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Oral Sub mucous fibrosis (OSMF): A Review from Ayurveda Perspective.

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ABSTRACT:

Background: Oral sub mucous fibrosis (OSMF) a chronic progressive disorder of oral cavity characterized by inflammation and progressive fibrosis of the sub mucosal tissues. Reported data published revealed an estimate of 5 million OSMF patients in India and increased over past four decades from 0.03% to 6.42%, seen commonly in younger 20-40 years age group. In Ayurvedic classical texts, no any direct references about the disease quoted, can be considered as *Anukta Vyadhi* (Unexplained disease) and on understanding the disease condition OSMF can be considered as *Vata Pradhana Tridoshaja Mukharoga Vyadhi* which needs management locally and systemically.

Material and Methods: Ayurvedic literature, modern texts as well as the data web-based search engines, journal, were used to search for relevant literature and information.

Result: Habit of areca nut or betel quid and tobacco chewing, excessive consumption of chilies, autoimmunity, genetic, environmental factor and dietary deficiencies are the main etiological factors. Excessive and constant use *Kashaya, Katu Rasa, Ruksha, Tikshna* and *Ushna Dravyas*, lead to *Dosha Prakopa* and *Vikruta Dhatu* formation corresponding to biochemical abnormalities/functional abnormalities and structural defects. So *Vata-Pitta Pradhana Tridosha* alleviating local as well as systemic treatment should be done.

Conclusion: The fundamental principles of *Ayurveda* should be applied for achieving regain of the normalcy of oral mucosa and restoring the normal function by its preventive and curative approach.

Keywords: *Mukharoga*, oral submucous fibrosis, areca nut or betel quid, tobacco chewing

INTRODUCTION

Oral sub mucous fibrosis (OSMF) a chronic progressive disorder of oral cavity characterized by inflammation and progressive fibrosis of the sub mucosal tissues (lamina

propria and deeper connective tissues)¹. Reported data published revealed an estimate of 5 million OSMF patients in India and increased over past four decades from 0.03%



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to 6.42%, seen commonly in younger 20-40 years age group^{2, 3, 4}. The etiology of OSMF is unknown. Reported studies emphasized the role of irritant substances acting locally on the oral mucosa, chronic nutrition deficiency and a genetic predisposition to the disease⁵, local irritants such as tobacco, areca nut, pungent, spicy foods and alcohol⁶. In Ayurvedic classical texts, no any direct references about the disease quoted, can be considered as *Anukta Vyadhi* (Unexplained disease) and on understanding the disease condition OSMF can be considered as *Vata Pradhana Tridoshaja Mukharoga Vyadhi* which needs management locally and systemically. Aim of the present study is to review Oral sub mucous fibrosis from Ayurvedic and modern science point of view along with management protocol.

MATERIALS AND METHODS

To fulfil the aims and objectives relevant Ayurvedic literature, modern texts as well as the data bases Google scholar, PubMed, AYUSH Research Portal, DHARA, studies available on Research Gate web-based search engines, journal, were used to searched topics on OSMF and presented in an organized manner.

RESULT

Ayurvedic Review

In Ayurvedic classical texts, no any direct references about the disease quoted, can be considered as *Anukta Vyadhi* (Unexplained disease) and needs to understand according to *Ayurvedic* principles before considering its line of treatment.

However, some symptoms related to OSMF can be found mostly in *Mukharogas* and *Vrana* related chapters of the classics in scattered manner. *Acharyas* have also mentioned its malignant potential and its prognosis under the broad headings like *Mukharbuda*. On looking into the *Ayurvedic* Classics, clear description of symptoms related to OSMF like:

1. *Kruchchhen Vivrunoti Mukham*⁷ (difficulty in opening the mouth) – *Vataja Sarvasara Mukharoga*.
2. *Mukhadaha*⁸, *Ushna*⁹ (burning sensation in mouth) – *Pittaja Sarvasara Mukharoga*.
3. *Tikshna Asaha*¹⁰ (intolerance to spicy food) – *Pittaja Austhakopa Mukharoga*.
4. *Mukhasosha*¹¹ (dryness of mouth) – *Vataja Mukharoga*
5. *Alparasagyata*¹², *Virasagyata*¹³ – *Vataja Nanatmaja Vikara, Vikruta Vata Karma*

