

## Sectional Denture Technique for a Microstomia Patient on OPD, Inderprastha Dental College & Hospital, Sahibabad

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### Abstract

Microstomia is a condition of reduction in the size of oral aperture which can be either acquired or congenital and may affect the quality of life. Dental procedures become difficult in such patients due to poor access to the oral cavity. Completely edentulous patients with microstomia often face the difficulty of being unable to insert or remove the prosthesis with ease. Also, the dentist faces the difficulty during the fabrication of the dentures for such patients due to poor compliance of the patient. Therefore the impression techniques, methods and designs incorporated in the prosthesis need to be modified. This clinical report describes a quick and easy method for fabrication of a sectional complete denture in a patient with congenital microstomia. Primary impressions were made without tray. Later, the final impressions were made by sectional method; the two parts were reassembled outside the mouth, using magnet and press buttons.

**Keywords:** Microstomia; Complete Denture; Sectional Impressions; Sectional Denture Technique; Magnet; Press Buttons.

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### Introduction

Microstomia is defined as an abnormally small oral orifice [1]. Normal maximum oral aperture should be from 51 to 60 mm. Mild microstomia is determined when the maximum oral aperture is between 41-50mm, moderate microstomia, between 31 and 40mm, and severe if the aperture does not exceed 30mm. Microstomia can be the result of disease, surgery, or accidents, orofacial cancers, head and neck radiation, reconstructive lip surgery, burns, micro invasion of muscles of mastication, temporomandibular joint (TMJ) dysfunction syndrome, and genetic disorders [2-7].

The sequelae of microstomia can be severe and include reduced oral intake, speech pathology, impaired oral hygiene ability, and difficult insertion and removal of dental prostheses.

Regardless of the cause, a limited oral opening greatly complicates impression making. The insertion of a standard complete arch stock impression tray may be impossible if there is a severely limited oral opening. Different management techniques described are surgeries [9-10], use of dynamic opening devices [11-14] and modification of denture design [15-19]. Numerous special clinical technique of denture design have been developed to overcome the challenge of accessing the oral cavity during impression procedure. Modified impression techniques include the use of sectional impression trays, modified stock trays, and flexible impression trays.

Sectional and collapsible designs with varying strategies have been described in literature to retain the denture in an unfolded position. Examples include the insertion of pins, the use of a locking tool, latching a swing-lock assembly, and locking the denture segments with magnets or attachments.

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The purpose of this article is to describe the clinical management of an edentulous patient with microstomia. A combination of press button and magnets was used to induce a design with advantages of both magnet and press button. The advantage lies in their small size and strong attractive force, which allows their placement in the prosthesis without being obtrusive in the mouth.

### Case Report

A 52-year-old woman (Figure 1A) with limited oral opening sought treatment at Department of Prosthodontics & crown and bridges, Inderprastha dental college and hospitals, Sahibabad, Ghaziabad with chief complaint of difficulty in mastication. An oral examination revealed small oral aperture of vertical dimension 31 mm (Figure 1B) and intercommissural length on opening was 40 mm. making it impossible to insert the stock tray to make preliminary impression; therefore fingers were used as a medium for holding material. Hence it was planned to make preliminary impression using condensation silicone putty impression material (zermack, Italy) with putty wash impression technique (Figure 2). After making primary impression primary cast was poured for fabrication of special tray.

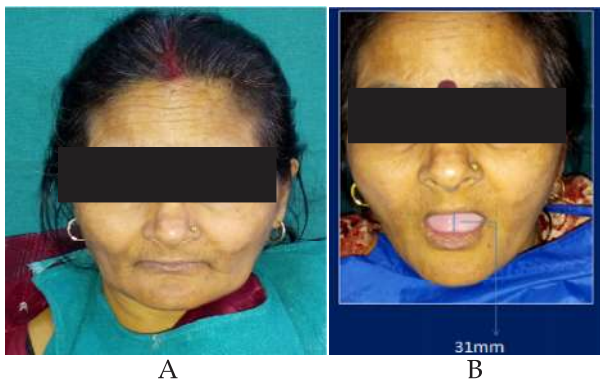


Fig. 1A and 1B: (A) Preoperative view: frontal view, (B) Restricted mouth opening

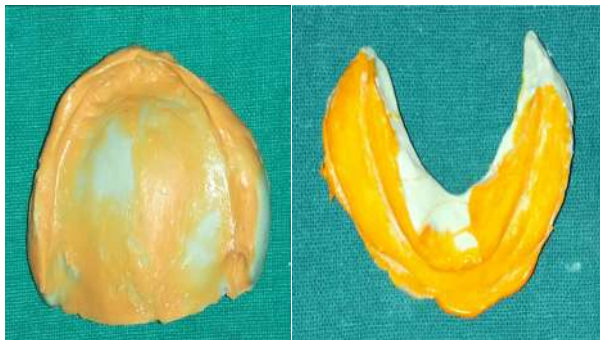


Fig. 2: Maxillary and mandibular primary impression

Maxillary and mandibular auto polymerizing acrylic sectional tray was prepared on each stone cast. Both custom impression trays were fabricated into two section, right and left sections. The maxillary tray was sectioned from midline and three die pins were placed in maxillary custom tray for joining of both sections. The mandibular custom tray was sectioned from buccal shelf region (Figure 3).

