Criteria**

Patients coming with complaint of head and neck swellings at Cytology Laboratory and giving consent for Fine Needle Aspiration cytology were included in the present study.

#### **Exclusion Criteria**

- Patients with bleeding disorders and on anticoagulants.
- Inadequate cytological smears.

## **MATERIALS AND METHODS**

The present study was conducted at the Cytology section of Department of Pathology, Pt J.N.M. Medical College, Raipur, Chhattisgarh from January 2023 to December 2023. Each patient was inquired about the chief complaints, history of chief complaints, past history, personal family and drug history. Data regarding age, sex, anatomic region, and probable clinical diagnosis were noted. Thorough clinical examination was done including site, size, number, laterality consistency of swelling including the findings of overlying skin. Finding of radiological Imaging and biochemical investigations were noted. Patients were explained about the procedure and informed about the advantages and risks of procedure and informed consent were taken thereafter.

After cleaning the area and with all aseptic precautions, Fine needle aspiration cytology was done with the help of 10 mL disposable syringe with an attached 21-gauge needle. Whenever required 2 to 3 passes were taken with due consent of patients. The

slides were labelled by glass marker. Few Slides were air-dried and stained by the May Grünwald Giemsa stain. Few slides were fixed immediately in methanol and stained with Haematoxylin and eosin (H&E) stains. In the case of clinical or radiological suspicion of tuberculosis, Ziehl Neelsen (ZN) stain for acid-fast bacilli was done. Peripheral smear was taken in case of suspicion of lymphoma.

## **RESULTS**

In the present study, 331 cases of palpable head and neck lesions were included. The age in the study population ranged from 2 to 80 years.

In the present study, maximum number of cases i.e. 105 (31.8%) were seen in age group of 16-30 years followed by 88 cases (26.5%) in age group of 31-45 years, 67 cases (20.3%) in age group of 46-60 years, 41 cases (12.4%) in 0-15 years and 30 cases (9%) in age more than 60 years. [Table 1]

In the present study, 64% (220) were females and 34% (111) were males. There was clear female preponderance.

In the present study, Neck lesions were more common than lesions on head. Maximum number of cases 130 (39.3%) were found in lymph nodes followed by thyroid lesions which constituted 115 cases (34.7%), skin and soft tissue constituted 53 (16%) cases, salivary glands constituted 24 (7.3%) cases and cheek and oral cavity constituted 09 (2.7%) cases. [Table 2]

In the present study, total 130 lymph node lesions were found. Out of 130, maximum number of cases i.e. 98 (75.4%) were non-neoplastic lesions of lymph node. Out of 98, 36 (27.7%) were reactive follicular hyperplasia followed by 30 (23.1%) cases of granulomatous lymphadenitis (Photomicrograph 1), 21 cases (16.2%) of tuberculous lymphadenitis (Photomicrograph 2), 10 cases (7.7%) of suppurative lymphadenitis and one case (0.8%) of necrotizing lymphadenitis. As far as malignant lesions of lymph node are concerned, 25 cases (19.2%) cases showed metastatic deposits of Squamous cell carcinoma (Photomicrograph 3) and adenocarcinoma. In 05 (3.8%) cases, lymphoproliferative disorder/lymphoma was seen. Miscellaneous cases included one case of sinus histiocytosis and Langerhans Cell Histiocytosis (Photomicrograph 4). [Table 2]

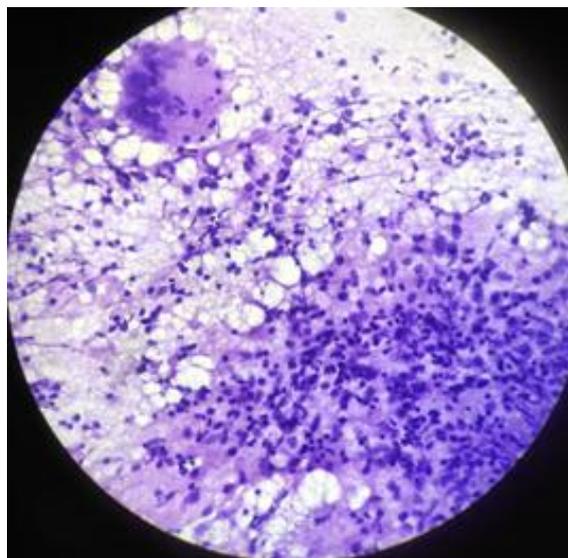
In the present study, total 115 thyroid lesions were found. Out of 115, maximum number of cases i.e. 55 (47.8%) were of colloid goitre, followed by 18 (15.7%) cases of lymphocytic thyroiditis, 17 cases (14.7%) of follicular neoplasm, 15 cases (13.1%) of colloid cyst, 07 cases (6.1%) of hyperplastic lesions. One case of papillary carcinoma (Photomicrograph 5) and two cases of medullary carcinoma (Photomicrograph 6) were found in present study. [Table 2]

