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FNAC of neoplastic lesions of head and neck

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Abstract

Background: Lesions of the head and neck region are routinely encountered by clinicians, in patients across all age groups and diagnoses range from reactive hyperplasia of lymph nodes to malignancies¹. Among the most frequently sampled palpable head and neck lesions are lymph nodes, thyroid and major salivary glands along with other rarely encountered lesions like subcutaneous tissue swellings, lumps of skin appendages and oral cavity lesions². FNAC, today is one of the most important diagnostic modalities used universally in the initial assessment of patients presenting with palpable head and neck region masses. It is an inexpensive, safe, outdoor procedure, with rapid reporting and requires minimal equipment.

Aims and Objectives

1. To diagnose neoplastic lesions of head and neck using FNAC.
2. To find out the incidence rate of different head and Neck lesions.
3. To classify this lesions under different categories. e. g benign, malignant etc.
4. To study various factors related to the lesions. E.g. age, sex, etc.

Materials and Method: This study will be a retrospective observational study of all patients coming to Cytopathology department, B. J. Medical College, Civil Hospital Ahmedabad from January 2022 to August 2022. The data was retrieved from Laboratory Information System. Fine needle aspiration diagnosis was correlated with detailed clinical findings and investigations.

Results: Out of 88 fine needle aspiration procedures 38.6% (34 cases) were of lymph node, 15.9% (14 cases) were of thyroid, 22.7% (20 cases) from salivary gland, 22.7% (20 cases) from skin and soft tissue swellings. Out of total 88 lesions, 31 cases (35.2%) benign and 57 cases (64.7%) were malignant.

Conclusion: FNAC is simple, quick, inexpensive and minimally invasive first line investigation for differential diagnosis of head and neck masses and also serves as a guide to the appropriate therapeutic management of the patient whether to locally excise a benign tumor or plan radical surgery.

Keywords: Hhead and neck, FNAC, neoplastic

Introduction

Presently, FNAC is a popular and effective technique to have a rapid tissue diagnosis. It is an inexpensive, safe, outdoor procedure, with rapid reporting and requires minimal equipment. The use of FNAC under radiological guidance enables it to approach the tiny and deep situated swelling of various parts of the body^[4].

A swelling is the most likely clinical problem to be encountered in the head and neck region. 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 head and 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, USG and CT of the region and excisional biopsy^[5].

FNAC differentiates non-neoplastic lesions from neoplastic lesions, thus eliminating need of surgical intervention in the lesions which can be treated conservatively.

Cancer is among the ten leading causes of death in India and head and neck neoplasia in India accounts for 23% of all cancers in males and 6% of all cancers in females^[6]. The highest incidence of head and neck neoplasia, in the world, among women has been reported From India. A timely FNAC plays an important role in early diagnosis^[7, 8]. FNAC, today is one of the most important diagnostic modalities used universally in the initial assessment of patients presenting with masses located within the region of the head and neck, including salivary gland and thyroid gland lesions can be readily diagnosed using this technique.

Materials and Method

This study will be a retrospective observational study of all patients coming to Cytopathology Department, B.J. Medical College, Civil Hospital, Ahmedabad from January 2022 to August 2022. The data was retrieved from Laboratory Information System.

Materials needed for aspiration

1. Disposable needles of 22-24 gauge with length of 2.5-3.8
2. Disposable plastic syringes of 10-20 cc.
3. Glass slides – clean and grease free.
4. Methanol as fixative.
5. Reagents for H & E stain, May-Grunwald Giemsa stain and Papanicolaou stain.
6. Sterile gloves, gauze piece and spirit swab.

Method

History of the patient was taken and investigations were noted. Patient was explained regarding the steps and process of the procedure and consent was taken. Aspiration material was spread on the slide, fixed and stained. After staining, the slides were mounted with DPX and then observed under the microscope.

Subject selection

Inclusion criteria: All the FNAC patients with neoplastic lesions of head and neck, visiting civil hospital Ahmedabad during study period were included.

Exclusion criteria: Patients with vascular lesions on head and neck, ulceration of the overlying skin and non-palpable swelling in head and neck.

Results and Observations

The present study is carried out at the Cytopathology section, Department of pathology, B. J. Medical College,

Civil hospital, Ahmedabad. Total 88 cases of neoplastic lesions of Head and Neck were taken from January 2022 to August 2022 were included in the study. Data was analyzed and tabulated to know the etiology, incidence and distribution of swelling by gender and age group.

