

## Mandibular Third Molar Surgery in Patients with Oral Submucous Fibrosis: Management and Parameters of Care

Abhishek Handa<sup>1</sup>, Shrikant sharma<sup>2</sup>, Sandeep Singh Rana<sup>3</sup>,  
Vardan Maheshwari<sup>4</sup>, Rajkumar Mantri<sup>5</sup>, Manish Sharma<sup>6</sup>.

---

**Abstract:** Oral submucous fibrosis (OSMF) is a precancerous condition of the oral cavity. Third molar surgeries in patients with oral submucous fibrosis is difficult but frequently necessary. There is mucositis and trismus, faulty wound healing and predisposition to infection. Exodontia and dentoalveolar surgery in these patients may result in distressing sequelae and diagnosis of any subsequent complications like space infection is difficult. Hence, these patients must be treated as a special care group and measures adopted to ease distress. Various literature has been reviewed to make us understand the underlying nature of the disease and factors that contribute to these problems and various measures to tackle them.

---

### I. Introduction

Oral submucous fibrosis (OSMF) is a precancerous condition of the oral cavity<sup>1</sup>. Pindborg (1966) defined OSMF as, "an insidious, chronic disease affecting any part of the oral cavity and sometimes the pharynx. Although occasionally preceded by and/or associated with vesicle formation, it is always associated with juxta-epithelial inflammatory reaction followed by fibroelastic change of the lamina propria, with epithelial atrophy leading to stiffness of the oral mucosa and causing trismus and inability to eat" Although the cause of this disease and its treatment is the subject of many articles, a rarely stated aspect of the disease is its potential to cause distressing problems during and after mandibular third molar surgery. In OSMF there is a chronic, insidious fibrotic change causing stiffening of oral mucosa, oropharynx and trismus. In advanced cases thick fibrotic bands extend from subepithelial connective tissue to muscle layer<sup>2</sup>. There is poor microcirculation in affected tissue, hypercoagulability of blood and medical treatment for this condition is not standardized<sup>3</sup>. It has been suggested that OSMF represents an abnormal healing process to chronic irritation<sup>4</sup>.

Surgery for removal of impacted third molar may be associated with several postoperative complications; these complications are more common in the mandible than in the maxilla; they may include bleeding, dry socket, nerve injury, delayed healing, periodontal pocket, and infection, many are preventable. All third molars need not be removed independent of disease findings and patients need not unnecessarily have to accept adverse consequences associated with the surgery risks and discomforts in the absence of pain, radiographic findings of pathology, and or marked clinical evidence of disease. However, when surgery is indicated several new concepts and techniques can prevent and or manage some of the common postoperative sequel of impacted mandibular third molar surgery<sup>5</sup>. Patients with OSMF present for extraction of teeth due to poor periodontal health, caries, impacted third molars; patients with frank carcinoma may require tooth extractions prior to surgery or radiotherapy. It must be understood that irritation of the inflamed and atrophic mucosa occurs during oral surgery.

Several classifications based on clinical and histological features, have been put forth by various researchers, based on different aspects of OSMF. The advantages and disadvantages of these classifications supersede the other leading to confusion. The present literature review helps to compile and analyze several classifications of OSMF available at various databases so as to assist the clinician, researchers and academicians in the categorization of this potentially malignant disorder according to its biological behavior and hence its subsequent medical and surgical management.

The details is as under:

#### A. Classification based on clinical features:

**Divya Mehota:** CLINICAL GRADING OF THE DISEASE<sup>11</sup>:

GRADE 1: Stomatitis, burning sensation in the buccal mucosa & with no detection of fibres.

GRADE 2: Symptoms of grade 1, palpable fibrous bands, involvement of soft palate, maximum mouth opening 26-35mm.

GRADE 3: Symptoms of grade 2, blanched oral mucosa, involvement of tongue & maximal mouth opening 6-25mm. GRADE 4: Symptoms of grade 3, fibrosis of lips & mouth opening 0-5mm.

