



## **Prevalence of Oral Sub Mucosal Fibrosis in Pre-Anesthesia Clinic in India: A Cross Sectional Observational Study**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Introduction:** Oral submucous fibrosis (OSMF) is a premalignant lesion of the buccal mucosa usually caused by chewing of betel nut, areca nut and tobacco. OSMF causes difficulty in laryngoscopy and intubation of the trachea. Patient of submucosal fibrosis do come for emergency and elective surgeries requiring general anaesthesia. In such scenario maintaining airway is a big challenge for anaesthesiologist. Knowledge of Prevalence of submucosal fibrosis in local region and degree of OSMF with difficult intubation may help anaesthesiologist to prepare and plan airway management in such conditions.

**Aims and Objectives:** To evaluate the prevalence of oral submucous fibrosis in patients coming in pre-anaesthesia clinic and assessment of airway and prevalence of degree of OSMF by measuring Interincisal mouth opening in patients of oral submucosal fibrosis.

**Methods:** Cross-sectional observational study was conducted in the department of anaesthesiology on 500 patients coming in pre-anaesthesia clinic. Patients were identified and sent

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to dental department for confirmation of diagnosis OSMF if one or more clinical feature of OSMF were present. A detailed proforma was used to record demographic parameter, the type of tobacco, betelnut and areccanut chewing habits, difficulty in mouth opening, inter incisor distance. OSMF was divided in 4 stages on the basis of inter incisor distance.

**Results:** Prevalence rate of submucosal fibrosis patients coming in our pre-anaesthesia clinic was 8%. Thirty patients were found to be in stage 1 (75%), nine patients were found to be in stage 2 (22.5%) and only one patient was in stage 3.

**Conclusion:** Being aware of the prevalence of OSMF in the region and stages of OSMF in regard to inter incisor distance in pre-operative clinic helps anaesthesiologists to prepare and plan airway management. And hence surgical exploration can be avoided.

*Keywords: OSMF; interincisal distance; laryngoscopy.*

## 1. INTRODUCTION

Oral submucous fibrosis (OSMF) is a premalignant lesion of the buccal mucosa usually caused by chewing of betel nut, areca nut and tobacco. It is characterised by the slowly progressive development of fibrous bands beneath the oral mucosa with secondary mucosal atrophy. It is widely accepted to be a collagen disease of insidious onset associated with chronic local irritation which will lead to limited opening of the oral cavity or inability to open the mouth due to which a patient can neither consume normal diet nor maintain good oral hygiene [1]. OSMF causes difficulty in laryngoscopy and intubation of the trachea. Patients with OSMF require anaesthesia for trismus correction, resection or reconstructive surgery [2] Patient of submucosal fibrosis do come for other emergency and elective surgeries requiring general anaesthesia. In such scenario maintaining airway is a big challenge for anaesthesiologist. Knowledge of prevalence of submucosal fibrosis in local region and degree of OSMF with difficult intubation may help anaesthesiologist to prepare and plan airway management in such conditions. In our cross-sectional observational study, we assessed airway (Interincisal mouth opening) of all the patients coming for anaesthesia in our institute. We assessed the prevalence of submucosal fibrosis in patients coming in pre-anaesthesia clinic and assessing the degree of submucosal fibrosis in term of Interincisal mouth opening.

## 2. AIMS & OBJECTIVES

- 1) To evaluate the prevalence of oral submucous fibrosis in patients coming in pre-anaesthesia clinic
- 2) Assessment of airway and prevalence of degree of OSMF by measuring Interincisal mouth opening in patients of oral submucosal fibrosis.

## 3. METHODOLOGY

This cross-sectional observational study was conducted in the Department of anaesthesiology at Datta Meghe Medical College & SMHRC Wanadongri, a tertiary care hospital in Maharashtra from 1st May 2020 to 28th February 2021. Under universal precautions, all the patients were thoroughly examined by specialist examiners for clinical features of OSMF that included mucosal blanching, burning sensation, restricted mouth opening and presence of fibrous bands. Patients were identified and sent to dental department for confirmation of diagnosis if one or more clinical feature of OSMF were presents by histopathological feature's characteristic of oral submucous fibrosis. A detailed proforma {pre anaesthesia record} was used to record demographic parameter, the type of tobacco, betalnut and areccanut chewing habits, difficulty in mouth opening, inter incisor distance.

### 3.1 OSMF was Divided in Following Stages [3]

**Stage 1:** Interincisal mouth opening up to or greater than 35 mm, stomatitis, and blanching of oral mucosa.

**Stage 2:** Interincisal mouth opening between 25 and 35 mm, presence of palpable fibrous band in buccal mucosa and/or oropharynx, with/without stomatitis.

**Stage 3:** Interincisal mouth opening between 15 and 25 mm; presence of palpable fibrous bands in buccal mucosa and/or or pharynx, and in any other parts of the oral cavity.

