ORIGINAL RESEARCH PAPER
Volume - 14 | Issue - 05 | May - 2025 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

THE MILAN SYSTEM FOR REPORTING SALIVARY GLAND CYTOPATHOLOGY (MSRSGC): A STUDY FROM A TERTIARY CARE HOSPITAL OF WESTERN INDIA.

Pathology

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ABSTRACT

Background: Salivary glands are exocrine organs that secrete saliva widely distributed throughout the mouth and oropharynx. FNA cytology has been effective modality for the diagnosis of salivary gland lesions, allowing for appropriate pre-operative management decisions. To provide consistency in the reporting of salivary gland cytology and to enhance clinico-pathological communication, an international six-tier classification scheme, "MSRSGC" was introduced in 2015, which offers guidelines of diagnosis and treatment based on various categories of malignancy risk and thus helps in individualized treatment and follow-up. **Methods:** In this study, retrospective analysis of received 120 cases of salivary gland in cytopathology department during the period of January 2017 t0 december 2022 was done. Cytopathological examination and HPE reports were correlated whenever available. The cases classified according to MSRSGC classification. **Results:** Risk of malignancy (ROM) for category I, II, III, IVa, IVb, V and VI are 00%, 12.5%, 50%, 03%, 29%, 100% and 100% respectively. Sensitivity is 78% and Specificity is 97% ,**Conclusion:** MSRSGC offers a valuable and standardized 6-tier framework for categorizing salivary gland lesions, aiding in risk assessment and management strategies. It assists clinicians in determining appropriate management plans and communicating ROM across different categories.

KEYWORDS

Cytopathology, Classification, histopathological examination, salivary gland, International

INTRODUCTION

There are three pairs of major salivary glands-parotid, submandibular and sublingual glands and many minor salivary glands.[1]Salivary gland lesions form 3-9 percent of all Head and Neck neoplasms [2]

FNAC is diagnostic modaity that offers a minimally invasive, safe, cost-efficient, and precise method that is highly beneficial for distinguishing a significant portion of salivary gland nodules as benign/malignant. Consequently, it diminishes the need for unnecessary invasive surgeries in patients diagnosed with benign conditions.

FNA cytology has been reported to be a sensitive (54-98%) and specific (88-98%) modality for the diagnosis of salivary gland lesions , allowing for appropriate pre-operative management decisions[3-6] FNAC could prevent unnecessary excision of a considerable number of salivary gland swellings, which do not require surgery. Some patients have a non-neoplastic lesion (e.g., chronic sialadenitis, lymphoepithelial cysts, and granulomatous diseases); others patients with a benign neoplasm (Pleomorphic Adenoma, Warthin's tumor) who are not suitable candidates for surgery and others who have malignancy for which surgical excision is not appropriate (e.g., lymphoproliferative disease and metastasis) can be reassured by the knowledge of the nature of lesions, as it indicates that surgery can be avoided.

Even when surgery is indicated, FNA guides preoperative strategy (e.g., partial or total parotidectomy, facial nerve resection and neck dissection) providing reassurance to both patient and surgeon.[7] The prognosis of salivary gland tumors correlates directly with the clinical stage of the disease; early diagnosis contributes for a better prognosis. At present, the initial diagnostic workup of a salivary gland lesion utilizes a multimodal approach, comprising imaging studies such as ultrasonography and/or magnetic resonance imaging for localization of the lesion, followed by fine-needle aspiration cytology for typing and classification[8,9]

The characteristics of salivary gland lesions identified by fine-needle aspiration cytology are varied and may overlap, which makes diagnosis difficult for cytopathologists. To provide consistency in the reporting of salivary gland cytology and to enhance clinico-pathologic communication, an international six-tier classification scheme, "Milan system for Reporting Salivary Gland Cytopathology (MSRSGC)" was introduced in 2015, which was sponsored by the ASC and IAC. which offers guidelines for the diagnosis and treatment based on various categories of malignancy risk and thus helps in individualized treatment and follow-up.[10,11]

This classification divides lesions into six categories:

I) Non-Diagnostic
II) Non-neoplastic
III) Atypia of undetermined significance (AUS)
IV) Neoplasm
IVa: Benign
IVb : Salivary Gland Neoplasm of Uncertain Malignant Potential (SUMP)
V) Suspicious of malignancy
VI) Malignant.

AIM AND OBJECTIVE:

To provide consistency and to establish guidelines by reporting salivary gland cytopathology by Milan System and using it as an evidence-based system for clinicians for the selection of treatment modality.

MATERIALS AND METHODS

In this study, retrospective analysis of 120 specimens of salivary gland were received in cytopathoogical department during January 2017 to December 2022 was done. Histopathoogical correlation were availabe in 50 cases. Relavant cinical data were retrived from laboratory request forms and the cases were classified according to Milan classification. Cytopathogical and histopathological sides were reviewed cases with faded slides and irretrievable clinical records, were excluded from the study.