**SK Katharia et al (1992)** have given different scores assigned to the patients on the basis of mouth opening between upper and lower central incisors as follows<sup>11</sup>:

Score 0: Mouth opening is 41mm or more

Score 1: Mouth opening is 37 to 40 mm  
Score 2: Mouth opening is 33 to 36 mm  
Score 3: Mouth opening is 29 to 32 mm  
Score 4: Mouth opening is 25 to 28 mm  
Score 5: Mouth opening is 21 to 24 mm  
Score 6: Mouth opening is 17 to 20 mm  
Score 7: Mouth opening is 13 to 16 mm  
Score 8: Mouth opening is 09 to 12 mm  
Score 9: Mouth opening is 05 to 08 mm  
Score 10: Mouth opening is 0 to 04 mm.

**Haider et al (2011)** study based on severity of the disease with functional staging and objective measures inter-incisal opening<sup>11</sup>:

Clinical Staging:

Stage 1: facial bands only.

Stage 2: facial and buccal bands

Stage 3: facial and labial bands

Functional Stage:

Stage A: Mouth opening 13 to 20 mm

Stage B: Mouth opening 10 to 11mm

Stage C: Mouth opening <10mm

Pre-existing trismus is exacerbated after exodontia. Hence patients become very distressed. To avoid and overcome these problems the following measures can be adopted:

### **Lubrication**

Circumlabial bands cause narrowing of oral aperture, stiffness and discomfort during retraction of the corner of the mouth. A topical local anesthetic gel is applied to the lips, corner of the mouth and buccal mucosa to soothe irritation caused by instrument application. Repeated application of the topical anesthetic gel is required during the procedure.



(Fig-1, Lubrication of inflamed mucosa)

## **II. Modification of Surgical Technique**

Varying degrees of trismus occur due to fibrosis of tissues around the pterygomandibular raphe<sup>6</sup>. Any surgery in this location can result in an increased severity of trismus in the postoperative period. If there is pericoronitis of the third molar it becomes difficult for the clinician to understand whether the trismus is solely due to this cause and predict if extraction of the tooth would produce improvement in mouth opening. Hence, careful considerations should be made in the initial beginning, whether tooth extraction must be made or not. For extraction of those mandibular third molars transalveolar technique, the flap design must be conservative without overextension of distal releasing incision. Tearing or shredding of flap, lingual gingiva, pterygomandibular raphe must be avoided. We recommend the use of luxators and atraumatic dental extraction forceps for its removal. The wound healing mechanism of oral mucosa is faulty resulting in scarring and fibrosis<sup>4</sup>. Intraalveolar extraction or 'simple' extraction of tooth also has to be performed with special care.



(Fig-2, Mouth gauge application)



(Fig-3, Atraumatic forcep right and left side)

### III. Antibiotic Therapy

In OSMF, there is mucosal atrophy and collagen deposition beneath the basement membrane. There is a decrease in ground substance, cellular elements and vascularity with increasing fibrosis<sup>10</sup>. Hence a deleterious effect on wound healing after third molar surgery is to be expected. Patients are unlikely to undertake extensive and scrupulous oral hygiene measures because of pain, trismus and mucosal irritation, which predisposes to wound infection. A masticatory space infection developed after exodontia is difficult to diagnose. Clinicians have to diagnose the condition based on nonspecific features like pyrexia and raised white blood cell counts.

Presence of trismus, alone, is nonindicative of infection. An antibacterial oral rinse started 7 days prior to mandibular third molar surgery reduces microorganism load on oral mucosal surfaces<sup>8</sup>. We would, however, hesitate to propose a blanket use of systemic antibiotic therapy after mandibular third molar surgery.

