

Application of Milan Reporting System in Salivary gland cytology at PDU medical college and hospital, Rajkot- 60 case study

Sonal Karmur¹, Shilpa H. Gandhi ², Deepa Jethwani³, Trupti M. Purohit⁴, Gauravi Dhruva⁵

¹2nd year Resident, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

²Professor, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

³Associate Professor, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

⁴Assistant Professor, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

⁵Professor and Head, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

Abstract:

Introduction: Salivary gland lesions are one of the most common encounters in clinical practice for the evaluation of which Fine needle aspiration cytology is a well-established technique nowadays. Owing to the heterogeneity and morphological overlap between the various categories of these salivary gland lesions, there was a need for a standardized procedure. The Milan System for Reporting Salivary Gland Cytopathology (MSRSGC) provides a standardized evidence-based reporting system and thus helpful for the management of these lesions. We have undertaken this study for evaluation of salivary gland lesions by this newly introduced grading system for predicting the malignant potential of these lesions.

Materials and Methods: The present study was carried out in the Cytopathology Laboratory, Department of Pathology, P.D.U Medical College and Hospital, Rajkot, Gujarat carried out over a period of 1 year between August 2023 to July 2024. All the cases referred to the department of Pathology from the Department of Surgery, ENT, and Dental Surgery for evaluation of salivary gland lesions were included in the study. Clinical data and radiological assessment were done in all these cases. Fine needle aspiration was done. Smears are prepared and the slides were stained with H and E stain, Giemsa stain and PAP stain was used in cases where required. All the cases were categorized according to MSRSGC.

Result: We have received 60 salivary gland lesions for aspiration over a period of one year. The most affected age group was from 21 to 40 years. Most of the study subjects were presented with parotid swellings (73%) followed by submandibular gland (25%). As per the MSRSGC classification system, 16 cases were categorized as non-neoplastic while 44 as neoplastic lesions. Of the non-neoplastic cases, 01(2%) were grouped in category I, 15 (25%) in category II. Out of the 44 salivary gland neoplasms, 32(53%) cases were in category IVa and 4(7%) cases in category IVb, 2(3%) cases in category V, and 6(10%) cases in category VI.

Conclusion: MSRSGC is a six-category scheme that is recently proposed that separates the salivary gland FNAC into distinct categories, thus increasing the specificity by limiting the number of false negative and false positive cases.

Keywords: Cytology, Salivary gland, Milan system, Malignancy.

Introduction:

Fine needle aspiration cytology is a minimally invasive procedure that has been widely accepted in the evaluation of lesions in salivary gland. Salivary gland aspiration cytology provides a cost-effective means for their evaluation as it is a very simple and effective. This procedure has avoided unnecessary surgical interventions by differentiating benign from malignant lesions.

It can differentiate between neoplastic and non-neoplastic salivary gland lesion.

It can also differentiate between low- and high-grade carcinomas. Also help in determining the extent of surgery.

Salivary gland reporting system lacks terminology and various systems have been in use from two tiered to six-tiered system. The “Milan System for Reporting Salivary Gland Cytopathology” (MSRSGC), a tiered international classification scheme was proposed by the American Society of Cytopathology and International Academy of Cytology recently.

Materials and Methods:

The present study was carried out in the Cytopathology Laboratory, Department of Pathology, P.D.U Medical College and Hospital, Rajkot, Gujarat carried out over a period of 1 year between August 2023 to July 2024.

All the cases referred to the department of Pathology from the Department of Surgery, ENT, and Dental Surgery for evaluation of salivary gland lesions were included in the study. Clinical data and radiological assessment were done in all these cases. Fine needle aspiration was done. The FNA should utilize a 23- or 25-gauge needle, usually attached to a 10ml syringe, and often using a syringe holder to assist in applying a vacuum during the procedure. After insertion, the needle is moved slightly back and forth, angled in different directions before finally withdrawing. Smears are prepared and the slides were stained with H and E stain, Giemsa stain and PAP stain was used in cases where required. All the cases were categories according to MSRSGC.

