Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Spl Issue [2] 2022 : 174-178

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD

ORIGINAL ARTICLE **OPEN ACCESS**

Sectional Complete Denture in Microstomia Patient: A Case Report

Kirti Singh[2], Sumit Singh Phukela[1*], Reshu[3], Abhishek Nagpal[4], Bharti Raina[5], Bhupender Yadav[6]
[1,2]Private Practitioner, Ex Pg, Department of Prosthodontics, Faculty Of Dental Sciences , SGT University [3-6]Department of Prosthodontics, Faculty Of Dental Sciences , SGT University, Gurugram, HR
*Email sumit.phukela@sgtuniversity.org

ABSTRACT
Microstomia is a condition with a small-sized mouth that can be due to various factors and can be acquired or congenital. Microstomia is a definite limitation for successful Prosthodontic treatment. It's a dentist's duty to fulfill the need and complaints of Microstomia patients and give every possible care to the patient. For efficacious rehabilitation of Microstomia, various procedures and strategies are incorporated in the prosthesis. In this case report, we showed; a basic technique and design for the construction of maxillary and mandibular hinged and sectional complete dentures for an edentulous patient within complete oral opening due to oral submucous fibrosis.
Key words: *Complete dentures, Microstomia, Push buttons, Submucous fibrosis, Sectional denture.*

Received 02.08.2022 Revised 22.08.2022 Accepted 28.10.2022

INTRODUCTION

Microstomia describes a small oral aperture. Primarily it is caused by Trauma, thermal and electrical burns of perioral tissues. Microstomia can also be caused by surgical treatment of severe burns of the face, cleft lip, and palate, radiotherapy, scleroderma, oral submucous fibrosis (OSMF), orofacial neoplasms or trauma of maxillofacial structures . Individuals with small oral aperture have several problems mainly related to their speech, they are deprived of proper nutrition, can't maintain their oral hygiene, facial expression are poor and have less social involvement. Additionally, fatal consequences can occur during general anesthesia procedures due to airway and ventilation problems and aspiration[1-2].The main causative factors are betel nut and tobacco chewing[3]. Its main characteristic feature is rigidity of mucosa because of fibroelastic alteration of juxta epithelial layers which lead to incapability to open mouth properly or widely and also dryness of tissues is seen due to decreased salivary secretion[4]. Management of microstomia is quite challenging. The ultimate management is bilateral commissurotomy. Surgical expansion can lead to scarring or contraction of tissues which may further reduce the oral opening, so it must be managed carefully[5].Construction of any Removable Prostheses for patients with reduced oral opening is difficult because of rigidity of tongue and perioral tissues. Various techniques based on flexibility of trays, modified standard trays and sectional trays have been proposed[6]. Sectional and folding dentures have been designated for prosthodontics management of microstomia patients[7]

CASE REPORT

A 58 Year old edentulous female patient having limited mouth opening reported in the Department of Prosthodontics, with the chief complaint of lost teeth and wants replacement of same. On examination she has two finger mouth opening in range of 24-26mm.The buccal mucosa has heavy vertical bands. (Figure 1A, 1B, 1C,1D)

Figure 1(A) -Two finger mouth opening 1(B) - Mouth opening was measured


Figure 1(C)- Vertical Bands On Labial Mucosa Of Mandible **1(D) Vertical Band On Labial Mucosa Of Maxilla**

PROCEDURE

Tray selection- Since it was very difficult to place the smallest stock metal tray in patient mouth, moldable zero size aluminum tray was selected and the flanges of both maxillary and mandibular tray was trimmed with metal trimming bur. All the roughened borders were rounded off. Afterwards the trays were checked in patient's mouth.

Primary Impressions- The maxillary and mandibular primary impressions were made using alginate (Marieflex septodont dust free class A type 2-normal setting). After noting the important anatomical and mark, Proper disinfection was done using 1:213 iodophore) (**Figure2**).Primary Impression was then poured using model plaster (type 2), after beading and boxing and primary cast was obtained. (**Figure 3)**


Figure-2- hydrocolloid Primary Impression Figure- 3- Primary Cast

Sectional custom tray fabrication and final impressions: The Spacer wax was first adapted on primary cast and four tissue stops were placed, two on canine and two on molar tooth region. **(Figure 4)**

Figure- 4 – Spacer with tissue stops

The sectional special tray with joint was fabricated on primary cast using autopolymerising acrylic resin tray material.