#### Modification of Local Anesthesia Technique

The technique of local anesthesia for mandibular molar extractions also needs to be modified. Trismus disallows a classic inferior alveolar nerve block. The Vazirani-Akinosi closedmouth mandibular block is chosen<sup>9</sup>. In this technique, the needle insertion is into soft tissues over medial aspect of mandibular ramus. This keeps needle away from pterygomandibular raphe making it preferable even in the absence of severe trismus in OSMF patients. A postinjection trismus which may occur as a complication of a classic inferior alveolar nerve block could be very severe. Whatever the technique, though, needle insertion into stiff, inelastic mucosa is traumatic. Post extraction instructions to the patients must emphasize the possibility of increased severity of trismus. Patients require careful followup and mouth opening exercises. Patients with OSMF must be treated as a special care group and oral surgery in this group must be approached with caution.

#### Injection technique

- It has to vary in different degree of mouth opening.
- Mouth gauges of different sizes should be used depending on degree of mouth opening.
- It is different in patient to patient.
- Sufficient time must be taken to inject local anaesthetic drug into the tissue.
- Blunt needle should be avoided.

- Spinal needle (25 gauge) where classical inferior alveolar nerve block, if required, can be used<sup>13</sup>.
- Buffering of local anesthetic solution
- 9 parts of lidocaine(1-2%) of one part of solution bicarbonate(8.4%) just before procedure<sup>12</sup>.
  - Buffered solution has reduced shelf life.



(Fig 4, Vazirani-Akinosi closed mouth mandibular block)



(Fig-5, spinal needles)

#### **Extra oral block**

It can be used as a substitute to intraoral techniques when intra oral techniques are not advised or ineffective.

Disadvantage of intra oral technique like vazirani-akinosi

- Difficult to visualize the path of the needle and the depth of insertion.
- No bony contact; depth of penetration somewhat arbitrary.
- Potentially traumatic if the needle is too close to the periosteum.

#### **IV. Discussion**

OSMF is a chronic progressive and irreversible disease affecting the oral and oropharyngeal mucosa characterized by a mucosal rigidity of varying intensity due to the fibroelastic changes of the juxtaepithelial layer, resulting in a progressive inability to open the mouth.

Trismus occur due to fibrosis of tissues around the pterygomandibular raphe in some various degree<sup>6</sup>. Any surgery in this location can result in an increased severity of trismus in the postoperative period. If there is pericoronitis of the third molar it becomes difficult for the clinician to attribute trismus solely to this cause and predict if extraction of the tooth would produce improvement in mouth opening. It may not. Hence, at the outset, any recommendation of tooth extraction must be made after careful consideration. For extraction of mandibular third molars using a transalveolar technique, the flap design must be conservative without overextension of distal releasing incision. Tearing or shredding of flap, lingual gingiva, pterygomandibular raphe must be avoided. The wound healing mechanism of oral mucosa is faulty resulting in scarring and fibrosis<sup>4</sup>. Intraalveolar extraction or 'simple' extraction of tooth also has to be performed with special care.

Surgery for removal of impacted third molar surgeries may be associated with several postoperative complications; these complications are more common in the mandible than in the maxilla; they may include bleeding, dry socket, nerve injury, delayed healing, periodontal pocketing, and infection. Many are preventable. All third molars need not be removed independent of disease findings and patients need not unnecessarily have to accept adverse consequences associated with the surgery risks and discomforts in the absence of pain, radiographic findings of pathology, and or marked clinical evidence of disease. However, when surgery is indicated several new concepts and techniques presented in this chapter can prevent and or manage some of the common postoperative sequel of impacted third molar surgery.

The technique of local anesthesia for mandibular molar extractions also needs to be modified. Trismus disallows a classic inferior alveolar nerve block. The VaziraniAkinosi closedmouth mandibular block is chosen<sup>9</sup>. In this technique, the needle insertion is into soft tissues over medial aspect of mandibular ramus. This keeps needle away from pterygomandibular raphe making it preferable even in the absence of severe trismus in OSMF patients. A postinjectiontrismus which may occur as a complication of a classic inferior alveolar nerve block could be very severe. Whatever the technique, though, needle insertion into stiff, inelastic mucosa is traumatic. Post extraction instructions to the patients must emphasize the possibility of increased severity of trismus. Patients require careful followup and mouth opening exercises. Patients with OSMF must be treated as a special care group and oral surgery in this group must be approached with caution.