Table 1: Incidence of different neoplastic head and neck lesions

Lesions	Total Cases	Incidence rate
Lymph node lesions	34	38.6%
Thyroid Lesions	14	15.9%
Salivary Gland lesions	20	22.7%
Soft tissue lesions	15	17.04%
Skin lesions	5	5.68%
Total	88	100%

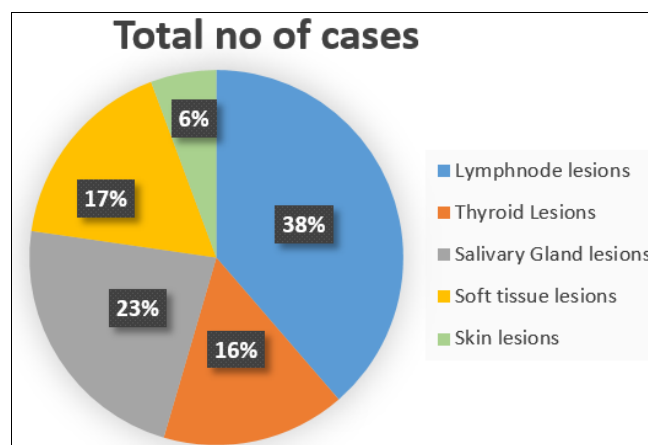


Chart 1: Incidence rate of different neoplastic head and neck lesions

Incidence of different lesions of head and neck is described with 38% of lesions occurring in Lymph node, 16% occurring in thyroid, 23% occurring in salivary gland, 17% occurring as soft tissue lesions and 6% occurring as skin lesion.

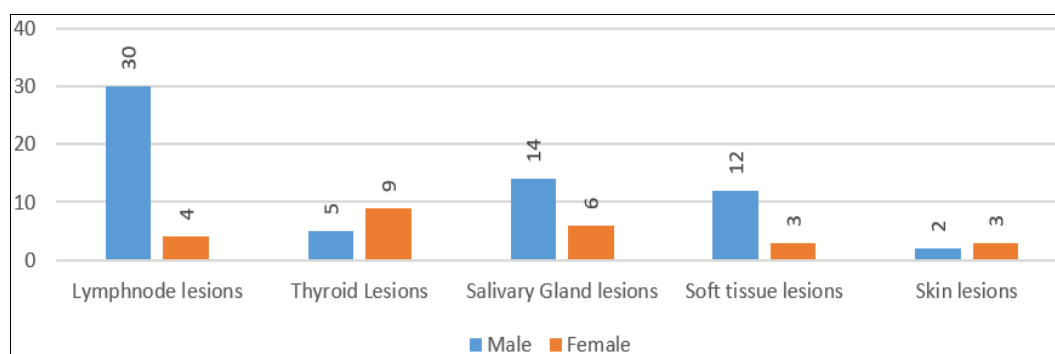


Chart 2: Distribution of different neoplastic head and neck lesions in association with Gender

Out of the 88 cases, 63 cases were reported in males and 25 cases reported in females of head and neck lesions.

Table 2: Incidence of different neoplastic head and neck lesions in association with different Age groups

Age groups	Lymph node lesions	Thyroid Lesions	Salivary Gland lesions	Soft tissue lesions	Skin lesions	Total
0-10	0	0	0	0	0	0
11-20	0	1	1	1	0	3
21-30	5	1	1	3	0	10
31-40	5	3	7	3	1	19
41-50	3	5	2	4	1	15
51-60	8	2	4	3	1	18
61-70	7	1	3	1	1	13
71-80	6	1	2	0	1	10

81-90	0	0	0	0	0	0
>91	0	0	0	0	0	0
Total	34	14	20	15	5	88

Incidence of lesions is shown depending upon their age group, maximum cases are found between age group of 31-

40 years and no cases are found in age group of 0-10 years

Table 3: Incidence of different Lymph node Lesions

Lymph node lesions	No. of cases	Incidence rate
Metastatic Squamous cell carcinoma	18	52.9%
Non- Hodgkin's Lymphoma	4	11.7%
Hodgkin's Lymphoma	2	5.8%
Metastatic Poorly differentiated carcinoma	5	14.7%
Metastatic adenocarcinoma	4	11.7%
Metastatic Nasopharyngeal carcinoma	1	2.9%
Total	34	100%

Amongst 38% lesions occurring in Lymph node, 52.9% were malignant squamous cell carcinoma, 14.7% were Metastatic Adenocarcinoma, 5.8% were Non-Hodgkin's

Lymphoma, 11.7% were Metastatic Poorly differentiated carcinoma, 5.8% were Hodgkin's' Lymphoma and 2.9% were Metastatic Nasopharyngeal carcinoma.