Category I: Non-diagnostic (ND)

Category II: Non-neoplastic (NN)

Category III: Atypia of undetermined significance (AUS)

Category IVa: Neoplasm: Benign (NB)

Category IVb: Neoplasm: Salivary gland neoplasm of uncertain malignant potential (SUMP)

Category V: Suspicious of malignancy (SM)

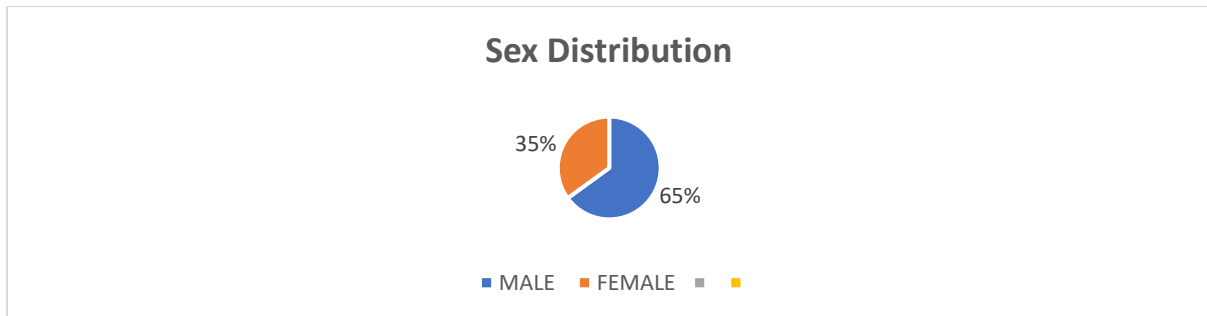
Category VI: Malignant (M).

Results:

Distribution of cases according to sex, age, and site of involvement of the lesion.

Table 1: - SEX DISTRIBUTION OF PATIENTS

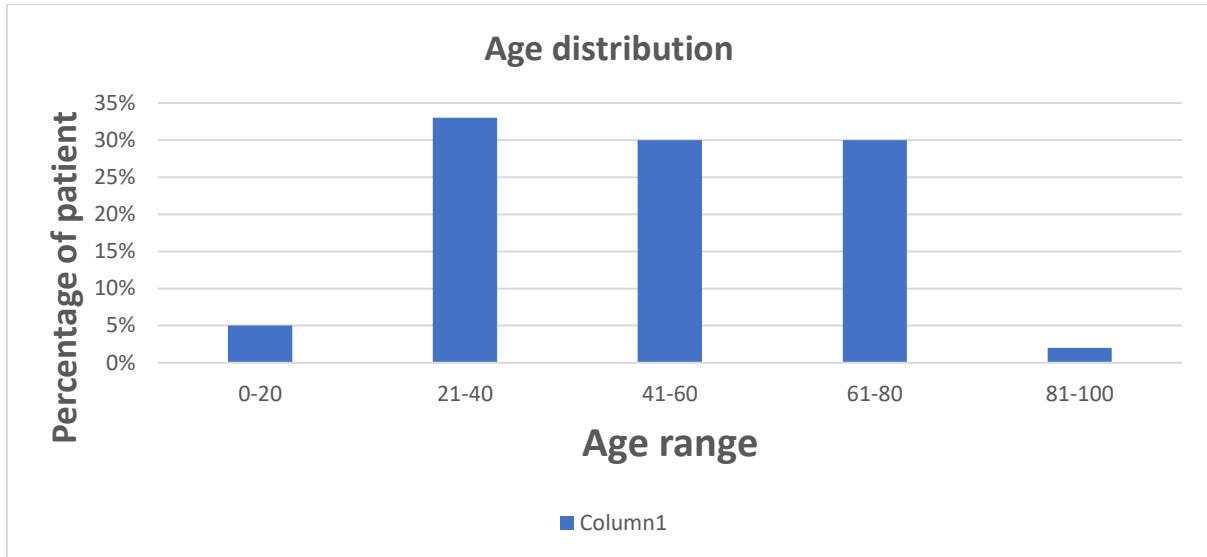
SEX	CASES	PERCENTAGE
MALE	39	65%
FEMALE	21	35%
TOTAL	60	100%



In the present study of 60 cases, 39 cases (65%) were male, while 21 cases (35%) were female.

