CASE REPORT

Can tamarind seed chewing cause oral submucous fibrosis – A case report
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Abstract
Oral submucous fibrosis is a chronic disease of insidious onset feature of the deposition of fibrous tissue in the submucous layer of the palate, fauces, cheek, lips, pharynx, and esophagus which also affect muscles of mastication resulting in trismus and disability due to muscle hypertrophy highly widespread in the Indian subcontinent and mainly caused by areca nut chewing and other irritants in various forms. It is a potentially cruel condition and is of major concern to oral physicians. The multifactorial nature of this disorder is discussed in past literature. Still now, only one case paper published on tamarind that this is the second paper which presents a case of oral submucous fibrosis in 45 years female patient who had tamarind seed chewing habit.

Introduction
Oral submucous fibrosis (OSMF) is a potentially malignant disorders characterized by scarring of oral mucosa and area with limited mouth opening and is characterized by chewing of areca nut which causes an anomalous increase in the quantity and number of collagen in the layers of the subepithelial region further progresses to increase its severity, leading to dense fibrous bands in the oral cavity. As far as, the etiopathogenesis of OSMF is concerned that it is deliberate and multifactorial. In India, rural populations affect with prevalence rate up to 0.4%[1,2] Millions of people suffering from this problem. OSMF has high malignant transformation rates 7.6%[3,4] and a relative risk of 397.3 for oral malignancy progress compared to people with the habit of tobacco habits but without any potential malignant disorder.[4] The previous literature reports mention that there is a strong correlation between OSMF and people chewing areca nut. There are very few literature which mentions tamarind seeds causing OSMF. Hence, we are reporting one such rare case of OSMF in a 45-year-old woman without areca nut chewing habit, but with a heavy practice of chewing roasted tamarind seeds.

Case Report
A 45-year-old female reported to the Department of Oral Medicine and Radiology, Maratha Mandal N G H Institute of Dental Sciences and Research centre, Belagavi, Karnataka, India, with a chief complaint of inability to open mouth for 1 year. She had a burning sensation on the consumption of spicy food for 2 years and also no history of areca nut and tobacco chewing. However, she had a history of 15–20 unrefined roasted tamarind seeds 3–4 times per day since childhood.

On extraoral examination, the patient was moderately built and nourished with signs of anemia and sunken cheeks [Figure 1]. On intraoral examination, there is a reduction in the mouth opening (interincisal distance) up to 20 mm. Blanching present over the right and left buccal mucosa, retromolar area, ventral surface of tongue, palatal region with uvula. On palpation, vertical fibrous bands were palpable on the right and left buccal mucosa

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Alkaloids, coppers, oral submucous fibrosis, tamarind seeds tannins

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Figure 1: Extraoral picture shows shrnken cheeks
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and circular fibrous bands were palpable on the circumoral area (Figure 2a-c).

After the detailed clinical history and clinical findings, a provisional diagnosis of OSMF was made with differential diagnosis of submucous fibrosis-induced secondary to anemia and scleroderma. Then, she was subjected to complete hemogram. All the hematological reports were within normal limits. The patient was subjected to incisional biopsy for the right buccal mucosa and the sample was sent for histopathological examination. H and E stain section of the submitted sample reveals the atrophic epithelium which is of parakeratinized stratified squamous type. The connective tissue interface was flat. Connective tissue shows thick bundles of collagen fibers hyalinized areas and moderate vascular supply with scarce inflammatory cells which were characteristics of OSMF (Figure 3).

Based on clinical and histologic evidences final diagnosis given as OSMF. Then, the patient was asked to quit the habit and started with antioxidant and laser surgery was done.

Discussion

According to World Health Organization, in 1978, defined OSMF as a chronic slowly progressive chronic insidious disease in which fibrous bands various parts of the mouth progress to severe restriction in the movement of various parts of mouth including the tongue. This potentially malignant disorder has affected more than 2.5 million people. Globally, it accounts for 7.6% and malignant transformation rate is 7.6% it accounts globally.[2] Due to this high conversion rate, OSMF is recorded as a communal health problem worldwide, including UK, South Africa, and many Southeast Asian countries.[3] It most often seen between 20 and 40 years.[4] Multivariant etiological factors have been postulated to elicit the progression of the diseases which including chewing areca nut, spicy food, genetic and immunologic processes, nutritional deficiencies, and other causes. The previous literature mentions the mechanism of areca nut playing an key role in the pathogenesis of OSMF. A variety of alkaloids present in areca nut, within precise quantity in dependant manner, leads to stimulation and proliferation of fibrous deposition and causing increased collagen deposition.

The hypothesis also postulates about the presence of tannin in areca nut interferes with degradation of collagen by further inhibiting the release of an enzyme collagenase. Therefore, fibrosis formation is a result of chemical forms of areca nut, namely, tannins and alkaloids which are present. The high copper content presents in areca nut and subsequently, leading to regulation of copper dependant enzyme, lysyl oxidase is another hypothesis of increased collagen in OSMF patients.[5,6,7]

However, it was known that the woman was habituated from childhood days to chew tamarind seeds in the present case. The incidence of osmf in a 45-year-old female, without habit of chewing areca nut but ritual habit of chewing heavy roasted and refined tamarind seed chewing habit support this unique present case. In the Indian subcontinent, traditionally tamarind seeds are eaten and followed by the urban people certain racial groups such as Kurumba, Malayali, Isla, and Dravidian tribes.[8] The seed coat (testa) is removed, boiled, or roasted and is eaten as an alternative to betel nut. These roasted tamarind seeds are considered to be enhanced the flavor of peanuts. Tamarind seeds consist of more lipids, proteins, and other nutrients with excellent nutritious value. Tamarind seeds have higher antioxidant potential than, antihyperlipidemic, and antidiabetic activity. The occurrence of the majority of total free tannins and phenolics predominantly in the seed coat necessitates the removal of seed coat causing to OSMF.[9]

The previous literature mentions that tamarind seeds made of alkaloids, such as vinca and colchicine. The alkaloids present in the tamarind seeds that are of significance because they have twofold functions. At low concentrations, these alkaloids are proficient in inhibiting mitotic cell division phagocytosis and can promote lymphotoxic actions that are dangerous to health. High concentrations of tannins and alkaloids
of alkaloids be injurious to the patients which is present in tamarind seeds.[9] Tamarind seed contains 1.6–19 mg/100 g of copper, but the regular daily intake of copper.[10] In developing countries, it is between 0.6 – 1.6 mg/day.[11] Frequent consumption of Seeds has pivotal role in collagen synthesis which can lead to OSMF.

The most important factor is that there are no cases of OSMF caused due to tamarind seed chewing habit. Bearing in mind the chemical nature of tamarind seeds with tannins and specific alkaloids and high copper release, it can be noted that frequent consumption of these seeds can be implicated in the pathogenesis of OSMF in the current case.

**Conclusion**

It is believable that this case report illustrates roasted and refined tamarind seed as a non-areca nut based on chemical alkaloids in tamarind seeds can be an etiological factor for OSMF. However, further progress the additional researches and longitudinal studies required to correlate the role of long-term use of tamarind seeds and its pathogenesis in OSM so that appropriate measures can be taken to provide the better treatment.

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