Table 4: Incidence of different Thyroid lesions

Thyroid Lesions	No. of cases	Incidence rate
Follicular lesion of undetermined significance	1	7.1%
Follicular Neoplasm	4	28.5%
Papillary carcinoma	8	57.1%
Medullary carcinoma	1	7.1%
Total	14	100%

Amongst 16% lesions occurring in Thyroid Lesions, 57.1% were papillary carcinoma, 28.5% were Follicular neoplasm and 7.1% were medullary carcinoma of thyroid.

Table 5: Incidence of different salivary Gland lesions

Salivary Gland lesions	No. of cases	Incidence rate
Pleomorphic adenoma	14	70%
Warthin's Tumour	1	5%
Mucoepidermoid carcinoma	4	20%
Adenocarcinoma	1	5%
Total	20	100%

Amongst 23% lesions occurring in Salivary gland, 70% were Pleomorphic adenoma, 5% were of Warthin's Tumour, 42.85% were Mucoepidermoid carcinoma and 5% were Adenocarcinoma.

Table 6: Incidence of different Soft tissue lesions

Soft tissue lesions	No. of cases	Incidence rate
Lipoma	14	93.3%
Benign spindle cell lesions	1	6.6%
Total	15	100%

Amongst 17% of soft tissue lesion, 93.3% belonged to Lipoma and 6.6% belonged to benign spindle cell lesion.

Table 7: Incidence of different Skin lesions

Skin lesions	No. of cases	Incidence rate
Benign Skin adnexal tumor	1	20%
Squamous Cell Carcinoma	4	80%
Total	5	100%

Amongst 6% of skin lesion, 20% lesions were benign skin adnexal tumor and 80% were of Squamous Cell Carcinoma.

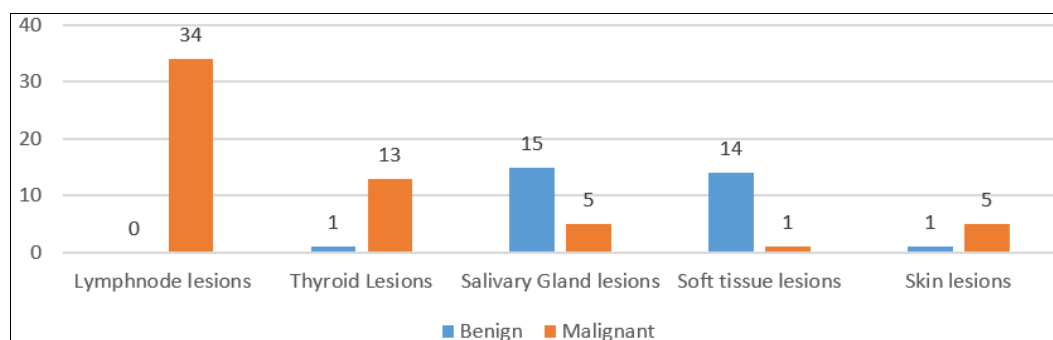


Chart 3: Distribution of cases according to Benign and Malignant lesions

Out of total 88 lesions, 31 (35.2%) benign and 57 (64.7%) were malignant.

Discussion

Fine needle aspiration cytology was initially conceived as a means to confirm a clinical suspicion of local recurrence or metastasis of known cancer without subjecting the patient to

further surgical intervention. The clinical value of FNAC is not limited to neoplastic conditions. It is also valuable in the diagnosis of inflammatory, infectious and degenerative conditions, in which samples can be used for microbiological and biochemical analysis in addition to cytological preparations.

With this facts in mind, the objective of this retrospective study is to find out the incidence of various pathological conditions detected by FNAC in patients with Head and neck swelling coming to Civil Hospital. Various parameters like age distribution, sex predilection, site wise distribution, nature of the lesion were evaluated and the findings compared with other studies.

