

Prevalence of Oral Submucous Fibrosis among Tobacco Chewers in the Population of Patna, Bihar: A Cross-sectional Study

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Abstract

Background: oral submucous fibrosis (OSMF) is defined as an “insidious, chronic disease affecting any part of oral cavity, and sometimes the pharynx”. The pathogenesis of OSMF is believed to be multifactorial. Factors that trigger the disease include consumption of chewing areca nut, chillies, nutritional deficiencies, and immunologic processes. The current study was done to study the prevalence of OSMF among tobacco users Population of Patna, Bihar. **Materials and Methods:** A total of 1280 patients reporting to the Department of Oral Medicine and Radiology at Patna Dental College and Hospital, Patna consisting of 984 males and 296 females were involved in the study that patients were divided into two groups. The first group was control group with patients not having tobacco chewing habit consisting of 640 patients. Another group included tobacco with same no of patients as that of control group. All patients were examined for presence of OSMF. **Results:** Prevalence of submucous fibrosis was found to be 75.0% among tobacco chewers. Males were more affected (70.0%) than the females. **Conclusion:** Tobacco chewing can be considered to be a concerned habit and necessary public health programs should be taken to eradicate this habit.

Keywords: Premalignant condition, Submucous fibrosis, Tobacco chewers.

INTRODUCTION

Oral submucous fibrosis (OSMF) was first described by Joshi in the literature as a peculiar blanching of the oral mucosa and fauces. In his study of 41 cases, he found that the characteristic symptom presented by all the patients was the inability to eat pungent foods. The early symptoms were stomatitis, glossitis, and appearance of vesicles in the mouth. There is varying degree of inability to open the mouth. The mucosa over the hard and soft palate was pale and blanched with occasional red spot on the palate.^[1]

According to Pindborg and Sirsat, OSMF is defined as an “insidious, chronic disease affecting any part of oral cavity, and sometimes the pharynx. Although occasionally preceded by and/or associated with vesicle formation, it is always associated with a juxtaepithelial inflammatory reaction followed by a fibroelastic change of the lamina propria, with epithelial atrophy leading to stiffness of the oral mucosa causing trismus and inability to eat.” They also described various prodromal symptoms like burning sensation in mouth experienced when the patient is eating spicy food, blisters, ulcerations or recurrent stomatitis, excessive salivation, dryness of mouth, and various later symptoms like difficulties

in mouth opening, inability to whistle or to blow out a candle and difficulty in swallowing. Clinical findings are vesicles in soft palate area, buccal mucosa lips which are painless, ruptures, and leave small superficial ulcerations. As disease progresses, oral mucosa become blanched, slightly opaque, white, and fibrous bands appear giving mucosa a marble like appearance. Various epithelial and connective tissue changes were also observed by them.^[2]

Paissat evaluated the Importance of OSMF with respect to debilitation and precancerous potential. Theories of etiology, pathogenesis, and clinical presentation of submucous fibrosis were described, along with management with modern surgical techniques. Etiology is unknown, but factors which predispose to the condition are chillies, vitamin B deficiency, protein deficiency, and betel nut chewing. Clinical presentation of disease was burning sensation in mouth, vesicle formation,

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ulceration, excessive salivation, defective gustatory sensation, and dryness of mouth with difficulty in mouth opening and swallowing. Various epithelial and connective tissue changes were observed on histopathological examination. Increased ESR, anemia, eosinophilia, and hyperglobulinemia were other laboratory findings. Management was surgical, corticosteroids, or conservative treatment. Without any form of treatment prognosis was poor but not usually life threatening.^[3]

OSMF affects both sexes. A predominance of women was observed in several studies.^[4] Most of the patients with this condition are in 20–40 years age group. The most frequently affected locations in OSMF are the buccal mucosa and the retromolar areas. It even involves the soft palate, palatal fauces, uvula, tongue, and labial mucosa. Occasional involvement of the pharynx and esophagus is seen.

The pathogenesis of OSMF is believed to be multifactorial. Factors that trigger the disease include consumption of chewing areca nut, chilies, nutritional deficiencies, and immunologic processes. The most important risk factor, however, is the chewing of betel quid and this has been supported by epidemiological, case control, animal experimental, and tissue culture studies as well. A multifactorial model for the pathogenesis of OSMF such as iron and nutritional deficiencies, chronic candidiasis, tobacco, lime, betel quid, genetic abnormalities, Herpes simplex virus, Human papilloma virus, and autoimmunity have been postulated and are known to have either have direct effect in causing OSMF or an indirect effect by mediating the immune system which is compromised in OSMF.^[5]

OSMF has a propensity for malignant transformation, with as high as a fourth of all cases demonstrate epithelial dysplasia at the time of biopsy. The association of betel quid chewing, OSMF, and oral squamous cell carcinoma (OSCC) is quite profound, especially in Taiwan and the Indian subcontinent, where up to 80% of oral OSCC is associated with this habit. Epidemiologic studies have shown that the rate of malignant transformation ranges from 3% to 19%. In a long-term follow-up study, the annual malignant transformation rate was approximately 0.5%.^[6]

Adequate management of a subject with an oral lesion begins with an accurate diagnosis. There are lesions which can be diagnosed on data gathered during the history and/or physical examination. However, there are others which need further confirmation by specialized procedures. Among the several methods available for diagnosing oral mucosal lesions, the histopathological examination of a biopsy of tissue of the suspected lesion is regarded as the most suitable method. Various studies to assess the distribution of oral mucosal lesions are helpful and valuable in estimating the prevalence of a disease in the population. This helps in identifying high risk sub-population and guidance in carrying out preventive and curative services. There have been less studies that inform about the prevalence of tobacco habits and associated oral changes in north India population. The purpose of this study

was to investigate the prevalence of OSMF in individuals having habit of smoking and chewing tobacco and to assess the relative risk of oral mucosal lesions resulting from these habits in north Indian population.

