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A pilot study on Ayurvedic management of oral submucous fibrosis

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Abstract

Introduction: Oral submucous fibrosis (OSMF) is a chronic debilitating disease and a well-recognized potentially premalignant condition of the oral cavity. Various medical and surgical treatment modalities have been used in modern science, but results are not satisfactory owing to recurrence, adverse effects, and sometimes worsening the condition. On analyzing the disease condition with Ayurvedic approach, it seems to be nearer to *Vata-Pitta* dominant chronic *Sarvasara Mukharoga* and needs to be treated at local as well as systemic level. **Aim:** To evaluate the effect of proposed Ayurvedic treatment protocol in the patients of OSMF. **Materials and Methods:** It was an open-label nonrandomized clinical trial with black box design comprising of holistic Ayurvedic approach in which 22 patients of OSMF completed the treatment. In all of them after *Koshthashuddhi* (mild purgation) and *Shodhana Nasya* (errhine therapy); *Pratisarana* (external application) with *Madhupippalyadi Yoga*, *Kavala* (gargling) with *Ksheerabala Taila* and internally *Rasayana Yoga* were given for 2 months and followed for 1 month. **Results:** It revealed statistically highly significant relief in almost all signs and symptoms as well in inter incisal distance improvement. Furthermore, sustained relief was found in follow-up. **Conclusion:** Ayurvedic treatment protocol is effective in the management of OSMF.

Key words: *Kavala*, *Mukharoga*, oral submucous fibrosis, *Pratisarana*, premalignant condition, *Rasayana Yoga*

Introduction

Oral submucous fibrosis (OSMF) is a chronic debilitating disease of the oral cavity characterized by inflammation and progressive fibrosis of the lamina propria and submucosa, that results in marked rigidity and eventually inability to open the mouth.[1,2] It manifests as blanching and stiffness of the oral mucosa, trismus, burning sensation in the mouth, intolerance to eating hot and spicy foods, repeated vesicular eruption and ulceration of the buccal mucosa, palate and pillars, loss of gustatory sensation, etc.[3] Habit of betel nut and tobacco chewing, excessive consumption of chilies and spices, genetic susceptibility, immune mediated process, smoking, drinking alcohol coupled with dietary deficiencies are thought to be the causative factors of the OSMF,[4] but there is compelling evidence to implicate the habitual chewing of areca nut with the development of OSMF.[3,5] Probably involved pathogenesis is stimulation of fibroblast production, increased collagen synthesis due to areca nut alkaloids mainly arecoline along with stabilization of collagen structure by catechin and tannin contents of areca nut.[4,5]

Worldwide estimate of OSMF indicates that 2.5 million people are affected with most cases connected on the Indian subcontinents, especially southeast India.[1,3] An epidemiological assessment of the prevalence of OSMF among Indian villagers based on baseline data, recorded a prevalence of 0.2% (n = 10071) in Gujarat and 0.4% (n = 10287) in Kerala.[5] The alarming fact is that there has been a drastic increase in the incidence of OSMF in the younger age group in India as *Pan-Masala* and *Gutka* are easily available in most part of the country even to young children.

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OSMF has a high morbidity rate because it causes progressive inability to open the mouth resulting in eating difficulty and consequent nutritional deficiencies. It also has a significant mortality rate. On the basis of cancer registry data, it is estimated that annually 75,000–80,000 new oral cancer develop in India, the majority of oral cancers are unequivocally associated with tobacco-areca nut chewing habits, and usually preceded by premalignant lesions, most often a persistent leukoplakia or OSMF.[6]

The management of OSMF comprises of nutritional support and anti-oxidants; physiotherapy; immunomodulatory drugs such as steroids; intra-lesional injections of steroids, hyaluronidase, human placental extracts, etc., either singly or in combination for early/milder form of disease and surgical measures for advanced cases.[3] Unfortunately, all these medical and surgical interventions have very limited success, as they are not free of adverse effects and recurrence are also there.[5]

As the disease OSMF cannot exactly be equated with any *Mukharogas* in Ayurvedic classics, it can be considered as *Anukta Vyadhi* (unexplained disease) and can be managed according to methodology given by *Acharya Charaka*.[7] On looking into the Ayurvedic classics, some scattered description of symptoms related to OSMF such as *Krichchhen Vivrinoti Mukham*[8] (difficulty in opening the mouth), *Mukhadaha*,[9,10] *Usha*[9] (burning sensation in mouth), *Tikshna Asaha*[11] (intolerance to spicy food), *Mukhasosha*[12] (dryness of mouth), *Arasagyata*, *Alparasagyata*,[13] *Virasagyata*[14] (defective gustatory sensation), *Mukhantargata Vrana*[15,16] (ulceration of the oral mucosa) and *Vranavastu*,[17] *Durudha Vrana*[18] (fibrosis) can be found. Thus analyzing the disease condition, OSMF can be considered as *Vata Pitta* dominant *Tridoshaja* chronic *Sarvasara Mukharoga* (disease affecting the whole oral cavity) and it is obvious that it needs to be treated at local as well as systemic level.

