

Prosthodontic Rehabilitation of a Patient with Oral Submucous Fibrosis: A Case Report

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Abstract

OSMF is a chronic precancerous condition characterized by inflammation and progressive fibrosis of lamina propria. It is a disease of unknown origin commonly prevalent in Indian population. It is associated with genetic predisposition, infectious and viral agents, carcinogens, immunological factors, tobacco chewing, consumption of chillies, deficiency of iron and B complex, smoking, alcohol, tobacco etc. Reduced mouth opening, decreased saliva, muscle rigidity and inelastic tissues pose a huge challenge for the dentist during prosthetic rehabilitation in such cases. This case report describes prosthodontic management of a patient with OSMF with complete denture designed to fulfil the patient's needs and requirements.

Key Words

Oral submucous fibrosis; betel nut; trismus; dry mouth

INTRODUCTION

Oral submucous fibrosis is a precancerous condition, first described by Schwartz in 1952, who coined the term 'atrophica idiopathica mucosa oris' describing this oral fibrosing condition. It was later termed as oral sub mucous fibrosis (OSMF) by Joshi. In 1953, Pindborg, Deftary and others reported its prevalence in patients in the age group of 2 to 87 years.^[1] It has been predominantly seen in Asian countries, especially in India. Recent epidemiological data shows a rise in number of cases in India from 250,000 in 1980 to 2 million cases in 1993. This has been attributed to an increase in prevalence of the habit amongst the population due to increased popularity of commercially prepared areca nut products owing to the marketing strategies, easy access, effective price changes etc.^[2] It is a disease of unknown origin commonly prevalent in Indian population. It is associated with genetic predisposition, infectious and viral agents, carcinogens, immunological factors, tobacco chewing, consumption of chillies, deficiency of iron and B complex, smoking, alcohol, tobacco etc.^[3] OSMF is a chronic disease characterized by mucosal rigidity due to fibroelastic transformation of juxta epithelial layers.^[4] Reduced mouth opening, decreased saliva, muscle rigidity

and inelastic tissues are the challenges for the dentist during prosthetic rehabilitation in such cases.^[5] This case report describes prosthodontic management of a patient with osmf with complete denture designed to fulfil the patient's needs and requirements.

CASE REPORT

A 46 year old female patient reported to the department of Prosthodontics with the chief complaint of difficulty in chewing food due to missing teeth and wanted replacement of teeth. She also complained of burning sensation on having spicy food and restricted mouth opening since a few months. Patient gave a history of tobacco and betel nut chewing since 26 years, 4-5 times/day, but had discontinued over a period of time. Extra oral examination showed the patient had a restricted mouth of about 25mm. Patient appeared frail and was advised examination for nutritional deficiencies. Intraoral examination required special care as it was difficult to retract the patient's fibrotic cheeks. It revealed pale appearance of tissues, dryness of mouth and lack of elasticity and compressibility of buccal mucosa. Thick fibrotic vertical bands were palpable bilaterally on the buccal mucosa (Fig. 1) resulting in reduced mouth opening (Fig. 2). Maxillary and mandibular arches



Fig. 1: Intraoral view showing fibrous bands on buccal mucosa



Fig. 2: Reduced mouth opening



Fig. 3: Final impressions



Fig. 2: Teeth arrangement with reduced occlusal



Fig. 3: External surface impression



Fig. 4: Pre and post treatment facial profile

were completely edentulous, representing Atwoods order III and V respectively. Both the ridges were smooth, round with well keratinised mucosa. Sticking of the mouth mirror to the oral mucosa during examination was suggestive of dry mouth. Absence of puffed cheek appearance when asked to blow indicated loss of cheek elasticity. A diagnosis of OSMF at a moderately advanced stage was made based on these characteristic oral features and biopsy report. Treatment plan decided was a complete denture modified to enhance its retention, stability and support which is compromised due to the existing unfavourable clinical conditions. Patient was not willing for dental implants due to surgical and financial considerations. Prior to commencement of the treatment, the patient was advised to discontinue her betel nut and tobacco chewing habit completely. She was then advised physiotherapy involving opening and closing the mouth wide repeatedly atleast 4- 5 times a day. Supportive measures like avoiding spicy food and

intake of nutritional supplements was advised. After the necessary preliminary management, the definitive prosthetic treatment was started in a conservative manner. The routine steps in construction of complete dentures were followed along with modifications at every step to accommodate the inelastic tissues. Preliminary impression was made in irreversible hydrocolloid (Algitex, DPI, Mumbai, India) in a perforated stock metal tray modified to keep the flanges short and avoid contact with the inelastic tissues. Cast was poured in dental plaster type II (Kaldent, Kalabhai Pvt. Ltd., Mumbai, India). Custom trays were fabricated on the cast using self cure acrylic resin (DPI Auto polymerised acrylic resin, Mumbai, India). The tray was checked intraorally for border extensions and stability. Functional border moulding was carried out with putty addition silicone (Ad- Sil putty, Prime Dental Pvt. Ltd., Mumbai, Maharashtra, India), as vestibular mucosa exhibited some resiliency. As patient's complained