Table 2: - AGE WISE DISTRIBUTION OF SALIVARY GLAND LESION

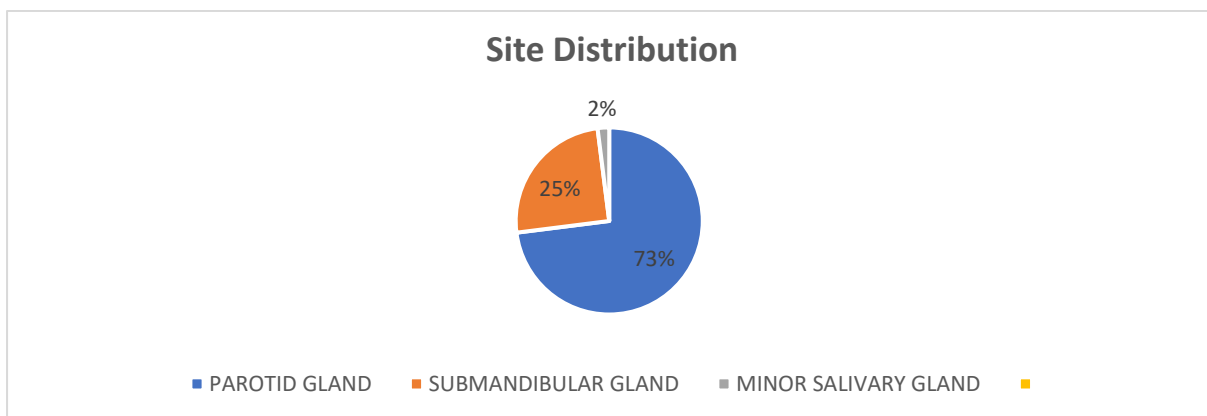
AGE RANGE	CASES	PERCENTAGE
0-20	03	5%
21-40	20	33%
41-60	18	30%
61-80	18	30%
81-100	01	2%
TOTAL	60	100%



In our study we had male predominance and most of the cases were seen in the age group of 21-40years.

Table 3: - SITE DISTRIBUTION OF SALIVARY GLAND LESION

SITE	CASES	PERCENTAGE
PAROTID GLAND	44	73%
SUBMANDIBULAR GLAND	15	25%
MINOR SALIVARY GLAND	01	2%
TOTAL	60	100%

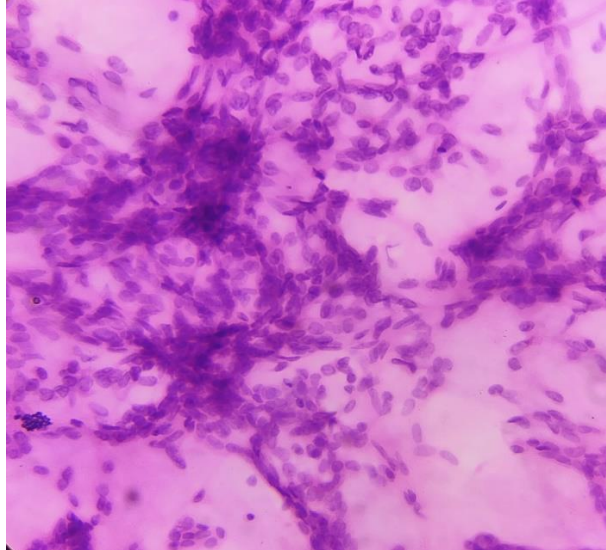


Patients had presented with lesions in all the major and minor salivary glands-parotid, submandibular and sublingual. Majority of the cases were seen in the parotid gland. (73%

