

# Histopathological Spectrum of Oral Mucosal Lesions in a Tertiary Care Hospital

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## ABSTRACT

**Background:** Neoplastic as well as non-neoplastic lesions commonly involve oral mucosa. It had been observed that benign lesions were more common than malignant ones. The present study was done to evaluate the pattern of distribution of various oral mucosal lesions in a tertiary care hospital.

**Methods:** This retrospective cross-sectional study reviewed the archival records in the Department of Pathology, Gandaki Medical College, Nepal from January 2017 to December 2020. The records of patients with histopathologic diagnosis of oral mucosal lesions were obtained. The histopathological diagnosis, age, gender, and the site of involvement were collected using a prepared form. Descriptive statistics was applied using SPSS 20 software.

**Results:** Oral mucosal lesions included 3.7% (180 out of total 4895) of cases diagnosed histopathologically. The cases were common among females (101cases/56.1%). Most of the oral mucosal lesions were diagnosed in more than 45 years old patients (75cases/41.7%). The non-neoplastic oral lesions (106cases/58.9%) were the most common lesions followed by neoplastic oral lesions (52cases/28.9%). Among non-neoplastic oral lesions, reactive hyperplastic oral lesions were the most common (50cases/27.8%). Reactive hyperplastic oral lesions frequently affected gingiva (18cases/36%). Neoplastic lesions (Benign neoplasm: 12cases/44.4%; Malignant lesions; 10cases/40%) frequently affected the tongue.

**Conclusions:** Oral lesions were mostly non-neoplastic and reactive hyperplasia being the most commonest presentation

**Keywords:** Neoplastic; non-neoplastic; oral mucosal lesions; reactive

## INTRODUCTION

Any abnormal alteration in color, surface, swelling, or loss of integrity of the oral mucosal surface is referred as Oral mucosal lesion (OML).<sup>1-3</sup> OMLs includes benign and malignant lesions. Some cases of malignancy may mimic benign lesions which may lead to incorrect treatment.<sup>4</sup> The knowledge on the spectrum of oral mucosal lesion in a particular population may provide a guide to a better diagnosis.<sup>5</sup> The literature review depicts, there are few studies on the prevalence of oral mucosal lesion in Nepal.<sup>6-8</sup> Bajracharya et al in their study, found that benign as well as the non-neoplastic lesions were more prevalent and among malignancies, Oral Squamous Cell Carcinoma (OSCC) were seen as the predominant malignancy.<sup>6</sup> Review of literature depicts no studies such studies were conducted in our province. So, this study was conducted to assess the pattern of distribution of OMLs in a tertiary level hospital in Pokhara.

## METHODS

A retrospective cross-sectional hospital-based study was conducted among the archival records of 4 years duration in Department of Pathology, Gandaki Medical College, Nepal. The ethical approval from the institutional review committee of Gandaki Medical College was obtained. The archival records in the department of Pathology from January 2017 to December 2020 were retrieved and reviewed. The consecutive samples with all the histopathologically diagnosed cases of oral mucosal lesions were selected. The parameters included in the study were age, gender, site and the histopathological diagnosis of the cases. The data, for which all clinical information, was not present and any repeat biopsies, were excluded from the study. The oral mucosal lesions were grouped into 3 main categories: non-neoplastic oral lesions (reactive hyperplastic oral lesions, Cystic Lesions

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and Inflammatory lesions), Neoplastic oral lesions (Benign Neoplastic lesions and malignant oral lesions) and Potentially Malignant Oral Lesions (PMOLs).<sup>4,6,9</sup> The data collected was entered in SPSS 20 (IBM Corporation) software and analysed using descriptive statistics.

**RESULTS**

Oral mucosal lesions (OMLs) included 3.7% (180 out of total 4895) of cases diagnosed histopathologically, in Department of Pathology in the assessed period of time. Table 1 showed the age, gender and category wise distribution of OMLs. Among 180 cases, 101 cases (56.1%) were seen in females and 79 cases (43.9%) in males. Most of the cases, 31 cases (60%), in this group

were diagnosed as reactive hyperplastic oral lesions. Most of the cases, 75 cases (41.7%) were diagnosed in more than 45 years old patients. Most of the cases, 22 cases (88%), in this age group were diagnosed as neoplastic malignant lesions. The non-neoplastic oral lesions (106 cases of non-neoplastic oral lesions/58.9%) were frequently diagnosed OMLs followed by neoplastic oral lesions (52 cases of neoplastic oral lesions/28.9%). Among non-neoplastic oral lesions, reactive hyperplastic oral lesions were most common (50 cases of reactive hyperplastic oral lesions/27.8%). Among neoplastic oral lesions, benign neoplasm was more frequent diagnosed cases (27 cases of benign neoplasm/15%) in comparison to malignant neoplasm (25 cases of malignant neoplasm/13.9%).

