

Oral Submucous Fibrosis and Elongated Styloid Process - Do they have an Alarming Inter-Connection??

Shital Patel^{1*}, Deval Mehta², Taher Rupawala³, Nimesh Patel⁴, Sanjay Makwana⁵ and Krupa Bhimani⁵

¹Reader, Department of Oral and Maxillofacial Surgery, AMC Dental College and Hospital, Gujarat University, Ahmedabad, Gujarat, India

²Dean, Professor and HOD, Department of Oral and Maxillofacial Surgery, College of Dental Science and Research Center, Gujarat University, Ahmedabad, Gujarat, India

³Ex-Post Graduate Student, Department of Oral and Maxillofacial Surgery, AMC Dental College and Hospital, Gujarat University, Ahmedabad, Gujarat, India

⁴Senior Lecturer, Department of Oral Medicine and Radiology, Goenka Research Institute of Dental Sciences, Gujarat University, Gandhinagar, Gujarat, India

⁵Post-Graduate Student, Department of Oral and Maxillofacial Surgery, AMC Dental College and Hospital, Gujarat University, Ahmedabad, Gujarat, India

***Corresponding Author:** Shital Patel, Reader, Department of Oral and Maxillofacial Surgery, AMC Dental College and Hospital, Gujarat University, Ahmedabad, Gujarat, India.

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Abstract

Oral Submucous Fibrosis is a premalignant condition affecting a considerable population around the world. The surge in the use of arecanut and tobacco products has led to monumental rise in young patients complaining of trismus and inability to eat. Although, the condition can be effectively managed through surgery followed by physiotherapy, its incessant subclinical progression often restores the intraoral fibrosis once physiotherapy is discontinued, most commonly due to pain. In this respect, it was intriguing to notice many such patients eliciting an elongated styloid process which may be consequent to activation of Transforming Growth Factor -beta due to chronic trauma or inflammation. This growth factor is also involved in marked deposition of collagen forming intraoral fibrous bands. Hence, if a definite association can be delineated between the two conditions, through radiographic examination on an orthopantomogram, clinicians can be alerted to diagnose an elongated styloid process whenever a case of oral submucous fibrosis presents in the clinical practice. This simple yet significant protocol shall eliminate a prominent cause of pain during mouth opening exercises thus making the chances of treatment failure negligible.

Keywords: Oral Submucous Fibrosis (OSF); Elongated Styloid Process (ESP); Transforming Growth Factor -Beta (TGF- β); Orthopantomogram (OPG)

Abbreviations

OSF: Oral Submucous Fibrosis; TGF- β : Transforming Growth Factor -Beta; ESP: Elongated Styloid Process

Amongst the numerous deleterious diseases affecting the oral cavity in the Indian Subcontinent, Oral Submucous Fibrosis (OSF) assumes prime position as its recent prevalence has increased exponentially over the last few decades to about 0.2 - 2.3% in males

and 1.2 - 4.6% in females of age 11 - 60 years across India [1-3]. It is a precancerous, debilitating condition, forming a major portion of the disease spectrum encountered when the patients present to both general dentists and oral and maxillofacial surgeons alike. It is progressive and insidious in nature, causing epithelial atrophy which hastens malignant transformation in about 7-30 % and dysplasia in 25 % of cases [3,4]. Disturbingly, this malady has gained attention of the youth and children, especially males, due to the popularity of commercially prepared arecanut and tobacco preparations with 20 million Indian farmers engaged in tobacco production. The epidemic of OSF the rise due to failure of stringent implementation of curbs on tobacco production, easy availability, attractive packaging, delusive advertising as a confidence booster and cultural practices of the general population is on [5,6].

The constant contact of the tobacco mixture with oral mucosa causes uninterrupted chemical and mechanical irritation with diffusion of alkaloids and flavonoids. Consequently, juxta epithelial inflammatory cell infiltration induces synthesis of tumor necrosis factor, interferon alpha and growth factors like Transforming Growth Factor-beta (TGF- β) at the site of inflammation [7]. Clinically, once the disease progresses into moderate stage, trismus leads to marked functional impairment and becomes irreversible, which demands immediate and definite medical and surgical therapy, the results of which need to be sustained by vigorous physiotherapeutic sessions postoperatively [8]. In conjunction with non-stoppage of the habit, inefficient physiotherapy in the form of lack of patient motivation or pain during physiotherapy incapacitating active mouth opening exercises, are probable causes of recurrence of trismus [4].