## V. Conclusion

These parameters of care are designed to provide guidance consistent with current best clinical practice. It is unlikely that a further extended systematic literature search would prove advantageous as the major problem is the absence of evidence provided by sound randomised controlled trials. It is hoped that a study which has been commissioned will be successful in providing this data.

## References

- [1]. Pindborg JJ, Murthy PR. Oral submucous fibrosis as a precancerous condition. *Scand J Dent Assoc.* 1984;92:224–229. [PubMed]
- [2]. Lai DR, Chen HR, Lin LM, Huang YL, Tsai CC. Clinical evaluation of different treatment methods for oral10/30/2015 Dentoalveolar Surgery in Oral Submucous Fibrosis: Need for Caution [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3777038/3/3submucous\\_fibrosis](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3777038/3/3submucous_fibrosis). A 10 year experience with 150 cases. *J Oral Pathol Med.* 1995;24:402–406. doi:10.1111/j.16000714.1995.tb01209.x. [PubMed] [Cross Ref]
- [3]. Mehrotra R, Singh HP, Gupta SC, Singh M, Jain S. Pentoxifylline therapy in the management of oral submucous fibrosis. *Asian Pac J Cancer Prev.* 2011;12:971–974. [PubMed]
- [4]. Angadi PV, Kale AD, Hallikerimath S. Evaluation of myofibroblasts in oral submucous fibrosis: correlation with disease severity. *J Oral Pathol Med.* 2011;40:208–213. doi:10.1111/j.16000714.2010.00995.x. [PubMed] [Cross Ref]
- [5]. Rajendran R. Oral submucous fibrosis: etiology, pathogenesis, and future research. *Bull WHO.* 1994;72(6):985–996. [PMC free article] [PubMed]
- [6]. Bhonsle RB, et al. Regional variations in oral submucous fibrosis in India. *Community Dent Oral Epidemiol* 1987;15:225–229. doi: 10.1111/j.16000528.1987.tb00526.x. [PubMed] [Cross Ref]
- [7]. Caniff JP, Harvey W, Harris M. Oral submucous fibrosis: its pathogenesis and management. *Br Dent J.* 1986;160:429–434. doi: 10.1038/sj.bdj.4805876. [PubMed] [Cross Ref]
- [8]. Chen HM, Shih CC, Yen KL, Wang SM, Kuo YS, Kuo MYP, Chiang CP. Facial Candida albicans cellulitis occurring in a patient with oral submucous fibrosis and unknown diabetes mellitus after local corticosteroid injection treatment. *J Oral Pathol Med.* 2004;33:243–245. doi: 10.1111/j.09042512.2004.00058.x. [PubMed] [Cross Ref]
- [9]. Malamed SF. Techniques of mandibular anesthesia. In: Malamed SF, editor. *Handbook of local anesthesia*. 5. Missouri: Mosby; 2004. pp. 227–253.
- [10]. Arvind Ramanathan et al. Dentoalveolar Surgery in Oral Submucous Fibrosis: Need for Caution, *J Maxillofac Oral Surg.* 2013 Sep; 12(3): 341–342.
- [11]. Priyadarshni, Classification System for Oral Submucous Grading - A Review, *International Journal of Science and Research (IJSR)* ISSN (Online): 2319-7064.
- [12]. Kerry Brandis, Alkalinisation of local anaesthetic solutions, *Australian prescriber* VOLUME 34 : NUMBER 6 : DECEMBER 2011.
- [13]. ROBERT B. SHIRA, Intraoral Second Division Nerve Block, *Oral Surgery Oral Medicine Oral Pathology* 03/1979; 47(2):109-13. DOI: 10.1016/0030-4220(79)90161-0