In the present study, total 53 lesions were found in skin and soft tissue. Out of 53 cases maximum cases

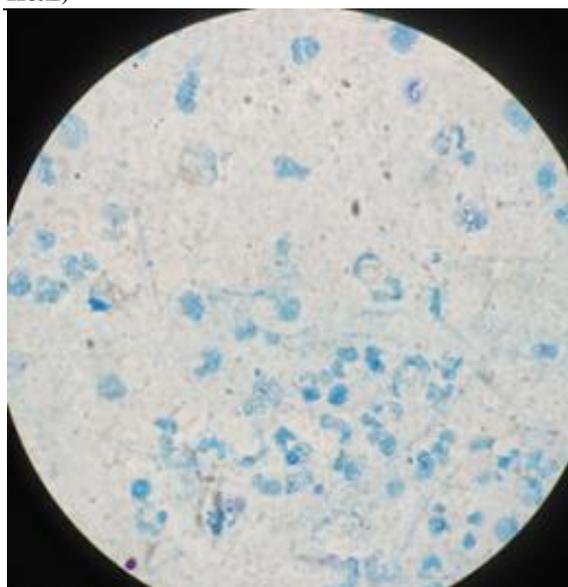
i.e. 56.6% (30) were non neoplastic cysts, 17% (09) cases were abscess, 11.3% (06) cases were of squamous cell carcinoma and 9.5% (05) cases were of lipoma. Two cases of spindle lesions and one case of calcinosis cutis was found. [Table 2]

In the present study, 24 cases were found in salivary gland. Out of 24, maximum number of cases i.e. 14 (58.3%) were of pleomorphic adenoma (Photomicrograph 7), followed by 8 cases (33.3%) and two cases, one of adenoid cystic carcinoma (Photomicrograph 8) and one case of carcinoma ex pleomorphic adenoma was found. [Table 2]

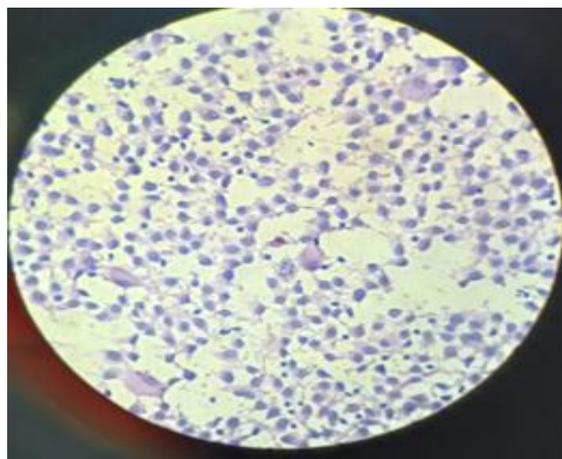
In the present study, 09 cases were found in cheek and oral cavity. Out of 9 cases, 05 cases (55.5%) were inflammatory lesions followed by three cases of benign cysts i.e. mucocele and two cases of oral squamous cell carcinoma. [Table 2]



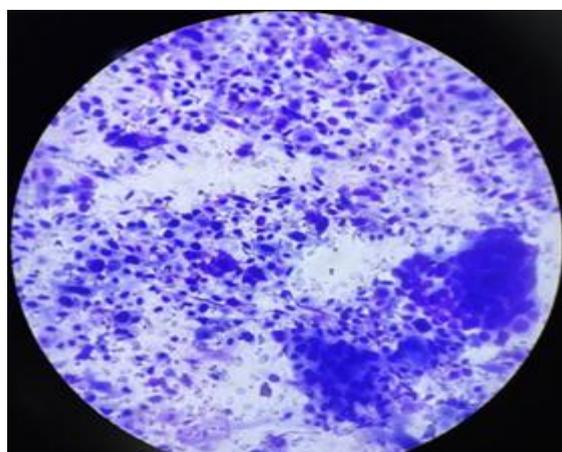
**Photomicrograph 1: Granulomatous Lymphadenitis-Granuloma Formation comprising of lymphocytes and epithelioid cells. Multinucleated Giant cells noted. (400x H&E)**



