



Mandibular split denture in a case of reduced mouth opening- A case report

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Abstract:

Though treating patients diagnosed with Oral sub mucous fibrosis is difficult until the mouth opening is regained, it is not a justice to deny such patients with prosthodontic treatment during the considerable long treatment period. This article discusses a case report wherein a mandibular split denture was fabricated for a female patient diagnosed with Oral sub mucous fibrosis as she was not able to chew food. The intermediate laboratory procedures were also performed as a split procedure to avoid the strain to the patient because of the reduced mouth opening.

Key words: Split special tray, hinge with buccal tube, double lock die pin, buccal tube, hinge

Introduction:

Trismus or limited mouth opening can be created by conditions like orofacial cancers, head and neck radiation, reconstructive lip surgery, burns, trauma, microinvasion of muscles of mastication, temporomandibular joint (TMJ) dysfunction syndrome and genetic disorders [1-5]. Various treatment modalities include surgery, dynamic opening devices called microstomia orthoses, and modification of denture design [6-10]. Oral Submucous fibrosis is a precancerous condition characterized by the fibrosis of the lamina propria and restricted mouth opening which requires attention at the earliest to treat the predisposing factors. It is necessary to understand that the dentist may be the first person to identify the problem and alert the patient.

A deviation from normal ways of fabricating a conventional denture is sometimes a welcome relief for a patient suffering from Oral submucous fibrosis. Many methods to fabricate sectional dentures have been attempted until now like cast Co-Cr hinges [7,9], swing-lock attachments, stud attachments, orthodontic expansion screws [12], pins [8], bolts, telescope system [11], rods [13], clasps [11], cast locking recesses and magnets. Though this method is not going to be a definitive treatment, this temporary measure helps to condition the patient more towards the definitive treatment. This procedure requires

careful reorientation in every step to avoid errors in the subsequent steps. The problem of reduced mouth opening and reduced flexibility of the tissues remains a challenge to the dentist.

Case report:

A female patient aged 56 years, came to the Department of Prosthodontics, Chennai with the complaint of difficulty in chewing food. She gave a history of using betel nut with tobacco for the past 15years, usually localising it in her cheek mucosa. Intraoral examination.

On examination, the patient had fibrotic bands in the right & left buccal mucosa, burning sensation in the mouth, inability to open her mouth wide. She had a mouth opening of 25mm(Fig:1).



Figure 1: Reduced mouth opening of 25 mm

So split denture was planned in the lower arch which would aid her in easy insertion and removal of denture.

She was diagnosed as a case of chronic Oral sub mucous fibrosis.

Procedure:

- Preliminary impressions were made with heavy body putty elastomeric impression material directly adapted over the ridge. Primary casts were obtained.



Figure 2: Sectioned special tray



Figure 3: Reoriented secondary impression

- Autopolymerizing acrylic resin special tray was constructed and it was split into two in the centre and was later reoriented using a double die pin. Two die pins, one in the incisor region and one in the palatal region was placed in the upper tray to have an anti-rotational effect. One die pin in the incisor region was placed for the lower tray. They were liable to be reoriented into a single tray even after sectioning (Fig:2).
- Border molding with low fusing impression compound was performed in two sections both in the upper and lower arch and secondary impression with light body elastomeric impression material was also done in a similar manner.

- The secondary impressions were reoriented after cutting away the excess material in the centre using sharp scissors. The impressions were reoriented into a single impression with the help of double lock die pins (Fig:3).
- Casts were poured in the usual manner and split record bases (connected by the double lock die pins) were constructed over the secondary cast. Occlusal rims were fabricated over them accordingly.
- Jaw relation was done in the sectional method and was reoriented during the procedure inside the mouth using the die pins (Fig:4).
- The occlusal rims after jaw relation were placed over the secondary cast and articulation was done in a conventional manner after reorientation. Teeth setting were done based on the usual setting principles.



Figure 4: Split occlusal rims



Figure 5: Split trial bases

- Wax trial was done using the sectional method and reoriented inside the patient's mouth and checked for occlusion, phonetics, aesthetics as usual (Fig:5).
- The trial bases after wax try-in were returned to the articulator and wax up was done. The split trial bases were reunited using wax to make them as a single denture. Flasking was done and heat polymerization was used to fabricate the dentures.



