



**ORIGINAL RESEARCH PAPER**

**Oral Medicine & Radiology**

**A CASE REPORT- ORAL SUBMUCOUS FIBROSIS**

**KEY WORDS:** Oral Submucous Fibrosis, Intralesional Steroid Injection, Malignant Transformation, Restricted Mouth Opening

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**ABSTRACT**

The condition known as oral submucous fibrosis (OSMF), which is mostly brought on by the chewing of areca nuts, manifests as a burning sensation, paleness of the oral mucosa, a palpable fibrous band, and restricted mouth opening. The stages of OSMF, which are based on clinical and pathological grading, determine the appropriate course of treatment. For trismus alleviation and repair surgery for any malignant transformation, patients with OSMF need treatment. A 58-year-old woman who had a limited mouth opening and complained about pain as well as a burning sensation when eating was seen. The patient had oral physiotherapy in addition to intralesional steroids (Dexamethasone 4 mg and Hyaluronidase 1500 I.U.). The effects of chewing areca nuts and their propensity to cause cancer have been explained to the patient.

**INTRODUCTION:**

Chewing betel nuts is the main cause of submucous fibrosis in the oral cavity (OSMF), a precancerous lesions that has the potential to become malignant<sup>1,2,3</sup>. The gradual hardening of the oral mucosa, which makes it impossible to open the mouth, is the defining characteristic of OSMF. In addition to the pharyngeal and upper portion of the esophageal region, it mostly affects the oral mucosa. Ram Nathan proposed that OSMF could result from mucosal alteration, which could be a result of chronic iron shortage, It is also known as the Asian counterpart to sideropenic dysphagia. In earlier studies reported OSMF caused by multifactorial agent<sup>4,5,6</sup>. Recent studies reported that smokeless tobacco substances contain alkaloids such as arecoline, arecaidine, guvacoiline, and guvaine, of which arecoline is known to be the main causative agent. OSMF is predominantly seen in the South and Southeast Asian population<sup>7,8</sup>.

This might be because there are areca nut commercialized products available in these nations<sup>9</sup>. When compared to people who smoke but do not have any precancerous lesions or conditions, it has a cancerous conversion rate of up to 7.6percent and an incidence rate of 39.7% for the development of mouth cancer<sup>10</sup>.

According to Kakkar and Puri, it is divided into six grade levels based on the clinical situation.

- Grade 1 reveals: solely shows a blanching of the oral mucosa with no additional symptoms.
- Grade 2 reveals: symptoms include a burning feeling, dry mouth, vesicle, and an oral ulcers that is not involving the tongue.
- Grade 3 reveals the presence of Grade 2 along with mouth restriction.
- Grade 4 reveals the presence of a palpable band without tongue involvement, along with grade 3.
- Grade 5 reveals the presence of tongue involvement with grade 4.
- Grade 6 reveals OSMF along with histologically proven cancer<sup>22</sup>.
- A 58-year-old female patient with OSMF is the subject of this study.

**Case Report:**

A patient in her 58s who had been experiencing restricted mouth opening for the previous six months presented to the Department of Oral Medicine and Radiology. The individual has experience of chewing difficulty and experiencing burning after ingesting hot and spicy foods. Also had a history of tobacco chewing (betel nut) for the past 5 years with a

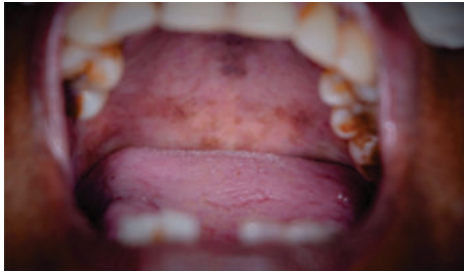
frequency of 2-3 times per day and cessation of the tobacco chewing habit before 6 months. No gross asymmetry was found. Individual disclosed a medical records of diabetes and hypertension that dated back six years. Intra-oral examination reveals the presence of restricted mouth opening, the pale appearance of the soft palate (Fig. 2), and facial pillars.