MATERIALS AND METHODS

A total of 1280 patients reporting to the Department of Oral Medicine and Radiology at Patna Dental College and Hospital, Patna consisting of 984 males and 296 females were involved in the study after obtaining their written informed consent. The study was conducted in compliance with the protocol; ethical approval was obtained from the ethical committee of the Patna dental college, Patna, Bihar (Ethical Approval Number-PDC/ETH/2022/04). The participants were categorized into two groups. The first group acted as control group with 640 patients including 492 males and 148 females who do not have the habit of tobacco consumption. The second group consisted of patients with tobacco use. The patients were between 14 and 66 years age group. The patients being included in tobacco user group consisted of patients with habit of chewing and smoking tobacco for more than 4 years. Only those patients were included who had habit with a frequency ≥ 4 times each day. All patients were examined for presence of OSMF. The diagnosis was made on the basis of proper history and clinical examination in accordance with the WHO acknowledged colored atlas and criteria for OSMF. The results achieved were analyzed with the help of the Statistical Package for the Social Services 18.0 version.

The control group consisted of 492 males and 148 females. About 2.76% cases of oral mucosal variant were detected in male patients (Table 1). Only 1.62% cases of OSMF were noticed in female patients (Table 2). It was found that maximum cases of OSMF were found in age group of 36–45 years contributing to 38.21% cases. It was then followed by 46–55 years of age having 18.69% cases. It was reported

Table 1: Oral submucous fibrosis in males in control group

Serial no	Age group	Oral submucous fibrosis (%)
1	14–35	2.76
2	36–45	00
3	46–55	00
4	56–66	00
Total	492	2.76

Table 2: Oral submucous fibrosis in females in control group

Serial no	Age group	Oral submucous fibrosis (%)
1	14–35	0.81
2	36–45	00
3	46–55	00
4	56–66	0.81
Total	148	1.62

that among patients belonging to 14–35 years age group 10.6% cases were reported. However, minimum no of cases (8.13%) was noticed among the patients belonging to the age group of 56–66 years (Table 3). In female tobacco chewers subjects 43.23% cases of OSMF were noticed (Table 4).

DISCUSSION

Sinor *et al.* conducted a study in India and found male predominance in OSMF cases.^[7] In the present study, male predominance is also reported which can be attributed to easy accessibility and use of areca nut to male and its products more frequently than females.^[7]

Mehrotra conducted a study to evaluate the prevalence rates of oral mucosal lesions. Data were collected year wise with reference to age, sex, site involved, and histopathological findings. It showed that potentially malignant and malignant oral lesions were widespread in the patients visiting the hospital.^[8] Similarly, in a population-based case–control study in rural and urban Lucknow, it was found that patients who use pan masala were at higher risk of developing OSMF.

In the present study, the 1280 patients were in the age range of 14–66 years, with a peak incidence in 36–45 years. Hence, it can be concluded that the occurrence of OSMF is seen most commonly in age group 36–45 years. This observation was similar to study conducted by Nigam, who reported that the maximum number of OSMF cases were in the age group of 36–40 years.^[9] This could be due to increased social encounters and economic liberty that they get at this age in a rapidly developing nation like India. Therefore, during this age, they indulge in various chewing habits such as betel nut, gutkha, pan masala, smoking, and alcohol either to relieve stress, as a fashion or due to peer pressure.

Shah found the relationship between OSMF to various chewing and smoking habits. It was found that chewing of areca nut/quid or pan masala (a commercial preparation of

areca nuts, lime, catechu and undisclosed coloring, flavoring, and sweetening agents) was directly related to OSMF and frequency of chewing rather than the total duration of the habit was directly correlated to OSMF.^[10] Ali *et al.* evaluated the effect of frequency, duration, and type of areca nut products on the incidence and severity of OSMF. It showed that the duration and frequency of its use and type of areca nut product have effect on the incidence and severity of OSMF. Gutkha and pan masala have more deleterious and faster effects on oral mucosa. The gutkha-chewing habit along with the other habits does not have any significant effect on the rate of occurrence and incidence and severity of the OSMF.^[11] The present study showed significant effect of duration and frequency of use of areca nut products on the incidence and severity of OSMF.

The conversion of premalignant to malignant condition varies from 3% to 19%. A recent study from India has reported that 25.77% OSF cases converted to OSCC which indicates the alarming malignant potential of OSMF.^[12]

The easy availability and promotions of these areca nut products, especially gutkha and pan masala in social places, have impacted general population in India which has led to the increased occurrence of OSMF, a premalignant condition. The high prevalence of OSMF requires significant awareness and management of these lesions among general population. Primary health-care professionals including dentists should be knowledgeable and familiar with the etiopathogenesis, clinical presentation, diagnosis, and management of these lesions.

CONCLUSION

The dentist should be especially equipped with knowledge to identify and separate precancerous condition like OSMF posing danger in the future and start to treat them with proper planning and prevention of tobacco use which, in recent years, has emerged as an important predisposing factor for such lesions. As well as more studies with greater sample size is the need of hour specially in Bihar to get a proper picture of ill effect of tobacco consumption.

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Table 3: Oral submucous fibrosis in males in tobacco users

Serial no	Age group	Oral submucous fibrosis (%)
1	14–35	10.56
2	36–45	38.21
3	46–55	18.69
4	56–66	8.13
Total	492	75.60

Table 4: Oral submucous fibrosis in females in tobacco users

Serial no	Age group	Oral submucous fibrosis (%)
1	14–35	16.21
2	36–45	27.02
3	46–55	00
4	56–66	00
Total	148	43.23

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