Management of a Patient with Oral Submucous Fibrosis Having Restricted Mouth Opening: A Case Report

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Abstract

Objectives-Oral Submucous Fibrosis is a chronic inflammatory disease that results in progressive juxtaepethelial Inflammatory reaction followed by a fibroelastic change of lamina propia with epethilial atrophy leading to stiffness of oral mucosa, causing trismus . This causes the difficulty in chewing, swallowing and speaking.
Method- Sectional complete denture was an appropriate treatment to resolve the problem of Oral Submoucos Fibrosis. The acylic resins connectors in the form of sleeves and cross pins reduced the overall costs and
simplified the laboratory technique.
Results-The rehabilitation of patient suffering from OSMF is a challenge to the Prosthodontist. This article describes the prosthodontic management of such patient by using a sectional denture.
Conclusions-This technique has proven to be simple, inexpensive, and applicable to the selected Oral Submucous Fibrosis patients.

KEYWORDS: Oral Submucous Fibrosis, Restricted mouth opening, Sectional Denture.

Introduction

Limited oral opening can be caused by head and neck radiation, reflex spasm, surgically treated head and neck tumours, microinvasion of the muscles of mastication, connective tissue diseases ,fibrosis of masticatory muscles, facial burns, and reconstructive lip surgeries and Oral submucous fibrosis. (1) The condition can also results from genetic disorders such as partial duplication of chromosome 6q, Hallopeau-Siemens –type recessive dystrophic epidermolysis bullosa, Freeman – Sheldon syndrome, Burton Skeletal dysplasia, and diseases such as Plummer-Vinson syndrome or scleroderma. (2).Limited mouth opening in patients is a common occurrence in prosthodontic practice.(3)

Oral submucous fibrosis is a chronic insidious disease affecting any part of oral cavity and sometimes pharynx. Although occasionally preceded by vesicle formation, it is always associated with juxtaepethelial inflammatory reaction followed by a fibroelastic change of lamina propia with epethial atrophy leading to stiffness of oral mucosa, causing trismus and inability to eat .It is a disease of unknown cause that occurs mainly in India. It is associated with genetic predisposition and alterations and infectious and viral agents, carcinogens and immunological factors. It is most commonly related to the habit of tobacco chewing. Consumption of chilies, deficiency of iron and B –complex, smoking, alcohol and tobacco play important role in initiation of disease . Patients with OSMF often complain of burning sensation of the mouth especially when eating spicy food. This is accompanied by vesicles formation, ulceration or recurrent stomatitis with excessive salivation and defective gustatory

sensation. The most serious consequences of OSMF is malignant transformation or development of squamous cell carcinoma of affected tissues which occurs in 3% to 6% of the cases(4).

Stiffness of oral mucosa leads to limited mouth opening and difficulty in mastication. This article describes a method for sectional denture for a patient with OSMF where limited mouth opening of oral cavity will not allow the use of conventional complete denture.

CASE REPORT

A 55 years old female patient was referred to Department of Prosthodontics ,Institute of dental sciences,Bareilly. for replacement of missing teeth. Her chief complaint was burning sensation of mouth on eating spicy food and difficulty in mouth opening since 3 years. Patient had a habit of chewing areca nuts with paan 4-5 times / day since 10 years.

Extraoral examination-

The patient had mouth opening of 3.5 cm with slight angular chelitis.

Intraoral examination-

The patient had completely edentulous maxillary and mandibular arches .whitish non scrapable lesion was seen on right buccal mucosa. Mucosa appeared blanched with palpable fibrotic bands extending to right buccal frenum vestibule involving buccal frenum with shallow sulcus on right side of maxilla.

Procedure –

1 Sectional Primary impressions (fig 1)-

Two similar stock trays are selected and sectioned antero- posteriorly in such a way that excess tray after the handle is removed from right side of tray 1 and left on tray 2 (Fig 1a).Impressions are made separately of left and right side of the oral cavity using impression compound (Y Dents,MDM Corp)(Fig 1b) and the cast obtained from impression 1. This cast oriented to impression 2 and remaining portion is poured in Model plaster (type II) to obtain the final primary cast.