**Stage 4:** Interincisal mouth opening less than 15 mm.

Patients were categorised in different groups depending on their age: Group 1: 20–30 years,

Group 2: 30–40 years, Group 3: 40–50 years, Group 4: 50 to 60 years.

#### 4. STATISTICS

Continuous variables were expressed as mean  $\pm$  SD. SPSS version 17 was used for statistical analysis.

#### 5. RESULTS

There were 500 patients screened in pre anaesthesia clinic for airway assessment and clinical diagnosis of OSMF. Forty patients were found to have OSMF. Prevalence rate of submucosal fibrosis patients coming in our pre-anaesthesia clinic was 8%. All the 40 patients gave history of gutkha addiction.

Out of 40 OSMF patients 35 (87%) were male and 5 (12.5%) were female. According to clinical staging OSMF was divided in 4 stages. Thirty patients were found to be in stage 1 (75%), nine patients were found to be in stage 2 (22.5%) and only one patient was in stage 3. as shown in Table 1.

**Table 1. Distribution of OSMF patients according to clinical staging**

Stages of OSMF	Number of patients (percent%)
Stage 1	30(75%)
Stage 2	9(22.5%)
Stage 3	1(2.5%)
Stage 4	0

Prevalence on the basis of age groups is shown in table 2. OSMF was more prevalent in younger patients (age group 20-40 years). Most of the patients had stage 1 or 2 OSMF. None of the patients in our study had stage 4 OSMF.

#### 6. DISCUSSION

Maintaining patent airway is essential for adequate oxygenation and ventilation. Failure to do so, even for a brief period of time, can be life threatening. Patients with restricted mouth opening like patients with OSMF pose challenges for conventional, nasal or oral intubation [4]. Submental intubation and tracheostomy demand a surgical exploration with morbidities associated with them which may not be acceptable to the patient [4]. Recognition of potential for a difficult airway in pre anaesthesia clinic, measurement of interincisal distance and staging of OSMF helps anaesthesiologist to anticipate the difficulty of intubation and allows time for optimal preparation, proper selection of equipment and technique and participation of personnel experienced in difficult airway management [5]. In our study we evaluated 500 patients who visited to our pre-anaesthesia clinic. Out of this we found that 40 (8%) patients were having OSMF while Vishnudas dinesh prabhu et al had found the prevalence of oral submucous fibrosis was 1.96% at Bagalkot district [10]. We found that maximum patients of OSMF belonged to stage 1 and 2 that means inter incisor mouth opening distance more than 25 mm. Only one patient belonged to stage 3. Amit Shah et al. [5] did a study on 20 oral submucous fibrosis patients having inter incisor distance

**Table 2. Prevalence of OSMF on the basis of age group**

Age group	Number of patients (%)	Stage of OSMF	Number of patients (%)
21-30 years	20 (50%)	STAGE 1	18 (45%)
		STAGE 2	2 (5%)
		STAGE 3	0
		STAGE 4	0
31-40 years	15 (37.5%)	STAGE 1	9 (22.5%)
		STAGE 2	5 (12.5%)
		STAGE 3	1 (2.5%)
		STAGE 4	0
41-50 years	5(12.5%)	STAGE 1	3 (7.5%)
		STAGE 2	2(5%)
		STAGE 3	0
		STAGE 4	0
51-60 years	0	STAGE 1	0
		STAGE 2	
		STAGE 3	
		STAGE 4	

less than 18 mm. Patients were evaluated pre-operatively for general anaesthesia. Among them nine patients with mean interincisal mouth opening of 15.44 mm (range: 14–18 mm) were successfully operated under nasotracheal intubation, despite interincisal mouth opening of less than 35 mm (three finger breadth) which predicts difficult airway. Fibreoptic guided laryngoscopy was required for maintenance of airway in six patients with mean preoperative mouth opening of 9.0 mm. Five patients with mean pre-operative mouth opening of 5.2 mm underwent blind awake nasal intubation. None of the patients required surgical exploration of airway. In our study, very few patients had stage 3 OSMF. So, our patients with OSMF are less likely to require surgical exploration of airway for airway management. In our study, men had a significantly higher OSMF prevalence than women. Sinor et al. in India found male predominance in OSMF cases [6,7]. In previous studies from India, a relation between gutkha, tobacco, areccanut and pan masala habits was observed with occurrence of OSMF [8-9] Similarly, we also found that all the patients of OSMF had history of such habits [10-15].

## 7. CONCLUSIONS

Being aware of the prevalence of OSMF in the region and stages of OSMF in regard to inter incisor distance in pre-operative clinic helps anaesthesiologists to prepare and plan airway management. And hence surgical exploration can be avoided. We need to increase our data base in order to be sure about the prevalence figures.

## ETHICAL APPROVAL

Ethical clearance was obtained from the Institutional ethical committee.

## CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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