6. *Mukhantargata Vrana*¹⁴ (ulceration of the oral mucosa) - All types *Sarvasara*
7. *Vranavastu, Durutha Vrana*¹⁵- OSMF can be compared as *Punah Punah Mukhapaka- Vranashotha* and *Vrana* in *Mukha* leading to *Kathina, Khara, Shukla Vranavastu* formation which also can be compared as *Kathina, Shukla Durootha Vrana*.
8. *Mukharbuda*¹⁶ - Oral carcinoma, the dreadful complication of OSMF can be included in broad entity of *Mukharbuda* described by *Acharya Vagbhatta* as *Antahkapolamashritya Shyavapandu Kaphoarbudam* and its prognosis *Chhinnam Ghattitam Mruditam Cha Vivardhate* which also seems comparable to OSMF (its recurrence and aggravation after surgery).

Nidana (Probable etiology)

OSMF is the result from *Pragyaparadha* and *Asatmendiyartha Sanyoga* factors due to excessive chewing of areca nut and tobacco related products. Though no specific causative factors could be traced from the classical texts; probable *Nidanas* of OSMF according to *Ayurveda* can be given under the broad headings of:

- *Atiyoga* of *Kashaya Rasa and Ruksha, Vikasi Dravyas*. (Excessive and constant use of areca nut and its related products)
- *Atiyoga* of *Katu Rasa and Tikshna, Ushna Dravyas*. (Excessive use of chilies and spices, tobacco etc)
- *Abhigataja Vrana* due to *Tikshna and Kshara Dravyas* (Irritation and injury due to excessive chewing of areca nut and tobacco related products mainly due to its alkaloids content and lime)
- *Agnimandhya* and *Dhatukshaya* (Nutritional deficiencies)
- *Beejadosh* (Genetic predisposition)

These factors may lead to the possible grave consequences in the form of *Dosha Prakopa* and *Vikruta Dhatu* formation corresponding to biochemical abnormalities/functional abnormalities and structural defects.

Poorvarupa (Premonitory Symptoms) of OSMF

Poorvarupa defines as the premonitory symptoms which appear before the actual appearances of disease¹⁷. *Poorvarupas* of the disease OSMF are as follows:

1. *Mukhantargata Shotha*: Inflammation of the oral cavity
2. *Mukhantargata Vrana*: Ulceration of the oral cavity
3. *Mukhadaha*: Burning sensation in mouth
4. *Katurasa Asahishnuta*: Intolerance to spicy food
5. *Lalasaravadhikya*: Excessive salivation

6. *Mukhashosha*: Dryness of mouth
7. *Virasagyata*: Defective gustatory sensation

Rupa (Symptomatology) of OSMF

The clinical features of the disease are as follows:

1. *Mukhasankocha/ Mukham Kruchchhen Vivrunoti*: Inability to open the mouth
2. *Mukhantargata Shotha*: Inflammation of the oral cavity
3. *Mukhantargata Vrana*: Ulceration of the oral cavity
4. *Mukhadaha*: Burning sensation in mouth
5. *Katurasa Asahishnuta*: Intolerance to spicy food
6. *Mukhashosha*: Dryness of mouth
7. *Mukhantah Vedana*: Pain in mouth
8. *Arasagyata/Alparasagyata/Virasagyata*: Decreased/defective gustatory sensation
9. *Shweta Pandu Vrana of Mukhayatana*: Blanching of the oral mucosa
10. *Shushkata, Kathinya, Kharata, and Stambha of Mukhagata Dhatus*: Atrophy of oral epithelium and leathery hard consistency, stiffness of the lamina propria and sub mucosal tissue of oral cavity and oropharynx.
11. *Kathina, Khara, Shukla Vranavastu in Mukha*: fibrous bands and fibrosis of the tissue of oral cavity and oropharynx.

Thus analyzing all signs & symptoms of the disease OSMF can be taken as *Vata- Pitta Pradhana Sarvasara Mukharoga*.

