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PJMLS OPEN ACCESS

Print ISSN: 2707-4471. Online ISSN: 2707-448X

Research Article	Pak-Euro Journal of Medical and Life Sciences
DOI: 10.31580/bb8m9b44	Copyright © All rights are reserved by Corresponding Author
Vol. 9 No. 1, 2026: pp. 209-214	
www.readersinsight.net/pjmls	**Revised:** March 13, 2026 **Accepted:** March 23, 2026
Submission: December 30, 2025	**Published Online:** March 31, 2026

CLINICAL CHARACTERISTICS AND TREATMENT OUTCOMES OF ORAL MUCOSAL LESIONS IN A TERTIARY CARE SETTINGS

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Abstract

The oral mucosal lesions include a wide spectrum of diseases and disorders. Appropriate management and early recognition are key to increasing the chances for better outcomes and slowing the progression of the disease. The primary objective of this study was to assess the clinical features, distribution pattern and outcome of oral mucosal lesions of patients attending tertiary care center. This Cross sectional observational study (September 2022 to February 2023) included 120 patients using consecutive sampling via a structured proforma to record the demographic information, risk factors, characteristics of lesions, site of anatomical involvement and clinical diagnosis. Treatment outcomes were evaluated at follow-up visits and grouped into complete resolution, partial improvement, no response, or recurrence. Data were analyzed by SPSS 26.0 and p-values <0.05 were regarded as significant. There were 120 patients with 62.5% male and the maximum number were in the 41–60 years age group (45.8%). 58.3% reported the presence of tobacco-related habits. The benign lesions was found in 56.7% of the cases, 22.5% of the lesions were dysplastic lesion and 10.8% were oral squamous cell carcinoma, identified by histopathological examination. These tobacco users had significantly more potentially malignant lesions than non-users (55.7% vs. 26.0%; p=0.003). After treatment, complete clinical resolution was seen in 55.8%, partial improvement in 28.3%, recurrence in 10.8% and no clinical response in 5.0% of patients. Oral mucosal lesions are a wide spectrum of inflammatory, potentially malignant and malignant lesions in tertiary care settings. Most patients had good treatment outcomes with early diagnosis, histopathological confirmation and timely management, and tobacco use was an important risk factor for potentially malignant oral lesions.

Keywords: *Oral mucosal lesions, Oral medicin, Oral leukoplakia, Oral lichen planus, Oral pathology, Oral submucous fibrosis; Treatment outcomes*

INTRODUCTION

Oral mucosal lesions (OMLs) represent a heterogeneous group of pathological conditions that affect the oral epithelium and submucosa, encompassing non-neoplastic inflammatory lesions to potentially malignant diseases (1). These lesions can cause significant diagnostic and therapeutic difficulty in the oral medicine practice due to their overlapping clinical presentations and variable natural histories (2). Conditions such as oral lichen planus and recurrent aphthous stomatitis are common inflammatory entities, while oral leukoplakia and oral submucous fibrosis (OSMF) carry a well-established risk of malignant transformation (3, 4). The burden of OMLs is massive and most significant in the regions where there is a high prevalence of tobacco and areca nut use, including South Asia where smokeless tobacco and gutkha are ingrained in culture practice (5). Early detection, proper histopathological management and early application of appropriate treatment, including risk factors modification, is essential to patient outcomes and disease progression to oral squamous cell carcinoma (OSCC) (6).

Epidemiological data from tertiary centres has shown that distribution of OMLs and the clinical appearance depends on geographical location, referral patterns and local risk factors Previous studies in India, Pakistan, and other South Asian countries identify oral lichen planus and recurrent aphthous stomatitis as the most common non-malignant conditions, while leukoplakia and OSMF are more prevalent in populations with high use of areca nut and tobacco (7-9). However, despite the high prevalence of these conditions, there is a

scarcity of prospective data on treatments effects after standard clinical management in resource-limited tertiary services (10). Numerous studies have focused on diagnostic distribution or the association of risk factors with lesions, and have not systematically reported outcomes of treatment, relapse, or the effects of tobacco cessation on lesion resolution. It is crucial for developing evidence-based clinical protocols and the proper allocation of healthcare resources to understand these outcome measures.

