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Review Article

An Integrated Review Of “Sarvasara Mukharoga” Or “Mukhapaka” W.S.R. To Oral Submucous Fibrosis (OSF)

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ABSTRACT-

Ayurveda explains this feature of mouth ulcer as a characteristic feature of *paittik* individuals. In excess consumption of extremely pungent and spicy food. It may also occur for the reason that of chewing of chemical agents like tobacco, insomnia and vitamin insufficiency, much life threatening disease like malignancy, submucosal fibrosis, skin disease and disturbances in gastro intestinal tract like constipation.

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'*Sarvasara mukharoga*' or '*mukhapaka*' is a recurrent mouth ulcer. According to its sign and symptoms we can compare it with Oral Sub mucous Fibrosis (OSF).

Oral Sub mucous Fibrosis (OSF) is a premalignant disorder commonly accompanying with the practice of chewing betel quid containing areca nut, a habit common among South Asian societies. It is characterized by inflammation, increased deposition of submucosal collagen and formation of fibrotic bands in the oral and para oral tissues, which increasingly limit mouth opening. In recent times, OSF has been reported among South Asian populations mostly. Physicians should enhance their knowledge of this disease as it seems to be increasing in South Asian region. In this paper, we review the literature on OSF to help physicians make an early diagnosis and reduce the morbidity and mortality associated with this situation.

Key words: *Sarvasara mukharoga*, *mukhapaka*, oral submucous fibrosis

INTRODUCTION:

Oral Sub mucous Fibrosis (OSF) is a disease mostly related with the chewing of areca nut, an ingredient of betel quid (usually contains betel leaf, areca nut, slaked lime & may contain tobacco) and is prevalent in South Asian residents. It causes significant morbidity (in terms of loss of mouth function as tissues turn into rigid and mouth opening develops problematic) & mortality (when conversion into squamous cell malignancy). The introduction of chewing tobacco containing areca nut into the market has been associated with a sharp increase in the frequency of OSF.¹ According to Statistics

Canada,² in 2006 about 1.26 million people in Canada identified themselves as South Asians. With an increase in immigration from South Asia, there will likely be an growth in the frequency of OSF in western countries (Table 1) including Canada. In this article, we review the literature on OSF with special reference to '*Sarvasara mukharoga*' or '*mukhapaka*'. *Mukhapaka* is one of the *mukharoga* and occurs in all over the oral cavity Acharya Kashyapa; Acharya Caraka has described it as *Mukhapaka*, while Acharya Sushruta and Acharya Vagbhata have described it as *Sarvasara*. *Sarvasara* means the disease which have capacity to spread all over the buccal mucosa.

Table 1: Summary of Oral Submucous Fibrosis cases reported in some developed countries.

Data collected countries	Ethnic origin of patient	Number of cases reports
Canada ³	India	2
Canada ⁴	India	1
Canada ⁵	India	3
United Kingdom ⁶	Bangladesh	1
United Kingdom ⁷	Bangladesh	1
United Kingdom ⁸	India (2), Pakistan (1)	3
France ⁹	India	1
Germany ¹⁰	India	1
Russia ¹¹	Greece	1
Melbourne, Australia ¹²	India	1
South Africa ¹³	India	14
Durban, South Africa ¹⁴	Not mentioned	6
Not available ¹⁵	Saudi Arabia	1

LITERATURE REVIEW:

