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Consistency Rates Between Clinical Diagnoses Of Oral Lesions With Histopathological Reports

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ABSTRACT

Introduction: Oral lesions are common clinical finding, often requiring a definitive diagnosis to guide appropriate treatment. Clinicians frequently rely on visual examination and clinical experience to diagnose these lesions; however, histopathological examination remains the gold standard for confirming or refuting these initial diagnoses.

Objectives: This study aims to evaluate consistency rates between clinical diagnoses of oral lesions and their corresponding histopathological reports, highlighting the importance of accurate clinical assessment in dental practice.

Methodology: A retrospective analysis was conducted from 305 patients who had undergone biopsy in Department of Oral and Maxillofacial Surgery at UCMS College of Dental Surgery, Bhairahawa, Nepal between August 2020 to July 2023. Clinical diagnosis made by oral and maxillofacial surgeons were compared with the final histopathological diagnosis obtained from incisional or excisional biopsies. The consistency rate was calculated for each diagnostic category.

Results: The overall agreement rate between clinical and histopathological diagnosis was found to be 69.83%. The highest consistency rate was observed in cases of mucocoeles (94.4%), followed by fibromas (89.4%), radicular cyst (81%) and squamous cell carcinoma (81%). The lower agreement rate was seen in central giant cell granuloma (42.8%), followed by central ossifying fibroma (47%), dentigerous cysts (53.8%) and odontogenic keratocysts (54.1%).

Conclusion: The findings of this study underscore the necessity for thorough clinical examinations and effective collaboration between clinicians and pathologists to enhance diagnostic accuracy and treatment outcomes. Regular clinicopathological meetings and continuous education programs may help improve the consistency between clinical and histopathological diagnoses.

Introduction

Oral lesions with need for correct clinical diagnosis along with its histopathological examination are frequently encountered by oral and maxillofacial surgeons in their day to day practice. In addition, final diagnosis is required for definitive treatment of lesions. There are various oral lesions which have specific clinical features that help in making clinical diagnosis. But some clinical features are common for different lesions for which histopathological examinations are needed.¹

So, clinical examination alone of the oral mucosa often leads to an indefinite diagnosis. Histopathological examination of the lesion is of utmost importance for final diagnosis. Surgical removal of affected tissue and subsequent

histopathological examination is most often recommended for proper diagnosis.²

Literatures revealed difference in clinical and histopathological diagnosis of oral lesions.³ There is 69%-70% agreement between clinical and histopathological diagnosis of lesions but may varies accordingly.⁴ Among malignancies, squamous cell carcinoma is the most common. Early stages of malignancy may mimic benign lesions. Proper management of patients begins with an accurate diagnosis and histopathology is considered as the gold standard. So, in day to day practice life, thorough physical examination must almost always be completed with a pathological study in order to establish the final diagnosis.⁵

Identifying the discrepancy rate between clinical and histologic diagnoses and, in particular, factors associated with discrepancy will allow for more timely and rational use of various biopsy procedures. This understanding could lead to earlier detection of more problematic lesions and possibly a decreased use of histologic evaluation in lesions with a negligible discrepancy rate. Surgical biopsy procedures, despite being a frequently done procedure, can increase patient anxiety and is associated with additional financial burden to patients.⁶

Histopathological examination provides definitive diagnostic information based on tissue architecture and cellular morphology. However, the clinical context remains essential for interpreting these histopathological findings. Thus, a combination of clinical and histopathological evaluation often leads to the most accurate diagnosis and optimal patient care. The prime objective of the present study is to explore the consistency rates between clinical and histopathological diagnoses of oral lesions, examining the underlying factors contributing to discrepancies.

Methodology

A hospital based observational, analytical retrospective study was designed and was approved by the Institutional Review Committee (IRC) of Universal College of Medical Sciences, Bhairahawa, Nepal (UCMS/IRC/68/23). Written informed consent from patients were obtained for the publication of their data.

Medical records of patient registered between August 2020 to July 2023 were reviewed from medical record section of UCMS College of Dental Surgery, Bhairahawa, Rupandehi, Nepal. Three hundred and five cases of oral lesions with complete and detailed records were selected for the study by convenience sampling method. Patients records with any oral lesions with comprehensive medical history, clinical and physical examination, most probable clinical diagnosis and histopathological diagnosis were only included in the study. Parameters recorded were demographic data, classification of lesion into intraosseous and extraosseous lesion, most probable clinical diagnosis, type of biopsy performed, classification of lesions into benign and malignant, histopathological diagnosis, concordance index (CI) in overall lesions, extraosseous and intraosseous lesions, benign and malignant lesions. Patients with incomplete medical records were not included in the study.

