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# A Clinical Study of Oral Submucous Fibrosis At Tertiary Care Centre in India


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| *** Dr. Rajveer Basu** | Resident, Dept. Of ENT, G.R.Medical College, Gwalior. * Corresponding Author |
| **Dr. Rajesh Kumar** | Resident, Dept. Of Pharmacology, G.R.Medical College, Gwalior. |
| **Dr. V. P. Narve** | Asso. Professor, Dept. Of ENT, G.R.Medical College, Gwalior. |



**ABSTRACT**

Oral submucous fibrosis is a potentially malignant and crippling condition characterized by progressive inability to open the mouth. The study was conducted on 100 patients who reported to ENT OPD, JA Group of Hospital & G. R. Medical College, Gwalior (M.P.). The peak incidence in 21 to 30 years of age with Male: Female ratio of 1.4:1. The mean age of presentation was 35.01¬±1.54 years (Males) & 40.85±1.54 (females). Majority of patients were Literate (64%), Hindu (87%), of rural area (63%) and of lower socioeconomic status (59%) and labourer (24%). Various preparations of Betel nut (89%) by far the most common etiological agent with Gutkha chewers (77%) with mean frequency 7.22±0.45 pouch /day & mean duration 7.92±0.77 years. 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, laborer, rural and lower socioeconomic status groups of patients.


**KEYWORDS** Areca nut, Oral submucous fibrosis, Trismus, Palpable fibrotic band, Squamous cell carcinoma.

**Introduction:**
Oral submucous fibrosis (OSMF) is a chronic fibrotic disease of the oral cavity and oropharynx characterized by fibroelastic transformation in the mucosa and an increased deposition of collagen in the juxtaepithelial and submucosal tissues resulting in fibrous scarring and limitation of 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. Most affected individuals report a burning sensation of the oral mucosa aggravated by spicy food. The presence of palpable fibrous bands is a requisite diagnostic criterion for this condition. However a more serious complication is the risk of developing oral malignancy which is as high as 3 - 7.6%. Paymaster first mentioned the precancerous nature of the disease.[3]

**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 Otorhinolaryngology and Head & Neck surgery and also those referred from other Departments of JAH, G. R. Medical college, Gwalior (M.P.). 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 ENT and Head and Neck examination was done and noted on a specific proforma after taking a 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.

*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**
Apthous ulcer
Stomatitis and other diseases affecting to oral cavity.
Scleroderma
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 Hindus : Muslims 91:9 while in our study 87% Hindus (M:F1.6:1),12%Muslims(M:F 1:2). It is nearly same, probably because of the population under my study is mainly constituted by Hindus, female preponderance in Muslims because of custom of paan/paan masala in Muslim's females.

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%selfemployed, 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 inhibiters of GABA receptors) while some gutkha users seek the products because of its carminative effect.

**Table 3: Symptoms With Duration Wise Distribution Of Patients**

| Symptoms | Duration <1 Year (%) | Duration 1-5 Years (%) | Duration >5 Year S(%) | Total No. Of Patient | N.T.Ameer et al-2012 (5) |
|---|---|---|---|---|---|
| Burning Sensation | 50 | 25 | 7 | 82 | 100 |
| Recurrent Ulceration | 43 | 21 | 6 | 70 | - |
| Restricted Mouth Opening | 31 | 38 | 12 | 81 | 100 |
| Excessive Salivation | 12 | 6 | 3 | 21 | - |
| Dryness In Mouth | 0 | 0 | 0 | 0 | 0 |
| Altered Pronunciation | 11 | 5 | 0 | 16 | 17 |
| Hearing Impairment | 4 | 3 | 1 | 8 | - |
| Restricted Tongue Movement | 5 | 4 | 0 | 11 | 11.54 |
| Taste Impairment | 1 | 0 | 0 | 1 | 12 |
| Loss Of Appetite | 14 | 0 | 0 | 14 | - |
| Weight Loss | NA | NA | NA | 12 | - |
| Swelling In The Jaw, Cheek & Neck | 14 | 0 | 0 | 14 | - |
| Referred Otalgia | 8 | 0 | 0 | 8 | 4 |
| Pain In Mouth | 23 | 5 | 1 | 29 | 10 |

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.