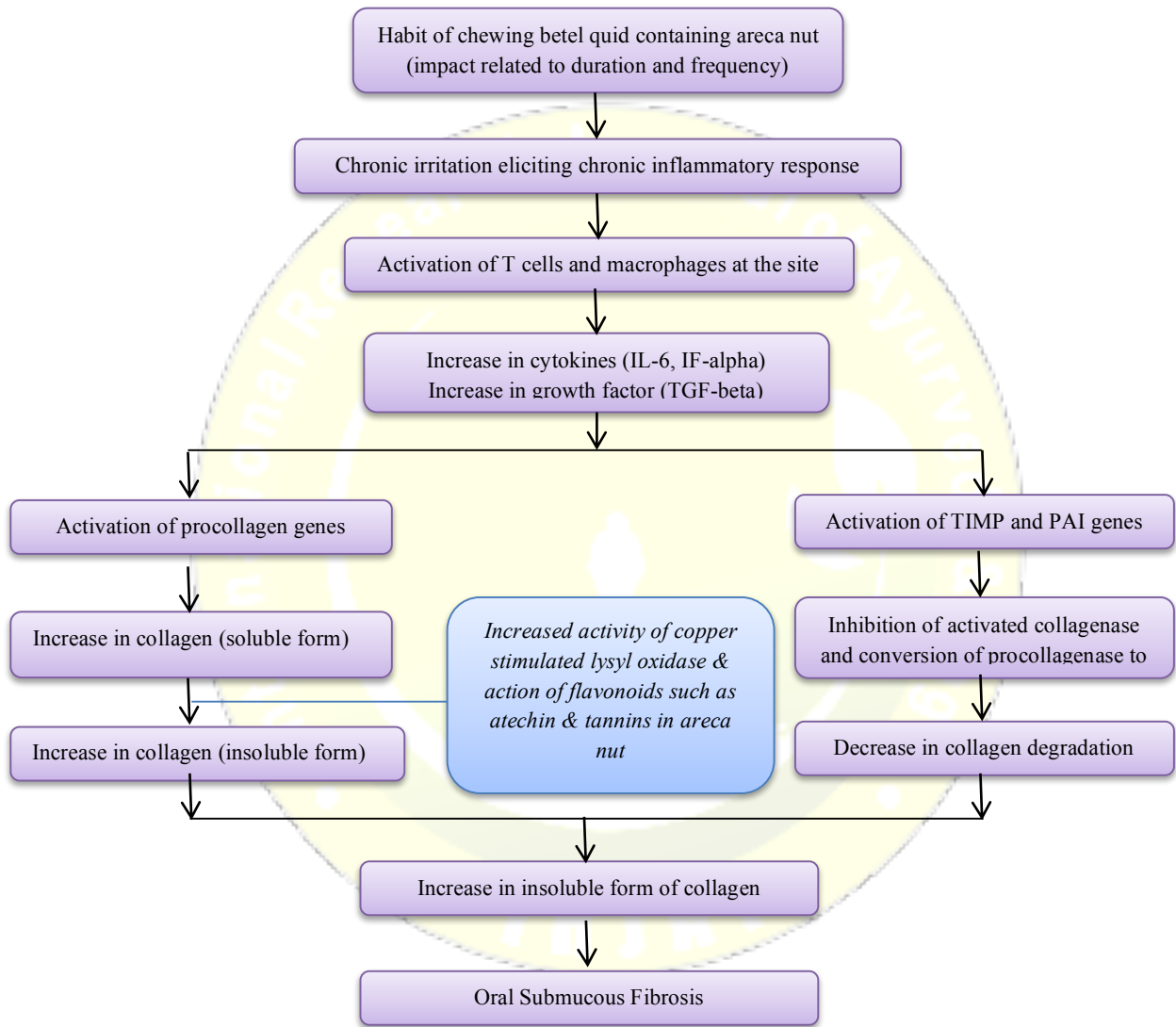
Etiology: The strongest risk factor for OSF is the chewing of betel quid containing areca nut. The amount of areca nut in betel quid and the frequency and duration of chewing betel quid are clearly related to the development of OSF¹⁶ The direct contact of the quid mixture with oral tissues results in their continuous irritation by various components, including biologically active alkaloids (arecoline, arecaidine, arecolidine, guvacoline, guvacine, flavonoids, tannins and catechins)

and copper. Other factors, such as genetic and immunologic predisposition, probably also play a role as OSF has been reported in families (both children and adults) whose members are not in the habit of chewing betel quid or areca nut.¹⁷