**Table 1. Age, Gender and Category wise distribution of Oral Mucosal lesions.**

Age groups	Category of Oral Mucosal Lesions						Total N/%
	Non-neoplastic oral lesions			Neoplastic Oral lesions		Potentially Malignant Oral Lesions n/%	
	Reactive hyperplastic oral lesions n/%	Inflammatory Lesions n/%	Cystic Lesions n/%	Neoplastic Benign Lesions n/%	Neoplastic Malignant Lesions n/%		
5-25	16/32	3/12	24/77.4	8/29.6	0	1/4.5	52/28.8
26-45	16/32	9/36	6/19.4	10/37	3/12	9/40.9	53/29.5
More than 45	18/36	13/52	1/3.2	9/33.4	22/88	12/54.6	75/41.7
Sex							
Male	19/38	12/48	14/45.2	8/29.6	16/64	10/45.5	79/43.9
Female	31/62	13/52	17/54.8	19/70.4	9/36	12/54.5	101/56.1
Total	50/27.8	25/13.9	31/17.2	27/15	25/13.9	22/12.2	180
			106/58.9		52/28.9		

Note: n = frequency, N= Total, frequency, % = Percentage

**Table 2. Regional distribution of Oral mucosal lesions.**

Site	Reactive hyperplastic oral lesions n/%	Inflammatory Lesions n/%	Cystic Lesions n/%	Neoplastic Benign Lesions n/%	Neoplastic Malignant Lesions n/%	Potentially Malignant Oral lesions n/%	Total N/%
gingiva	18/36	4/16	0	2/7.4	3/12	2/9.1	29/16.1
tongue	8/16	6/24	6/19.4	12/44.4	10/40	3/13.6	45/25
lip	3/6	2/8	18/58.1	3/11.1	1/4	1/4.5	28/15.6
Buccal mucosa	15/30	6/24	1/3.2	4/14.8	4/16	11/50	41/22.8
Palate	2/4	4/16	0	3/11.1	1/4	3/13.6	13/7.2
RMT	1/2	0	0	1/3.7	1/4	1/4.5	4/2.2
Floor of the mouth	1/2	3/12	5/16.1	0	0	1/4.5	10/5.6
vestibule	2/4	0	1/3.2	1/3.7	0	0	4/2.2
Angle of mouth	0	0	0	1/3.7	0	0	1/0.6
Gingivo-alveolar		0	0		5/20	0	5/2.8
Total	50/27.8	25/13.9	31/17.2	27/15	25/13.9	22/12.2	180

Note: n = frequency, N= Total, frequency, % = Percentage, RMT= Retromolar trigone

Table 2 showed the regional distribution of OMLs of each category. Tongue (45 cases/25%) was seen to be the most frequently affected site. Neoplastic lesions (Benign neoplasm: 12 cases (44.4%); Malignant lesions; 10 cases (40%) frequently affected the tongue. Reactive hyperplastic oral lesions frequently affected gingiva (18 cases /36%) followed by buccal mucosa (15 cases/30%).

Table 3 showed the spectrum of neoplastic benign and malignant neoplasm seen in this study. Among the benign neoplastic lesions, squamous papilloma (9 cases/33%) and among malignancies, OSCC (21cases/84%) was the most frequently diagnosed lesion.

Table 4 shows distribution of non-neoplastic tumor like reactive lesion and potentially malignant oral lesions. Among the non-neoplastic tumor like reactive lesions, pyogenic granuloma was most frequently diagnosed lesions (26 cases/ 52%) followed by irritational fibroma (20 cases /40%). Among the PMOLs, Leukoplakia (13 cases/59%) was the most commonly diagnosed PMOL.

Table 5 shows distribution of cystic and inflammatory lesion/miscellaneous lesion. Among cystic mucosal lesions, mucocele (24/ 77.4%) was the most frequently diagnosed lesion.