The aim of this study was to examine the clinical characteristics, anatomical distribution, histopathological pattern, and treatment of OMLs among patients attending a tertiary care teaching hospital. The primary objectives were to determine the distribution of OMLs and describe histopathological findings (including dysplasia and malignancy). The secondary objectives were to assess short-term treatment outcomes (complete resolution, partial improvement, no response, recurrence) and evaluate the association between tobacco use and potentially malignant lesions.

MATERIALS AND METHODS

The cross-sectional study was an observational study carried out for six months in the department of pathology in tertiary care teaching hospital Shaikh Zayed Lahore. A total of 120 patients with OMLs and with a clinical diagnosis at the outpatient oral medicine clinic during the study period were included in the study. Non-probability consecutive sampling was used in recruiting participants after an informed consent. Inclusion criteria for this study were a patient aged 18 years or older with one or more clinically evident OMLs. Those whose clinical records have been incomplete, those who were being treated for oral lesions before their presentation, and those who refused to participate were excluded from the study. No patients refused to participate during the study period. Demographic data such as age, gender, tobacco use, and relevant medical history were collected using a structured form for data collection after informed consent. Trained oral medicine specialists conducted comprehensive oral examination under standardized clinical conditions. The nature, anatomical site, length of time, clinical appearance, and clinical symptoms of the lesions were recorded.

Standard oral medicine diagnosis criteria were used to determine the clinical diagnoses. When clinically indicated (e.g. suspected potentially malignant disorder, lesion with uncertain diagnosis), histopathological examination was performed. The histopathological examination was classified as benign lesions, hyperkeratosis without dysplasia, mild dysplasia, moderate dysplasia, severe dysplasia or OSCC. Per the institutional protocol of tertiary care center, histopathological examination was performed for all 120 patients with clinically diagnosed OMLs. This biopsy approach was adopted to ensure diagnostic certainty and to identify occult dysplasia or malignancy in lesions that were not clinically suspicious.

The management strategies were chosen based on the clinical diagnosis and ranged from drugs, topical corticosteroids, antifungal medications, habit cessation counseling, surgical intervention and supportive care. Patients were followed to assess treatment outcome (complete resolution, partial improvement, no clinical response, and recurrence). All the data were coded and analyzed using Statistical Package for Social Sciences (SPSS) version 26.0. Descriptive statistics were expressed in frequency, percentage, mean and standard deviation. The Chi square test was used to determine the association between categorical variables. A p-value of ≤0.05 was considered statistically significant.

RESULTS

The demographic and clinical data of the study population is shown in Table I. Out of the 120 cases of OMLs, male patients were 62.5% of the total number. The age group with the highest percentage of patients was the 41–60 age group (45.8%). 58.3% of the participants reported on tobacco-related habits. The most common location of involvement was buccal mucosa.

Table I. Demographic and clinical characteristics of patients with oral mucosal lesions (N=120)

Variables	Frequency (n)	Percentage (%)
Gender		
Male	75	62.5
Female	45	37.5
Age group (Years)		
18–30	22	18.3
31–40	26	21.7
41–60	55	45.8
>60	17	14.2

Tobacco use		
Yes	70	58.3
No	50	41.7
Most common site involved		
Buccal mucosa	51	42.5
Tongue	24	20.0
Gingiva	18	15.0
Palate	15	12.5
Floor of mouth	12	10.0

Table II demonstrates histopathological findings among biopsied lesions. A total of 120 patients underwent histopathological examination, as all clinically diagnosed lesions met the criteria for biopsy per institutional protocol. Dysplastic changes were identified in 22.5% of lesions, while OSCC was confirmed in 10.8% of cases.

Table II. Histopathological findings among investigated lesions (n=120)

Histopathological diagnosis	Frequency (n)	Percentage (%)
Benign lesions	68	56.7
Mild Dysplasia	15	12.5
Moderate Dysplasia	8	6.7
Severe Dysplasia	4	3.3
Oral Squamous Cell Carcinoma	13	10.8
Hyperkeratosis without Dysplasia	12	10.0

Table III illustrates the association between tobacco use and occurrence of potentially malignant oral lesions. Tobacco users demonstrated a significantly higher prevalence of potentially malignant disorders compared with non-users (p=0.003).