Pathogenesis: The pathogenesis of OSF is not well established, although a number of possible mechanisms have been suggested (Fig.-1). Pathogenesis is believed to involve juxta-epithelial inflammatory reaction and fibrosis in the oral mucosa, probably due to

increased cross-linking of collagen through up-regulation of lysyl oxidase action.¹⁹ Fibrosis, or the buildup of collagen, results from the effects of areca nut, which increases

collagen production (e.g., stimulated by arecoline, an alkaloid) and decreases collagen degradation.^{20,21} Hence, OSF is now considered a collagen metabolic disorder



Note: IF-alpha = Interferon alpha, IL-6 = Interleukin-6, PAI = Plasminogen Activator Inhibitor,
TGF-beta = Transformin Growth Factor beta, TIMP = Tissue Inhibitor of Matrix Metalloproteinase.

Figure 1: Etiopathogenesis of Oral Submucous Fibrosis.

Clinical features: The time between the onset of chewing habit and the development of OSF clinical symptoms varies widely, ranging from a few months to a few decades depending on the type of dietary areca nut, the time and exercise of the habit, individual tendencies and other factors. The signs and symptoms of OSF are due to inflammation and, in particular, fibrosis. The first and most common symptoms are a burning sensation, dry mouth, blurring of the oral mucosa and ulcer. A burning sensation often occurs while chewing spicy food. Blurring of the oral mucosa results in damage to the local bones due to increased fibrosis and causes a marble-like appearance. Blanching may be localized, activated or reticular. In some cases, blurring can be associated with small bursting vesicles that cause swelling. Patients complain that these vesicles build up after eating spicy foods, suggesting the possibility of the virus becoming unresponsive. These features can be seen in all stages of OSF. In the most advanced stage of the disease, an important factor is the fibrous group that prevents the opening of the mouth and causes hardening of the bone, speech, swallowing, and maintaining oral hygiene. The development of fibrous strands on the lips makes the lips thick, rubbery and difficult to remove or otherwise; The band around the lips gives the

lip to open the shape. Fibrosis makes the cheeks soft and firm. When a patient whistles or tries to insert a balloon, a common occurrence of nausea is missing. In the tongue, drainage of the mucosa around the nail and side bars may result in blanching or fibrosis of the ventral mucosa. Fibrosis of the tongue and the bottom of the mouth interferes with the movement of the tongue. Severe involvement of the membrane involves the mucosa blanched considerably. Fibrosis can extend outward to include the soft palate and uvula. These may appear wrinkled and in extreme cases. Gingival involvement varies widely and is characterized by fibrosis, blanching and generalized stippling loss. In rare cases of extensive involvement, there may be hearing loss due to Eustachian tuberculosis and difficulty in swallowing due to esophageal fibrosis.

The cause of this digestive system basically involves the *pitta*. According to Ayurveda, *mukhapaka* is divided into five different types, depending on the *dosha* imbalance causing symptoms.

Symptoms of *Vata* type

- a. Great pain.
- b. Fissuring of tongue.

c. Cold food intolerance.

Symptoms of *Pitta* type:

a. Severe burning

b. Redness.

c. Bitter taste in the mouth.

Symptoms of *Kapha* type :

a. A moderate pain.

b. Excessive salivation.

c. insignificant itching.

d. The mouth ulcer is not very red, but it is sticky.

Symptoms of *sannipatja* type:

A combination with all the symbols of *vata*, *pitta* and *kapha* types.

Symptoms of *raktaja* type:

a. Ulceration like alkaline reacted burning.

b. Severe burning.

c. Redness.

d. Bitter taste in the mouth cavity.

Pathology: Early OSF pathology is characterized by juxta epithelial inflammation including edema, major fibroblasts and inflammatory induction,

which consists primarily of neutrophils & eosinophils²¹. Later, collagen lumps with initial hyalinization are seen and acute inflammatory infiltration containing endogenous cell types, such as lymphocytes and plasma cells, occasionally resembles lichenoid mucositis. In more advanced stages, OSF is characterized by the formation of thick collagen groups and elastic hyalinization in the circulating tissue and a decrease in vascularity. The sleeping epithelium often becomes thinner and loses melanin or becomes hyperkeratotic. Occasionally dysplastic changes occur in the epithelium. Inflammation and fibrosis of the small salivary glands can also be seen. Muscle deterioration will occur in the advanced stages of OSF.

