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RESEARCH ARTICLE
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SECTIONAL DENTURE USING A NOVEL IN- BUILT DESIGN OF SPECIAL TRAY IN SCLERODERMA PATIENT- CASE REPORT

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ABSRACT
Limited mouth opening is a common occurrence in prosthodontic practice. It may occur due to genetic disorders, oral cancers, scleroderma, surgical treatment for neoplasms, burns etc. The prosthetic treatment of such patients presents difficulties in all the stages of rehabilitation. This mainly leads to compromised impression making and prosthesis. This article describes the fabrication of a split impression tray to make a secondary impression and fabrication of sectional denture using press button on edentulous ridge in patient having scleroderma.

KEYWORDS - Microstomia, Sectional trays, Sectional dentures

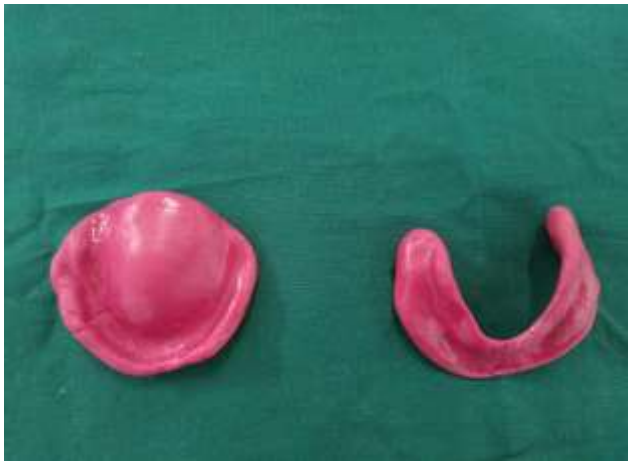
INTRODUCTION
Prosthodontics starts with a good impression and a good impression always leads to a good prosthesis. An adequate mouth opening is mandatory for a good impression making[1].
Restricted mouth opening is a relatively common dental condition that has a variety of causes such as Oral Submucous Fibrosis (OSMF), Microstomia (Surgically induced), Trismus, Haematoma formation following an inferior dental nerve block[3]. Limited mouth opening is considered as a hindrance in prosthodontic rehabilitation of a patient. Special impression procedures and techniques should be considered for making an impression in such cases. This clinical report describes the management of edentulous patient with microstomia induced by scleroderma using special split tray and sectional denture using press button.

CLINICAL REPORT

A 67 year old female patient came to the Department of Prosthodontics, Kannur dental college, Anjarakandy with the chief complaint of replacement of missing teeth. She had a limited mouth opening of about 25mm caused by scleroderma, and presented with hardening and tightening of the skin, sclerodactyly, claw like hand and atrophy of finger tips (fig1). Mucosa appeared blanched with palpable fibrotic bands on buccal mucosa.

(Fig 1 LIMITED MOUTH OPENING)

On clinical examination, maxillary and mandibular arches were completely edentulous. The fabrication of complete denture is quite difficult in such patients. It was therefore decided to make modified preliminary impression without using stock tray. Primary impression for both dental arches were obtained using impression compound material by finger pressure.(Fig 2)



(Fig 2 PRIMARY IMPRESSION)

The primary casts were poured in dental plaster. Maxillary and mandibular sectional trays were fabricated using autopolymerizing acrylic resin on the primary cast.