**Table 3. Distribution of neoplastic benign and malignant neoplasm.**

Neoplastic Benign Lesions	n/%	Total
Squamous papilloma	9/ 33.3	27/15
Lymphangioma	2/ 7.4	
Cavernous hemangioma	2/7.4	
Capillary hemangioma	6/22.2	
Neurofibroma	3/11.1	
Verruca wart, focal epithelial hyperplasia, compound nevus, pleomorphic adenoma, Benign Fibrous Histiocytosis	1/3.7% each	25/13.9
Neoplastic- Malignant lesion	n/%	
WDOSCC	15 /60	
MDOSCC	5/20	
PDOSCC	1/4	
Verrucous Carcinoma	3	3
Adenoid Cystic Carcinoma	1	

Note: n = frequency, N= Total frequency, % = Percentage, WDOSCC=Well differentiated Oral squamous cell carcinoma, MDOSCC= Moderately differentiated Oral Squamous Cell Carcinoma PDOSCC=Poorly differentiated Oral Squamous Cell Carcinoma

**Table 4. Distribution of non-neoplastic tumor like reactive lesion and potentially malignant oral lesions.**

Potentially malignant oral lesion	Frequency (n)/ Percentage (%)	Total Frequency/ Percentage
Leukoplakia without dysplasia	5/22.7	13/59
Leukoplakia with mild dysplasia	5/22.7	
Leukoplakia with moderate dysplasia	1/4.5	
Leukoplakia with high grade dysplasia	1/ 4.5	
Proliferative verrucous leukoplakia with mild dysplasia	1/ 4.5	
Verrucous hyperplasia	3/13.6	22/12.2
Oral lichen planus	6/27.3	
Reactive hyperplastic oral lesions	Frequency (n)/ percentage (%)	Total
Pyogenic granuloma	26/ 52	50/27.8
Irritational fibroma	20 /40	
Peripheral giant cell granuloma, Peripheral ossifying fibroma	1 each /2% each	
Nodular fasciitis	1/ 2	
Epulis fissuratum	1/2	

**Table 5. Distribution of cystic and inflammatory lesion/miscellaneous.**

Non -neoplastic Inflammatory lesions and others	Frequency (n)/Percent (%)	Total/ Percent
Chronic inflammatory lesion	4/16	50/27.8
Nonspecific ulcer with pseudoepitheliomatous hyperplasia	2/8	
Lichenoid reaction	3 /12	
Chronic sialadenitis	5/20	
Idiopathic gingival enlargement, Morticatio-linguarum, candidiasis, amyloidosis, Inflammatory gingival enlargement, Granulation tissue, Actinomycotic ulcer, Tuberculous ulcer, Black hairy tongue, sialolithiasis	1 each /4% each	
Cystic mucosal lesions	Frequency/ percentage	Total/ percent
Mucocele	24/ 77.4	31/17.2
Ranula	3/ 9.7	
Mucous retention cyst	3/9.7	
Nasolabial cyst	1/ 3.2	

## DISCUSSIONS

In our study, more biopsies of OMLs were taken in females (101 cases/56.1%) than males (79 cases/43.9%), which was similar to findings by Toun et al, Acharya et al, Modi et al, Alshayeb et al and Kamble et al.<sup>1,7,9-11</sup> In contrast, more biopsies of OMLs have been found to be taken in males than females in studies by Agrawal et al, Bajrachaya et al, Poudel et al, Gambhir et al and Mehrotra et al.<sup>4,6,8,12,13</sup> However, in contrast to these findings, Fierro-Garibay C et al found no significant differences between males (49.2%) and females (50.8%).<sup>14</sup> In our study, most of the cases in females were diagnosed as reactive hyperplastic oral lesions (RHOLs) (31cases/30.7%). Consistent to our findings, there is greater tendency of occurrence of certain category of non-neoplastic oral lesions especially RHOLs in females.<sup>15</sup> Serum levels of female sex hormones may increase the tissue response to mechanical irritation.<sup>15,16</sup> Neoplastic lesion was also seen more common in female (19/70.4%) which is in contrast to study by Agrawal et al and Modi et al.<sup>4,9</sup> Our finding of female predominance could be due to the increasing prevalence of deleterious oral habits among females than males in our part of world.<sup>9</sup> However, similar to findings of Agrawal et al, Modi et al and Mathew Al et al, malignant neoplastic lesions (16cases/64%) was more common among males in our study.<sup>4,9,17</sup> This finding is attributable to oral habits such as tobacco especially in males in this region.<sup>4,10</sup>