Treatment:

No known treatment for OSF is effective, although some conservative and surgical interventions may result in improvement²². Currently, intralesional steroids are the main treatment modality. These are injected into the fibrotic bands weekly for 6–8 weeks with regular monitoring of mouth opening. Patients are advised to do mouth-opening exercises, for example, by placing ice cream sticks in their mouth and gradually increasing the number. Hyaluronidase,²² which

facilitates the breakdown of connective tissue, can be combined with the steroids for injection. The list of other treatment modalities (Table 2) ²³ is extensive and includes use of micronutrients and minerals,

carbon dioxide laser, pentoxifylline, lycopene, immunized milk, interferon gamma, turmeric, hyalase, chymotrypsin & collagenase

Table 2: Treatment procedures

Treatment with main molecules	Treatment particulars
Micronutrients & minerals ²⁴	Vitamin-A, B complex, C, D & E, iron, copper, calcium, zinc, magnesium, selenium & others
Milk collected immunized cows ²⁵	45 gm milk powder twice in a day for 3 months
Lycopene ²⁶	8 mg twice in a day for 2 months
Pentoxifylline ²⁷	400 mg 3 times in a day for 7 months
Interferon gamma ²⁸	Intralesional injection of interferon gamma (0.01-10.0 U/mL) 3 times in a day for 6 months
Steroids ²⁹	Submucosal injections two times in a week in multiple sites for 3 months
Steroids ²⁹	Topical for 3 months
Hyalase with dexamethasone	-
Placental extracts	-
Turmeric ³⁰	Alcoholic extract of turmeric (3 gm), turmeric oil (600 mg), turmeric oleoresin (600 mg) daily for 3 months
Chymotrypsin, hyaluronidase & dexamethasone ³¹	Chymotrypsin (5000 IU), hyaluronidase (1500 IU) and dexamethasone (4 mg), twice weekly submucosal injections for 10 weeks

Since fibrosis cannot be reversible, when opening the mouth a combination of surgical

interventions, such as myotomy, coronoidectomy ³²and excision of the fibrotic

band, is required. Reconstruction using techniques such as the buccal pad flap, the temporal vein and the forearm Flap can also be performed.^{33,34}, Alternative procedures, such as oral stent insertion, physiotherapy, local heat treatment, oral tests using acrylic carrots and ice cream sticks, experimented with various success rates. In high-risk situations, depending on the stage of disease and the range of oral involvement, treatment combining drug combinations with the above surgery may be helpful.

Ayurveda treatment for Sarvasara mukharoga or Mukapaka:

- a. Improving and strengthening digestion.
- b. Harmonizing of all *dosha*.
- c. Improving nutritional grade.

In Ayurveda, therapies include *Panchakarma*, external treatments, internal medicine, Activities, Food advice and lifestyle changes.

Panchakarma: Virechana can be done for better treatment.

Activities: *Asana specific, pranayama*, and meditation.

Food or Diet: Improves the intake of lukewarm water and foods that aid digestion.

Avoid spicy, dry, deep fried foods and heavy foods that are difficult to digest.

External treatments:

Lepa, kavala (gargling), *gandoosha* (fills mouth) - with medicated decoctions / oils, *shiro dhara* by medicated buttermilk (*takra*) / milk (*ksheera*).

