



## PREDOMINANCE OF WHITE AND RED LESIONS IN WESTERN UTTAR PRADESH – SHORT STUDY

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### ABSTRACT

**Background:** Oral lesions are red, white or mixed red/white that occur on mucous membrane of oral cavity. The most common oral lesions are leukoplakia, tori, inflammatory lesions, ulcers, candidiasis, lichen planus. The main cause of these lesions is habit like smoking, tobacco chewing, alcohol, or some injury. **Aim:** The aim of the study is to evaluate predominance of white and red lesions in modinagar population. **Design:** A total number of 943 subjects from various villages of western Uttar Pradesh who were attended the free dental checkup camp with smoking and/or chewing habits aged 15 years and over were included in the study through random selection. **Result:** In our study white lesions shows higher rate of prevalence than red lesions.

**KEYWORDS :** Mucosal lesions, Tobacco, tobacco pouch keratosis, oral Submucous fibrosis, smoker's palate.

### INTRODUCTION :

Oral white lesions might be quite challenging to diagnose. These lesions represent a wide spectrum of lesions with different etiology and various prognoses. The diagnosis of white lesions varies from benign reactive lesions to more serious dysplastic and carcinomatous lesions. While there are some classic features that help distinguish these lesions, similar features may give rise to some complications in diagnosis.<sup>1</sup>

Oral lesions can be classified into four groups comprising of ulcerations, pigmentations, exophytic lesions, and red-white lesions.<sup>2</sup> Although white lesions constitute only 5% of oral pathoses, some of these lesions such as leukoplakia, lichen planus, and proliferative verrucous leukoplakia have malignant potential as high as 0.5–100%.<sup>3</sup> Therefore, white lesions mandate an appropriate clinical diagnostic approach to exclude the possibility of malignancy.

Oral white lesions can be caused by a thickened keratotic layer or an accumulation of non-keratotic material.<sup>4</sup> High risk habits such as alcohol and tobacco consumption have been recognized as defined causes for oral precancerous or cancerous lesions. Tobacco use is one of the most important risk factors for the development of oral mucosal lesions including oral pre-cancer and cancer. It is well established that oral SCC occurs as a result of several molecular and biochemical cellular alterations and changes in the underlying fibrovascular stroma including neovascularization. In conjunction with cellular alterations, clinical changes in the affected epithelial tissues are observed. The clinical significance of oral precancerous lesions lies in its association with malignant transformation into OSCC. The risk of malignant transformation has been reported to be between 6.6% and 36.4%, although a recent analysis indicated a rate of 12.1%.<sup>5</sup>

A broad range of OML has received interest for epidemiologic studies worldwide, but few studies have documented the entire range of possible lesions. Although in 1980, the World Health Organization (WHO)'s "Guide to epidemiology and diagnosis of oral mucosal disease and conditions"<sup>6</sup> provided a systemic approach of data collection, the epidemiologic literature on oral mucosal diseases is somewhat scanty in this

country. Cancer has always been a challenge to medical science with the continuing global increase of cases. Cases of oral cancer have increased considerably with almost 263,900 new cases and 128,000 deaths reported worldwide in 2006.<sup>8</sup> Shankaranarayanan *et al.*<sup>9</sup> revealed that India has one of the highest rates of oral cancer varying from over 20 per 100,000 people as compared with 10 per 100,000 in USA and less than 2 per 100,000 in the Middle East. Oral cancer accounts for almost 30% of all cancers in India.

Early detection of these premalignant lesions/conditions of the oral cavity is very important for the successful treatment and better prognosis of the disease. Hence the need for this study to determine the prevalence of Oral mucosal lesion in the adult patients in western u.p region. The aim of the study was to provide a systemic standard approach, using the WHO guidelines for the collection and report of data for OML and other conditions, and assign different codes of treatment.

### MATERIAL AND METHOD:

An epidemiological survey was conducted and total number of 943 subjects from various villages of western Uttar Pradesh who were attended the free dental checkup camp with smoking and/or chewing habits aged 15 years and over were included in the study through random selection. An epidemiological survey was conducted and total number of 1143 subjects from various villages of western Uttar Pradesh who were attended the free dental checkup camp with smoking and/or chewing habits aged 15 years and over were included in the study through random selection.