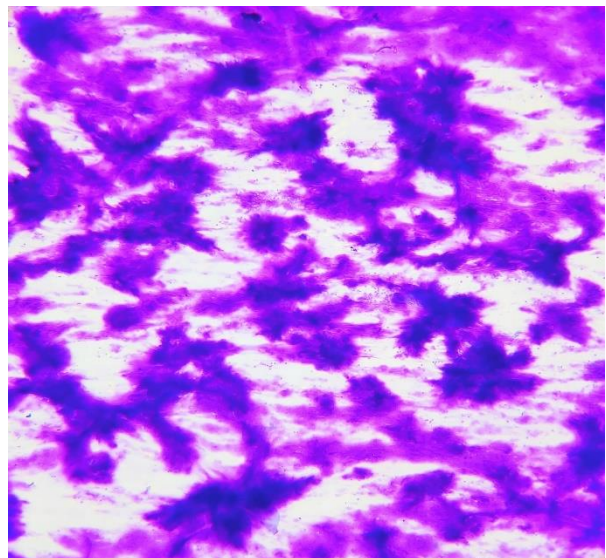
Table 4: - CYTOLOGICAL EVALUTION WAS DONE ACCORDING TO THE MILAN SYSTEM.

CATEGORY	CYTOLOGICAL DIAGNOSIS AND NO. OF CASES	PERCENTAGE
Category I: Non-diagnostic (ND)	Only hemorrhagic material aspirate (01)	2%
Category II: Non-neoplastic (NN)	Chronic sialadenitis (11), Acute on chronic sialadenitis (02), Acute on chronic parotitis (01), Autoimmune sialadenitis (01)	25%
Category III: Atypia of undetermined significance (AUS)	00	0%
Category IVa: Neoplasm: Benign (NB)	Pleomorphic adenoma (20), Warthin's tumor (12)	53%
Category IVb: Neoplasm: Salivary gland neoplasm of uncertain malignant potential (SUMP)	Basal cell adenoma (04)	7%
Category V: Suspicious of malignancy (SM)	Mixed tumor with necrosis (01) Suspicious of adenoid cystic carcinoma (01)	3%
Category VI: Malignant (M).	Adenoid cystic carcinoma (03) Mucoepidermoid carcinoma (03)	10%
TOTAL	60	100%

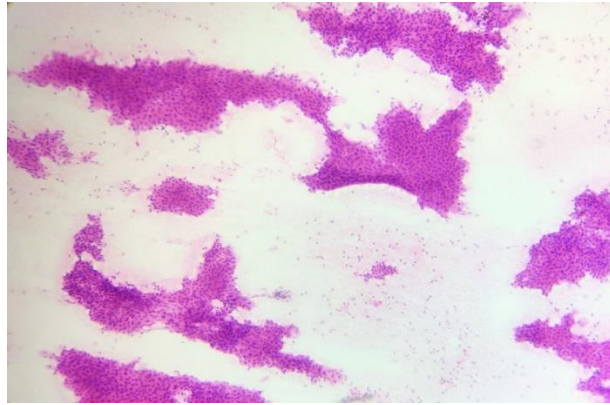
As per the MSRSGC classification system, 16 cases were categorized as non- neoplastic while 44 as neoplastic lesions. Of the non-neoplastic cases, 01(2%) were grouped in category I, 15 (25%) in category II. Out of the 44 salivary gland neoplasms, 32(53%) cases were in category IVa and 4(7%) cases in category IVb, 2(3%) cases in category V, and 6(10%) cases in category VI.



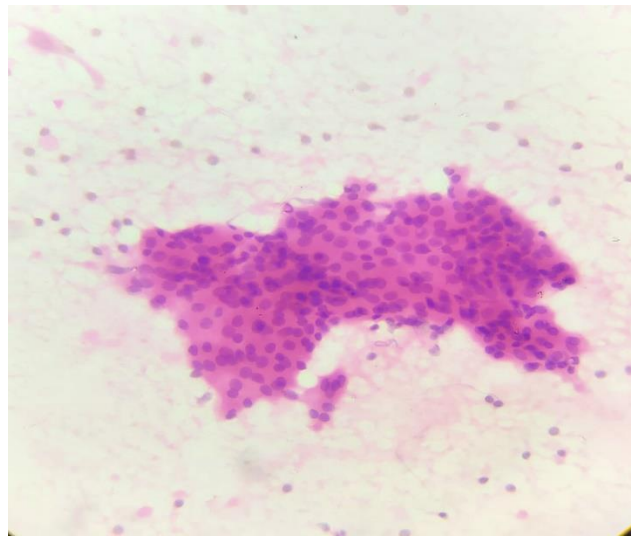
H and E Stain: Pleomorphic adenoma 40X, Epithelial and myoepithelial cells