Data were entered in Microsoft Excel 2007 and analyzed by means of Statistical Package for Social Sciences (SPSS 18.0 for Windows, SPSS Inc.). For descriptive statistics; percentage, mean, range and standard deviation were calculated. The rate of correct clinical diagnosis (concordance index) is calculated. The histopathological diagnosis was compared with clinical diagnosis and a concordance index (CI): (the number of cases in which the histopathological diagnosis coincided with most probable clinical diagnosis / the number of total sample) x 100 was calculated. The rate of correct clinical diagnosis in compared to histopathological diagnosis (concordance index) was evaluated regarding the type of lesions.

Results

A total of 305 cases of oral lesions with complete medical past records with its histopathological diagnoses were enrolled in the study. The selected group include 162 males (53%) and 143 females (47%) as shown in figure 1. The mean age was 43.6 years \pm 19.9 years (age range, 6-77 years). Overall frequency distribution of oral lesions according to its histopathological diagnosis and CI is shown in [Table 1]. The maximum CI was found to be with mucocele (94.4%) followed by fibroma (89.4%). The minimum CI was found to be with central giant cell granuloma (42.8%) followed by central ossifying fibroma (47%). Out of 305 patients, in 182 (59.67%) patients had gone for excisional biopsy followed by incisional biopsy in 120 (39.34%) patients and punch biopsy in 3 (0.99) patients as shown in (Table 2). According to site of origin among 305 lesions, 155 (50.82%) were extraosseous soft tissue lesions whereas 150 (49.18%) where CI for extraosseous origin was high (75.48 %) in compare to intraosseous lesions (64%) (Table 3). After histopathological report, 263 (86.2%) patients had benign (non- neoplastic) lesion whereas 42 (13.8%) patients had malignant (neoplastic) lesions. For malignant lesions, CI was 76.19% whereas for benign lesions it was 68.82% (Table 4). The overall CI between clinical and histopathological diagnoses was found to be 69.83% (Table 5).

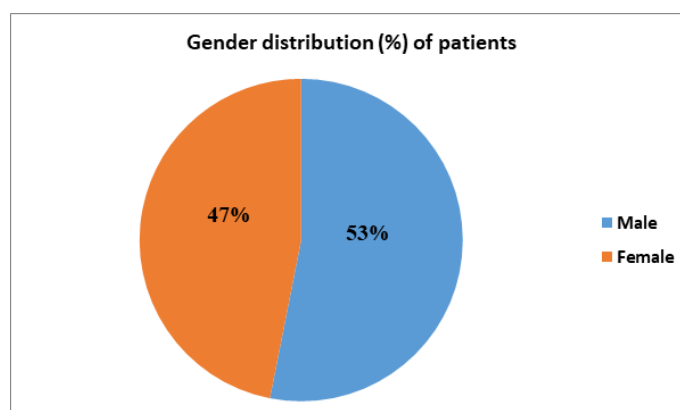


Figure 1: Gender distribution of patients

Table 1: Frequency distribution of oral lesions according to its histopathological diagnosis and concordance index (CI %)

Histopathological diagnosis	N (%)	CI (%)
Intraosseous lesions		
Radicular cyst	37(12.1)	81
Dentigerous cyst	13(4.2)	53.8
Odontogenic keratocyst	24(7.8)	54.1
Ameloblastoma	09(2.9)	66.6
Central ossifying fibroma	17(5.5)	47
Centra giant cell granuloma	07(2.2)	42.8
Odontome	09(9.9)	66.6
Osteomyelitis	11(3.6)	54.5
Extraosseous lesions		
Pyogenic granuloma	30(9.8)	70
Mucocele	18(5.9)	94.4
Squamous papilloma	17(5.5)	64.7
Squamous cell carcinoma	37(12.1)	81
Peripheral giant cell granuloma	13(4.2)	61.5
Peripheral ossifying fibroma	07(2.2)	57.1
Fibroma	19(6.2)	89.4
Others		
• Intraosseous	23(62.16)	60.86
• Extraosseous	14(37.84)	64.28

Table 2: Type of biopsy performed

Biopsy type	Number (%)
Excisional	182 (59.67)
Incisional	120 (39.34)
Punch	3 (0.99)

Table 3: Type of lesion according to its site of origin and its concordance index (CI)

Type of lesion	Number (%)	Correct diagnosis (n)	CI (%)
Intraosseous	150 (49.18)	96	64
Extraosseous	155 (50.82)	117	75.48

Table 4: Type of lesion according to its nature of origin and its concordance index (CI)

Type of lesion	Number (%)	Correct diagnosis (n)	CI (%)
Benign	263 (86.2)	181	68.82
Malignant	42 (13.8)	32	76.19

Table 5: Concordance index (CI) of overall lesions, intraosseous, extraosseous, benign and malignant lesions

