

Use of Snap Fasteners as a Simple & Unique Approach for Patient With Microstomia : A Clinical Report

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Abstract

Patients with limited mouth opening are frequently encountered in prosthodontic practice. Microstomia defined as an abnormally small oral orifice, can be associated with various etiopathologic factors such as head and neck radiation, surgically treated head and neck tumours, connective tissue diseases, facial burns, reconstructive lip surgeries and the most common factor oral submucous fibrosis. Microstomia in patients with trismus induced by submucous fibrosis, the procedure may be even more difficult to carry out because of reduced tissue resiliency and obliteration of vestibular spaces, tongue rigidity and the decreased oral opening. It is difficult to apply conventional clinical procedures to construct dentures for such patients, as it is difficult to insert or remove the custom trays, denture bases and the final prosthesis as one piece. So sectioning of the tray is necessary, so that the trays can be inserted and removed in sections. The main problem encountered during these procedures is reorientation of the tray back in position. This article presents a simple technique for easy handling of the sectioned tray, which is, cost-effective and does not require any special devices or complex locking joints.

Introduction

Normal range of mouth opening in different population varies from 40-60mm, 41.4 mm and 47.1 mm. An opening of 25 -35 mm is functional and 10-24 mm is severely limiting (1). One of the most commonly observed pathologies associated with limited mouth opening is oral submucous fibrosis. Rajendran, in 1994 [2], reported and named this condition as “atrophia idiopathica (tropica) mucosae oris” involving oral mucosa, palate, and pillars of the fauces. Later, it was termed as oral sub mucous fibrosis. Formation of fibrous bands in submucous connective tissue was reported to be the root cause behind gradual reduction in mouth opening in such patients. In Prosthodontics the loaded impression tray is largest item requiring intraoral placement during impression procedures and wide mouth opening is required for proper tray insertion and alignment which is not possible in patients with limited mouth opening. Various treatment modalities include surgery,[3] dynamic opening devices called microstomia orthoses [4] and modification of denture design.[5]Surgical enlargement must be considered carefully because, if the rehabilitation of the surgical operation is not sufficient, a scar may result [6-8]. Without surgical operation, it is very difficult to perform prosthetic treatment for patients with microstomia, especially when the mouth circumference length is less than 160 mm² [9]. In cases, where microstomia is not manageable by surgeries or by use of dynamic opening devices [10, 11], a modification of the standard impression procedures is often necessary as the overall bulk and height of impression trays makes the recording of impressions, exceptionally difficult, if not impossible,

because the path of insertion and removal of impressions are compromised by lack of clearance [12, 13].

Present case report describes simple and economic method of fabrication of two-piece sectional trays for performing the clinical steps for complete denture in patients with microstomia.

Case Report

A 68-year-old female patient reported to the Department of Prosthodontics, Regional Dental College and Hospital, Guwahati, Assam India, with the chief complaint of missing teeth and wanted replacement of the missing teeth by means of fabrication of complete denture.

Procedure

On intraoral examination, restricted mouth opening in the range of 22 mm was found, making the fabrication of conventional single complete denture by routine procedures quite difficult. Because of reduced oral opening, it was impossible to making accurate impressions and record jaw relations using a single custom tray and denture bases. So in this patient, sectional custom trays and sectional denture bases using press buttons were planned for easy insertion or removal of the records with minimum discomfort to the patient. Sectioning of the tray is necessary, so that the trays can be inserted and removed in sections. The main problem encountered during these procedures is reorientation of the tray back in position. This article presents a simple technique for easy reorientation of the sectioned tray. Sectional impression trays and denture bases were designed with right and left sections that could be detached and rejoined together in correct original position in and outside the oral cavity for final impression and cast making procedure.

For each tray a two pairs of press buttons were used two on the each side of the section and one on the handle. Press buttons were fitted symmetrically and parallel to each other.

Extraoral Examination

On examination, it was found that patient had reduced mouth opening of 22 mm. Patient was also diagnosed with bilateral angular cheilitis. (Figure 1)

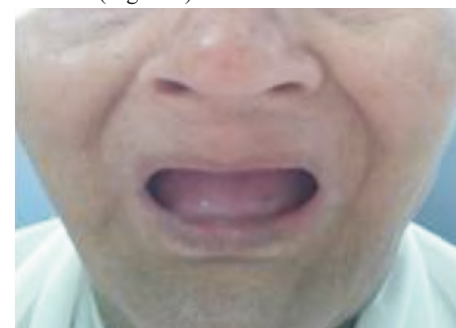


Figure 1

Intraoral Examination

The patient had completely edentulous maxillary and dentulous mandibular arch. Palpable fibrotic bands and blanched mucosa

were seen on right side.