Probable Samprapti of OSMF

Samprapti is the process, which takes place in the body in between *Nidana Sevana* and the stage of *Rupa* of the particular disease (Fig.1).

Samprapti Ghataka of OSMF

Dosha, Dushya, Srotasa, Agni, Ama etc. involved are of great importance and are known as *Samprapti Ghataka* (Table 1).

Chikitsa

Chikitsa can be defined as the measures, which bring about the homeostasis of imbalanced *Doshas, Dhatus and Malas*. The cause of OSMF is habit of betel nut, tobacco and its related product chewing. If the disease is detected at a very early stage, cessation of the habit is sufficient. So in the case of OSMF *Nidana Parivarjana* is the foremost and most important treatment¹⁸. OSMF can be considered as the *Vata-Pittaj Pradhana Sarvasara Mukharoga*, includes management of whole set of problems confronted by the patient. Adopting the proper line of treatment therapy is

initiated to combat the disease. So *Vata-Pitta Pradhana Tridosha* alleviating local as well as systemic treatment should be done. Local treatment of *Mukharogas* includes *Pratisarana* and *Kavala- Gandusha*. Great emphasis has been given to *Pratisarana* and *Kavala- Gandusha* in the management of *Mukharogas*, as both expels the localized *Doshas* from the oral cavity. *Pratisarana* with drugs containing *Lekhana, Ropana, Sothahara* and *Vata Pitta Pradhana Tridosha Shamaka* properties can be used. Drugs having *Lekhana* properties like *Haridra, Pippali, Saindhava* etc. along with drugs having *Ropana* properties like *Yastimadhu, Jatipatra* etc should be used with *Madhu* which itself having *Yogavahi, Lekhana* and *Ropana* properties can be used for *Pratisarana*. *Snehana* and *Shamana Kavala /Gandusha* alleviating the *Vata* and *Pitta Dosha* which relieve *Mukhadaha, Shotha* and *Vrana*; increases *Snigdhatata, Mardavata* in *Mukha* and also nourishes *Sthanastha Dhatus* can be used. *Ksheerabala Taila, Yastimadhu Taila, Ksheera, Ghrita* etc having *Vata-Pitta Shamaka* and *Snehana, Shamana* properties should be used for *Kavala/Gandusha*. OSMF is a chronic *Urdhwajatrugata Vyadhi*, systemic treatment of OSMF should begin with *Kayashudhdhi* and *Shiroshudhdhi*. Also, *Acharya Vagbhata* has mentioned *Kayashirasovirechana* as first line of treatment in general treatment of *Mukharoga*¹⁹. As prior to administration of *Rasayana* drugs it is necessary also.

Nasya is also described for *Mukharogas*, because *Nasya* is considered as a gateway for drug administration in care of *Urdhwajatrugata Rogas*²⁰.

Here in the context of disease OSMF first of all *Shodhana Nasya* should be done to expel out the morbid *Doshas* then *Brimhana Nasya* should be carried out to strengthen the vitality of the organ i.e. *Mukha*.

OSMF is the chronic debilitating disease of the oral cavity and there is a nutritional deficiency as an aggravating factor as well as squeal, also reflect a localized collagen disorder or an autoimmune process in the oral cavity. All these factors favor use of *Rasayana* drugs. This could be achieved by administrating the *Rasayana Yoga* internally. For these purpose *Vata Pitta Pradhana Tridosha Shamaka Rasayana* drugs like *Yastimadhu, Ashwagndha, Shatavari, Guduchi, Amalaki*, etc. should be given.

Pathya Apathya of Mukharogas

Pathya

1. *Yogaratanakara* has mentioned *Pathy-apathya* of *Mukharogas* as *Swedana, Virechana, Vamana, Gandusha*,

Pratisarana, Kavala, Raktamokshana, Nasya, Dhoomapana, Shashtrakarma, Agnikarma.