Maxillary impression tray

A 2mm T spacer was adapted. Maxillary custom impression trays was fabricated in two parts with anterior and posterior sections retained with pressbutton attached to the sectional custom trays.(Fig 3,4)

(Fig- 3)

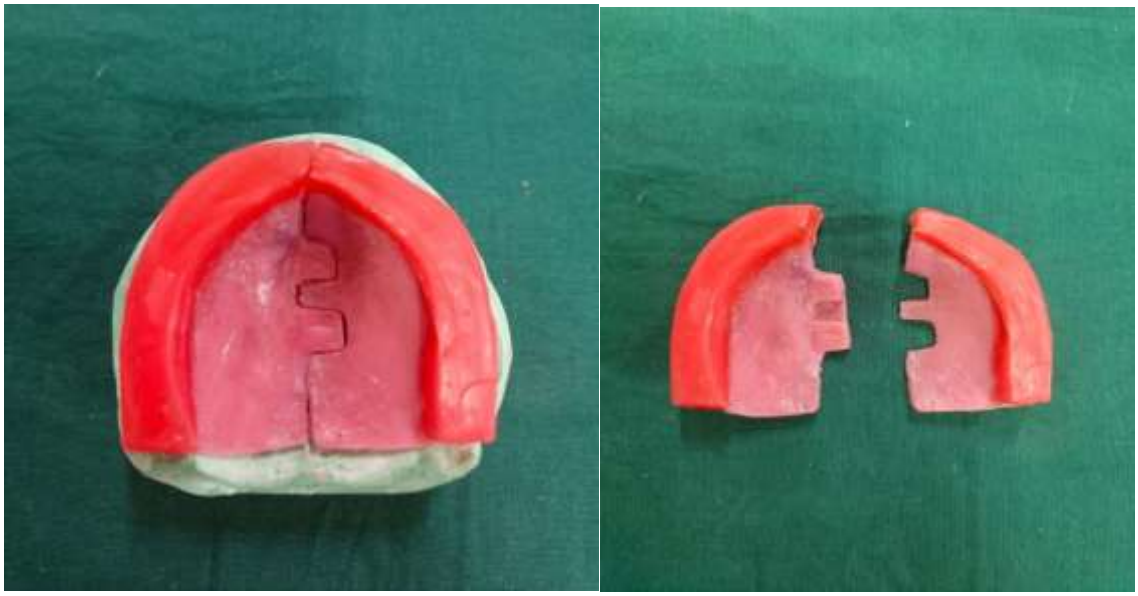
(Fig 4 MAXILLARY SPECIAL TRAY WITH PRESS BUTTON)

Modified Mandibular impression tray

A 2 mm spacer wax was adapted. The mandibular tray was sectioned from the midline. It was decided to split the tray in midline. The first segment was fabricated with autopolymerizing resin, and a tapered die pin was incorporated in the tray such that it was oriented parallel to the ridge and lied over the crest of the ridge. Cold mould seal was applied over the die pin and the first segment. The second segment was fabricated using autopolymerizing resin and interlocking with first tray. Here we have modified the tray handle by placing a screw over it to lock and stabilize the sectional part of tray. (Fig 5, 6).

(Fig- 5,6 MANDIBULAR SPECIAL TRAY WITH DIE PIN AND SCREW OVER IT FOR CLOSE APPROXIMATION)

Green stick compound was used for border moulding. First, posterior section of the tray was inserted orally and the functional buccal vestibule and the postpalatal seal were recorded. After posterior section, anterior section was inserted intraorally and the functional labial vestibules were recorded followed by sectional final impression with zinc oxide eugenol impression paste. The two parts of the tray were then joined extraorally to form a single unit and then master cast was poured.
On these sectional record bases wax occlusal rims were fabricated and jaw relation was recorded (Fig 7)



(Fig 7 MAXILLARY OCCLUSAL RIM)

The transfer of jaw relation record to the articulator, arrangement of teeth, and try in were carried out in conventional manner (Fig8, 9)

(Fig 8,9 MAXILLARY AND MANDIBULAR TRIAL DENTURE)

The denture was processed in sections using heat polymerized acrylic resin. Maxillary sectional denture was retained with two press buttons placed on mid of the palate and mandibular denture was retained with one lingually placed press button(Fig 10). The patient was instructed to place left half of denture and then right half. This is the postoperative view of the patient.(Fig 11)

(FIG 10 SECTIONAL DENTURE WITH PRESS BUTTON)

(FIG 11 POST- OPERATIVE SMILE)

DISCUSSION

In healthy individuals, mouth opening is around 30–50 mm but when the mouth opening is limited to a maximum of 20 mm, the individual is said to have a reduced mouth opening or trismus . The width of the index finger at the nail bed is between 17 to 19 mm. Therefore, two fingers' breadth (40 mm) and up to three fingers' breadth (54–57 mm) is the usual mouth opening. Generally, males display a greater width of mouth opening than females[4].