RESULTS

Tabe 1 : Age Incidence

Age grup (In years)	N F CASES	% Percentage
Up to 20 years	09	08
21-40 years	42	35
41-60 years	53	44
>60	16	13
Total	120	100%

Tabe 1 shows minimum age of 5 years and maximum age is 85 years Maximum number of cases is in the age group are 41 -60 years followed by 21-40 years age group.

Table 2: Diagnostic Accuracy In Malignant Neoplastic Lesions Of Salivary Gland

Cytology Diagnosis	Histopathological Diagnosis		Total
	Malignant	Benign	

Malignant Cases = 08	07	01	08
Benign Cases = 42	02	40	42
Total	09	41	50

TRUE POSITIVES	07%	SENSITIVITY	78%
FALSE POSITIVES	01%	SPECIFICITY	97%
TRUE NEGATIVES	40%	PPV	88%
FALSE NEGATIVES	02%	NPV	95%

Table 2 show the diagnostic accuracy of malignant lesions was predicted to be 94%.

As Cytology and Histological analysis is paired data, Wilcoxon Signed Rank test applied to calculate p-value is less than 0.05 to ascertain statistical significance.

In this study, Probability (p) value is 0.02 were considered statistically significant.

Table 4: Risk of Malignancy assessment on the basis of Histological Diagnosis

Category	Avaiabe Histological follow-up	Malignant	Benign	Risk of malignancy (ROM %)
I (cases – 07)	02	00	02	00%
II (cases –33)	08	01	07	12.5%
III (cases –05)	02	01	01	50%
IVa (cases -55)	27	01	26	03%
IVb (cases -07)	07	02	05	29%
V (cases -05)	01	01	00	100%
VI (cases-08)	03	03	00	100%
TOTAL: 120	50	11	39	100

Table 4 show Risk of malignancy (ROM) for category I, II, III, IVa, IVb, V and VI are 00%, 12.5%, 50%, 03%, 29%, 100% and 100% respectively.

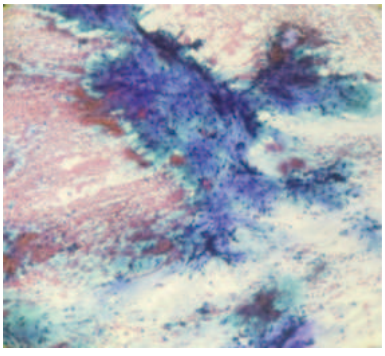

Figure 1: Category Iva - Benign Neoplasm : Pleomorphic adenoma – The smears are showing fibriller chondromyxoid stroma stained as magenta colour (10x ,PAP stain)

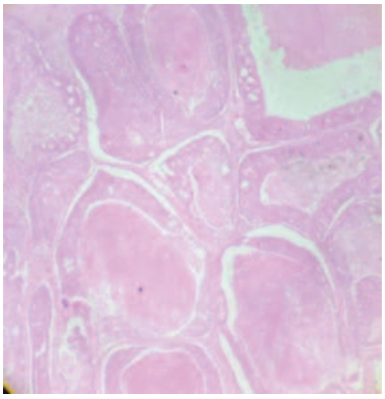

Figure 2: Salivary Duct Carcinoma – The sections show comedo-necrosis and high grade pleomorphic cells (10x ,H & E stain)

DISCUSSION

Table 5: The risk of malignancy reported in our study was 0%, 12.5%, 50%, 04%, 28%, 100% and 100%, respectively, for each category, and the results are comparable to that provided in the MSRSGC and recent other studies

Authors	ROM % of Milan Category						
	I	II	III	IVa	Ivb	V	VI
Present study	00	12.5	50	03	29	100	100
Karuna V et al. [12]	00	00	50	02	33	100	93
Viswanathan K et al. [13]	07	07	39	05	34	93	93
Wu H et al. [14]	15	00	40	10	13	50	100
Jha S et al. [15]	43	27	100	10	00	71	100
Pujani M et al. [16]	00	10	50	03	50	100	100

CONCLUSION

The adoption of the MSRSGC in routine practice promotes consistency in reporting and assists pathologists in reducing both false-positive and false-negative results. It is essential for institutions to adhere to this new classification system to prevent ambiguity and deliver critical information to clinicians. Additionally, the incidence of false-negative results can be partially mitigated through repeat aspiration, particularly in instances involving cystic lesions.

Adopting a standardized MSRSGC classification system offers considerable advantages for patient counselling and preoperative decision-making. Thus MSRSGC can assist clinicians and patients in evaluating the need for surgery, determining it's necessity, urgency, evaluating the extent of the procedure, and discussing prognosis when dealing with a diagnosed salivary gland lesions.

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