In Jamnagar and the surrounding area of Saurashtra, it is common to found chewing habit of betel quid, other betel nut related products as well the disease OSMF and oral malignancies. Considering the social acceptance of the habit and the lack of social stigma against these habits, it is prudent to formulate a proper treatment plan for OSMF concurrent with propaganda against these deleterious habits. Hence, this study was planned with a holistic Ayurvedic approach to deal this crippling disease which is the need of time.

Materials and Methods

In this open-label, nonrandomized, clinical trial; 24 patients were registered from the outpatient department of *Shalakya Tantra*. The study was started after approval from the Institutional Ethics Committee (No. PGT/7-A/Ethics/2011–12/2087) and registered in CTRI (Ref no./2013/12/006147). A consent letter based on subject's willingness and interest to participate in the study was obtained. The study was designed on black box method comprising of multi-therapy approach in a single group.

Inclusion criteria

- Age group between 16 and 60 years
- The patients having clinical signs and symptoms of OSMF.

Exclusion criteria

- Extensive fibrosis with severe trismus with an inter incisal distance (IID) <15 mm
- Disease is most advanced with premalignant and malignant changes
- Generalized fibromatosis
- Oral manifestation of scleroderma
- Oral lichen planus
- Pale oral mucosa of anemia mimicking blanching
- Chronic debilitating conditions such as DM, HT, HIV, etc.
- Patients not willing to give up addiction habits of *Gutka*, *Pan-Masala*, tobacco, etc.

Investigations

Routine hematological, routine biochemical-RBS, serum lipid profile, serum creatinine, and routine urine examination before treatment were carried to rule out any other disorder.

Treatment protocol and posology

For the initial 3 days *Erandabhrishta Haritaki*[19] powder 5–10 g was administered with luke warm water at bed time for *Koshthashuddhi* (mild purgation), followed by *Shadabindu Taila Nasya* (errhine therapy)[20] 4–8 drops in each nostril for 5 days. After that *Pratisarana* (external application), *Kavala* (gargling) and *Rasayana Yoga* were administered twice a day simultaneously for 60 days.

Madhupippalyadi Pratisarana

Pippalyadi Choorna [Table 1] 3–6 g was mixed with equal quantity of honey to make the paste, which was taken on the index finger and applied all over the oral mucosa and gentle massage was advised for about 10 min. Then, the patient was allowed to spit out the drug and the secretions.

Ksheerabala Taila Kavala

Supraclavicular massage with lukewarm *Tila Taila* (sesame oil) followed by fomentation was done. Then, luke warm *Ksheerabala Taila*[21] [Table 2] 10–15 ml was advised to fill in the mouth and move it between cheek and throat. It was continued for a period until the patient developed *Kaphapurnasyata* (mouth fill with secretions), *Ghranasrava* and *Akshisrava* (watery discharge from nose and eyes). Then, the patient was allowed to spit out the oil and secretions. Again mild fomentation and massage were done on the supraclavicular region.

Rasayana Yoga

Rasayana Yoga [Table 3] was administered in a dose of 6 g orally, with honey and ghee in unequal quantity and empty stomach twice a day.

After completing the treatment, follow-up was carried out for 1 month.

All the test drugs were prepared and procured from Pharmacy, Gujarat Ayurved University, Jamnagar.

Criteria for assessment

Subjective parameters

All the signs and symptoms were given scoring depending on their severity.

