

UNIVERSITI TEKNOLOGI MARA

**RECLASSIFICATION OF SALIVARY GLAND
NEOPLASM AND RESTRATIFICATION ITS
RISK OF MALIGNANCY
USING MILAN REPORTING SYSTEM –
A RETROSPECTIVE CYTOHISTOLOGICAL
STUDY IN HOSPITAL SELAYANG.**

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Thesis submitted in fulfillment
of the requirements for the degree of
Master of Pathology
(Anatomic Pathology)

Faculty of Medicine

May 2022

ACKNOWLEDGEMENT

Alhamdullilah, with the blessing of Allah SWT, The Most Gracious and The Most Merciful, I was able to complete a study entitled Reclassification of Salivary Gland Neoplasm and Re-stratification Its of Malignancy Using Milan Reporting System – A Retrospective Cytohistological Study In Hospital Selayang.

I would like to thank my supervisor, **Dr Norizal Mohd Noor**, for his kind support, suggestions, knowledge that was imparted as well as guidance for me to complete this project and dissertation.

My sincere gratitude and appreciation also go to my co-supervisors in Hospital Selayang, **Dr Noor Afidah Mohamed Shabery**, and Uitm, **Dr Mardiana Abdul Aziz**, for their endless support, insightful comments, and suggestion.

I must express my profound gratitude, especially to my beautiful wife,
for her endless support and mainly for being my inspiration and motivation throughout my years of studies. Also, not forgetting my parents,
and I would also like to extend my appreciation to my medical laboratory technologist, for assisting me throughout the laboratory process and for the valuable support given.

Finally, to all my lecturers, consultants, specialists, friends, and colleagues who had helped me in completing this study, as well as for all the stimulating discussion in either to complete this dissertation or my master's program, I would like to thank you.

This accomplishment would not have been possible without each one of you.

ABSTRACT

Introduction: Fine-needle aspiration is a safe, rapid, and efficient diagnostic test in salivary gland cytology. Challenges arise due to the overlapping morphological features present among some of the neoplasms. The MILAN reporting system was created to provide a standardized categorization of salivary gland cytology, thus improving communication with the clinicians for optimal patient management. This study aims to reclassify the salivary gland cytology according to MILAN classification and calculate the risk of malignancy (ROM). **Method:** Clinical information, FNAC slides, and their corresponding HPE diagnosis were retrieved. All the cytology slides were re-examined and correlation with HPE slides were made. The cytology slides are classified into the MILAN reporting system as follows: Category 1: Non-diagnostic (ND); Category 2: Non-neoplastic (NN); Category 3: Atypia of undetermined significance (AUS); Category 4A: Neoplasm: benign (NB), Category 4B: Neoplasm: salivary gland neoplasm of uncertain malignant potential (SUMP); Category 5: suspicious of malignancy (SM); and Category 6: Malignant (M). **Results:** A total of 68 cases were assessed and grouped based on the MILAN categories. The ROM are calculated based on the HPE proven malignancy over the total number of cases in each categories. The results were as follows: ND (23.5%), NN (14.7%), AUS (1.5%), NB (36.8%), SUMP (8.8%), SM (10.3%), and M (4.4%). The ROM for each category is 12.5%, 10%, 0%, 0%, 42.9%, 100% and 100% respectively. **Conclusion:** Overall, the study demonstrated diagnostic sensitivity, specificity, positive predictive value, and negative predictive value of 62.50%, 88.33%, 52.63%, and 88.2%, respectively, with $p < 0.001$ in each MILAN category.

TABLE OF CONTENTS

	Page
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATION	x
CHAPTER ONE: INTRODUCTION	1
1.1 Research Background	1
1.2 Problem Statement	2
1.3 Objective	2
1.4 Scope And Limitation	2
1.5 Significance Of The Study	3
CHAPTER TWO: LITERATURE REVIEW	4
2.1 Salivary Gland Anatomy, Histology, and Cytology	4
2.2 Neoplastic Disease of Salivary Gland	4
2.3 Cytology of Salivary Gland Tumour	6
2.4 Previous System of Reporting Salivary Gland Cytology	8
2.5 New Reporting System – MILAN	10
CHAPTER THREE: RESEARCH METHODOLOGY	13
3.1 Background of The Study Area	13
3.2 Study Design	13
3.3 Sample Size Calculation	13

CHAPTER ONE

INTRODUCTION

1.1 Research Background

An Arabian physician named Albucasis first invented fine needle aspiration (FNA) on the thyroid in 1000. Later, FNA was first introduced in 1847 by Kun. In the 1930s, it was reintroduced and actively encouraged by Martin and Ellis. Even though FNA remained popular in Europe and especially in Scandinavian countries, it is only in the past 30 years that it has seen a rebirth in popularity in the United States. Fine needle aspiration (FNA) has generally become a safe, rapid, and efficient diagnostic test in salivary gland pathology. Several studies have reported excellent sensitivity and specificity of FNA to distinguish neoplastic and non-neoplastic lesions together with benign and malignant neoplasms; among different studies, the sensitivity of FNAC ranges from 86% to 100%, and specificity ranges between 90%–100% (Schmidt, 2011, p. 13).

However, many salivary gland neoplasms show morphologic overlaps, such as adenoid cystic carcinoma versus pleomorphic adenoma and low-grade mucoepidermoid carcinoma versus mucocele and mucinous metaplasia (Tabatabai, 2015, p. 3). Few studies are suggesting the use of morphological characteristic based analysis to create a risk stratification approach for classification of salivary gland neoplasm and providing risk of malignancy (ROM) and to guide for further ancillary test and management plan (Schindler, 2001, p. 3) (Rossi, 2016, p. 4). Unfortunately, there is a broad dissimilarity in ROM in different categories ranging from 6%–100%, thus lacking a harmony approach.

Another pitfall in reporting a salivary gland FNA is inconsistent terminology between pathologists and multiple reporting formats ranging from 2 tier to 6 or more (Griffith, 2017, p. 5) (Wang, 2015, p. 3). This has led to miscommunication between the pathologist and the surgeon, which later affect patient management. Thus, the Milan System for Reporting System of Salivary Gland Cytopathology (MSRSGC) was developed to improve communication between pathologist and clinician, improve patient care, and facilitate cytologic, histologic correlation.