Low fusing impression compound was used for border molding. After completion of border molding wax spacer was removed from the left section and coated with tray adhesive loaded with light body condensation silicone impression material and placed intraorally. Similarly, secondary impression of right section was made. After setting of the impression material, the Two halves of the tray was removed from the patient's mouth. Excess impression material along the midline was trimmed with sharp instrument. Then both sections were joined along with the help of die pins.

For mandibular impression first the smaller section impression was made followed by the larger section. The two sections were then joined with the help of die pin in buccal shelf region.

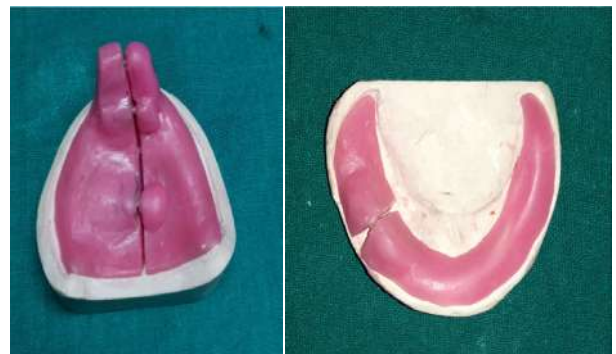


Fig. 3: Maxillary and mandibular sectional impression trays

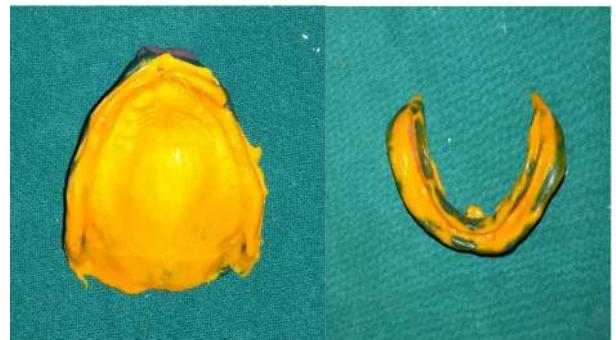


Fig. 4: Maxillary and mandibular secondary impression



Fig. 5 (A to B): Maxillary and mandibular sectional denture bases

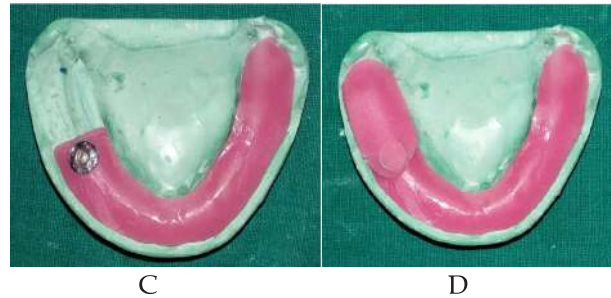


Fig. 6: Maxillary and mandibular wax occlusal rims



Fig. 7: Maxillary and mandibular processed sectional denture



Fig. 8: Post-operative frontal view

The temporary sectional maxillary and mandibular denture bases retained with press buttons and magnets were fabricated on the master cast using auto polymerizing acrylic resin 5 (A-D).

On these sectional record bases, wax occlusion rims were fabricated and jaw relation was recorded. The transfer of maxillo-mandibular relationship to the articulator, arrangement of teeth and try-in was carried out in conventional manners.

The denture was processed in sections using heat polymerized acrylic resin. Maxillary sectional denture was retained with two press buttons and one magnet in midline of the denture and mandibular denture was retained with one lingually placed press button in molar region. Preoperative and postoperative view is given in figure 1 and 8.

### Discussion

In patients with microstomia it is difficult to insert the impression trays. Several authors have

suggested different ways of making an impression in patients with restricted mouth opening. McCord *et al*<sup>16</sup> described a complete sectional denture for a patient with Microstomia which was designed in two halves; with the left side fitting into a beveled recess in the right side to give a more accurate location. Naylor and Manor described a technique for the construction of a flexible prosthesis for the edentulous patient with microstomia that may be used to perform an oral augmentation exercises to increase the vertical opening. A sectional impression tray allows us to make functional impression irrespective of the difficulties associated with microstomia, which can be assemble externally. The use of push buttons and magnets is most popular method of joining the sectional denture. Matsumura and Kawasaki used a dental magnetic attachment for a sectional removable of partial denture for a patient with a severe undercut secondary to ablative tumor surgery<sup>17</sup>. The advantage lies in their small size and strong attractive force, which allows their placement in the prosthesis without being obtrusive in the mouth. Advantages also include ease of placement, cleaning, and automatic reseating. But to prevent the denture deflection during mastication the use of push buttons plays an important role.

This case presents a simplest, economical and practical method of fabrication of sectional complete denture in microstomia patient. This technique was accomplished without use of complicated machinery. To determine the long term success of

this technique, periodic recall, maintenance and further improvement in design are necessary.

### Summary and conclusion

This clinical report describes the fabrication of an economical, quick and easy method of fabrication of sectional complete denture. Although patients with microstomia presenting for prosthetic rehabilitation pose a challenge to the clinician, they can be conservatively managed by modifying clinical and laboratory procedures. The sectional denture was convenient for the patient in terms of insertion, removal and function.

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