Objective parameter

IID scoring was adopted to assess improvement in the opening of the mouth. IID was measured by taking the distance between mesial angles of the upper and lower central incisor with Vernier Caliper. Clinical stages and grading of the disease were adopted from previous studies.[22,23]

Signs and symptoms	Score
Mukhadaha (burning sensation in mouth)	
Nil	0
On taking spicy food	1
On taking food	2
Continuous	3
Rasagyana (taste)	
Normal	0
Altered/decreased	1
Lalasrava (salivation)	
Normal	0
Altered	1
Decreased	2
Katu Rasa Asahishnuta (intolerance to spicy food in comparison to previous tolerance)	
Nil	0
Mild	1
Moderate	2
Severe	3
Mukha Vedana (pain in mouth)	
Nil	0
While opening the mouth	1
Continuous	2
Colour of oral mucosa	
Pink normal	0
Red or deep pink	1
Pale white	2
Blanched white	3
Ulceration in mouth	
Nil	0
Mild	1
Moderate	2
Severe	3
Consistency of the mucosa on palpation	
Soft normal	0
In between soft and leathery hard	1
Leathery hard	2
Fibrous bands-on palpation	
No fibrous bands	0
One or two solitary fibrous bands	1
Bands felt nearly in entire surface	2
Adherent fibrous bands producing rigidity of mucosa	3

The scoring pattern for IID

Inter incisal distance (mm)	Score
41 or above considering normal	0
37-40	1
33-36	2
29-32	3
25-28	4
21-24	5
17-20	6
13-16	7

Table 1: Ingredients of *Madhupippalyadi Yoga*

Name of the drug	Botanical/English name	Proportion
Pippali	*Pipper longum* Linn.	½
Yastimadhu	*Glycyrriza glabra* Linn.	1
Gairika	Ochre (Fe_2O_3)	1
Jati	*Jasminum officinale* Linn.	1
Haridra	*Curcuma longa* Linn.	½
Madhu	Honey	4

Table 2: Ingredients of *Ksheerabala Taila*

Name of the drug	Botanical/English name	Proportion
Atibala	*Abutilon indicum* Linn.	1
Tilataila	*Sesamum indicum* Linn.	3.2
Godugdha	Cow milk	4

Table 3: Ingredients of *Rasayana Yoga*

Name of the drug	Botanical/English name	Proportion
Guduchi	*Tinospora cordifolia* Linn.	1
Amalaki	*Embelica officinalis* Gaertn.	1
Gokshura	*Tribulas trrestris* Linn.	1
Haridra	*Curcuma longa* Linn.	½
Yashtimadhu	*Glycyrriza glabra* Linn.	1

Overall assessment

The overall improvement was assessed on the basis of subjective and objective parameters.

- Cured: 100% relief in signs and symptoms
- Marked improvement: 76-99% improvement in signs and symptoms
- Moderate improvement: 51-75% improvement in signs and symptoms
- Mild improvement: 26-50% improvement in signs and symptoms
- Unchanged: 0–25% improvement in signs and symptoms.

Statistical analysis

The values of data were expressed as a percentage of relief and mean-standard error of the mean. The data were analyzed by Student's *t*-test for comparing before and after treatment obtained scores. The level of significance are expressed as $P > 0.05$ as insignificant, $P < 0.05$ and 0.01 as significant, $P < 0.001$ as highly significant.

Observations

In the present study, 22 out of 24 patients were completed the therapy. Age- and sex-wise distribution of registered patients showed that, 50% patients were in age group of 16–30 years followed by 41.67% in age group of 31–45 years and 79.17% patients were male. The socioeconomic status based distribution showed that 54.17% patients belonged to lower middle class and 37.5% from poor class. Personal history showed that 45.83% patients had *Vishamagni* (irregular appetite) and 41.67% had *Mandagni* (low appetite) while 45.83% patients had constipation.

Maximum 62.5% patients were of *Vata Pitta Prakriti* while 50% patients were of *Avara Satva*. 58.33% of the patients were consuming excessive chillies and spices previously, and 37.5% patients were taking *Alpa* and *Ruksha* diet (less in quantity and nutrition). Observation on addiction revealed that 83.33% of the patients had chewing habit of *Gutka/Mawa* (containing chiefly areca nut, lime, catechu, and tobacco) followed by 8.33% had chewing habit of *Pan Masala* (containing chiefly areca nut, lime, and catechu). 4.17% of the patients were addicted to only areca nut chewing as well 4.17% were addicted to *Bajara* (burnt fine powder of tobacco) application in the mouth. Frequency- and quantity-wise distribution showed that 41.67% patients were taking 1–5 packets of *Gutka*, etc., products per day followed by 37.5% were taking more than 10 packets. 41.67% patients had chewing habit since more than 10 years, followed by 33.33% since 6–10 years and 20.83% patients since 2–5 years.