2. *Trunadhanya, Yava, Mudga, Kulattha, Jangala Mamsarasa, Satavari, Karavellaka, Patola, Balamulaka, Karpura Jala, Ushnodaka, Tambula, Ghrita, Khadira, Katu, Tikta Dravyas*²¹.
3. One should be encouraged for *Kshira* and *Ghrita Bhojana* owed to its *Rasayana* and *Vata Pitta Shamana* effects.
4. Take enough water to prevent dryness of mouth.
5. Oral hygiene should be maintained properly as it is compromised due to inadequate mouth opening in OSMF. *Acharyas* have emphasized importance of oral hygiene by various measures for preserving oral health as a part of daily regimen (*Dinacharya*). Only *Ayurveda* has mentioned eight measures as a part of *Dinacharya* to keep tongue, teeth, gums & whole oral cavity (*mukha*) clean. They are *Dantadhavana/ Dantapavana, Dantashodhana Choorna (manjana), Jihvanirlekhana, Gandusha, Kavala, Pratisarana, Mukhaprakshalana, Tambulasevana*

Apathya

1. According to *Yogaratanakara Danta Kashtha, Snana, Amla Dravya, Matsya, Anupa Mamsa, Dadhi, Kshira, Guda, Masha, Rukshanna, Kathina Dravyas, Guru, Abhishyandhi Ahara, Divaswapna, Adhomukhashayana* are *Apathya in Mukharoga*²².
2. Excessive use of *Kashaya Rasa, Katu Rasa, Ruksha, Vikasi, Ushna, Tikshna Dravyas*- betel nut, tobacco and its related products like *guka, mawa, panmasala* etc. and excessive use of chilies and spicy food must be avoided.

Modern Review

Definition

Oral submucous fibrosis (OSMF) a chronic progressive disorder of oral cavity characterized by inflammation and progressive fibrosis of the sub mucosal tissues (lamina propria and deeper connective tissues). The buccal mucosa is the most commonly involved site, but any part of the oral cavity can be involved, even the pharynx¹.

Etiology

The etiology of OSMF is unknown. Reported Most studies on OSMF have emphasized only the role of irritant substances acting locally on the oral mucosa and chronic deficiency of iron /or vitamin B complex and a genetic predisposition to the disease⁵ also local irritants such as tobacco, areca nut, pungent, spicy foods, and alcohol⁶.

Classification

The clinical condition mainly categorized into three stages:

Stage 1: Stomatitis: The mucous membrane of mouth are inflamed.

Stage 2: Fibrosis: Marked by the development of lesions in the mouth, oral mucosa blanching as well as circular and vertical palpable fibrous patches in and around the mouth gives a mottled appearance to the buccal mucosa.

Stage 3: Sequale of OSMF: It is identified by the presence of Leukoplakia and various speech and hearing difficulty. There is another group classification system for OSMF apart from the above staging system. This second system was developed in the year 1995 by Khanna and Andrade for surgical treatment of trismus.

As per this staging system, OSMF can be categorized into:

Group I: It is the earliest stage of the disorder and does not include any limitations in opening the mouth, patients are included with inter-incisal distance above 35 mm.

Group II: It refers to those OSF patients who have an inter-incisal distance between 26 and 36 mm.

Group III: It includes moderately advanced cases where the inter-incisal distance of the patients is from 15 to 26 mm and have fibrotic bands on the soft palate while anterior pillars of the fauces.

Group IVA: Patients in this group have severe trismus and their inter-incisal distance is less than 15mm and extensive fibrosis of the entire oral mucosa.

Group IVB: In sufferers included in this group, the condition reaches an extremely advanced stage with the oral mucosa undergoing premalignant and malignant changes.

Clinical Features

OSMF manifests as:

1. Inability to open the mouth due to oral fibrosis and scarring.
2. Burning sensation in the mouth
3. Intolerance towards hot and spicy food.
4. Blanching and stiffness of oral mucosa
5. Vesiculation, ulceration
6. Recurrent stomatitis
7. Altered salivation
8. Defective gustatory sensation
9. Dryness of mouth
10. Pigmentation changes
11. Impaired mouth movement

12. Gradual stiffness and reduced mobility of the soft palate and tongue.

Management

Decrease or eradicating habit of chewing areca nut play and important role in preventive measure aspect. To improve current treatment regimens for OSMF, the following strategies have been proposed:

1. Nutritional support
2. Immunomodulatory Drugs
3. Physiotherapy
4. Local Drug Delivery
5. Combined therapy
6. Surgical management

DISCUSSION

Oral sub mucous fibrosis is a chronic debilitating disease of the oral cavity characterized by inflammation and progressive fibrosis of the sub mucosal tissues resulting in marked rigidity and an inability to open the mouth commonly associated with chewing areca nut (betel nut) habitually which is the main component of betel quid. Betel quid chewing is associated with increased incidence of oral sub mucous fibrosis and oral cancer. The areca nut mainly contains chemical constituent such as tannins arecatannin, gallic acid and also alkaloids such as arecoline, arecaidine and guvacine, have vaso-constricting properties in nature²³. The disease has a spectrum of presentations ranging from inability to open the mouth, burning sensation in mouth, intolerance to spicy food, defective gustatory sensation, dryness of mouth, blanching of the mucosa, recurrent ulceration, vesiculation, leathery texture of the mucosa, palpable fibrous bands etc. In OSMF basic pathology is inflammation and a progressive fibrosis of the sub epithelial stroma that is lamina propria and sub mucosa.

As the disease is new and there is no reference protocol for its management it can be included in *Anuktavyadhi* and can be managed according to methodology given by *Acharya Charaka* considering its *Dosha, Adhithana, Samutthana* etc. chewing habits of betel nut, tobacco and its related products can be considered as *Atiyoga* of *Kashaya, Katu Rasa* and *Ruksha, Vikasi, Tikshna, Ushna Dravyas*; causes *Vata* and *Pitta* vitiation along with *Sthanastha Dhatudushti* and *Khavaigunya* which seem to be the precipitating factors of the disease while *Dhatukshaya, Agantu Vrana* caused by mechanical irritation owing to chewing habits substance seem to be the promoting or aggravating factors for the disease and *Beejadosha* seems to be the predisposing factor for the disease. OSMF mainly occurs due to combination of all *Nija, Aagantuja* and *Sahaja Nidanans*. *Nija Nidanans* includes *Kashaya, Katu, Ruksha, Ushna Tikshnadi Ahara Vihara Sevana* and *Vishista Nidanans* which are excessive chewing

of betel nut, tobacco and its products i.e. *Kashaya, Katu, Ruksha, Ushna, Tikshna, Vikasi Dravyas*. *Aagantuja Nidanans* includes *Abhighataja Vrana* due to these excessive chewing habits and its *Tikshna, Kshara Dravyas* (alkaloid and lime content). *Sahaja Nidana* is *Beejabhagavayava Dushti* making the local tissue weak or vulnerable to other factors. Due to the *Nija Nidanans* which is of *Vata – Pitta* provocative in nature, cause vitiation of *Vata Pitta Doshas* which latter on get localized (*Sthanasamshraya*) in the oral cavity. On other hand, *Aagantuja Nidanans* cause *Achaya Poorvaka Dosha Prakopa* mainly *Vata* and *Pitta*²⁴.

After considering all the symptoms, OSMF is a *Jeerna Vata-Pittaja Sarvasara Mukharoga* ultimately causing *Shukla, Kathina, Khara Vranavastu/ Duroodha Vrana* in *Mukha*. The *Vrana* situated in *Mukha* are involving *Twaka* and *Mamsa*, and *Acharya Sushruta* has mentioned that *Vrana* involving *Twaka* and *Mamsa Dhatu* is not easily curable. On taking a keen look on pathogenesis and symptoms of OSMF like recurrent ulceration and inflammation it shows the difficulty in treating the condition. Thus OSMF can be considered as *Krichchhasadhya Vyadhi* at early stage while it becomes *Yapya Vyadhi* at latter stage when disease becomes more advanced with severe trismus.

Among the local treatments *Kavala, Gandusha* and *Pratisarana* are having utmost importance in *Mukharoga*. For *Vataja Mukhapaka Pratisarana* with *Pippali, Saindhava* and *Ela, Kavala* with *Vatahara Dravyas Sidhdha Tailas, Nasya* with *Vatahara Dravyas Siddha Tailas, Snaihika Dhuma* etc. and for *Pittaja Mukhapaka Pitta- Raktahara Chikitsa* and use of *Madhura Sheeta Dravyas* has been mentioned in classics^{25,26}.