Herbs:

- a. Aloe (*Aloe vera*): 1-3 tablespoon of *aloe vera* juice used as a mouthwash, and then swallowed: three times a day.
- b. Deglycyrrhizinated Licorice (*Glycyrrhiza glabra*): Mix 200 mg of powdered deglycyrrhizinated and 200 ml of warm water swished in the mouth and then extract; continue every morning and evening for a week.
- c. Chamomile (*Matricaria recutita*): A diluted tincture or strong tea made with chamomile flowers can be swished in the mouth three to four times a day.
- d. Echinacea (*Echinacea purpurea, E. angustifolia, E. pallida*): 4 ml liquid echinacea mixed with warm water and mouthwash for 2-3 minutes, then swallowed; this can be repeated 3 times a day.

e. Myrrh (*Commiphora molmol*) is taken in 200 to 300 mg of herbal extract with lukewarm water and put into the mouth two to three times a day. Mild changes in lifestyle, dental work irritation from poor-fitting dentures, rough fillings, or braces can aggravate cancer wounds and should be treated by a dentist^{35,36}

Internal drugs- Single remedies useful for mouth ulcers-

a. *Khadira*- (*Acacia catechu*) - Cleansing blood and do healing because of the astringent nature.

b. *Bahera* / *bibhitaka* (*Terminalia belerica*)

c. Ber Fruit (*Ziziphus mauritiana*) - Helps to restructure the discontinued tissue of the ulcerated area.

d. *Amalaki* (*Emblica officinalis*)

e. Indian Gooseberry - Rejuvenative, coolant and nourishing nutrients.

f. *Draksha* - Raisins - (*Vitis vinifera*) - Coolant, laxative and rejuvenative.

g. *Hareetaki* (*Chebulic myrobalan*) - Restorative, laxative and heals a wound due to astringent principles.

h. *Chandana* / Sandal Wood- Soothes the tissue.

i. *Usheera* (*Vitivera zazinoides*) - Coolant and soothes the affected oral cavity or area.

j. *Parpataka* (*Pumaria parviflora*) - Cleans the blood and lowers the vitiated hole. *Raktika* (*Ixora grandiflora*) - Smooth and redesigned.

k. *Musta* (*Cyperus rotundus*) - Digestive, carminative & adjusts pathophysiology from its base level.

i. *Guava* (*Psidium guava*) astringent and coolant natures help to reduce ulcerated lesions.

Ayurveda medicines for oral ulcers : Oral solution / chewing

a. *Khadiradi vati* - The patient is asked to chew the tablet and swallow the saliva slowly. An elderly patient can chew upto 6 - 8 pills a day.

b. *Yastimadhu* (chewing) - Coarse Powder of licorice is slightly chewed.

c. *Arimedadi taila* -is for gargling and is best for stomatitis.

d. *Triphala kashaya* is also used for gargling.

e. *Panchavalkala kashaya*; for gargling

f. *Eladi vati* is effective when chew after meals 3-4 times in a day.

Oral Ayurveda medicines for mouth ulcers

:

Usheerasava, aravindasava, drakshasava, kumaryasava, chandanasava, lavangadi vati, kamadugha (mouktika yukta), pravala bhasma, pravala panchamruta^{37,38,39,40,41}.

DISCUSSION :

The results of OSF are illustrated by two factors: the persistence of the disease and its potential for ulceration. OSF does not regress spontaneously by discontinue of areca nut chewing. When a disease already exists, it complicates or worsens with the involvement of additional areas of the oral mucosa. OSF is strongly associated with the risk of oral cancer, although the underlying biology of this organization has not yet been resolved.

OSF may cause atrophy epithelium, which increases carcinogen absorption. Studies show that dysplasia is seen in approximately 25% of biopsied cases and the rate of transformation of OSF cases into malignancy varies from 3% to 19%.

CONCLUSION:

OSF is a premalignant disease commonly associated with the habit of chewing betel quid containing areca nuts, a common practice among South Asian communities. It is distinguished by inflammation, an increase in submucosal collagen incorporation and fibrotic girldle formation of the oral and para-oral tissues that continue in the open mouth. In recent times, OSF has been mentioned among the majority of South Asians. Doctors should improve their knowledge of the disease as there seems to be an increase in South Asian people with the right medicines and give advice on their adaptation to a different lifestyle

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