A screening examination including intraoral clinical examination was performed in the out patient department, D.J College of Dental Sciences & Research, Modinagar using artificial light, dental mirror, dental explorer, gauze, and other materials. Cotton swabs were used to remove debris and to see whether white lesion can be wiped off.

Personal data including age, gender, chief complaint, and social habits were recorded. Details of the habits such as duration in years, frequency, site of placement of quid in the oral cavity, and alcohol consumption were recorded.

Individuals were divided into habits (like tobacco chewing in the form of gutkha, paan, supari etc., smoking) and without

habits. The clinical diagnosis of oral mucosal lesions/ conditions such as leukoplakia, oral submucous fibrosis, lichen planus, smoker's palate, and other lesions were based on the pertinent WHO criteria.

## RESULT

Table shows the predominance of various white and red lesions of the oral cavity. The frequency of leukoplakia was found in 90 (9.5%) of the total population, Oral Submucous Fibrosis in 27 (2.9%), lichen planus in 15 (1.6%), tobacco pouch keratosis in 109 (11.6%), Ulcers in 24 (2.5%) and smokers palate in 62 (6.6%) of the total population.

This shows a higher prevalence of tobacco pouch keratosis i.e. 11.6% among all other lesions.

	Frequency	Mean	Std. Deviation	Std. Error Mean
Leukoplakia	90	1.90	.194	.010
OSMF	27	1.97	.167	.005
Lichen planus	15	1.98	.125	.004
Tobacco pouch keratosis	109	1.88	.320	.010
Ulcer	24	1.97	.158	.005
Smoker's palate	62	1.93	.248	.008

## DISCUSSION

Oral mucosal lesions could be due to infection (bacterial, viral, fungal), local trauma and or irritation (traumatic keratosis, chemical burns), systemic disease (metabolic or immunological), or related to lifestyle factors such as the usage of tobacco, areca nut, betel quid, or alcohol. Oral lesions can lead to interference of daily activities due to discomfort or pain that interferes with mastication, swallowing, and speech, producing additional symptoms such as halitosis, xerostomia, or oral dysesthesia, which hampers an individual's daily social activities.<sup>5</sup>

The most common precancerous lesions present clinically as white, red or a mix of white and red mucosal changes. These clinical lesions are known as leukoplakia or erythroplakia. here are other pathological conditions that are considered precancerous including oral lichen planus and oral submucous fibrosis.<sup>6</sup>

Oral leukoplakia (OL) is the most frequent potentially malignant disorder of oral mucosa. Although OL is mentioned in clinical reviews since 1969<sup>10</sup>, it was first defined by World Health Organization in 1978<sup>11</sup> as a white patch or plaque which cannot otherwise be characterized clinically or pathologically as any other disease. Since then until now, the meaning of oral leukoplakia is not very much changed. In 1994<sup>12</sup>, after an international symposium held in Uppsala, Sweden in the definition, was added that oral leukoplakia is not associated with any physical or chemical cause, excepting smoking and it can become cancer. In 2007 it was decided that the name of leukoplakia should be limited only to a clinical diagnosis defined by exclusion of other white lesions such as oral lichen planus, white sponge nevus, nicotine stomatitis, leukoedema etc<sup>13</sup>. In 2012 van der Waal<sup>14</sup> proposed a new definition which seems more oportune as it includes the histological confirmation "A predominantly white lesion or plaque of questionable behavior having excluded, clinically and histopathologically, any other definable white disease or disorder"

Oral Submucous fibrosis (OSMF) is a chronic disease of oral mucosa characterized by inflammation and progressive fibrosis of lamina propria and deeper connective tissues, followed by stiffening of an otherwise yielding mucosa resulting in difficulty in opening the mouth.<sup>15,16</sup> OSMF is a common problem in India. The most common symptom is progressive trismus i.e. inability to open the mouth which is

due to accumulation of inelastic fibrous tissue in the juxta-epithelial region of the oral mucosa. Progressive trismus in turn impairs mastication and results in poor oral hygiene. The epithelium overlying the fibrous condensation becomes atrophic in 90% of cases and is the site of malignant transformation in 4.5% of patients.<sup>17</sup>

Lichen planus derives its name "lichen" as it looked like lichens growing on the rock and planus is for flat.<sup>18-20</sup> LP may involve various mucosal surfaces either independently or concurrently (oral, skin, and oral and skin lesions). Oral form may precede or accompany the skin lesions or it may be the only manifestation of the disease.<sup>20</sup> Prevalence of skin LP in general population is 0.9-1.2% and prevalence of oral LP is reported between 0.1% and 2.2%.<sup>20</sup> In our present study, prevalence of skin LP was 0.06% and oral LP 0.4%.