Microstomia or limited mouth opening is common in patients suffering from scleroderma. This condition posses problem during each step of prosthetic reconstruction starting from selection of the primary impression tray to insertion of the denture. Several methods of constructing sectional special trays have been discussed in literature. Various techniques to make preliminary impressions for patient with constricted oral openings have included, sectional stock tray system described by Robert J Luebke, flexible tray made with silicone putty and flexible tray used for fluoride appilication[7]. Here we have modified custom sectional impression tray with two halves, and a screw was attached over it to lock and stabilize the sectional part of tray allowing the functional impression to be made despite difficulties associated with microstomia. Many of the special tray used for sectional impression does not have sufficient stability while taking the impression and rearranging it. Because of the overlapping system combined with the incooperation of screw, this particular design offers better stability compared with the other designs presently available. The advantage of such custom tray is that it can be removed as two separate segments and reassembled externally which provides

key and keyway to realign in similar position as in the patient mouth. The press buttons are available easily and at nominal cost. In case of any damage, they can be replaced and relocated easily.

CONCLUSION

This clinical report describes the fabrication of an economical, quick and easy method for fabrication of a sectional custom tray and sectional denture using press button. Although patients with microstomia seeking prosthetic rehabilitation pose a challenge to the clinician, they can be conservatively managed by modifying clinical and laboratory procedure.

REFERENCES

1. Malik P, Rathee M. Restricted mouth opening-impressions making. Scholars Journal of Dental Sciences. 2015;2:24-9.
2. Swapna C, Priyanka K, Sheejith M. Impression Techniques for Patients with Limited Mouth Opening-A Review. Journal of Medical and Dental Science Research. 2022;9(11):49-52.
3. Ki SH, Jo GY, Yoon J, Choi MS. Reconstruction of microstomia considering their functional status. Archives of Craniofacial Surgery. 2020 Jun;21(3):161.
4. Siddiqui HK, Ikram K, Siddiqi SH, Nazir A, Shaikh M, Ahmed E, Khan S. Common causes of limited mouth opening and its management approach among dentists in Karachi. Baqai Journal of Health Sciences. 2018 Jul 1;21(2).
5. Colvenkar SS. Sectional impression tray and sectional denture for a microstomia patient. Journal of Prosthodontics: Implant, Esthetic and Reconstructive Dentistry. 2010 Feb;19(2):161-5.
6. SAtpAthy A, GujjAri AK. Complete denture in a microstomia patient. Journal of clinical and diagnostic research: JCDR. 2015 May;9(5):ZD16.
7. Basavanna JM, Raikhy A. Sectional Denture for Microstomia Patient: A Clinical Report. International Journal of Prosthodontics & Restorative Dentistry. 2013 Apr 1;3(2):62.
8. Kumar SM, Krishna PD, Nariman RH. A sectional impression tray technique for an oral submucous fibrosis patient with limited mouth opening. Journal of Oral Research and Review. 2014 Jul 1;6(2):65-7.
9. Prithviraj DR, Ramaswamy S, Romesh S. Prosthetic rehabilitation of patients with microstomia. Indian Journal of Dental Research. 2009 Oct 1;20(4):483-6.
10. Givan DA, AuClair WA, Seidenfaden, CDT JC, Paiva J. Sectional impressions and simplified folding complete denture for severe microstomia. Journal of Prosthodontics: Implant, Esthetic and Reconstructive Dentistry. 2010 Jun;19(4):299-302.