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### Oral submucous fibrosis: Clinical study

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#### Abstract

**Introduction:** Oral submucous fibrosis (OSF) is a high risk precancerous condition characterized by changes in the connective tissue fibers of the lamina propria and deeper parts leading to stiffness of the mucosa and restricted mouth opening. Patients with severe cases have distinct difficulties in chewing, swallowing and speaking. It predominantly occurs in Indians and other population of the Indian subcontinent with certain oral habits. It is now accepted that chewing areca is the most important aetiological factor for developing OSF.

**Results:** As the frequency and duration of areca nut chewing habit increases, the clinical staging also increases. As the duration of smoking increases, clinical staging also increases. The burning sensation (82%) and decreased mouth opening (81%) were the most common symptoms while the most common signs were trismus, blanching of mucosa and palpable fibrotic bands, each occurring in 100% of the cases. (64%) Anaemia, 28% presented with oral squamous cell carcinoma. There is no definitive correlation found in between functional staging & clinical staging. The close association between betel nut and oral sub mucous fibrosis, oral cancer indicate need for a preventive approach through health education and increased awareness among the public of the serious consequences of these habits especially in illiterate, labourer, rural and lower socioeconomic status groups of patients.

**Keywords:** Areca nut, oral submucous fibrosis, trismus, squamous cell carcinoma

#### Introduction

Oral submucous fibrosis (OSF) is a high risk precancerous condition characterized by changes in the connective tissue fibers of the lamina propria and deeper parts leading to stiffness of the mucosa and restricted mouth opening [1]. The exact etiology of OSMF is still obscure, though various etiologic factors are being mentioned such as genetic, autoimmune, nutritional and environmental, the areca nut chewing habits (most common) has been associated with OSMF [2]. In patients with submucous fibrosis, the oral epithelium becomes atrophic and thereby becomes more vulnerable to carcinogens [3]. The atrophic epithelium shows first an intercellular edema and later epithelial atypia associated with moderate epithelial hyperplasia [4]. From then on, carcinoma may develop any time. It is suggested that submucous fibrosis should be regarded as a condition that causes predisposition to the development of oral cancer [5]. Here we are discussing cases of oral submucous fibrosis showing malignant potential and development of oral squamous cell carcinoma.

#### Material and Methods

The present study was conducted on 100 randomly selected patients of OSMF irrespective of their age, sex, religion, occupation and socio-economic status; who reported to the Department of Oral Medicine & Radiology. A detailed history especially in reference to age, sex, residence, occupation, socioeconomic status, substances, signs and symptoms was obtained. All patients were examined for any systemic disease. A detailed habit history and duration of intake was done and noted on a specific pro forma after taking informed consent. All patients were subjected to biopsy and histopathological examination to confirm the diagnosis and prove the presence or absence of co-existing malignancy. Diagnosis was mainly based on history and clinical examination of patients and confirmed by histopathological examination. OSMF cases were clinically categorized in four clinical stages to their ability to open mouth as given below: – *Functional staging* (Chandramani More *et al* (2011) :

**M1:** Interincisal mouth opening up to or greater than 35 mm.

**M2:** Interincisal mouth opening between 25 and 35 mm.

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**M3:** Interincisal mouth opening between 15 and 25 mm.

**M4:** Interincisal mouth opening less than 15

**Clinical staging**

**Stage 1 (S1):** Stomatitis and/or blanching of oral mucosa.

**Stage 2 (S2):** Presence of palpable fibrous bands in buccal mucosa and/or oropharynx, with /without Stomatitis.

**Stage 3 (S3):** Presence of palpable fibrous bands in buccal mucosa and/or oropharynx, and in any other parts of oral cavity, with/ without Stomatitis.

**Stage 4 (S4) as follows**

Any one of the above stage along with other potentially malignant disorders, e.g. oral leukoplakia, oral erythroplakia, etc. Any one of the above stage along with oral carcinoma

**Exclusion criteria**

Aphthous ulcer Stomatitis and other diseases affecting to oral cavity.

Erythroplakia

Leukoplakia

Lichen planus

**Result and Discussion**

Although earlier there was a definitive female predilection as

reported by Pindborg *et al* but recently there is a paradigm shift in this aspect, our study also giving predominance of male over female in the ratio of 1.4:1. There was a statically significant difference (p value – 0.0199) in mean age of presentation of OSMF patients among the males and females, where males presented earlier with mean age of 35.01±1.54 years while females with mean age of 40.85±1.54. The mean age presentation of patients of OSMF with oral squamous cell carcinoma was 41.35±2.63 and 40.82±2.82 male and female respectively. C. Raina *et al* 4 (2005) has reported 80% cases literate while in our study it was 64% which were distributed as 72.88% and 51.22% among males and females respectively This may be because of increased awareness through mass media in literates. C. Raina *et al* 4 (2005) has reported 26% students, 22% farmer, 20% housewives, 12% clerk, 7% shopkeeper, 4% auto driver while in our study 24% laborers, 20% homemaker farmers, 23%, 15% self-employed, government employee including one patient doctor (10%), 4% housemaid, 3% drivers, and 1% student. and Maximum number of patient were residing in rural areas (63%) with rural: urban ratio of 1.7:1 and there was no significant difference in M:F in rural (1.42:1) and urban(1.46:1). Most of the patients were hard worker they used to chewing tobacco/paan masala as psychoactive and stimulant agent (specific areca alkaloid act as a competitive inhibitors of GABA receptors) while some gutkha users seek the products because of its carminative effect.