Maxillary primary cast - Conventional special tray was fabricated thereafter and sectioned from midline into two halves. These were held together using push button in center. (Geox brand-metal button, rustproof). (**Figure 5A, 5B, 5C**)

Figure- 5(A) Sectional custom tray Figure 5(B, C) - custom tray with push button of maxilla

Mandibular primary cast- Conventional special tray was fabricated thereafter and sectioned in two halves from the center and a hinge joint (lug) of wrist watch was used to hold the two halves of the tray.(Local Case brand-stainless steel lug). (Figure 6A, 6B,6C)

Figure-6(A, B, C) - Two half of custom tray assembled with watch lug of mandible

Border molding was done using D.P.I Pinnacle green stick followed by wash impression using ZOE Paste (Septodont-Neogenate).The impressions were refined and each half of tray assembled extraorally(Figure7B, 7C). Impressions were poured for master cast using type 2 dental stone after beading and boxing. (Figure 7D).

Figure-7(A) - Border Molding Figure 7(B) - Wash Impressions 7C

Figure 7(D)- Master cast of Maxilla and Mandible

Sectional base plate fabrication and fabrication of wax occlusal rims-Temporary denture base were made-upon master cast using autopolymerising acrylic resin and were sectioned from mid line. The two sectioned base plates were joined using push button and hinge joint of wrist watch. On these sectional record base wax rims were fabricated and jaw relation was recorded. (Figure 8A, 8B)

Figure 8(A)-Occlusal Rims w.r.t Maxilla 8(B) Jaw Relation and Mandible

Try in of sectional prosthesis-The jaw relation of the patient was transferred to articulator, teeth arrangement and try in was done. (Figure 9A, 9B)

Figure 9(A) Mounted Articulator 9(B) Try in stage

Curing of sectional prosthesis- Wax up of the sectional prosthesis were done before acrylization.
Curing of Maxillary denture- Push button was removed and denture was smoothened using burs. After wax up maxillary cast was duplicated using agar. The curing of different half of sectional trays were done at different time. First the right half was waxed upon master cast and new push button was attached in center and acrylistion was done in conventional manner. There after buffing, finishing and polishing was done. This finished right half was then positioned on the replicated cast and sealed with wax. This assembly was duplicated again using agar. .Another half (Left half) of the denture was then positioned on that duplicated cast, the female part of push button was attached in center in corresponding position of right half using GIC cement. Wax up done, ensuring complete coverage of push button and curing was done in conventional manner. Thereafter finishing and polishing.
Curing of mandibular denture- After removing the joint of wrist watch from prosthesis, it was waxed up and the gap is filled by wax. After dewaxing the hinge joint of wrist watch was placed again at same position and further steps were carried out in conventional manner. Finishing and polishing of denture were done in conventional manner.
Sectional complete denture insertion - At the time of denture insertion stability and fit of denture were ensured. Patient was educated regarding use of denture, post insertion instruction were given to patient. Routine follow-up appointments were scheduled for the patients. (Figure 10A,10B,10C).

Figure 10(A,B) Sections of complete denture inserted and assessed C) Frontal view of the Patient

DISCUSSION
A normal mouth opening (35-40mm) of oral cavity is important for speech, facial expression, chewing of food, maintenance of oral hygiene. Limited mouth opening is a consequence of various medical conditions. Complete denture fabrication in these patients is quite challenging. Earlier Naylor and Manor et al (1983) checked the oral amplification exercise for intensification of the vertical height [8]. Maccord et al reported the uses stainless steel post of 1mm diameter fitted behind the central incisor to join the sectional denture. Different type of attachments such as posts, push buttons, and dual die pins and magnets were used for joining the sectioned dentures [7]. Cheng *et al* made collapsible complete denture. According to him this collapsible denture is kept stable by tongue pressure and resistance is provided by ridge slopes. The disadvantage of this procedures are increase laboratory time and mainly the requirement of patient compliance is necessary [9]. Suzukiy *et al.* in 2000 reported the use sectional collapsed denture, telescopic system made-up with cast on technique using Co-Cr-Ti. He used foldable single piece denture, the main difficulty in these type of denture was fitting of the hinge along the midline that it should connect the front edge (tip) of residual ridge with the posterior edge of the denture[10]. Sharma *et al* reported the use using press buttons to join the sections of tray [11]. Another group of authors reported the use hinge and stud attachments for their dentures. Advantages of these custom