Lesions	Concordance Index (CI %)
Overall	69.83
Intraosseous	64
Extraosseous	75.48
Benign	68.82
Malignant	76.19

Discussion

An accurate diagnosis of any oral lesions with its non-pathognomonic features to deliver proper treatment, the coincidence between clinico-pathological diagnosis seems to be very crucial. This study is aimed to adjust the clinical characteristics of the lesion in order to enable pathologists to obtain appropriate tissue samples. So, with this concept its favorable for surgeons while taking proper biopsy specimen and pathologists in reaching an exact histopathological diagnosis; each failure in the clinical diagnosis might lead to pathological diagnosis failure as well.⁶

Out of 305 patients, 162 (53%) were male and 143 (47%) were female. Increased number of male patients with oral lesions than female may be due to indulgence of males more into habits like smoking tobacco and paan chewing in this part of world.^{7,8} The mean age of the patient was 43.6 years (age range 6-77 years) which is similar to various studies done previously.⁹⁻¹⁰

In the present study, there were certain common oral lesions that were associated with a high degree of clinical diagnostic accuracy. Mucoceles (94.4%), fibromas (89.4%), radicular cyst (81%) and squamous cell carcinoma (81%) showed a high level of concordance which is similar to the study done by Forman et al.⁶ This might be due to typical presentation and most frequently encountered lesions in day to day practices. The high consistency rates in clinico-histopathological diagnoses of mucoceles and fibromas are due to their distinct clinical presentations, consistent histopathological features, common etiopathological factors, and the expertise of clinicians. This reliability underscores the importance of thorough clinical examination and histopathological confirmation in the diagnosis and management of oral lesions.

The lower agreement rate in the present study was seen in central giant cell granuloma (42.8%), followed by central ossifying fibroma (47%), dentigerous cysts (53.8%) and odontogenic keratocysts (54.1%). The possible reasons for this might be due to several factors like clinical presentation variability, overlapping histopathological features, biopsy sampling error, observer variability, evolution and complexity of lesions, etc.

The present study found 69.83 % of overall agreement between clinical and histopathological diagnosis which is similar to study done by Farzinnia et al.¹¹ who calculated the overall concordance rate as 72.2%. However, our concordance rate was low when compared to studies conducted by Tatli et al.¹² and Forman et

al.⁶ (93.3% and 94.4%, respectively). When lesions were divided according to the site of origin into intraosseous and extraosseous lesions, the accuracy while suspecting extraosseous lesions were higher (74.4%) compared to intraosseous lesions (64.96%). The reason behind the difference in agreement rate might be due to direct clinical examination of lesion on the basis of its colour, size and shape, growth pattern and its extent, consistency, associated with any discharge or not, etc. Other reasons are differences in proficiency level of the surgeon and the pathologist, accuracy of the biopsy, specimen handling and transfer to the laboratory and surgeon-pathologist co-operation.¹³⁻¹⁴

A total of 37 (12.1%) cases of squamous cell carcinoma were identified with the most common site being buccal mucosa followed by tongue. The concordance index in our study was more for malignant lesion i.e. 76.19% in compared to benign lesion i.e. 68.82%. This is in accordance with the study done by Farzinnia et al.¹¹ where they found concordance index of 78.8% in squamous cell carcinoma cases. This might be due to the majority of malignant lesion in our study were squamous cell carcinoma which has typical clinical appearance and make ease during clinical diagnosis. Due to rising prevalence and incidence of malignancies, importance of proper oral hygiene with routine dental checkup, spectrum of oral lesions seen and their precise time bound diagnosis should be emphasized upon in society. Histopathological examination still is needed for confirmatory diagnosis as the nature and the origin of oral cavity lesions cannot be determined by clinical examination alone.¹⁵

Literatures revealed concordance index rates of clinical and histopathological diagnoses with varying results by different authors in their studies. The correct clinical and histopathological diagnoses is directly dependent on the clinician's knowledge and education levels. Proper history of patient should be obtained before making final diagnosis and transferred to pathologists to avoid error.

Conclusions

The present study indicates that overall concordance index rate between the clinical and pathological diagnoses of the lesions in 69.83% of cases, however non negligible discordance still exists. It should be noted that the clinico-histopathological concordance rate will never reach 100%, because there are various oral lesions that have identical clinical picture and differ histopathological. In such cases, the definitive diagnosis is still based on the histopathological results. Therefore, histopathological diagnosis remains gold standard to avoid misdiagnosis and inappropriate treatment. By enhancing our understanding of clinico-histopathological correlations, we can improve diagnostic accuracy, optimize treatment strategies, and ultimately achieve better patient care in the field of oral health.

Limitations Of The Study

Large number of samples with longer study duration is required to deliver more information and conclusive results in the present study.

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Conflict of Interest

The authors declare they have no conflicts on interests.

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