Similar analysis in handful cases of OSF wherein detailed clinical examination was not possible due to trismus, routine radiographic examination in form of orthopantomogram shed light to a co-existent finding of an elongated styloid process (ESP). ESP is typically a common finding in many patients who consult an otolaryngologist with complain of throat pain. Styloid process is normally seen as a slender cylindrical osseous projection located immediately in front of the stylomastoid foramen fused to the inferior aspect of the temporal bone [9]. The average length of the process is 15.4 - 18.8 mm in Asian population and 20 - 30 mm in Caucasian population with incidence of ESP seen in 4 - 8 per 10000 individuals [10]. The embryonic origin of the styloid process, specifically the Ceratohyal part which forms the stylohyoid ligament, can exhibit mineralization at a later stage at its insertion to the

lesser cornu of hyoid bone, resulting in vague facial pain upon swallowing, turning the head, otalgia, headache and dizziness - all potentially eliminating any scope for physiotherapeutic exercises, if indicated. Interestingly, the implication of TGF- β in deposition of insoluble collagen and chondrocyte maturation and endochondral ossification underlines the possibility that it could be a vital link in activation of the remnants of the Reichert's cartilage in the styloid complex leading to continuous ossification in the adult life. This ossification could be on account of constant trauma leading to production of TGF- β which is responsible for stimulation of osteoprogenitor cells [10,11,12].

Ergo, it is our hypothesis that the coexistence of both OSF and an ESP in a single individual can be justified by the role of TGF- β due to which active screening of the patients of OSF for detection of ESP preoperatively by means of a simple orthopantomogram would be highly purposeful. Attentive clinico-radiographic examination on part of the otolaryngologists to rule out OSF and oral and maxillofacial surgeons to exclude an ESP in patients being treated for ESP and OSF respectively shall allow a single-step surgical procedure treating both the conditions with minimal postoperative pain and enhanced physiotherapy and accompanying psychological well-being.

Bibliography

1. Warnakulasuriya Saman., et al. "Oral Submucous Fibrosis". *Contemporary Oral Oncology* (2017): 329-353.
2. Rao Naman R., et al. "Oral submucous fibrosis: a contemporary narrative review with a proposed inter-professional approach for an early diagnosis and clinical management". *Journal of Otolaryngology-Head and Neck Surgery* 49.1 (2020): 3.
3. Pundir Siddharth., et al. "Oral submucous fibrosis a disease with malignant potential: report of two Cases (2010).
4. Kale S., et al. "Effectiveness of long term supervised and assisted physiotherapy in postsurgery oral submucous fibrosis patients". *Case Reports in Dentistry* (2016): 6081905.
5. More C Das S., et al. "Proposed clinical classification for Oral Submucous Fibrosis". *Oral Oncology* 48 (2012): 200-202.
6. Hebbar PB., et al. "Oral submucous fibrosis in India: Are we progressing". *Indian Journal of Cancer* 51.3 (2014): 222.
7. Rajalalitha P and Shireen Vali. "Molecular pathogenesis of oral submucous fibrosis-a collagen metabolic disorder". *Journal of Oral Pathology and Medicine* 34.6 (2005): 321-328.

8. Aziz Shahid R. "Oral submucous fibrosis: case report and review of diagnosis and treatment". *Journal of Oral and Maxillofacial Surgery* 66.11 (2008): 2386-2389.
9. Monsour Paul A and William G Young. "Variability of the styloid process and stylohyoid ligament in panoramic radiographs". *Oral Surgery, Oral Medicine, Oral Pathology* 61.5 (1986): 522-526.
10. Dey Annuradha and Srijon Mukherji. "Eagle's Syndrome: A Diagnostic Challenge and Surgical Dilemma". *Journal of Maxillofacial and Oral Surgery* (2020): 1-5.
11. Correll Ralph W, et al. "Mineralization of the stylohyoid-stylomandibular ligament complex: A radiographic incidence study". *Oral Surgery, Oral Medicine, Oral Pathology* 48.4 (1979): 286-291.
12. Shivakumar HR., et al. "Evaluation of elongated styloid process in patients with oral submucous fibrosis using panoramic radiographs". *Journal of Maxillofacial and Oral Surgery* 13.4 (2014): 556-559.

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