2 Sectional custom tray fabrication and final impression (fig 2)

A special tray with wax spacer was fabricated in acrylic (M.P.Sai Enterprise)on primary cast. This special tray was then sectioned through the midline ,after which cross- pin slots were placed on the handle of each tray using the Pindex machine. The trays were then stabilized on the cast using sticky wax(M.P.Sai Enterprise). The cross pins , along with sleeves , were placed in position , petroleum jelly was applied on the outer surface of tray that would come in contact with the other half , and the remaining portion of the tray was fabricated. To ensure tray stability , as well as uniformity of pressure and impression material, 4 tissue stops were placed on the intaglio surface of the trays(fig 2a and fig 2b). Border moulding of the maxillary and mandibular sectional trays was then completed in sections using low fusing compound(DPI Pinnacle), followed by the making of sectional final impressions using eugenolfree zinc oxide impression paste (Cavex, Holland)(fig 2 c and fig 2 d). The impressions were refined and the trays were assembled extraorally for pouring of the master casts after beading and boxing of the same.

3 Sectional record base fabrication-

Temporary record bases were fabricated on the obtained master casts using autopolymerizing acrylic resin. The record base were recovered and sectioned through the midline. The sectioned halves were then connected using size '0' stainless steel press buttons(snap fasteners, Needle ind) and acrylic tabs.

4 Fabrication of wax rims and sectional jaw relations(Fig 3)-

On these sectional record bases ,wax rims were fabricated and jaw relation were recorded, after placing the individual sections intra-orally(fig 3 a,b and c).

5 Try-in of waxed up sectional prosthesis-

The transfer of jaw relation record to the articulator , arrangement of teeth ,and the try- in were carried out in the conventional manner.

6 Acrylization of the sectional prosthesis (fig4 and 5)-

Before acrylization of the waxed –up sectional denture, the press buttons were smoothened using acrylic stones and burs. The master cast was duplicated using reversible hydrocolloid (agar) and kept aside for later use. The acrylization was carried out in the following manner:

a) The right half of the waxed up sectional prosthesis was placed on the original master cast and sealed with wax. Three (1 in case of mandibular sectional denture) new size '0' press buttons (male portion) were waxed in position,4 to 5 mm from midline(fig 4a).
b) The above mentioned assembly was acrylized conventionally , after which the right half of the sectional prosthesis was recovered , polished , and finished. The right half of the sectional prosthesis was placed on the duplicated master cast and sealed with wax(fig 4b).
c) The right half of the sectional prosthesis , along with the duplicated master cast was duplicated again using reversible hydrocolloid(agar)(fig 4d).
d) The left half of the sectional prosthesis was placed on the duplicated cast , and the female

Figure 1 (a) Depicts metal stock tray cut in halves

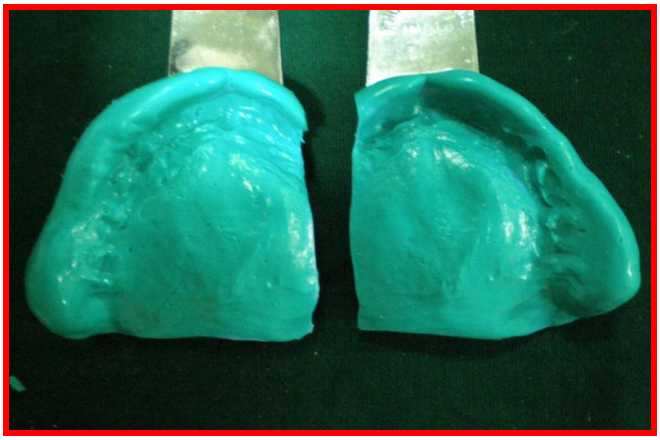

Figure 1 (b) depicts sectional primary impression by impression compound

Figure 2(a) depicts maxillary sectional special tray

Figure 2(b) depicts mandibular sectional special tray

Figure2 (c) depicts maxillary sectional final impression

Figure 2(d) depicts mandibular sectional final impression

Fig .3 JAW RELATION RECORD

Fig 4 Acrylization of the sectional prosthesis in following steps

Figure 4(a) sectional teeth arrangement on left side

Figure 4(b) duplication of maxillary sectional teeth arrangement

Figure 4(c) sectional teeth arrangement on the right side over the duplicated cast

Figure 4(d) duplication of mandibular left side teeth arrangement

Figure 5(a) Depicts mandibular sectional denture dorsal view

Figure 5(d) Depicts maxillary sectional denture palmar view

Figure 5(B) Depicts maxillary sectional denture dorsal view

Figure 6(a) Depicts sectional dentures in patient mouth

Figure 5(c) Depicts mandibular sectional denture palmar view

figure 6(b) Depicts preoperative photograph

figure 6(c) Depicts post operative view

portions of the press buttons were fixed in their corresponding positions using cyanoacylate cement(fig 4 c).

e) Waxing and sealing of the left half of the sectional prosthesis was carried out ,ensuring complete coverage of the press buttons.
f) Acrylization of the above was carried out conventionally ,followed by recovering, finishing, polishing the left half sectional prosthesis(fig 5 a ,b ,c and d).