Symptoms wise distribution showed 100% patients had a complaint of inability to open the mouth, burning sensation in mouth and intolerance to spicy food. Dryness of mouth was present in 83.33% patients, decreased taste in 62.5% patients and pain while opening the mouth in 54.17% patients. Chronicity-wise observation revealed chronicity of OSMF up to 1 year in 33.33%, between 2 and 5 years in 33.33% and more than 5 years in 33.33% patients.

On examination blanching of the mucosa, ulceration of the mucosa, leathery hard consistency of the mucosa and fibrous bands were recorded in 100% of the patients. In 45.83% patients 1–2 solitary fibrous bands followed by fibrous bands nearly in the entire surface in 29.27% patients while multiple adherent fibrous bands giving rigidity to the mucosa was observed in 25% patients. IID was 15–16 mm in 45.83%, 25–28 mm in 25%, 17–20 mm in 12.5%, 21–24 mm in 12.5% and 29–32 mm in only 4.17% patients.

In 100% patients, there was stage 2 OSMF. In maximum 83.33% patients, there was grade 3 OSMF and grade 2 OSMF in 16.67%.

Results

Effect of therapies on signs and symptoms

Statistically highly significant ($P < 0.001$) results were found in symptoms such as burning sensation of mouth, intolerance to spicy food, dryness of mouth, pain while opening the mouth and clinically marked improvement was observed in decreased taste [Table 4]. Furthermore, statistically highly significant improvement ($P < 0.001$) was obtained in blanching of the mucosa, ulceration of the mucosa, and leathery consistency of the mucosa, but the result was insignificant in palpable fibrous bands ($P > 0.05$) [Table 5]. In objective parameter IID statistically highly significant improvement was obtained ($P < 0.001$) [Figures 1,2 and Table 6].

Total effect of therapy

Out of 22 patients none of the patients was cured, 9.09% showed marked improvement; maximum 72.73% showed moderate improvement and 18.18% of the patients had mild improvement.

Discussion

Formerly OSMF was thought to be a disease of the elderly women; but at present, there is a paradigm shift in the scenario; -more and more younger males of the third and even the second decade are being affected which is noted after *Gutka*, *Pan-Masala* came into the market.[3] The reason for OSMF cases coming from low socioeconomic group might be poor quality of food, low vitamins and minerals particularly iron deficiency and use of more spices and chillies to make the food tasty, coupled with lack of health consciousness.[24]

Maximum patients had impaired digestion hampering subsequent stages of absorption and assimilation which further aggravates the disease condition. *Vata Pitta Prakriti* people were affected owing to similarities of disease initiating *Doshas*.

In the present study, most of the patients (95.83%) chewed areca nut in some form or other which also proves the previous researches.[3,5] The most commonly used areca nut products by the patients in this study were *Gutka/Mawa* containing a higher concentration of areca nut per chew and other ingredients like tobacco and lime that overall cause more harm. No definite relation of frequency and quantity is established in this study as previous researches also showed that chewing betel nuts average 5 times a day is sufficient to cause the disease.[25] The duration of chewing habit wise data supports the fact that the disease is of gradual onset over a period of at least 2–5 years.[5]

Pooga (areca nut - *Areca catechu* Linn.) is having *Kashaya Rasa* (astringent taste), *Ruksha* (dry), *Sheeta* (cold) and *Vikasi* (causing looseness of tissues and joints by the diminution of vital essence) properties.[26] Its excessive and constant chewing seems to be the *Atiyoga* (over use) of *Kashaya Rasa*[27] that affects locally predominantly causing *Sthanadushti* (local tissue harm) as well systemically to provoke the *Vata Dosha* which is the prime factor in the pathogenesis leading to *Rukshata* (dryness), *Kharata* (hardness), *Stambha* (stiffness) and *Shushkata* (atrophy) in *Sthanastha Dhatus* (fibrosis of subepithelial tissue and atrophy of epithelium of oral cavity). *Tamraparna* (tobacco - *Nicotiana tabacum* Linn)[28] and lime (alkali)[29] are having *Katu* (pungent), *Ushna* (hot), *Tikshna* (penetrating) and *Pitta* provoking properties.[29] Its excessive and constant chewing results in *Agantu Vrana* (local irritation and injury)[30] causing local tissue harm while its systemic absorption provoke the *Pitta dosha* contributing to the disease process.

Excessive consumption of chillies and spices can be taken as *Atiyoga* (excessive use) of *Katu Rasa*[27] and *Tikshna*, *Ushna Drvayas* which act locally as irritant and also provoke *Pitta* along with *Vata* aggravating the disease. Consuming *Alpa* (less in quantity and *Ruksha* (ununctuous) food is responsible for the *Vata* provocation and *Dhatukshaya* (nutritional deficiency) promoting the disease condition.