**Table 1:** Signs Vs Functional Grading

Gender/Signs	>35 mm IID	26-35mm IID	15-25mm IID	<15mm IID	Total
Staining of tooth/ Poor oral Hygiene	5	36	41	17	99
Mouth Opening	5	36	42	17	100
Vesiculation	0	0	0	0	0
Blanching	5	36	42	17	100
Melanoplakia	2	9	11	9	31
Palpable fibrotic band	2	11	9	11	33
Ulcer/growth	4	36	42	7	89
Ankyloglossia	2	35	41	7	85
Restricted soft palate movement	5	28	6	0	39
Atrpphic Uvula	5	36	42	17	100

**Table 2:** Symptoms and duration wise distribution

Symptoms	Duration <1 year%	Duration 1-5 years%	Duration >5 years%	Total Number of patients
Burning Sensation	50	25	7	82
Recurrent Ulceration	43	21	6	70
Restricted Mouth Opening	31	38	12	81
Excessive Salivation	12	6	3	21
Dryness in mouth	0	0	0	0
Change in voice	11	5	0	16
Hearing impairment	4	3	1	8
Restricted tongue movement	5	4	0	11
Taste Impairment	1	0	0	1
Loss of Appetite	14	0	0	14
Weight loss	NA	NA	NA	12
Referred Otagia	8	0	0	8

**Table 3:** Treatment with dose and duration

Grades	Drug Administered	Dose	Duration	Mode
Grade I	Antioxidant (Tab A to Z)	1 tablet once daily	10 weeks	Oral
Grade II	Iron Supplement (Tab Hamfer) Triamcinalone acetonide ointment	1 tablet once daily 0.1%	10 weeks 4 weeks (grade I) 8 weeks (grade II)	Oral Topical
Grade III	Injection hyaluronidase	1500 IU	Biweekly for 10 weeks	Intralesionally in combination
Grade IV	Injection dexamethasone Local Anaesthetic Antioxidant (Tab A to Z) Iron Supplement (Hamfer) Triamcinalone acetonide ointment	2ml 1ml 2% without adrenaline 2ml 1 tab once daily 1 tab once daily 0.1%	Weekly once for 4 weeks 10 weeks 10 weeks 4 weeks	Intralesionally separately Oral Topical

Maximum number of patient was belonging to lower class of socioeconomic status i.e. 59% with male to female ratio of 1.27:1. Followed by upper lower i.e. 23%, Minimum patients were found belonging to upper class of socioeconomic status i.e. 2%. There was no female of upper class in my study. This may be because areca nut preparations are cheap and widely available anywhere, even in rural local shops, rural & lower socioeconomic group of patients can afford easily. Betel nut was by far the most common etiological agent, taken either alone or in various combination.(89%). Maximum were Gutkha chewer either alone or in various combinations i.e. 77% with mean frequency  $7.22 \pm 0.45$  pouch /day and mean duration  $7.92 \pm 0.77$  years (N.T. Ameer *et al*- mean frequency -8.2, & mean duration 7.12 years). while in advanced clinical staging was mean duration 8.9 years and mean frequency 8.5 pouches /day. Total 29% patients were found to be dual substance users with various combinations. (Tobacco with lime and Gutkha i.e. 8%). Triple substance users (18%), Quadruple (8%). Maximum number of stage 2 patients were found to be single substance user (Gutkha 38%) and dual substance (Tobacco with lime + Gutkha 11%) while of stage 4b patients were found to be single substance (Gutkha 25%, Tobacco with lime 14%), Dual substance users (Gutkha+ smoking 7%), Quadruple substance users(7%). Advanced clinical staging was not found to have definitive correlation with multiple substance users. As the duration of smoking increases, clinical staging also increase.

The patients those smoke for more than 10 years, all were presented in stage 4b. Most common signs i.e. blanching of buccal mucosa, palpable fibrotic bands and restricted mouth opening were found in 100% cases followed by staining of teeth in 99% patients while in 1 patient teeth were absent. Restricted soft palate movement was found in 89% cases while 85% cases presented with atrophy of uvula. In 1 patient of stage I soft palate movement was found to be normal. While in 10 patients of stage 4 soft palate could not be visualized. 31% patients were having ulcerative growth while in 39% cases indirect laryngoscopy could not be possible. 40% cases of functional staging 1 presented ulcer/growth, of stage 2(25%), of stage 3(26%) and of stage 4 it was 52%. There is no definitive correlation found in between functional staging & clinical staging. The most common presenting complaint was burning sensation of mouth while taking meal (82%) and mostly presented within a duration of 1 year. Next most common presenting symptom was restricted mouth opening i.e. 81% cases and most of these presented within 1-5 years. Only 1 patient presented with alteration in taste sensation while no one had dryness of mouth. The patients those presented with excessive salivation, referred nostalgia and swelling in neck, cheek, jaw had malignant lesions on biopsy.

### Conclusion

The close association between betel nut and oral sub mucous fibrosis, oral cancer indicate need for a preventive approach through health education and increased awareness among the public. It was observed and statistically proven and concluded that combined therapy employing nutritional and iron supplements with intra lesional injection therapy using hyaluronidase and dexamethasone in addition to local anesthetic topical gel and topical application of triamcinolone acetonide 0.1% caused a marked improvement in patients sign and symptom evidenced by improvement in color of mucosa, decrease in blanching and decrease severity of burning sensation, increased mouth opening and tongue protrusion.

The limitation were long duration of treatment and difficult follow up of patients and high cost of injections.

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