Generalized dental stains were also observed. Clinical examination revealed a 19 mm restriction in the Interincisal mouth opening. (Fig. 1). The right anterior buccal mucosa exhibits vertical stripes. In the back of the right and left buccal mucosa, there are horizontal bands. (Figs. 3 and 4). On hard tissue examination, partially edentulous in relation to ages 16, 17, 27, 36, 37, 46, 47, and 41. Stage III oral submucous fibrosis was tentatively diagnosed on the basis of the clinical features mentioned above and tobacco products use. (Passi D et al., 2017). Counseling was given to the patient, and she was also advised to maintain her blood sugar level and not take tobacco again. She was treated with the triple injection technique intralesionally.

Dexamethasone (4 mg), hyaluronidase (1500 I.U. ), and lignocaine (1 ml) are injected twice weekly for up to 1 month, and thereafter once per day for 1 month. Adjunctive treatment with a multivitamin tablet and antioxidants (lycopene) once daily for up to 1 month Mouth opening exercises are advised. After a follow-up period of 1 month, we noticed a reduction in the amount of palpable bands with an improved Interincisal opening of 25 mm (an increase of 6 mm) (Fig. 5). Patient also noticed a reduction in burning sensation while consuming hot foods.



**Fig.1 .Extra oral preoperative mouth opening**



**Fig.2.** Balancing and Paleness of soft palate



**Fig.3.** left buccal mucosa



**Fig.4.** Right buccal mucosa



**Fig.5.** Post operative mouth opening

**DISCUSSION:**

Women's chronic anaemia, mucosal atrophy, and chronic dysphagia were all symptoms of the illness reported by Paterson and Brown-Kelly in 1919 as the "Brown-Kelly Paterson syndrome" or "sideropenic anaemia"<sup>11</sup>. Schwartz named OSMF "Atrophica idiopathica mucosae oris" in 1952 after five Indian females who had OSMF in Kenya at the time. Later on in 1966, Pindborg and Sirsat referred it as "a persistent, insidious sickness affecting any area of the oral cavity and occasionally the pharynx."<sup>12,13</sup>. Because of its potentially malignant condition, OSMF is linked to severe functional impairment and an elevated risk of malignant transformation at a rate of 7-13%<sup>13,14</sup>. Paymaster was the one who first described the possible precancerous nature of OSMF converted into squamous cell carcinoma. The pathogenesis of the illness involves eating areca nuts, consuming hot peppers, hereditary, immunology, and dietary factors. A smokeless tobacco known as betel quid or pan-

