

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

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ABSTRACT

Background: Oral submucous fibrosis is a chronic, progressive disease condition which is pre-cancerous in nature with multifactorial etiology. In this condition, the mucosa eventually becomes blanched and fibrotic bands appear, involving buccal mucosa, soft palate, lips and tongue, leading to stiffness of the oral mucosa causing trismus. This condition hinders conventional prosthetic treatment of edentulous patients. The fabrication of complete denture is complicated by the loss of resiliency of tissues, limited tongue movements and the constant adjustments required to accommodate the changing periphery. This paper presents a clinical report of comprehensive prosthodontic management of a complete denture patient with oral submucous fibrosis.

Keywords: Oral Submucous Fibrosis, sectional custom trays, maxillary sectional denture, mandibular collapsed denture.

INTRODUCTION

Oral submucous fibrosis is a chronic, progressive disease condition which is pre-cancerous in nature with multifactorial etiology. In this condition, the mucosa eventually becomes blanched and fibrotic bands appear, involving the buccal mucosa, soft palate, lips and tongue, leading to stiffness of the oral mucosa causing trismus.¹ Prosthodontic treatment, particularly, is more complex due to the reduced oral opening (microstomia). A maximal oral opening smaller than the size of a complete denture can make prosthetic treatment challenging.² The fabrication of complete denture is further complicated by the loss of resiliency of tissues, limited tongue movements and the constant adjustments required to accommodate the changing periphery. Management of such patients requires modifications in the conventional techniques used in fabrication of complete denture. This

paper presents a clinical report of comprehensive prosthodontic management of a completely edentulous patient with oral submucous fibrosis.

CASE REPORT

A 62-year-old female patient reported to the Department of Prosthodontics and Crown and Bridge complaining of missing teeth, reduced mouth opening, and a burning sensation affecting the oral mucosa. The patient gave history of betel nut chewing since 30 years. There was no significant medical history.

On examination, maximum mouth opening of the patient was restricted to 19 mm and intercommisural width was 38 mm (Fig. 1). Intraoral examination revealed that the buccal and labial mucosae were pale and showed evidence of thickening. Dense fibrous bands

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Fig 1: Reduced mouth opening and intercommisural width.

could be palpated within the cheek mucosa. The patient presented with edentulous resorbed maxillary and mandibular ridges, with fibers extending from buccal mucosa to the ridge resulting in shallow buccal vestibule, insufficient depth of lingual vestibule with atrophic mucosa and salivary gland hypofunction. A clinical diagnosis of oral submucous fibrosis with complete edentulism was made in consultation with clinicians from the Department of Oral Medicine and Radiology. The patient was advised physiotherapy (opening and closing the mouth wide with maximum effort for 15-20 minutes at least 4 times a day) along with cessation of the habit of chewing betel nut quid. Since the mouth opening was limited, it was decided to fabricate sectional complete denture prosthesis. Treatment plan was explained to the patient and informed consent was obtained.



Fig 2: Primary impression made using impression compound using altered stock tray.

Definitive treatment:

i. Primary impression:

Stock metal tray was selected of appropriate size and buccal aspect of the tray was trimmed on both right and left sides³. Primary impression was made using impression compound [Pyrex Polykem, India] (Fig. 2).

ii. Final impression:

- a. For making of final impression, customized sectional maxillary and mandibular trays were fabricated. The sectional maxillary tray was fabricated by using two tapered brass die pins, 8 mm and 6 mm long⁴ (Fig. 3). Similarly, the sectional mandibular tray was fabricated by using press buttons (snap fasteners), which were fixed to the handle of the sectional custom tray, so the tray could be exactly reassembled (Fig. 4). The trays were tried intraorally, fit and extensions were evaluated. Placement and removal of both the segments were practiced.