7 Sectional prosthesis insertion(fig 6)-

After ensuring the fit and stability of the sectional prosthesis, it was placed in the patient's mouth(fig 6 a,b and c). The patient was thoroughly educated and instructed regarding the use of the prosthesis, to ensure proper assembly of the same. Post -insertion and oral hygiene instructions were imparted , and routine follow-up appointments were scheduled. There was still decrease in burning sensation and mouth opening was increased by 5 mm.

Discussion-

Limited mouth opening in patients is a very common occurrence in prosthodontic practices. A maximal opening smaller than the size of a complete denture can make prosthetic treatment challenging. Different management techniques described are surgeries ,use of dynamic bite openers ,and modification of denture design.(5)

The first commissural splint innovation ,suggested in 1975 ,radically altered the management of burns to the lip, by providing resistance to scar contraction in an effort to prevent microstomia. The main reason for fabricating a commissural splints is the need to minimize the effect of microstomia from multiple causes.(6)

McCord et al described a complete sectional denture microstomia which was designed in 2 halves ;with the left side fitting into a beveled recess in the right side to give a more accurate location. Both halves were joined rigidly by a stainless steel post that was inserted into three post that was inserted into three tubes within the complete denture palate. The post ,which was removable ,was attached to the right maxillary incisor, which served both as a tooth and handle for the post.(7) .A sectional stock tray system for making preliminary impressions was described by Robert .J.Luebke. Improved fit of the tray was possible for the individual dental arch because the two halves separately fitted to each side of the arch thus achieving better anatomical adaptation to teeth and of soft tissues.(8)

Patients with microstomia may undergo surgical enlargement of oral aperture ,but it has its own adverse effects that a scar may result .Without surgical intervention , it is very difficult to perform prosthetic treatment especially when the mouth circumference length is less than 160 mm square.

Conservative management of microstomia has been described in literature and includes the use of microstomia orthoses to expand the oral opening.(9) Prosthetic management of microstomia patients presents difficulty at all stages ,from preliminary impressions to fabrication of prosthesis. Limited mandibular opening can pose a major dental problem and the general difficulties of reduced access become more apparent when providing prosthesis. The overall bulk and the height of impression trays make the recording of impressions extremely difficult if not possible because the paths of insertion and removal of impressions are compromised by lack of clearance. The use of sectional impressions which may be recorded in two or more parts and then relocated in two or more parts and then relocated outside the mouth is a useful technique to adopt for such patients. The trays can be provided with fins ,pins,lego pieces stepped or butt joints to facilitate relocations .(10)

Sectional or collapsible dentures are generally used to provide prosthodontic rehabilitation to patients with limited intra-oral access. A swing-lock and / or simple hinge can be use to connect the two segments of such a collapsible dentures. Some treatments include the use of Co-Cr frameworks with clasps to hold sectional complete denture ,the use of a sectional complete denture can also be joined by a post that slides into stainless steel tubing. There are several commercially available magnetic attachment systems for use in clinical dentistry which can be used successfully for treatment of patients with limited mouth opening.(11)

Conclusion

It is often difficult to apply clinical procedures to construct dentures for patients who demonstrate

limitedmouth opening. However ,with careful treatment planning and prudent designing , the use of either sectional impression techniques and /or sectional dentures many of apparent clinical difficulties can be overcome . Simplified sectional tray design and ease of fabrication are the major advantages of this case report .The technique can be accomplished in any dental clinic, without using complicated machinery or attachment devices for sectioning or assembling the trays/ prosthesis together. The press buttons are easily available at a nominal cost. In case of any damage they can be replaced easily with the help of self cure acrylic resin. This technique shares disadvantages common to all sectional tray/ prosthesis designs, namely , additional time , labour , and materials. However , to determine the long term success of this technique , periodic recall , maintenance ,and further improvements in design are needed

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