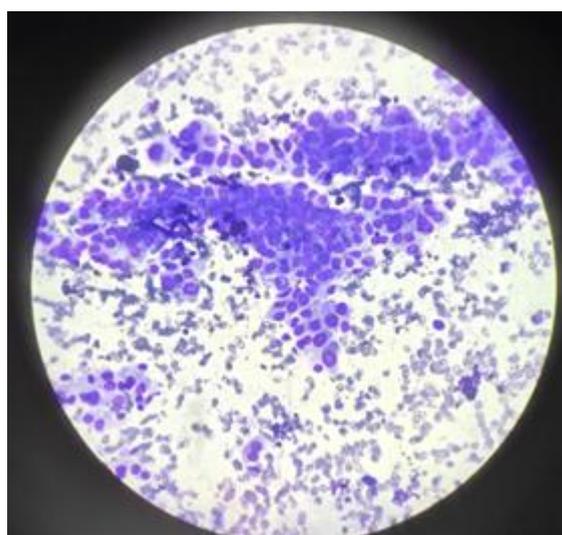
**Photomicrograph 2: Tuberculous Lymphadenitis – Pink rods Acid Fast bacilli seen. (Oil Immersion x Ziehl Neelsen Stain)**



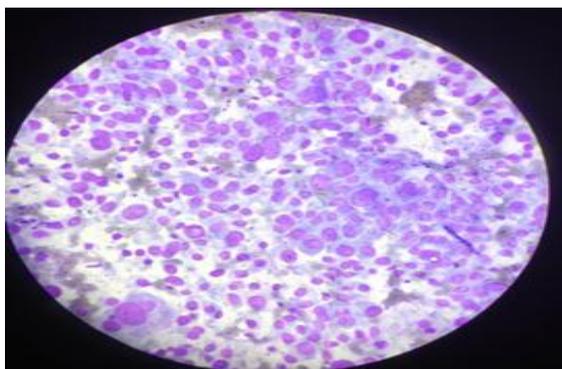
**Photomicrograph 3: Langerhans Cell Histiocytosis (Lymph Node)- Histiocytic Tumours cells having fairly defined pale blue cytoplasm, at places vacuolation noted, with eccentric large nuclei showing reniform nuclei/ coffee bean nuclei. Eosinophils & lymphocytes noted (400x H&E).**



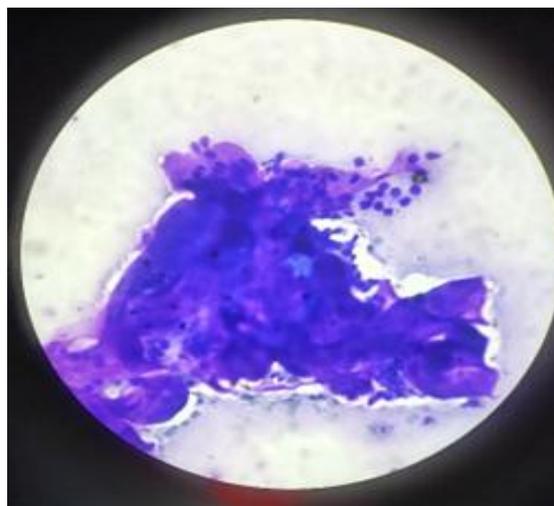
**Photomicrograph 4: Metastatic (Squamous cell carcinoma) Lymph Node- Dispersed population of malignant squamous cell with occasional clustering (400x MGG).**



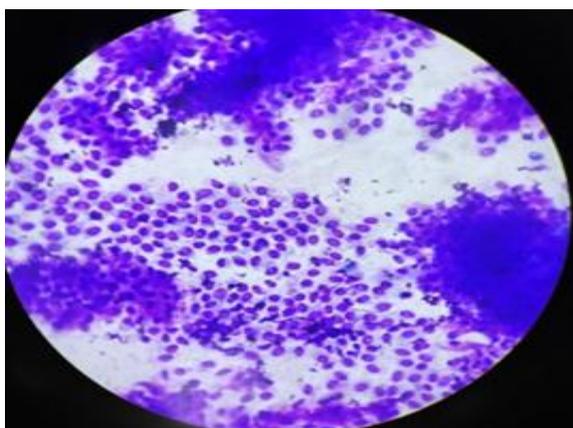
**Photomicrograph 5: Papillary Carcinoma Thyroid- Clusters of Follicular epithelial cells with variable degree of anisonucleosis. Nuclear Pseudo-inclusion Seen (400x MGG).**