Out of 88 cases included in this study, 34 cases occurred in lymph nodes, 14 cases occurred in thyroid gland, 20 cases occurred in salivary gland, 15 cases were soft tissue lesion and 5 case occurred in skin.

Out of total 88 cases, 63 cases occurred in male and 25 cases occurred in female.

Maximum cases occurred in 31-40 years of age. Youngest patient recorded was 16 years female. In our study, maximum number of patients (38.6%) were of Lymph node origin in our study, which is again comparable to Vasudha M Bhagat *et al.* ^[9] (53.50% were of lymph node origin) and Kishor *et al.* ^[10] (39.58% lymph node origin).

Microscopic appearance of lesions

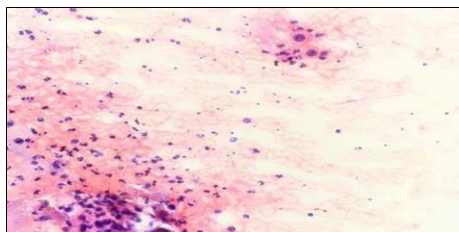


Fig 1: Metastatic Squamous cell carcinoma: FNA smear contained abundant pleomorphic cells with dense cytoplasm and irregular nuclear shape and keratinized squamous cells

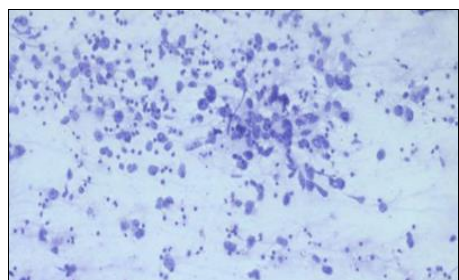


Fig 2: Nasopharyngeal Carcinoma: FNA smear shows large anaplastic epithelial cells with lymphoid cells and few atypical forms

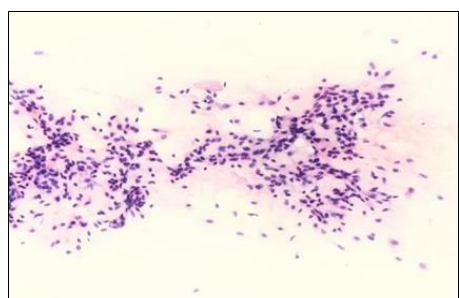


Fig 3. Pleomorphic Adenoma: FNA smear shows presence of characteristic chondromyxoid matrix with myoepithelial cells

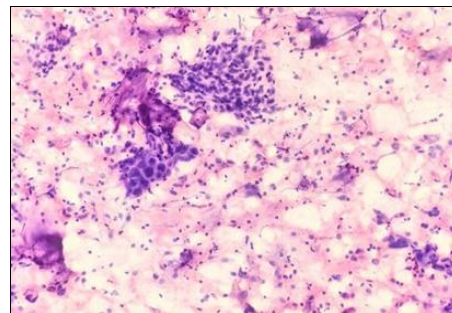


Fig 4: Mucoepidermid Carcinoma: FNA smear shows presence of malignant squamous cells and mucin secreting cells

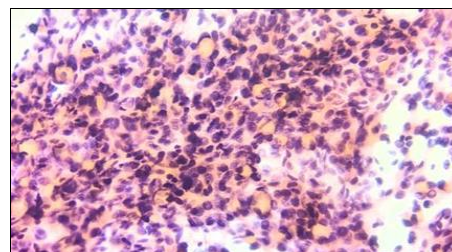


Fig 5: Follicular Neoplasm: FNA smear shows repeated follicular pattern of thyroid follicular cells

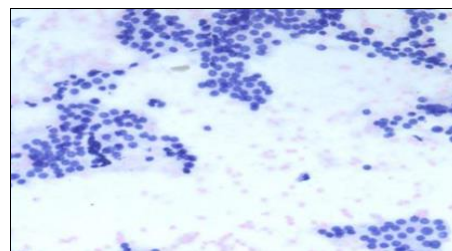


Fig 6: Papillary Thyroid Carcinoma: FNA smear shows cells with powdery chromatin, intranuclear inclusion and nuclear groove