Figure 6: Processed denture



Figure 7: Splitting the lower denture

- Maxillary and mandibular dentures were fabricated in the usual manner (Fig:6).
- Dental stone was poured into the finished lower denture to help in splitting of the denture subsequently. The dentures were articulated to prevent the development of any further occlusal discrepancy. The lower denture was split into two in the centre through and through (Fig:7).
- Orthodontic begg's buccal tube and 19 gauge stainless steel wires were used for reorientation of the split mandibular denture, two in the labial region of the lower denture and one in the lingual anterior region of the lower denture.
- One buccal tube was fixed in the vertical direction along with the bent down end of the labial bow using self cure acrylic resin. Other end of the labial bow was inserted into the buccal tube on the other half of the denture and fixed with self cure acrylic resin.
- A box type of hinge using 19 gauge stainless steel wire and a begg's buccal tube was made and attached to the lingual anterior region of the lower denture. It helps in folding of the denture inwards.

- The dentures were finished & polished. The patient was instructed regarding the usage of the denture (Fig:8).
- The patient was reviewed after 24 hours, and 1 week and 1 month.



Figure 8: Infolding of lower denture

Discussion

Though making of impressions and other lab procedures was time consuming, it was comfortable to the patient and eased her cooperation during the various clinical procedures. Light body impression material was used for secondary impression to alleviate any burning sensation to the patient. The disadvantages would be the bulkiness in the labial region of the lower denture and being a time consuming procedure to the clinician. Reorientation if not properly done in every step will lead to problems in retention and stability of the denture.

Splitting was done in lower denture only because of divergent flanges in the lower denture due to the pattern of resorption. This is a temporary procedure to help the patient while a wholesome treatment lies in treating the basic clinical condition. A consultation with specialist in oral medicine, should be sought for the exact treatment to be given to the patient for the oral submucous fibrosis which may be in the form of intralesional steroids, fibrinolytic drugs and antioxidant medication. After the condition of the patient improves it must be subsequently followed by the definitive complete denture.

Summary

This treatment plan would be a success only with the proper cooperation and the maintenance of the patient. It also depends on the skill and expertise of the dentist doing the treatment. Though this is a compromising treatment it is of help to the patient to overcome her limitation for the time being and

improves their further cooperation to treatment in the future.

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References

1. Dado DV, Angelats J. Upper and lower lip reconstruction using the step technique. *Ann Plast Surg* 1985;15:204-211.
2. Engelmeier RL, King GE. Complications of head and neck radiation therapy and their management. *J Prosthet* 1983;49:514-522.
3. Brunello DL, Mandikos MN. The use of dynamic opening device in the treatment of radiation induced trismus. *Aust Prosthodont J* 1995;9:45-48.
4. Maragakis GM, Garcia Tempone M. Microstomia following facial burns. *J Clin Pediatric Dent* 1998;23:69-74.
5. Cohen SG, Quinn PD. Facial trismus and myofacial pain associated with infections and malignant disease. Report of five cases. *Oral Surg Oral Med Oral Path* 1998;65:538-544.
6. Gulses A. Advances in the study of genetic disorder. InTech; 2011. Chapter 22, Microstomia: a rarer but serious oral manifestation of inherited disorders. p. 450-472.
7. Connie TA, Carlow DL, Stevenson-Moore P. The Vancouver microstomia orthosis. *J Prosthet Dent* 1989;61:476-483.
8. Conroy B, Reitzik M. Prosthetic restoration in microstomia. *J Prosthet Dent* 1971;26:324-327.
9. Curo C, Cotert HS, User A. Fabrication of sectional impression tray and sectional complete denture for a patient with microstomia and trismus. A clinical report. *J Prosthet Dent* 2003;89:540-543.
10. Cheng AC, Wee AG, Morrison D, Maxymiw WG. Hinged mandibular removable complete denture for post-mandibulectomy patients. *J Prosthet Dent* 1999;82:103-106.
11. Geckili O, Cilingir A, Bilgin T. Impression procedures and construction of a sectional denture for a patient with microstomia. A clinical report. *J Prosthet Dent* 2006;96:387-390.
12. Mirfazaelian A. Use of orthodontic expansion screw in fabricating section custom trays. *J Prosthet Dent* 2000;83:474-475.
13. Luebke RJ. Sectional impression tray for patients with constricted oral opening. *J Prosthet Dent* 1984;52:135-137.
14. Whitsitt JA, Battle LW. Technique for making flexible impression trays for the microstomic patient. *J Prosthet Dent* 1984;52:608-609.