Table III. Association between tobacco use and potentially malignant oral lesions

Tobacco Use	Potentially Malignant Lesions n (%)	Non-Potentially Malignant Lesions n (%)	p-value
Yes (n=70)	39 (55.7)	31 (44.3)	0.003
No (n=50)	13 (26.0)	37 (74.0)	

The distribution of OMLs diagnosed in the study participants is shown in Fig. 1 (a). Oral lichen planus was the most common lesion, with 25.8% (n=31); recurrent aphthous stomatitis was 20.8% (n=25). Oral leukoplakia (22) and OSMF (19) were the most common lesions found, accounting for 18.3% and 15.8%, respectively. Ten percent (n=12) of patients had traumatic ulcers, 5.8% (n=7) had oral candidiasis and 3.3% (n=4) had other less common lesions. The results suggest that inflammatory and potentially malignant lesions were most common among OMLs in the tertiary care setting.

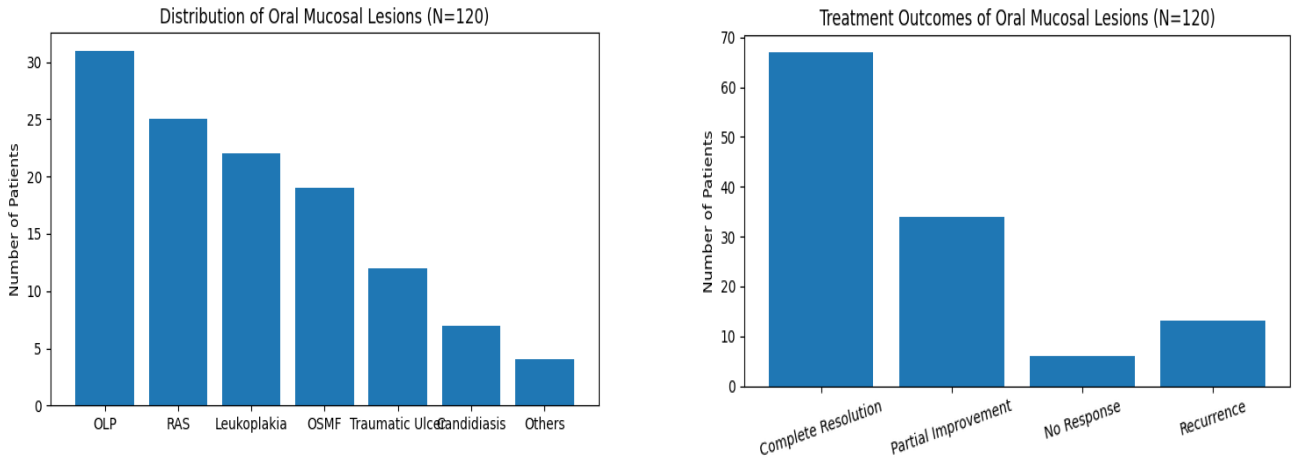

Fig. 1 (a). Distribution of oral mucosal lesions among study participants (n=120); **(b).** Treatment outcomes of oral mucosal lesions following clinical management (n=120)

The results of therapy and follow-up in patients who developed OMLs are shown in Fig. 1 (b). The most common outcome (55.8%, n=67) was complete clinical resolution. Partial improvement was recorded in 28.3% (n=34)

of patients while 10.8% (n=13) recurred during follow-up. The clinical response was not significant in 5.0% (n=6) of patients. These results indicate that most OMLs responded well to the management prescribed, underscoring the need for early diagnosis and timely appropriate treatment for favourable clinical outcome.

DISCUSSION

In this six-month cross-sectional observational study of 120 patients with OMLs, we found that oral lichen planus (25.8%) was the most common diagnosis, followed by recurrent aphthous stomatitis (20.8%), oral leukoplakia (18.3%), and OSMF (15.8%). After management, 55.8% had the complete clinical resolution, 28.3% had some improvement and 10.8% recurred. Tobacco use was reported by 58.3% of participants and found a significant relationship between tobacco use and potentially malignant lesions (p=0.003). Histopathological examination, performed in clinically indicated cases, confirmed dysplastic changes in 22.5% of biopsied lesions, and OSCC was diagnosed in 10.8% of the total cohort (13 of 120 patients). These results will help to understand the pattern of OMLs seen in the tertiary care setup of South Asian continent and the effectiveness of traditional management options in real life (11, 12).