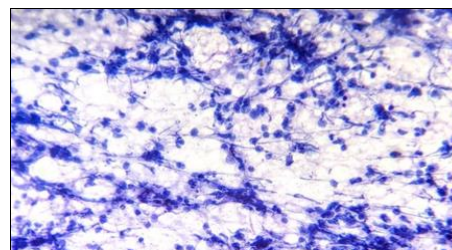


Fig 7: Non-Hodgkins Lymphoma: FNA smear shows increased cellularity with diffuse arrangement of monotonous population of atypical lymphocytes mixed with mature lymphocytes in lymph reticular background

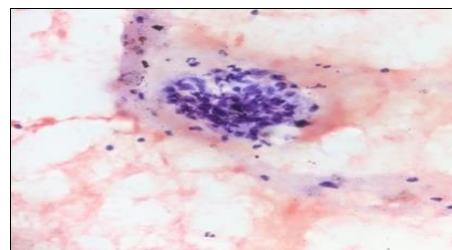


Fig 8: Benign spindle cell lesion: FNA smear shows loosely cohesive clusters of benign spindle cells. Few plump spindle cells with round to oval nuclei are also seen

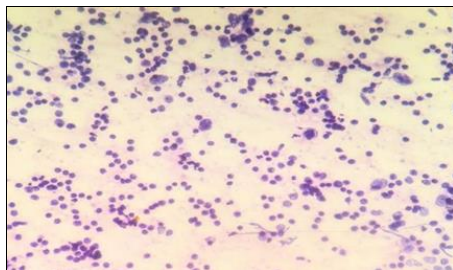


Fig 9: Hodgkin's Lymphoma: FNA smear shows polymorphic population and Reed-Sternberg cells

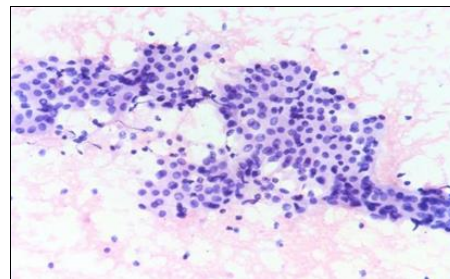


Fig 10: Warthin's Tumor: FNA smear shows sheet of *oncocytic* cells with scattered lymphocytes

Table 8: Comparison of distribution of head and neck swelling

No	Study	Lymph node %	Thyroid %	Salivary gland %	Others
1	Padia B. [5]	64.02	18.7	2.87	12.94
2	Shekhar H. [1]	42	18	15.5	17.5
3	Pathak [11]	61.2	19.2	6.7	12.9
4	Kapoor S [12]	43	15	15	8
5	Patel D. [13]	64	4.8	4.8	2
6	Present study	38.6	15.9	22.7	22.7

Present study is in concordance with other study which is most comparable with Shekhar H. and Kapoor S

In the present study, maximum cases occurs in 30-60 years which is in concordance with Shekhar H. and Padia B

Table 9: Comparison of Age distribution

No.	Age Group (years)	Present study	Shekhar H. [1]	Padia B [5]
1	1-30	14.7%	35%	47%
2	30-60	59%	54.5%	47.7%
3	60-90	26.1%	34%	7.3%

Table 10: Comparison of Gender ratio

Study	Present study	Rathod G [14]	Padia B [5]	Shekhar H [1]
Gender Ratio	2.52	1.43	1.48	1.32

In the present study, the male female ratio is 2.52 which is comparable to 1.43 and 1.48 seen in Rathod G and Padia B

Table 11: Comparison of neoplastic lesions

Study	Most common lymph node lesion	Most common thyroid lesion	Most common salivary gland lesion	Most common Soft tissue lesion
Present study	Metastatic Squamous cell carcinoma	Papillary carcinoma	Pleomorphic adenoma	Lipoma
Namrata Sharma <i>et al.</i> [15]	Metastatic Squamous cell carcinoma	Papillary carcinoma	Pleomorphic adenoma	Lipoma
Suryawanshi <i>et al.</i> [16]	Metastatic Squamous cell carcinoma	Papillary carcinoma	Pleomorphic adenoma	Lipoma

Out of the neoplastic lesions seen in lymph node, thyroid Gland, salivary Gland and soft tissue tumors the most common lesion seen in present study is comparable with Namrata Sharma *et al.* and Suryawanshi *et al.* [15].