supari, which combines Areca nuts, betel leaf, tobacco, and lime, is widely used in the central and southeast regions. The pathogenesis of the illness involves eating areca nuts, consuming hot peppers, hereditary, immunology, and dietary factors. A smokeless tobacco known as betel quid or pan-supari, which combines Areca nuts, betel leaf, tobacco, and lime, is widely used in the central and southeast regions. It is comparable to smoking tobacco in that this combination is placed over the buccal mucosal layer and slowly chewed over a prolonged time frame<sup>15</sup>. In the current case report, OSMF in a 58-year-old female patient who has been a betel nut user for the prior five decades is described. The progression of fibrosis is mostly influenced by chewing intensity and frequency<sup>16</sup>. The clinical manifestations include oral ulceration, a burning feeling while eating hot or spicy food, pale of the mucosa, and occasional leukoplakia<sup>17</sup>. Marked vertically fibrous ridges growth in within cheek and board-like rigidity of the buccal mucosal membrane are the disease's main features<sup>2</sup>. There will be soft tissue fibrosis, which can cause trismus, trouble swallowing, and also dysphagia. The diagnostic symptoms and associated signs are used to evaluate the disease's diagnosis<sup>3</sup>. Among the aforementioned clinical characteristics, this patient also had trismus, pale of the palate, stiff and inelastic buccal mucosa, and burning sensations when eating hot and spicy foods. The age range of 34 to 54 is where this illness is most prevalent. The patient in this instance is roughly 58 years old<sup>18</sup>. The primary culprit that changed collagen metabolic is arecoline. Chewing areca nuts damages the oral mucosa mechanically and chemically, resulting in inflammatory changes<sup>1</sup>. Keratinocytes release proinflammatory cytokines in response to the activation of macrophages and T lymphocytes brought on by prolonged inflammation, including interleukin-6, tnf, and transforming growth factor (TGF). The primary initiator of modified collagen metabolic through the TGF- signaling cascade is TGF-. the collagen formation and breakdown pathway is TGF-'s primary function. The procollagen gene is activated, procollagen proteinase levels are upregulated, and lysyl oxidase (LOX) activity is upregulated, which together account for the majority of collagen formation<sup>19</sup>. In addition to arecoline, copper from areca nuts, polyphenols, LOX, and copper-dependent enzymes also aid in the cross-linking of collagen and the deposition of extracellular matrix. Tissue blockers of matrix metalloproteinases (TIMPs) and plasminogen activator gene activation reduce collagen production<sup>20</sup>. Type I and type III collagen are deposited in the early stages of OSMF and resemble normal mucosa; by the advanced stages, type I collagen has replaced type III<sup>7</sup>. With the progression of the condition, type I collagen took the place of tenascin, fibronectin, prelecan, and elastic. The genotypes of COL1A1 and COL2A1 are related to the genetic susceptibility to OSMF. Cells are damaged and the cell cycle is arrested in the G1/S phase by areca nut extract. Reactive oxygen species (ROS) are released upon cell damage. that promote the epithelial-mesenchymal transition by activating the nuclear factor KB and mitogen-activated protein kinase (MAPK) pathways (EMT)<sup>6</sup>. When areca nuts engage with oral keratinocytes, fibroblasts are stimulated to distinct into myofibroblasts. OSMF is a connective tissue disorder caused by pathology in connective, that results in tightly packed fibres. Atrophy of the epithelium, diminished vascularity, and hypoxia are characteristics of OSMF; they are caused by the upregulation of hypoxia-inducible factors (Hif-1a and Hif-2a), which encourage carcinogenesis<sup>12</sup>. OSMF has excessive levels of connective tissue growth factors, which promotes fibrotic activity<sup>5</sup>. Management of OSMF includes various treatment modalities, including counseling the patient about the nature of the disease, Nutritional support includes lycopene, vitamins, and Curcumin. Modulators of inflammation include steroids, immune milk, interferon gamma, placental extracts, Modulators of vascularity include pentoxifylline, Fibrinolysis includes hydroxyurea and chymotrypsin, hyperbaric oxygen therapy, and also physiotherapy<sup>21</sup>. A fibrolytic enzyme called hyaluronidase

breaks down hyaluronic acid and reduces the consistency of intercellular cement, which inhibits the synthesis of collagen. Dexamethasone is an anti-inflammatory and immunosuppressive agent that prevents the inflammation seen in OSMF<sup>63</sup>. In this present case, A variety of medical treatment techniques are used after encouraging and advising the individual about the advantages of quitting the habit. Involves anti-oxidants, multivitamin tablets, and intralesional steroids, which include dexamethasone (4 mg) and hyaluronidase (1500 I.U.), along with oral physiotherapy. which helps in the reduction of the palpable vertical band and increased mouth opening.

**CONCLUSION:-**

OSMF is a treatable lesion by early recognition and diagnosis is important Along with close monitoring and follow up is required. Cessation of habits is a primary reason. Because overall consumption of areca nut and tobacco consumption is high in India among children and adults. Hence the awareness among the general population about the morbidity of the disease. In the future research based on OSMF management and molecular pathways would provide more benefits in preventing malignant transformation should be encouraged.

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