CONCLUSION

In Ayurvedic classical texts, no any direct references about the disease quoted, can be considered as *Anukta Vyadhi* (Unexplained disease) but on basis of sign and symptoms of the diseases it can be consider as *Vata-Pitta Pradhana Sarvasara Mukharoga* included in *Yapya Vyadhi*. The local treatments *Kavala, Gandusha* and *Pratisarana* are having utmost importance in *Mukharoga*. Hence, fundamental principles of *Ayurveda* should be applied for achieving regain of the normalcy of oral mucosa and restoring the normal function by its preventive and curative approach

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Fig.1:Flow chart showing *Samprapti* of the disease OSMF

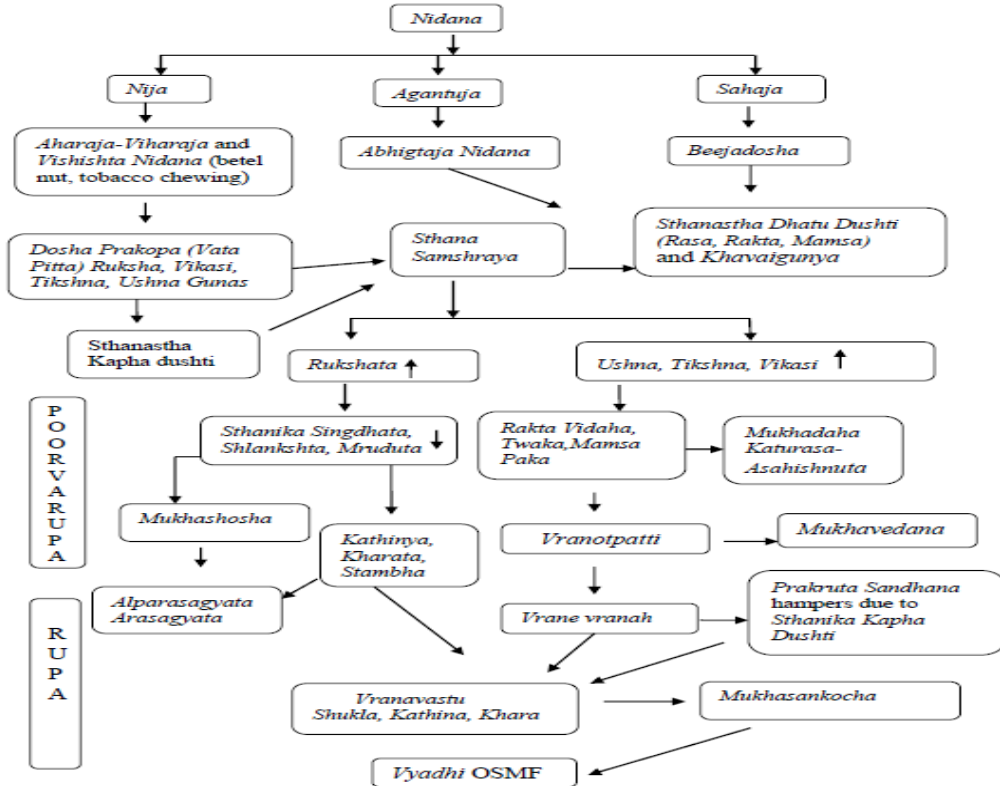


Table 1:Samprapti Ghataka of OSMF

Nidana	Vata Pitta Prakopaka Nidanans
Dosha	Tridosha (Vata Pitta Pradhana)
Dushya	Rasa, Rakta, Mamsa Dhatu
Srotasa	Annavaaha, Rasavaaha, Raktavaaha, and Mamsavaaha
Srotodushiti	Sanga
Agni	Jatharagni ; Rasa, Rakta, Mamsa Dhatvagni
Roga Marga	Bahya
Udbhava Sthana	Amashaya
Adhithana	Shareera
Vyaktisthana	Mukha
Prabhava	Chirakari
Sadhyasadhyaata	KruchchhraSadhaya , Yapyavyadhi