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Original Research

Oral Submucous Fibrosis: A clinico-histopathological comparative study in Gujarat

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ABSTRACT

Background: Oral submucous fibrosis (OSMF) is a well recognized potentially malignant condition of the oral cavity. Various factors have been implicated in the pathogenesis but there is strong evidence associating the disease with the habit of areca nut. There are very few reports to correlate the clinical stage to histopathological grading in OSMF. **Aim:** To correlate the clinical staging with histopathological grading in OSMF patients. **Materials and Methods:** The study was carried out on 40 patients of oral submucous fibrosis in the age range of 18 to 60 years. A detailed history of each patient was recorded along with clinical examination. Punch biopsy was performed for histopathological correlation. Clinical staging of the disease in terms of the ability to open one's mouth was correlated with histopathological grading. **Results:** Out of 40 patients of oral submucous fibrosis, 5(12.5%) had histopathologic grade I, 27(67.5%) had histopathologic grade II and 8(20%) had histopathologic grade III. From them 33 patients of clinical grade II, 5(15.15%) had histopathologic grade I, 24(72.72%) had histopathologic grade II and 4(12.12%) had histopathologic grade III. Out of 7 patients of clinical grade III, none had histopathologic grade I, 3(42.86%) had histopathologic grade II and 4(57.14%) had histopathologic grade III. **Conclusion:** The correlation of clinical grade with histopathological grade of oral submucous fibrosis was significant (P=0.02).

Key Words: Oral submucous fibrosis, areca nut, clinical staging, histopathological grading

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INTRODUCTION

Oral Submucous Fibrosis (OSMF) is a chronic, progressive, scarring disease that predominantly affects the people of South-East Asian origin. The onset of the disease is insidious & chronic in nature. The prodromal symptoms includes burning sensation in the mouth when consuming spicy food, appearance of blisters especially on the palate, ulcerations or recurrent generalized inflammation of the oral mucosa, excessive salivation, defective gustatory sensation and dryness of the mouth. As the disease progresses, the oral mucosa become blanched and slightly opaque and white fibrous bands appear. With progressing

fibrosis stiffening of certain areas of the mucosa occurs leading to difficulty in opening the mouth, inability to whistle or blow and difficult in swallowing. When the fibrosis involves the nasopharynx, the patient may experience referred pain to the ear and a nasal voice as one of the later signs in some patients^[1,2,3,4,5]

It has been reported that OSMF occurs mainly in persons who are habituated to chew areca nut or products containing arecanut along with other ingredients, in the recent years with the introduction of commercially available Gutkha and other areca nut products, the incidence of OSMF is increasing especially in the younger

generation.^[6] There is a paucity of studies, which correlates the clinical features to the various histopathological changes of OSMF. The present study had been undertaken to correlate the clinical staging of mouth opening with histopathological grading in OSMF patients.

MATERIALS AND METHODS

The study was carried out on 40 patients of oral submucous fibrosis who attended the Oral Diagnosis and Radiology department of Government Dental College and Hospital, Ahmedabad. All the patients had not received any kind of treatment for oral submucous fibrosis and none of them were suffering from any systemic diseases.

DIAGNOSTIC CRITERIA

O.S.M.F. was recognized solely on a clinical basis by following criteria.

1. Positive history of areca nut alone or in combination with tobacco chewing habit.
2. History of burning sensation of mouth on eating either normal / spicy food.
3. History of gradual restricted mouth opening.
4. Difficulty to protrude the tongue.
5. Clinically blanched oral mucosa.
6. Clinically palpable fibrous bands on the buccal mucosa and other areas of oral cavity.

After selecting the patient complete history of the patient, along with name, age, sex, and relevant medical history were recorded. The patient was examined under good light for better visibility. The intraoral examination was done with the help of mouth mirror and probe.

CLINICAL GRADING – OSMF cases were clinically categorized into three clinical stages (Kirankumar et al 2007)^[7] according to their ability to open the mouth as given below:

- Stage I - Mouth opening ≥ 45mm
- Stage II - Mouth opening 20-44mm
- Stage III - Mouth opening ≤ 2

RESULTS

Table I: shows correlation of Clinical grade of oral submucous fibrosis with age and sex.

Clinical Grade	Total	Sex		Age (Yrs)					
		M	F	15-20	21-25	26-30	31-35	36-40	>40
Grade I	–	–	–	–	–	–	–	–	–
Grade II	33	28 (84.85%)	5 (15.15%)	6(18.18%)	9(27.27%)	7(21.21%)	5 (15.15%)	3(9.09%)	3(9.09%)
Grade III	7	6(85.71%)	1(14.28%)	–	2(28.57%)	1(14.28%)	2(28.57%)	1(14.28%)	1(14.28%)
Total	40	34(85%)	6(15%)	6(15%)	11(27.5%)	8(20%)	7(17.5%)	4(10%)	4(10%)

METHOD OF TAKING BIOPSY

All patients were convinced for the punch biopsy. Local anesthesia (2% Lignocaine) was given at a considerable distance from the biopsy site. Biopsy was taken with 5 mm bored biopsy punch. The punch was rotated in clockwise direction and the mucosa was carefully gripped with artery forcep to cut with scissors from the base, care being taken not to crush the tissue.

This method was used because it is simple, causes less tissue destruction and causes less bleeding. It also maintains uniformity of all biopsies. The biopsy specimen was cleaned with a gauze piece to remove debris, clot, etc. it was then immediately put into 10% formalin for a minimum 24 hours for fixation. The tissues were then processed, embedded in paraffin wax and oriented in the mould to ensure its being cut in right plane. When wax blocks solidified; sections were cut at 5 to 6 micron thickness with a rotary microtome. The sections were then stained, with routine hematoxylin and eosin (H & E) to observe typical changes of tissues for evaluation of OSMF. The sections stained with H & E were studied under a binocular light microscope and the following histological details were recorded for the grading of lesion.