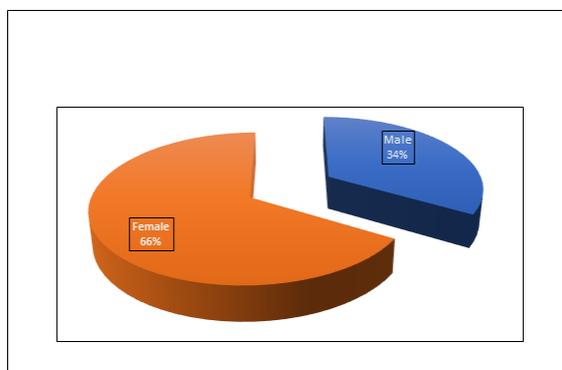
**Photomicrograph 6: Medullary Carcinoma Thyroid-** Dispersed population of plasmacytoid, round and spindle shaped tumour cells with pale blue cytoplasm. (400x MGG).



**Photomicrograph 8: Adenoid Cystic Carcinoma-** Basaloid cells embedded in hyaline globule. (400x MGG).



**Photomicrograph 7: Pleomorphic Adenoma –** Round to oval myo-epithelial like tumour cells embedded in fibrillary chondromyxoid stroma. (400x MGG).



**Figure 1: Sex wise distribution of Study Population (n=331)**

**Table 1: Age wise distribution of Study Population (n=331).**

Age Range (in years)	Cases	%
0-15	41	12.4%
16-30	105	31.8%
31-45	88	26.5%
46-60	67	20.3%
>60	30	9%
Total	331	100

**Table 2: Distribution of Palpable Head and Neck Lesions on basis of Anatomical Location**

S. No.	Site/Nature	Lesions	Number of cases	% Of cases	
1.	Lymph Node (n=130)				
		Non-neoplastic	Inflammatory	98	75.4%
		Neoplastic		32	24.6%
2.	Thyroid (n=115)				
		Non- Neoplastic	Colloid Goitre	55	47.8%
			Colloid cyst	15	13.1%
		Benign Thyroid Lesions Possibly	Lymphocytic thyroiditis	18	15.7%
			Hyperplasia	07	06.1%
			Neoplastic	Follicular Neoplasm	17
		Papillary Carcinoma Thyroid		01	0.86%
	Medullary Carcinoma Thyroid	02	1.7%		
3.	Skin & Soft Tissue (n=53)				
		Nonneoplastic/ Inflammatory	Abscess	09	17%
			Cysts	30	56.6%
		Neoplastic	Lipoma	05	9.5%
			Squamous cell carcinoma	06	11.3%
			Other	Spindle Cell Lesion & Calcinosis cutis	03
4.	Salivary Gland (n=24)				
		Non – Neoplastic	Sialadenitis	08	33.3%

	Neoplastic	Benign (Pleomorphic Adenoma)	14	58.3%
		Malignant	02	8.3%
5.	Cheek & Oral Cavity (n=9)			
	Inflammatory/Non-neoplastic		05	55.5%
	Neoplastic	Benign (Mucocele) & SCC	04	44.4

## DISCUSSION

Fine Needle Aspiration Cytology is sensitive, specific and reliable investigation for primary diagnosis of palpable head and neck lesions. It is easy to perform, less traumatic and can be done as outpatient procedure with little complications.

In India, head and neck malignancy constitute a major chunk of all the malignancies. In males it accounts to 23%, in female about 6% and forms 5 % of all childhood malignancies.<sup>[2,5,15-17]</sup> Head and neck are not only potential sites for malignancy but also benign lesions are also common. Their easy accessibility makes FNAC as primary choice of investigation.

In the present study total 331 cases were studied. The most common age group was 31-40 years of age comprising of 31.8% of population. Similar results were seen in study done by P H Muddegowda et al,<sup>[3]</sup> Patel JP et al,<sup>[5]</sup> and Patel DN et al.<sup>[18]</sup>

There was female preponderance which may be because of inclusion of thyroid swellings which are much more common in females. Female preponderance was also seen in study done by Muddegowda P H et al,<sup>[3]</sup> and study done by Patel J P et al.<sup>[5]</sup>

The most common anatomical location of lesions in head and neck region was lymph node (39.2%) followed by thyroid (34.7%) which is similar to the study done by Meenai F J,<sup>[8]</sup> in which 63.98% of lesions were found in lymph node and 18.25% cases were found in thyroid. Similarly, most common anatomical location was lymph node in study done by Nanik J (64.3%),<sup>[19]</sup> Kishore H (39.58%),<sup>[20]</sup> and Sreedevi et al (50.32%).<sup>[17]</sup> However, in study done by Fernandes H et al,<sup>[21]</sup> Vijay, et al,<sup>[22]</sup> found that thyroid lesions were more common 56.45% and 43.63% respectively.