Common to previous finding, a higher proportion (75cases/41.7%) of oral mucosal lesions biopsies were from more than 45 years old.<sup>4,15</sup> Most of the cases in this age group were diagnosed as neoplastic malignant lesions (22cases/88%) as seen in previous findings.<sup>4,9</sup> This finding can be related to accumulation of different harmful habits, removable dentures and iatrogenic factors which are more typical of the elderly population and hormone disturbances and severe systemic diseases occurring more often in perimenopausal women after the age of 45.<sup>1,15,18</sup> The higher frequency of oral lesions in the elder population is attributable to the physiological changes following the aging process, reduction in the cell repair ability and higher risk of genetic mutations associated with advanced age.<sup>1,10,15</sup> This findings emphasizes the importance of routine examination of the oral mucosa, particularly in adults and older individuals.<sup>15,18</sup> This finding was in contrast to finding of Poudel et al in which the common age group was 21-30 years.<sup>8</sup>

In our study, OMLs involved several mucosal sites which was consistent to previous findings. Therefore, a thorough, systematic approach to the intraoral

examination is important.<sup>18</sup>

The classification of lesions according to their clinical appearance plays an important aid in diagnosing any lesions. The knowledge on the distribution of disease in a particular population may provide a guide to a better diagnosis.<sup>19</sup> The dental practitioner should have information on the pattern of the distribution of oral mucosal lesions in a particular population as it would assist in generating the differential diagnosis.<sup>18</sup> In contrast to previous findings by Bajracharya et al, Modi et al, the non-neoplastic lesions (106 cases/58.9%) were the most frequently diagnosed OMLs followed by neoplastic lesions (52cases/28.9%) in our study.<sup>6,9</sup> Among non-neoplastic lesions (106cases/58.9%), RHOLs (50 cases/47.2%) were the most common oral lesions as stated by previous studies. Previous studies stated that the majority of lesions occurring in oral cavity are reactive in nature which is attributed to the regular exposure of oral mucosa to various physical, chemical and microbial insults.<sup>16,19,20</sup> The reactive hyperplastic oral lesion (RHOL) included pyogenic granuloma (26cases/52%), irritational fibroma (20cases/40%), peripheral ossifying fibroma (1case/2%), peripheral giant cell (1case/2%), nodular fasciitis (1case/2%) and epulis fissuratum (1case/2%). Consistent to previous finding, Pyogenic granuloma (13.5%) was the commonest RHOL.<sup>7,9,16</sup> In contrast to our findings, Babu et al and Vidyanath et al, found traumatic fibroma as the commonest RHOL.<sup>20,21</sup> RHOLs most commonly affected gingiva in our study which was seen previous study.<sup>21</sup> In previous study, RHOLs were located in the gingivae while other intraoral sites such as the cheek, tongue, palate and floor of the mouth were less commonly affected.<sup>21</sup> These lesions presents as painless pedunculated or sessile masses with non-ulcerated smooth to ulcerated surface and the color of overlying mucosa vary from light pink to red and can vary from few millimeters to several centimeters.<sup>20,21</sup> The similarity in the clinical appearance of these lesions to that of neoplastic proliferations may pose a challenge in differential diagnosis.<sup>20,21</sup> In our study, OSCC was found to be the most common neoplastic malignant oral lesion, a finding similar to previous studies.<sup>6,9</sup> The most common site of occurrence of neoplastic oral lesion was seen in tongue which was in agreement to similar study by Mathew et al and Mirbod et al.<sup>17,22</sup> In the study by Mathew et al, the main site of involvement by oral malignancy was the buccal mucosa and the lateral border of the tongue.<sup>17</sup> In a study by Mirbod et al, OSCC commonly involved the posterior ventrolateral border of the tongue.<sup>22</sup>

In our study, Squamous papilloma was seen to be the

most common benign lesions which was in contrast to finding by Bajracharya et al. Bajracharya et al found oral fibroma as most common benign neoplasm.<sup>6</sup>

The limitation of this study is its retrospective nature. The information and classification bias might exist due to retrospective nature of this study and the results cannot be generalized to the general population. For the estimation of representative distribution of oral mucosal lesions in our part of world, we should evaluate the records from various institutes.

## CONCLUSIONS

Oral lesions were mostly non-neoplastic and reactive hyperplasia being the most commonest presentation. The results of the present study provide important information about the pattern of distribution of oral mucosal lesions among patients seeking dental care in our institute. This data may serve for future studies with the goal of finding the prevalence of oral mucosal lesions in the general population.

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