made hinge is mainly the durability of prosthesis [12]. And these are cost effective. Sagawa *et al* reported the uses magnets made of Neodymium-Iron-Boron. These were economical and are easily available but slowly it loses its magnetic property. So to improving its success rate frequent recalls and maintenance were required [13].The sectional denture joined by push buttons and watch lug described in our case report was suitable in terms of insertion and removal of denture and there is no observable fracture and wear of the attachments.

CONCLUSION

In presented case report of microstomia patient we used simplified sectional tray design with an advantage of ease of fabrication. The procedure can be carried out easily in any dental laboratory. Disadvantage of this technique is similar as all sectional complete denture example increased laboratory time and additional material and labor. However regular follow up and maintenance increases its success rate. Push buttons and wrist watch joint also called as lug are economical and can be available easily so in case of any damage these can be easily replaced and relocate with auto polymerising acrylic. Another advantage of using stainless steel push button and lug is its corrosion resistance property. The pull in or pull out of the sectional complete denture is easy and comfortable for both the dentist and for the patient.

REFERENCES

1. Smith PG, MuntzH R, ThawleyS E. (1982). Local myocutaneous advancement flaps. Alternatives to cross-lip and distant flaps in the reconstruction of ablative lip defects. Arch Otolaryngol.; 108(11):714-718.
2. Afroz N, Hasan SA. (2006). Oral submucous fibrosis a distressing disease with malignant potential. Ind J of Comm Med. 31(4):270.
3. Jaminet P. (2009). Extreme microstomia in an 8-month-old infant: bilateral commissuroplasty using rhomboid buccal mucosa flaps. Eplasty.;26(10).
4. Ali FM, Patil A, Patil K, Prasant MC. (2014). Oral submucous fibrosis and its dermatological relation. Indian Dermatol Online J. 5(3):260–265.
5. DikbasIdil. (2007). Fabricating sectional-collapsible complete dentures for an edentulous patient with microstomia induced by scleroderma. Quintessence Int. 38:15–22.
6. Cura C,Cotert HS,User A. Fabrication of a sectional impression tray and sectional complete denture for a patient with microstomia and trismus: A clinical report. Journal of Prosthetic Dentistry. ;89(6):540-3.
7. McCord JF, Tyson KW, Blair IS. (1989). A sectional complete denture for a patient with microstomia. J Prosthet Dent;61:645-7.
8. Naylor WP, Manor RC. (1983). Fabrication of a flexible prosthesis for the edentulous scleroderma patient with microstomia. J Prosthet Dent;50:536-8.
9. Cheng AC, Wee AG, Tat-Keung L. Maxillofacial prosthetic rehabilitation of a midfacial defect complicated by microstomia: A clinical report. J Prosthet Dent 2001;85:432-7.
10. Suzuki Y, Abe M, Hosoi T, Kurtz KS. (2000). Sectional collapsed denture for a partially edentulous patient with microstomia: A clinical report. J Prosthet dent, ;84:256-9.
11. Sharma A, Arora P, Wazir S S. (2013). Hinged and sectional complete dentures for restricted mouth opening: A case report and review. Contemporary Clinical Dentistry. 4:74-7.
12. Satpathy A, Gujjari A K.(2015). Complete Denture in a Microstomia Patient. Journal of Clinical And Diagnostic Research. 9:ZD16-8.
13. Sagawa M, Hirosawa S, Yamamoto H, Fujimura S. (1987). Nd-Fe-B Permanent Magnet Materials. Japanese Journal of Applied Physics. 26:785-800.

CITATION OF THIS ARTICLE

K Singh, S S Phukela, Reshu, A Nagpal, B Raina, B Yadav. Sectional Complete Denture in Microstomia Patient: A Case Report. Bull. Env.Pharmacol. Life Sci., Spl Issue [2]: 2022: 174-178