As far as spectrum of cytological lesions in lymph nodes are concerned, most common pathology in lymph node was reactive lymphadenitis (27.7%) followed by granulomatous lymphadenitis (Photomicrograph 1) (23%) and metastatic lymph node (Photomicrograph 3) (19.2%). Similar results were obtained in study done by El Hag, et al,<sup>[23]</sup> in which reactive lymphadenitis was the commonest cause of neck masses accounting for 33% of cases followed by tuberculous lymph node (21%), followed by malignant swellings 13% of cases. In other studies by Rathod GB, et al,<sup>[24]</sup> and Tariq, et al,<sup>[25]</sup> tuberculous lymphadenitis (Photomicrograph 2) was found to be the most common pathology accounting for 42.12% and 36% of cases respectively followed by reactive/non-specific lymphadenitis constituting 18% and 19.3 % of cases and metastatic carcinoma found in 14% and 21.5 % of cases. One Interesting

case of Langerhans Cell Histiocytosis (Photomicrograph 4) in two-year male child and single case of Sinus histiocytosis was also seen.

Role of Fine Needle Aspiration Cytology in the thyroid lesions is vital and has been used since the 1950s and is one of the cost-effective methods in the diagnosis. The thyroid lesions are more common in females.<sup>[26,27]</sup> Fine Needle Aspiration Cytology plays a key role by differentiating between benign and malignant nodule and by this decrease needless surgery and start early treatment in malignant lesion by proper triage.<sup>[28]</sup> Despite its recognized interest, it has various drawbacks, such as incomplete aspiration, false negative and false positive and inability to distinguish follicular adenoma from carcinoma.<sup>[29,30]</sup> Most common thyroid lesions were colloid goitre (47.8%) followed by colloid cyst and lymphocytic thyroiditis (15.7%). Follicular neoplasms (14.7%) were most common type of neoplastic lesion. Results were almost similar to study done by Muddegowda P H,<sup>[3]</sup> in which colloid goitre was the most common thyroid lesions (44%), followed by lymphocytic thyroiditis (7%). Study done by Arora S,<sup>[31]</sup> most common thyroid lesion was colloid goitre (53.14%) followed by lymphocytic thyroiditis (24%) and follicular neoplasm (2.86%).

In our study, Pleomorphic adenoma (Photomicrograph 7) was most common lesion in salivary gland similar to Bhagat VM.<sup>[32]</sup> However, in studies by Kishor SH,<sup>[20]</sup> Valiya LG,<sup>[33]</sup> and Rathod GB,<sup>[24]</sup> inflammatory and reactive lesions comprising the majority. Two cases of malignant lesions were note namely adenoid cystic carcinoma (Photomicrograph 8) and mucoepidermoid carcinoma.

In our study, lesions in oral cavity including cheek area constituted 09 cases diagnosed on FNAC. We got 05 (55.5%) of inflammatory lesions followed by 03 cases of mucocele and one case of squamous cell carcinoma. In a study done by Gupta N et al,<sup>[34]</sup> salivary gland tumor and Squamous cell carcinoma were the most common lesion in the oral cavity.

Cystic lesions (56.6%) were most common on skin and soft tissue of head and neck area especially sebaceous cysts. Primary Squamous cell carcinoma was seen in 11.3% of cases. Lipoma usually present in extremities and head and neck area and was seen in 9.5% of cases. Single case of calcinosis cutis was seen in head and neck area.

## CONCLUSION

Head and neck area has diverse range of pathological lesions ranging from inflammatory to malignant lesions. FNAC is minimally invasive, cost effective and provides rapid results which are crucial for

timely management of the lesions limiting physical and psychological trauma to patients. Moreover FNAC helps to differentiate between infective and neoplastic process so avoiding unnecessary surgical intervention. However due to technical factors many a times yield is inconclusive to fetch definite diagnosis. Moreover radiological correlation is very helpful to reach at conclusive diagnosis. So, FNAC can be used as a first line of investigation in the diagnosis of head and neck swellings complemented with detailed clinical history, meticulous clinical examination and radiological examination. It is mandatory to add that cytological examination is presumptive diagnosis and Histopathological examination is still gold standard for diagnosis in many head and neck lesions. Due to lost to follow up of patients, we have not Histopathological examination of head and neck lesions.

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