of burning sensation in the mouth and to record the fine details, light body elastomeric impression material (Ad-Sil light body, Prime Dental Pvt. Ltd., Mumbai, Maharashtra, India) was used to make the final impression (Fig. 3). The success of the prosthesis in such cases depends on the closeness of contact with the tissues and is not dependent on the peripheral tissues. Final casts were poured in dental stone gypsum type III (Dutt stone, Dutt industries, Mumbai, India). Heat cure record bases (Lucitone 199, Dentsply, York division) were fabricated to improve the stability of record bases and narrow occlusal rims of modelling wax (Maarc, Shiva product, Mumbai, India) of adequate dimension were used to prevent distending the surrounding tissues. Vertical dimension was kept low. Anterior teeth were selected on the basis of esthetics. Posterior teeth selected were non-anatomic with reduced occlusal tables (Fig. 4). Molars can also be replaced by premolars for the same purpose. Anterior teeth were arranged to fulfil lip support and esthetics; with minimal labial inclination. Posterior teeth were arranged on the crest of the ridge and slightly lingually to stabilize the dentures by lingualising the occlusal forces. Waxing and carving was done with concave surfaces and minimal bulk. During try-in the buccal and lingual surface were coated with zinc oxide eugenol to record the external surfaces and accommodate the inelastic tissues (Fig. 5). The excess material over the teeth and borders was removed and the denture was processed using heat cure acrylic resin. The dentures were finished and polished. They were light in weight with thin rounded borders. The extensions were checked such that the tissues do not lift the denture away from the seating surface. Occlusal adjustment done and denture was delivered. Patient was instructed to keep the oral cavity moist by rinsing with water at regular intervals. Instructions were given for maintenance of oral hygiene and mouth opening exercises were told to be continued for successful use of the dentures. Follow-up visits were scheduled for 24 hrs, 1 week, 1 month, 3 months, 6 months, 1 year, 3 years for any minor adjustment. During follow-up visits the patient was found to be happy with the dentures and was satisfied with the treatment (Fig. 6).

DISCUSSION

OSMF is a chronic precancerous condition characterized by inflammation and progressive fibrosis of lamina propria. Cox & Aziz (1997)

proposed that the progressive inability to open the mouth being a major complaint in such cases is because of accumulation of fibrous tissue in the juxtaepithelial region of the oral mucosa along with concomitant muscle degeneration.^[6] Buccal mucosa is the most common involved site followed by other parts of the oral cavity.^[6,7] Nutritional deficiencies may not play a primary role but it could synergize the symptomatology by contributing to epithelial atrophy.^[2] Betel quid containing areca nut has been mentioned as the strongest risk factor for OSMF. The amount, frequency and duration of chewing betel quid are clearly related to the development and severity of the condition. Biologically active alkaloids and flavonoids like arecaidine, arecoline, arecolidine, guvacoline, guvacine and tannins, catechins respectively and copper are the main components causing continuous irritation resulting from direct contact of quid mixture with oral tissues.^[8] In this case betel nut chewing appears to be the main factor correlating with the disease. Buccal mucosa and lips are generally affected in the early stages, although it was thought that the palate and faucial pillars are involved first.^[9] The fibrous bands in the buccal mucosa run in a vertical direction and the mucosa is observed to be involved symmetrically. The initial symptoms include burning sensation in the mouth on intake of spicy food, appearance of blisters on the palate, ulcerations, excessive salivation, poor gustatory sensation, and dryness of the mouth. There are periods of exacerbation characterised by appearance of small vesicles in the cheek and palate, usually three months to one year. Focal vascular dilatations (petechiae) in early stages of the disease may be attributed to a vascular response due to hypersensitivity of the mucosa due to external irritants like chilli or areca nut.^[8] With further progression of the disease, blanching of the mucosa and appearance of fibrous bands are seen. The varying degrees of trismus are due to the dense fibrosis around the pterygomandibular raphe.^[9] In advanced cases, findings are severe trismus, ulceration, subsequent infection, mottled marble appearance of cheeks, reddish mucosa, pale and thickened floor of mouth and progressive dysphasia if the fibrosis extends down to the esophagus. The most serious consequences are malignant transformation (squamous cell carcinoma) which may occur in 3% to 6% of the cases.^[9] This condition poses quite a challenge to the clinician during the process of rehabilitation. Management of

the condition includes stopping the habit, nutritional support, local drug delivery, immunomodulatory drugs, physiotherapy and surgical management.^[10] If adequate precautions are taken during denture construction, it is possible to construct a functionally acceptable denture inspite of the tissue condition.^[5] The patient was instructed to quit the betel nut and tobacco chewing habit. Supportive therapy along with physiotherapy was initiated. Irreversible hydrocolloid in a tray with short flanges was used to record the preliminary impressions in an undistorted form. Functional border moulding with putty addition silicone was carried out as the vestibular mucosa exhibited some resiliency. The retention is by adhesion, cohesion & interfacial surface tension. Light body elastomeric impression material was used to record the fine details of the tissues and avoid tissue irritation. Heat cure record bases were fabricated to improve the stability of record bases and narrow occlusal rims of modelling wax of adequate dimension were used to prevent distending the surrounding tissues. Vertical dimension was kept low to improve stability and the increased freeway space will provide more freedom for mastication and speech considering the reduced mouth opening. The teeth were arranged on the crest of the ridge and the waxed external surfaces were carved to minimize the bulk and interference with the inelastic tissues. Posterior teeth selected were non- anatomic with reduced occlusal tables to enhance stability and reduce lateral forces. An external surface impression was also made for the same purpose. This case report describes the conservative management of this clinically challenging condition in a sequenced conservative manner. The long term success of this procedure will require periodic recall, maintenance and further improvement with feedback from the patient.

CONCLUSION

OSMF is a precancerous condition with a high degree of incidence. As no effective medical and surgical treatment is available for this condition, it is advisable to diagnose this condition in early stages. In the present case report, taking into consideration the signs, symptoms and needs of the patient suffering from oral submucous fibrosis, a conventional complete denture was fabricated with minimal pressure technique using elastomeric impression material.

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