Fig 3: Sectional maxillary custom tray



Fig 4: Sectional mandibular custom tray

- b. Sectional border molding of both the segments of the maxillary arch was carried out in conventional manner using low fusing

impression compound. Sectional border moulding of both the segments of the Mandibular arch was carried out using the admix technique.⁵ The final impression was made with light body addition silicone impression material (Virtual refill light body, Ivoclar vivadent global, Australia). On setting of the impression material, the tray was removed from the mouth in two sections and reassembled extraorally. (Fig. 5).



Fig. 5: Final impression w.r.t. maxillary and mandibular arches.

e. The impressions were boxed and poured using ADA-type III dental stone (Goldstone, Asian chemicals, Gujarat) and master casts were obtained.

iii. Jaw relation and try-in:

- a. To fabricate the collapsible temporary denture bases, stainless steel hinges used in ladies watch were used. Jaw relation was recorded using conventional technique⁶ (Fig. 6).



Fig 6: Jaw relation w.r.t maxillary and mandibular arches.

- b. Monoplane teeth were arranged in class 1 relation and try-in was done (Fig. 7).



Fig 7: Try-in done w.r.t. maxillary and Mandibular arches.

iv. Denture insertion:

- a. A maxillary sectional denture was designed in two pieces with a locking mechanism using magnets⁷ and a mandibular collapsed denture was fabricated with a stainless steel hinge between the two segments² (Fig. 8).



Fig 8: Maxillary sectional denture and mandibular collapsed denture.

- b. Denture insertion was done after educating the patient about insertion and removal of sectional dentures. The patient was provided with instructions for denture hygiene and maintenance. (Fig. 9).
- c. During follow up appointment, it was observed that the patient was well trained in insertion and removal of the denture. Patient was very much comfortable and there was marked improvement in masticatory function.



Fig 9: Post-operative view.

DISCUSSION

Microstomia or limited mouth opening is common in patients suffering from oral submucous fibrosis. This condition poses problem during each step of prosthetic reconstruction. In patients with microstomia, the overall bulk and height of the impression trays make recording of the impressions exceptionally difficult if not impossible. Without surgery, it is very difficult to perform prosthodontic treatment for patients with microstomia, especially when the mouth circumference length is less than 160 mm. In this case, as the patient was not willing to undergo surgery, it was decided to modify the conventional technique used in fabrication of complete dentures. The modification of metal stock tray for making primary impression was done to reduce the over extension and for easy insertion of tray in patients mouth.³ The maxillary sectional custom tray and mandibular sectional custom tray were fabricated using the technique suggested by Shweta Pandurang Caculo et al⁴ and Shreya S. Colvenkar⁷ respectively. In the maxillary custom tray, the two locking assemblies, one situated anteriorly and the other posteriorly, provided stability to both the sections of the tray. The press buttons in the handle of the mandibular custom tray provided the same functional advantage. This allowed precise intraoral positioning of the two segments and accurate reassembly extraorally. Jaw relations and teeth setting were completed with a collapsed trial denture base, incorporating a hinge assembly.⁶ The maxillary denture was fabricated using magnets which are a popular method for gaining retention. This

technique was proposed by Shreya S. Colvenkar et al⁷. Iron-neodymium-boron magnets encased in steel were used for fabrication of sectional dentures. The advantage lies in their small size and strong attractive force, which allows their placement in the prosthesis without being obtrusive in the mouth. Advantages also include ease of placement, cleaning, and automatic reseating. In the Mandibular denture, a hinge was incorporated in the middle of the lingual surface of the prosthesis and the patient could use this design without any problem.² In addition to prosthodontic rehabilitation, patient was counseled regarding cessation of betel nut chewing. Nutritional support in the form of antioxidants and vitamin B complex was provided.

CONCLUSION

The patients with microstomia presenting for prosthetic rehabilitation pose a challenge to the clinician. Such patients can be conservatively managed by modifying clinical and laboratory procedures; however, in these modifications, care should be taken to avoid compromising the basic principles of providing optimum function and esthetics to the patient. This clinical report describes the fabrication of an economical, quick, and easy method for fabrication of a sectional complete denture for a patient affected with oral submucous fibrosis.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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