Statistically highly significant relief ($P < 0.001$) in overall blanching of the mucosa, leathery consistency of mucosa shows that to some extent fibrosis is reversed. Fibrous bands are resulting from very dense fibrosis in the oral mucosa and sub mucosa and statistically insignificant relief ($P > 0.05$) may

Figure 1: Before treatment inter incisal distance 15 mm

Figure 2: After treatment inter incisal distance 24 mm

Table 4: Effect on chief complaints

Chief complains	*n*	Mean score		Relief (%)	SD	SE	*t*	*P*
		BT	AT					
Burning sensation in mouth	22	1.77	0.59	71.21	0.50	0.11	11.06	<0.001
Intolerance to spicy food	22	2.77	0.82	72.73	0.65	0.14	14.04	<0.001
Dryness of mouth	20	1.8	0.1	95	0.47	0.11	16.17	<0.001
Decreased taste	14	1	0	100	0	0	-	-
Pain while opening the mouth	13	1	0.08	92.31	0.28	0.08	12	<0.001

BT: Before treatment, AT: After treatment, SD: Standard deviation, SE: Standard error

Table 5: Effect on clinical findings

Clinical findings	*n*	Mean score		Relief (%)	SD	SE	*t*	*P*
		BT	AT					
Blanching of the mucosa	22	17.36	14.23	19.44	1.96	0.42	7.51	<0.001
Ulceration of the mucosa	22	8.5	0.27	97.18	2.20	0.47	17.52	<0.001
Leathery consistency of the mucosa	22	10.55	8.14	25.6	1.14	0.24	9.91	<0.001
Palpable fibrous bands	22	1.82	1.77	4.55	0.21	0.05	1	>0.05

BT: Before treatment, AT: After treatment, SD: Standard deviation, SE: Standard error

Table 6: Effect on objective parameter - IID

Parameter	*n*	Mean score		Relief (%)	SD	SE	*t*	*P*
		BT	AT					
IID	22	5.73	3.68	39.85	0.90	0.19	10.68	<0.001

BT: Before treatment, AT: After treatment, SD: Standard deviation, SE: Standard error, IID: Inter incisal distance

indicate that once the dense fibrous scarring occurs it may be difficult to revert.

IID is an objective parameter used to assess mouth opening.[31] The more advanced the disease, the less will be the mouth opening. Statistically highly significant ($P < 0.001$) improvement in IID (39.85%) was noted. Furthermore, sustained relief was observed in the follow-up period of 1 month that is not maintained in steroids like immunosupressor drugs mostly used by the modern science. In maximum patients (45.83%) IID was between 15 16 mm and had comparatively less (27.58%) relief. As the disease progresses, fibrosis becomes more dense reducing the mouth opening which indicates the disease may become *Yapya* (that can be maintained as it is) at this stage or may require a long-term treatment to have better result.

Probable mode of action of Ayurvedic treatment protocol

OSMF is a chronic supraclavicular disease hence holistic management of OSMF should begin with *Kosthashuddhi* (mild purgation) and *Shiroshuddhi* (errhine therapy) and also *Acharya Vagbhatta* has stated purification of body and head by *Kosthashuddhi* and *Shiroshuddhi* as the first line of treatment in *Mukharogas*.[32] *Koshthashuddhi* causes *Anulomana* of *Doshas* and prepare the organ for better absorption while *Shiroshuddhi* removes the *Srotorodha* (obstructions in channels) and opens the channels for absorption in supraclavicular region which might have enhanced the effect of all the used drugs and procedures.

Pratisarana (external application) and *Kavala* (gargling)/ *Gandusha* (holding oil or decoction in oral cavity) are the local therapies mostly used in *Mukharogas*. Here, local therapy

is to prevent and reverse the fibrosis. *Madhupippalyadi Yoga Pratisarana* has overall *Lekhana* (fibrolytic), *Shothahara* (anti-inflammatory), *Vranashodhana* (wound cleaning), *Vranaropana* (wound healing) and *Vata Pitta* dominant *Tridosha* pacifying effect as well most of the drugs possess anti-inflammatory and antioxidant properties. Fibrolytic and cancer preventive activities of *Haridra* have been proven and its use in OSMF is also documented in few journals and research works.[33] Furthermore, gentle massage over the oral mucosa in *Pratisarana* improves blood circulation resulting in better absorption of the drugs.