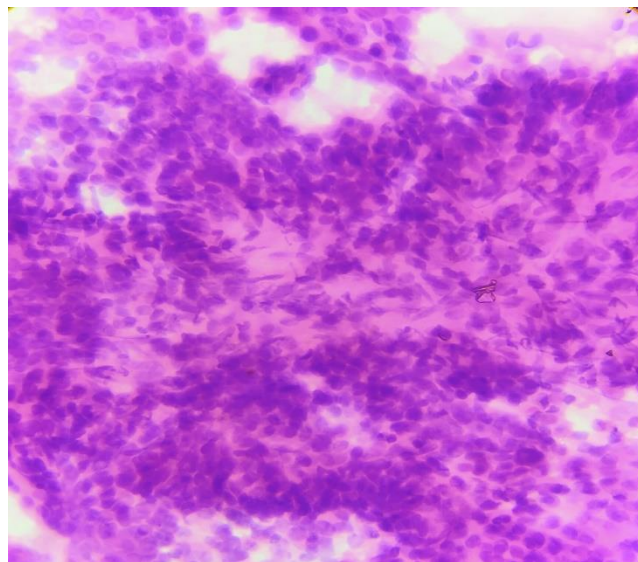
MGG Stain: Pleomorphic adenoma 10X, chondromyxoid stroma.



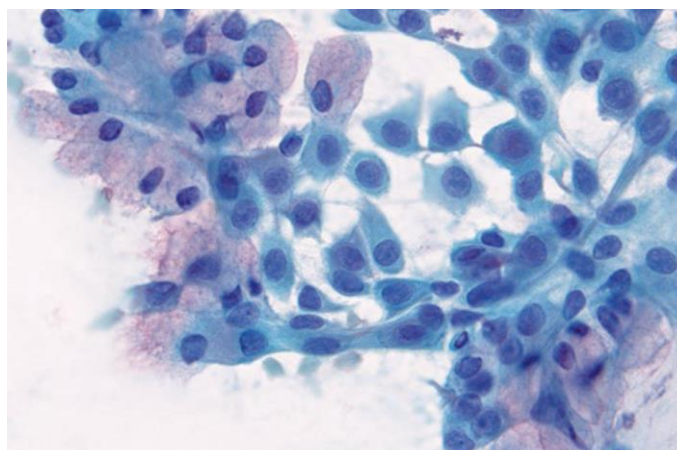
H and E Stain: Warthin's tumor 10X



H and E Stain: Warthin's tumor 40X , Sheets of oncocytes, proteinaceous background and lymphocytes



H and E Stain: Mixed tumor 40X



PAP Stain: Mucoepidermoid carcinoma, Mucinous cells, intermediate cells

Discussion:

FNA is widely accepted as a reliable technique in the initial evaluation of salivary gland lesion. It is a simple, safe, cost effective, minimally invasive, rapid diagnostic method. Primary goal of FNA is to separate benign lesions from malignant lesions for the purpose of planning the therapeutic protocol and follow up.

In experienced hands the reliability and accuracy of the FNAC is very high. High degree of expertise is required to perform the needle aspiration as well as in the interpretation of the smears. For the staining, the H & E and MGG stains were chosen because of its familiarity and easily discernible cytomorphology.

The present study had male to female ratio of 1.8:1 which is comparable to other studies^{5,6}. Parotid gland was most involved followed by submandibular gland and minor salivary gland. Similar findings were noted by Kala and Sonal et al^{5,6,7}.

Among the non-neoplastic, benign, and malignant lesions, pleomorphic adenoma, chronic sialadenitis and Warthin's tumor are the most common lesion in the present study. The percentage of chronic sialadenitis and pleomorphic adenoma were in concordance to previous studies. But the percentage of Warthin's tumor were higher than other studies.

The present study had maximum cases in category IV (53%), followed by category II (25%) and category VI (10%) which is like studied conducted by Manju et al, Sheetal et al, and Yogambal et al.

Conclusion:

Milan System for Reporting Salivary Gland Cytopathology is a six-category scheme that was recently proposed that separates the salivary gland FNAC into distinct categories, thus increasing the specificity by limiting the number of false negative and false positive cases.

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