These findings align with previous studies from similar tertiary settings in India and Pakistan, where oral lichen planus and recurrent aphthous stomatitis consistently rank among the top three diagnoses, and tobacco-related potentially malignant disorders account for a substantial burden (13, 14). Studies reported that oral leukoplakia is the most prevalent OMLs ranging between 22% to 28% (15, 16). Similarly, another study reported that recurrent aphthous stomatitis is the second most common diagnosis, accounting for approximately 18-22% of cases (17, 18).

Leukoplakia (18.3%) and OSMF (15.8%) were some of the most prevalent tobacco-related potentially malignant disorders observed across South Asian areas, reflecting the widespread use of smokeless tobacco and areca nut products in these populations (19-21). Local delivery of smokeless tobacco, gutkha and areca nut preparations could account for the high incidence of the buccal mucosa infection (22). These products tend to stay in the buccal sulcus for a long time, leading to sustained contact of carcinogenic compounds with the buccal mucosa, therefore predisposing this site to development of those reactive and neoplastic lesions (23, 24).

One notable finding in our study is the histopathological confirmation of OSCC in 10.8% of the total cohort. This ratio is significantly higher than the population prevalence of OSCC and likely reflects referral bias inherent to tertiary care settings (25). Primary and secondary healthcare centres tend to treat benign and self-limiting OMLs locally, making only referrals for persistent, suspicious and unresponsive lesions to tertiary hospitals (26). Consequently, tertiary care cohorts are enriched for advanced disease, malignant lesions, and severe dysplasia, explaining the elevated OSCC rate observed (27, 28). It is reported by several studies that OSCC prevalence ranging between 8% to 12% in tertiary centre cohorts (29, 30). Overall, in this study 55.8% of the OMLs resolved with standard therapies (topical anti-inflammatory medication and habit cessation counseling, and surgical excision for selected cases) at short-term follow-up. However, because chronic conditions such as oral lichen planus have a relapsing-remitting course, long-term follow-up is necessary to distinguish true resolution from temporary remission.

This study has several strengths such as the prospective design, the consecutive sampling to reduce the selection bias, and the application of standardised diagnostic criteria using trained oral medicine specialists. In addition, all clinically indicated lesions were confirmed histopathologically, making it possible to make a definite diagnosis of dysplasia and malignancy. However, there are certain limitations that need to be taken into account. Be careful with making assumptions about other populations due to the one centre design. The entire follow-up period is not long enough to evaluate long term outcome such as malignant changes particularly in chronic diseases such as oral lichen planus or OSMF. Inter-observers reliability of dysplasia grades was not assessed and this introduces some subjectivity.

Lastly, there was no quantitative assessment of compliance with tobacco cessation recommendations, and which may have influenced outcomes. The study has some certain limitations, but our results have great clinical implications. The strong correlation of tobacco use with potentially malignant lesions strengthens the current emphasis placed on systematic screening for tobacco and areca nut habits of all adult patients with oral complaints. Smoking cessation counseling at moderate level to reduce smoking exposure should be a part of routine care. The high incidence of OSCC (10.8%) reinforces the importance of having a low threshold for biopsy of any non-healing and suspicious lesions. Structured follow up protocols should be used to detect the recurrence or malignant transformation. Finally, while most OMLs are responsive to usual management, tobacco use is one of many

important modifiable risk factors.

CONCLUSION

The present study concludes that oral lichen planus and recurrent aphthous stomatitis are comparatively more common OML encountered in tertiary care setting and then are tobacco related potentially malignant disorders like leukoplakia and OSMF. Complete clinical resolution (good responses to standard clinical management) was seen in >50% of patients. Tobacco use continues to be an important modifiable risk factor linked to poor treatment outcomes and presence of potentially malignant lesions. The early detection of disease, routine follow up, and biopsy of suspicious lesions within a short time are important in limiting the progression of the disease and improving prognosis for those who have it. Further prospective studies are required to see if early complete resolution is associated with a decreased risk of malignant transformation in the longer term.

Conflict of interest:

The authors declare no conflict of interest.

Authors' contribution:

All Authors Contributed equally as per ICMJE.

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