1. Primary impression- Since it was impossible to insert a tray of suitable size into the patient's mouth, primary impression of maxillary and mandibular arches were taken with size 0 trays which were sectioned into left and right halves. (Figure 2)

Figure 2



2. Sectional custom tray fabrication and final impression making using sectional trays- Maxillary and mandibular custom trays were first fabricated then sectioned in the midline into two halves. With diamond disc each custom tray was divided into two equal halves at the midline along with the handle. Two male component of press buttons were attached with autopolymerizing acrylic resin on both sides of sectional trays. Then two acrylic plates were fabricated with female component of press buttons on each side. Female component on acrylic plate engages the male component on the sectional trays when pressure is applied with fingers (Figure 3). Sectional border moulding of the maxillary and mandibular sectional trays using putty elastomeric material (figure 4) followed by sectional final impressions using light body elastomeric impression material (figure 5). Border molding and final impression were made separately with each half of the tray. After the final impression was made, the tray was assembled extra-orally using snap fastener and a master cast was prepared in a usual manner (Figure 6).

Figure 3



Figure 4



Figure 5

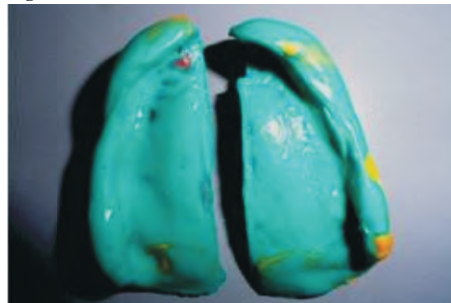
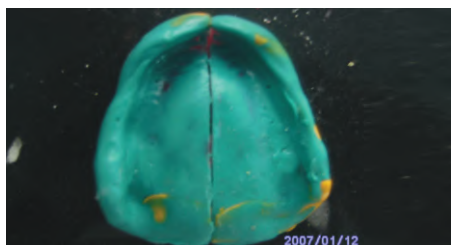


Figure 6



3. Sectional record base fabrication and recording of maxillomandibular relations using sectional denture bases- Temporary record bases were fabricated on the master cast using autopolymerizing acrylic resin and were again sectioned through the midline. The sectioned halves were then connected using size stainless steel snap fasteners. Then the two halves were joined using autopolymerizing resin. On final casts, record bases were fabricated. Maxillary and mandibular record bases were sectioned in midline. On sectional record bases, the occlusal rims were made. Jaw relation was recorded. (figure 7)

Figure 7



4. Sectional occlusal rim fabrication and sectional bite registration- Teeth arrangement was performed and satisfactory esthetics and function were achieved. (figure 8)

Figure 8



5. Try-in of prosthesis- The transfer of bite registration record to the articulator, arrangement of artificial teeth, and the try-in were carried out in the conventional manner.

6. Acrylization of prosthesis- Before acrylization of the waxed-up sectional denture, the press buttons were removed and acrylic portion was smoothed using acrylic stones and burs. The acrylization was carried out in the conventional manner.

7. Prosthesis insertion - Patient was able to insert the maxillary and mandibular denture by rotating it 90 degree so there was no need of splitting the denture figure 9.

Figure 9





Home care instructions (oral hygiene instruction, insertion, and removal of prosthesis) were imparted to the patient, routine follow up appointments were made.

Discussion

Reduced perimeter of the oral cavity poses unique problems during the fabrication of prostheses. Since accurate impression making and recording of jaw relations are integral for success of the final prosthesis the operator must have the knowledge of various methods that can be applied in such cases. In cases where microstomia is not manageable with surgery or dynamic opening devices, modified impression making techniques and prosthesis designs facilitates rehabilitation. For fabricating complete dentures that are different from the conventional ones dental literature, there are limited articles describing the method of making impressions and recording of jaw relations for patients with microstomia. Robert J. Luebke described sectional stock tray system for making preliminary impressions. In the year 1989 McCord et al described a complete sectional denture for microstomia patients which were designed in 2 halves, where both halves were joined together by stainless steel post.

The novel technique of using stainless steel press buttons made the modification simpler without compromising on the accuracy. There was no need of special procedures or materials since the placement of the buttons was just done by using the regular auto cure polymerizing resin. Incorporation of press button into the design provides the precision in securing the trays together firmly. As in this case, the patient was able to insert the mandibular denture by rotating it 90 degrees so dentures were not fabricated in sections.

Conclusion

This technique can be done in any dental office or laboratory without using any complicated machinery or parts for sectioning and attaching sectional dentures. This technique is an innovative, practical and economical solution for patients with microstomia. So as to determine the long-term success of this

technique, periodic recall and maintenance are needed. Simplified sectional tray design and ease of fabrication are the major advantages of this technique. This technique shares disadvantages common to all sectional tray designs, namely, additional time, labor and materials.

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