**Table 1: Habit Vs Clinical Staging**

| Habits | Stage 1 (%) | Stage 2 (%) | Stage 3 (%) | Stage 4a (%) | Stage 4b (%) | Total (%) | Male | Female |
|---|---|---|---|---|---|---|---|---|
| Tobacco With Lime +Paan +Betel Nut | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Tobacco With Lime + Gutkha | 0 | 7 | 0 | 0 | 1 | 8 | 2 | 6 |
| Gutkha + Alcohol | 0 | 3 | 0 | 0 | 1 | 4 | 4 | 0 |
| Gutkha Alone | 0 | 24 | 1 | 0 | 7 | 32 | 18 | 14 |
| Tobacco With Lime +Gutkha+Paan | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 |
| TobaccoWith Lime + Gutkha+ Paan+ Betel Nut | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Tobacco With Lime +Gutkha+Smoking | 0 | 2 | 1 | 0 | 1 | 4 | 2 | 2 |
| Tobacco With Lime +Gutkha+Smoking+Alcohol | 0 | 1 | 1 | 0 | 1 | 3 | 3 | 0 |
| Gutkha+ Smoking | 0 | 3 | 1 | 0 | 2 | 6 | 5 | 1 |
| Tobacco With Lime +Gutkha+Alcohol | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Gutkha+Betel Nut+Smoking+Alcohol | 0 | 0 | 1 | 0 | 2 | 3 | 3 | 0 |
| Tobacco With Lime+Smoking+Alcohol | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| Tobacco With Lime Alone | 0 | 4 | 1 | 0 | 4 | 9 | 4 | 5 |
| Gutkha+Smoking+Alcohol | 0 | 4 | 0 | 0 | 3 | 7 | 7 | 0 |
| Gutkha+Betel Nut+Alcohol | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 0 |
| Gutkha+Betel Nut | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| Tobacco With Lime +Gutkha+Betel Nut+Alcohol | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Betel Nut Alone | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| Paan+ Betel Nut | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Tobacco With Lime +Paan | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| Gutkha+Paan | 0 | 2 | 0 | 0 | 1 | 3 | 3 | 0 |
| Tobacco With Lime + Smoking | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Tobacco With Lime + Betel Nut | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 |
| Paan Alone | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 1 |
| Total | 0 | 64 | 8 | 0 | 28 | 100 | 59 | 41 |

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+_0.45 pouch /day and mean duration 7.92+_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 substace users with various combinations. (Tobacco with lime and Gutkha i.e. 8% ).Triple substance users (18% ), Quadruple(8%).

Maximum number of stage2 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 stage2(25%), of stage 3(26%) and of stage4 it was52%. There is no definitive correlation found in between functional staging & clinical staging.

**Table 2: Duration of smoking vs clinical staging**

| Years | Stage 1 | Stage 2 | Stage 3 | Stage 4a | Stage 4b |
|---|---|---|---|---|---|
| Up to 5 | 0 | 3 | 0 | 0 | 2 |
| 6– 10 | 0 | 8 | 2 | 0 | 2 |
| >10 | 0 | 0 | 0 | 0 | 6 |

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 otalgia and swelling in neck, cheek, jaw had malignant lesions on biopsy.

**Table 4: Signs vs Functional grading**

| Gender / Signs | >35mm (IID) | 26 -35 mm (IID) | 15 – 25 mm (IID) | <15mm (IID) | Total | N.T. Ameer et al- (5) |
|---|---|---|---|---|---|---|
| Staining Of Teeth/ poor oral hygiene | 5 | 36 | 41 | 17 | 99 | 69.3% |
| Mouth Opening | 5 | 36 | 42 | 17 | 100 | 100% |
| Vesiculation | 0 | 0 | 0 | 0 | 0 | - |
| Blanching | 5 | 36 | 42 | 17 | 100 | 100% |
| Melanoplakia | 0 | 2 | 3 | 0 | 5 | - |
| Palpable fibrotic Band | 5 | 36 | 42 | 17 | 100 | 100% |
| Ulcer/ Growth | 2 | 9 | 11 | 9 | 31 | -- |
| Ankyloglossia | 2 | 11 | 9 | 11 | 33 | 11.54% |
| Restricted Soft Palate Movement | 4 | 36 | 42 | 7 | 89 | -- |
| Atrophy Uvula | 2 | 35 | 41 | 7 | 85 | 76.92% |
| Idl Possible | 5 | 28 | 6 | 0 | 39 | -- |
| Total | 5 | 36 | 42 | 17 | 100 | 52 |

**Conclusion:**

The malady of OSMF is one of the most poorly understood and unsatisfactorily treated diseases. 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 specially in illiterate , laborers, rural and lower socioeconomic status groups of patients.

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