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# FINE NEEDLE ASPIRATION CYTOLOGY OF SALIVARY GLAND LESIONS: A STUDY IN A TERTIARY CARE HOSPITAL IN NORTH INDIA.

Pathology

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## ABSTRACT

**BACKGROUND:** Fine needle aspiration cytology in conjunction with clinical and radiological findings helps to rapidly provide the best possible initial assessment of lesion. The salivary glands, due to their superficial nature, are eminently accessible to FNAC and material is usually obtained easily.

**METHODS:** The study involved 180 cases of salivary gland swellings of patients who underwent FNAC in our institution. FNAC was performed using 22 gauge needle and 10ml plastic syringe with a detachable syringe holder (Franzen handle). In each case, three to four smears were made. One stained with Giemsa stain , one with papanicolaou and other kept unstained for any further required stain.

**RESULTS:** A total of 180 cases were included in the study.Non- neoplastic lesions accounted for 66.12 %, benign 28.33% and malignant lesions accounted for 5.55% in present study. Chronic Sialadenitis was the most common non neoplastic lesion in the present study, seen in 28.33% cases followed by sialadenosis(16.12%) cases and acute sialadenitis in 5.56% cases. In benign neoplastic lesions, pleomorphic adenoma was the most common lesion seen in 25% cases followed by Warthin's tumour in 2.77% cases. Mucoepidermoid carcinoma was the most common malignant neoplasm seen in 2.22% cases.

**CONCLUSION:** FNAC of salivary gland is a simple , cheap, safe and reliable technique in the diagnosis of salivary gland lesions with minimal complications.

## KEYWORDS

Fine Needle Aspiration Cytology, parotid gland, submandibular gland.

## INTRODUCTION :

Salivary gland tumours are relatively less common; comprising approximately 3 – 10% of the neoplasms of head and neck regions. Fine needle aspiration cytology is useful in the pre operative diagnosis and management of salivary gland lesions. It is especially helpful and has an edge over the incisional biopsy because the later may lead to fistula formation, potential infection in the plane of surgery and facial nerve palsy. FNAC has high senstivity and specificity. It is a rapid and safe technique and is devoid of any serious complications.

Fine needle aspiration cytology helps to differentiate between a neoplastic from a non neoplastic lesion. In case of non neoplastic inflammatory lesions, a conservative treatment may be helpful. It obviates the need for surgery. It has been demonstrated that fine needle aspiration of salivary gland lesions is associated with high diagnostic accuracy in benign rather than malignant lesions because of the heterogenous morphology and architecture of malignant tumors, especially in patients who have a biphasic neoplasms(1). The aim of our study is to study the spectrum of salivary gland lesions in our hospital and to analyse the diagnostic accuracy of fine needle aspiration cytology in salivary gland lesions.

## MATERIAL AND METHODS:

This is a prospective study done in the Post graduate Department of Pathology, Government Medical College Jammu for a period of two (2) years (September 2016-September 2018). A total of 180 cases who presented with salivary gland swellings were included in the study. All the patients were clinically evaluated by detailed history, clinical examination and relevant radiological investigations. FNAC was performed using a 22 gauge needle and 10ml plastic syringe with a detachable syringe holder (Franzen handle). Three to four smears were made in each case. Air dried smears were stained with May Grunwald Giemsa stain and wet smears fixed in 95% ethyl alcohol were stained with Papanicolaou stain. One smear kept unstained for any special stain required further.

**RESULTS**: In the present study, non neoplastic lesions accounted for 66.12 %, benign 28.33% and malignant lesions accounted for 5.55% (Table 1) .

**Table 1 showing distribution of salivary gland lesions.**

| Cytological diagnosis | Frequency(n) | Percentage(%) |
|---|---|---|
| Non - neoplastic | 119 | 66.12 |
| Benign | 53 | 29.44 |
| Malignant | 08 | 4.44 |

Parotid was the most common gland involved ( 55.67%) , followed by sub mandibular (39.45%) and sublingual (3.88%) in the present study(Table 2)

**Table 2 showing distribution of type of gland involved.**

| Type of gland involved | Frequency (n) | Percentage(%) |
|---|---|---|
| Parotid | 102 | 56.67 |
| Sub mandibular | 71 | 39.45 |
| Sublingual | 07 | 3.88 |

Chronic Sialadenitis was the most common non neoplastic lesion in the present study, seen in 28.33% cases followed by sialadenosis(16.12%) cases and acute sialadenitis in 5.56% cases. In benign neoplastic lesions, pleomorphic adenoma was the most common lesion seen in 25% cases followed by Warthin's tumour in 2.77% cases. Mucoepidermoid carcinoma was the most common malignant neoplasm seen in 2.22% cases.