Ksheerabala Taila is having *Snehana* (unctuous), *Balya* (strength enhancing), *Brimhana* (bulk enhancing), *Ropana* (healing) and *Vata Pitta* pacifying properties and most of the drugs possess anti-inflammatory, muscle relaxant and tonic properties. The common base of *Tila Taila* makes the whole drugs pervading to micro channels due to its *Shukshma* (entering in micro channels) and *Vyavayi* (spreading quickly) properties and it is also the best pacifying drug for the *Vataja Vikara*.[34] Moreover, pre- and post-procedure of supraclavicular massage and fomentation help to improve circulation to local region increasing absorption of the drugs along with it, movement of mouth in *Kavala* procedure is also useful as physiotherapeutic measure to relieve stiffness.

Systemic therapy of the OSMF is to bring homeostasis and to enhance the vitality of the oral mucosa. OSMF is the chronic debilitating disease, and it is believed to be a localized collagen disorder or an autoimmune process. All these factors favor the use of *Rasayana Yoga*.

Most of the drugs of *Rasayana Yoga* are having *Rasayana* (rejuvenating), *Balya*, *Deepana* (carminative), *Pachana* (digestion), *Shothahara*, *Vranapaha* (wound healing) and *Tridosha* predominantly *Vata Pitta* pacifying properties. Furthermore, most of the drugs are having immunomodulatory, antioxidant, anti-inflammatory, and cancer preventive properties that may have improved the status of *Dhatus* (tissues).[35] By virtue of *Yogavahi* (has special affinity to carry and potentiate the action of main drug), *Sukshma* and *Sanskaranuvarti* (affinity to carry the properties of main drug along with own) properties, *Madhu* and *Ghrita* serve as a best vehicle for the drugs.

Thus, complete treatment protocol is helpful to subside inflammation and ulceration so preventing further progress, increases suppleness of the stiffed oral tissue in terms of improving mouth movements, reverses fibrosis in some extent and improves overall immunity which in turns increases the strength of oral mucosa and submucosa to overcome the disease.

Conclusion

The present study opines that Ayurvedic treatment protocol ensures the regain of the normalcy of oral mucosa. It is effective in the management of OSMF without any adverse effect as well as having sustained relief in follow-up. It can be considered as a better alternative to the modern treatment modality in the management of OSMF.

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Conflicts of interest
There are no conflicts of interest.

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हिन्दी सारांश

ओरल सबम्युकस फाईब्रोसिस में आयुर्वेदीय चिकित्सा–एक प्रारंभिक अध्ययन

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ओरल सबम्युकस फाईब्रोसिस जीर्ण क्षयात्मक और मुँह के केन्सर जैसे भयानक रोग की पूर्वावस्था मानी जाती है। यह कोलेजन तन्तु से संबंधित रोग है जो सुपारी खानेवाले लोगो में अधिकांश पाया जाता है। इसमें मुँह की लेमिना प्रोपरिया एवं सबम्युकोसा नामक सतह में शोथ होता है जो बाद में फाइब्रोसिस में परिवर्तित होता है। आधुनिक चिकित्सा पद्धति में उपलब्ध दवाइयाँ और शस्त्र कर्म इसमें उतने लाभकारक नहीं हैं। इस रोग की आयुर्वेद में वर्णित किसी भी मुखरोग से तुलना नहीं मिलती है, किन्तु लक्षणों के आधार पर इसे वात पित्त प्रधान, त्रिदोषज, जीर्ण सर्वसर मुखरोग माना जा सकता है, जिसमें अंतमें व्रणवस्तु (फाइब्रोसिस) बन जाती हैं। ओरल सबम्युकस फाईब्रोसिस पर किये गए इस चिकित्सीय अध्ययन मे २४ रोगीयों का पंजीकरण किया गया जिनमें से २२ रोगीयों ने चिकित्सा पूर्ण की। सबमें प्रथम एरण्डभृष्ट हरीतकी से मृदुविरेचन करके षडबिन्दु तैल का शोधन नस्य दिया गया। बाद में कुल ६० दिन तक मधुपिप्पल्यादी योग का प्रतिसारण, क्षीरबला तैल का कवल और खाने के लिए रसायन योग दिया गया। निष्कर्ष स्वरूप ये पाया गया कि लगभग सभी लक्षणों में यह आयुर्वेदिक चिकित्सा शोधप्रारूप अत्यंत उपयोगी एवं लाभप्रद है।