Tobacco pouch keratosis or smokeless tobacco-induced keratosis is the development of a white mucosal lesion in the area of tobacco contact. The lesion develops on habitual chewing or snuff dipping tobacco.

Smokeless tobacco keratosis is caused by constant frictional irritation of smokeless tobacco against the oral mucosa resulting in keratosis.<sup>21</sup> The formation rate depends on the frequency of habit, dose, and even the brand used.

Smokeless tobacco keratosis presents in 15% of chewing tobacco users and 60% of snuff users. In an epidemiological study by Rimal *et al.*, smokeless tobacco keratosis was the most prevalent pre-malignant disorder found in 50.4% of their analyzed population.<sup>22</sup>

The prevalence of oral lesions in population has been documented in many parts of the world like Argentina<sup>6</sup>, USA, Israel and Cambodia, mainly based on clinical evaluation of the lesions.<sup>23-25</sup> In contrast, Correa *et al* and Dehler *et al* conducted prevalence studies based on the clinic opathological correlation, evaluating the biopsies of the observed lesions.<sup>26,27</sup>

The prevalence of these lesions in general population has been reported 9.7% in Malaysia, 15.5% in Turkey, 25% in Italy 4 and 61.6% in Slovenia.<sup>28-30</sup> These lesions have been found in 15% of Saudi Arabian and 41.2% of Indian dental patients.<sup>31,32</sup> Potentially malignant disorder of oral cavity may turn into oral squamous cell carcinoma, that is, the most common malignancy of oral epithelium. There are substantial evidences that tobacco (either in smoked form or smokeless), alcohol, and areca nut and their related products cause malignancy of oral epithelium in most of the cases. Hence, it is expected that potentially malignant disorder of oral cavity may also be caused by these factors.<sup>33</sup>

In our study data shows the prevalence of various white and red lesions of the oral cavity. The frequency of leukoplakia was found in 90 (9.5%) of the total population, Oral Submucous Fibrosis in 27 (2.9%), lichen planus in 15 (1.6%), tobacco pouch keratosis in 109 (11.6%), Ulcers in 24 (2.5%) and smokers palate in 62 (6.6%) of the total population. This shows a higher prevalence of tobacco pouch keratosis i.e. 11.6% among all other lesions.

In a study conducted by Bhatnagar P *et al* prevalence of Leukoplakia 2.83%, Lichen Planus 0.8%, OSMF 1.97% and recurrent aphthous stomatitis 1.53% was found.<sup>34</sup> In another study conducted by Schepmann *et al* leukoplakia shows apredominance of 0.6%.<sup>35</sup>

6.3% & 2.7% cases of OSMF was found in another study conducted by nitin kumar % Srivastava R.<sup>36,37</sup> Many other Author reported variations in prevalence of oral lichen planus ranging from 0.64 by PM Omal, 1.3% in 1996 to 12.8% in 2013

by Yi-TzuChen and 1.27% by Bernard E.<sup>38-40.</sup>

Another study shows In the total sample of 76 lesions, 28 (36.8%) were homogenous leukoplakia, 9 (11.8%) were speckled leukoplakia, one (1.3%) was erythroplakia, 9 (11.8%) were smoker's palate and 29 (38.1%) were smokeless tobacco keratosis.<sup>41</sup> Hence, our study shows prevalence of oral mucosal lesions in varying numbers but that is in accordance with many other studies. Many studies has shown presence of mucosal lesion in association with tobacco habits so in order to prevent these lesion we need to focus more on the factors responsible and patient motivation.

## CONCLUSION:

In conclusion, This wide variation in prevalence of oral mucosal lesions depend on different factors like environmental factors, habits like smoking and tobacco chewing etc. so we as oral pathologist need to focus on the factors that are responsible for these lesions to better guide the patients regarding these and to stop habits so that we can prevent oral mucosal lesions and their malignant transformations.

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