**Table 3 showing distribution of various salivary gland lesions.**

| Cytological diagnosis | Frequency(n) | Percentage(%) |
|---|---|---|
| **Non neoplastic** | | |
| Sialadenosis | 29 | 16.12 |
| Chronic Sialadenitis | 51 | 28.33 |
| Acute Sialadenitis | 10 | 5.56 |
| Granulomatous Sialadenitis | 05 | 2.77 |
| Suppurative Sialadenitis | 03 | 1.66 |
| Epidermal inclusion cyst | 07 | 3.88 |
| Abscess | 06 | 3.33 |
| Mucocele | 01 | 0.56 |
| Lymphocele | 01 | 0.56 |
| Acute on Chronic Sialadenitis | 04 | 2.22 |
| **Neoplastic( BENIGN)** | | |
| Pleomorphic adenoma | 45 | 25 |
| Warthins tumour | 05 | 2.77 |
| Basal cell adenoma | 02 | 1.11 |
| Benign Salivary gland tumour | 01 | 0.56 |
| **Neoplastic(MALIGNANT)** | | |
| Mucoepidermoid carcinoma | 04 | 2.22 |
| Acinic cell carcinoma | 02 | 1.11 |
| Carcinoma ex pleomorphic adenoma | 01 | 0.56 |
| Adenoid cystic carcinoma | 01 | 0.56 |
| Inconclusive | 02 | 1.11 |

## DISCUSSION:

FNAC has gained a popularity in the diagnosis of salivary gland lesions due to its low cost and safe procedure with minimal risk to the patients and help the clinicians in planning the management(2). It not only defines the nature of the lesion but in some cases, FNAC also helped in making definite diagnosis. Although, management of all neoplastic salivary gland lesions is surgical excision, a pre operative diagnosis of benign or malignant aids the clinician in planning the extent of surgery(3). In the present study, the parotid gland was most commonly involved followed by sub mandibular gland , a finding which has been well described in the literature( 4-7).

The rate of non-neoplastic lesions in the present study was 66.12% . It was in concordance with other studies ranging from 20% to 72.9%(8-11). Chronic sialadenitis was the commonest non neoplastic lesion in the present study seen in 28.33% cases. In the present study, benign neoplasms accounted for 53 cases(29.44%). In a study done by Verma S et al (12) incidence of benign neoplasms was 31.75% . In the present study, pleomorphic adenoma was the most common benign neoplasm which was also seen in other studies reported previously(8, 9, 11, 12,13). It commonly affects the parotid gland; cytological smears of the tumour shows a combination of bland ductal epithelial cell, myoepithelial cells and sheets and fragments of chondro myxoid fibrillary stroma(14). Warthin's tumor was the second most common benign lesion seen in our study as reported earlier in other studies also(15,16). It occurs mainly in males in the fifth to sixth decade of life , predominantly in smokers(13-16). The cytological smears show oncocytic cells with abundant pink granular cytoplasm and round uniform nuclei with lymphocytes, amorphous mucoid material and amorphous granular material in the background. In our study, the most common malignant salivary gland tumour was mucoepidermoid carcinoma which accounted for 44.44% of all the malignant lesions seen in the present study which was in concordance with the study done by Verma S et (12) who found 41.4% of mucoepidermoid carcinoma in their study. The cytological smears show a mixture of epithelial , intermediate and mucin secreting cells with a relatively bland nuclei. The second most common malignant salivary gland tumour in the present study was acinic cell carcinoma seen in 25% of the cases followed by carcinoma ex pleomorphic adenoma and adenoid cystic carcinoma each seen in 12.5% cases.

FNAC is a well grounded examination procedure as it provides valuable information for the pre operative diagnosis and helps the surgeon about the presence of benign or malignant lesion. As the complication rate logically increases with the degree of invasiveness of surgical procedure, it is important to be able to characterize the tumour pre operatively to correctly inform the patient about the type of surgerythat will be performed, the need for lymph node dissection and the possibility of nerve sacrifice(19,20).

## CONCLUSION:

FNAC is highly reliable technique for the pre-operative diagnosis of salivary gland tumours. An accurate cytologic diagnosis by an experienced pathologist can obviate the unwarranted surgery. Since it is minimally invasive technique, FNAC offers valuable information for planning the subsequent therapeutic management. However, therestill remains few cases that may be inaccurately diagnosed on cytology due to overlapping features and in those cases histopathology is the final modality of diagnosis.

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