Conflict of Interest

Not available

Financial Support

Not available

Table 12: Comparison of Benign and Malignant lesions

Study	Total cases	Benign	Malignant	Inadequate
Present Study	88	31 (35.2%)	57 (64.7%)	0
Shekhar H. [1]	290	268 (92.4%)	21 (7.24%)	1 (0.3%)

In the present study, out of total 88 lesions, 31 (35.2%) benign and 57 (64.7%) were malignant in comparison to study done by Shekhar H. where out of total 290 cases 268 (92.4%) were benign and 21 (7.24%) were malignant cases.

Conclusion

FNAC stands as a rapid, convenient and accurate outpatient method of diagnosis of accessible lesions especially of the head and neck, besides being safe and relatively free from complications thus it serves as a complementary diagnostic procedure to histopathological examination. It also helps as a guide to the appropriate therapeutic management to either locally excise a benign tumor or plan radical surgery or other alternative treatment modalities in case of malignancy.

References

1. Khetrapal S, Jetley S, Jairajpuri Z, Rana S, Kohli S. FNAC of head & neck lesions and its utility in clinical diagnosis: A study of 290 cases. *Thyroid*. 2015;49(16-9):44.
2. Setal Chauhan, Dharmendra Rathod, Joshi DS. FNAC of swellings of head and neck region. *Indian Journal of Applied and Basic Medical Sciences*. 2011;13:1-6.
3. Fernandes H, D Souza CRS, Thejaswini BN. Role of Fine Needle Aspiration Cytology in Palpable Head and Neck Masses. *JCDR*. 2009;3:1717-25.
4. Pranab Dey's. Fine needle aspiration cytology: Interpretations and diagnostic difficulties, 2nd edition. A study of FNAC of head and neck lesions at a tertiary care centre 1 Dr. Bhumi Padia, Tutor, Department of Pathology, GMERS Medical College, Junagadh, 2 Dr. Mukund Dhokiya, Consultant Pathologist, SRL Diagnostics, Junagadh, Gujarat, India.
5. Rao YN, Gupta S, Agarwal SP. National Cancer Control Programme: Current Status & Strategies. In

- Agarwal SP, ed. Fifty Years of Cancer Control In India. Dir Gen of Health Services, MOHFW, Government of India; c2002. p. 41-7.
6. Ahluwalia H, Gupta SC, Singh M, Gupta SC, Mishra V, Singh PA, *et al.* Spectrum of head and neck cancers at Allahabad. J Otolaryngology Head Neck Surg. 2001; 53:16- 20.
 7. Mehrotra R, Singh M, Gupta RK, Singh M, Kapoor AK. Trends of prevalence and pathological spectrum of head and neck cancers in North India. Indian J Cancer. 2005;42:89-93.
 8. Bhagat VM, Tailor HJ, Saini PK, *et al.* Fine needle aspiration cytology in no thyroidal head and neck masses-a descriptive study in tertiary care hospital. National Journal of Medical Research 2013;3(3):273-76.
 9. Kishor SH, Damle RP, Dravid NV, *et al.* Spectrum of FNAC in palpable head and neck lesions in a tertiary care hospital in India-a 3 years study. Indian J of pathology and oncology 2015;2(1):7-13.
 10. Pathak R, Prasad KBR, Rauniyar SK, Pudasaini S, Pande K, Koirala S, *et al.* Fine needle aspiration cytology of head and neck lesions and its correlation with histopathology. Journal of Pathology of Nepal 2016;6(1):985-989.
 11. Kapoor S, Bagga PK, Rupesh S, Singh A, Kumar A, Singh H. Diagnostic accuracy of fine needle aspiration cytology in palpable lesions of head and neck in comparison to histopathology. International Journal of Contemporary Medical Research. 2017;4(2):449-453.
 12. Patel DN, Patel PB, Patel HV, Gandhi TJ. Fine needle aspiration cytology role in head and neck lesions. IAIM, 2015;2(8):99-104.
 13. Rathod GB, Parmar P. Fine needle aspiration cytology of swellings of head and neck region. Indian J Med Sci 2012;66:49-54.
 14. Namrata Sharma. *et al.*, Study of Pathological Spectrum of Neck Lesions with Cytohistopathological Correlation National Journal of Laboratory Medicine. 2016 Jul;5(3):58-63.
 15. Suryawanshi *et al.* Annals of Pathology and Laboratory Medicine. 2015 Oct-Dec; 2(4):107-114.

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