Epithelium: Type of Keratinization - Para / orthokeratosis
 Thickness - Atrophic / Hyperplastic
 Dysplasia - Absent/Mild / Moderate / Severe

Connective tissue: Collagen fiber - Diffuse / Bundles
 Hyalinization - partial / complete
 Inflammatory cells: Acute / Chronic; Focal / Diffuse;
 Juxtraepithelial / perivascular

The histopathological grading is given below:

- Grade I: Loose, thin and thick collagen fibers in the Connective tissue.
- Grade II: Loose or thick collagen fibers with partial hyalinization of C.T.
- Grade III: Complete hyalinization of Connective tissue.

Table: II shows correlation of clinical grade with histopathological grade of oral submucous fibrosis.

Clinical Grade	Total	Histopathologic Grade		
		Grade I	Grade II	Grade III
Grade I	—	—	—	—
Grade II	33	5 (15.15%)	24(72.72%)	4 (12.12%)
Grade III	7	—	3(42.86%)	4(57.14%)
Total	40	5(12.5%)	27(67.5%)	8(20%)

In the present study out of 40 patients, there were 34(85%) male and 6(15%) were female. They were in age range of 15 to more than 40 years, in whom 6(15%) patients were in age range of 15-20 years, 11(27.5%) patients were in age range of 21-25 years, 8(20%) patient was in age range of 26-30 years, 7(17.5%) patients were in age range of 31-35 years, 4(10%) patients were in age range of 36-40 years and 4(10%) patients were more than 40 years of age. From them 33 were in clinical grade II, 7 were in clinical grade III while none were in clinical grade I.

Out of 33 patients of OSF in clinical grade II, there were 28(84.85%) male and 5(15.15%) female. They were in age range of 15 to more than 40 years, in whom 6(18.18%) patients were in age range of 15-20 years, 9(27.27%) patients were in age range of 21-25 years, 7(21.21%) patients were in age range of 26-30 years, 5(15.15%) patients were in age range of 31-35 years, 3(9.09%) patients were in age range of 36-40 years and 3(9.09%) patients were more than 40 years of age.

Out of 7 patients of OSF in clinical grade II, there were 6(85.71%) male and 1(14.28%) female. They were in age range of 21 more than 40 years, in whom 2(28.57%) patients were in age range of 21-25 years, 1(14.28%) patient was in age range of 26-30 years, 2(28.57%) patients were in age range of 31-35 years, 1(14.28%) patient was in age range of 36-40 years and 1(14.28%) patient was more than 40 years of age.

These finding suggested that greater incidence of OSF among male young patients, in the age range of 21-35 years.

Out of 40 patients of oral submucous fibrosis, 5(12.5%) had histopathologic grade I, 27(67.5%) had histopathologic grade II and 8(20%) had histopathologic grade III.

From them 33 patients of clinical grade II, 5(15.15%) had histopathologic grade I, 24(72.72%) had histopathologic grade II and 4(12.12%) had histopathologic grade III.

Out of 7 patients of clinical grade III, none had histopathologic grade I, 3(42.86%) had histopathologic grade II and 4(57.14%) had histopathologic grade III.

These findings suggested that the correlation of clinical grade with histopathological grade of oral submucous fibrosis was significant (P=0.02).

DISCUSSION

Oral submucous fibrosis is a well recognized potentially malignant condition of the oral cavity. The disease is prevalent among the south Asian countries. Various factors

have been implicated in the pathogenesis but there is strong epidemiological evidence associating the disease with the habit of areca nut.

Out of 40 patients in the present study, 34 patients were males and 6 were females, however the available data regarding sex predilection is conflicting. The sex wise distribution, in the present study, is in correlation with findings of Shah and Sharma (1998) [8] and Hazarey et al (2007) [9], who also found greater incidence of OSF among males. However, reverse trend with more than half of the patients being females have also been reported by Pindborg et al (1964) [4] and Caniff et al (1986) [3]. The present study shows greater incidence among males only for the reason that Gutkha and mixed habits are more common among males than in females in India.

The age wise distribution shows greater incidence of OSF among young patients, in the age range of 21-35 years, although the youngest patients was 18 years and the oldest 60 years of age. These findings are in correlation with the studies by pindborg et al (1964) [4] and Shah and Sharma (1998) [8] who found greater number of patients in 20-40 and 21-30 years age group respectively while Caniff et al (1986) [3] reported greater incidence in 18-72 years age range. Increase in the chewing habit of areca nut and the use of various commercial products containing areca nut in young generation may explain the decrease in the age of OSF patients.

In the present study, we found those 24 (72.72%) patients were in clinical grade II had histopathological grade II and those 4 (57.14%) patients were in clinical grade III had histopathological grade III. We found that the association between clinical grading and histopathological grading was significant (P value 0.022). Kiran kumar et al (2007) studied the clinical and histopathological grading of 75 OSF patients. They found that 26(45.6%) patients were in clinical grade II had histopathological grade of II and one patient (37.7%) patients were in clinical stage III had histopathological grade III. They did not find any direct correlation between clinical stages and histopathological grading [7]. Biradar et al(2018) studied the clinical and histopathological grading of 50 patients. They found co relation of clinical and histopathological staging to be highly significant (p<0.001) [10].

CONCLUSION:

The correlation of clinical grade with histopathological grade of oral submucous fibrosis was significant. However,

in this study, the population included was not large. Hence further detailed large scale studies are required to achieve the control of the disease at the early stages and malignant transformation rates are reduced.

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