

Simple solution for impressions in microstomia patients: Current concepts

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ABSTRACT

Limited mouth opening complicates treatment and compromises on it. Dealing with these patients is a challenging situation. Majority of these patients can be treated with exercise and stretching movements before impressions are made. Some do not respond to these procedures because of facial scarring and surgical manipulation of facial muscles. Modification of the technique as per the need of situation is the key to a successful impression procedure.

This article describes techniques for fabrication of different types of sectional tray designs for both stock as well as custom tray, from various tray materials, to make preliminary and final impressions for such patients. In sectional tray system, the two halves are inserted independently, removed separately, and reassembled extra orally to make the cast as per the case demand for ease of procedure and comfort of the patient.

KEY WORDS: Knob, locking clip, strip

INTRODUCTION

Patients with microstomia due to any pathology or extensive surgical procedures often exhibit severely limited ability to open the mouth. Making impressions for such patients is difficult or almost impossible and leads to compromised impressions and prostheses. In prosthodontic treatment, the loaded conventional impression tray requires wide mouth opening for proper tray insertion and alignment as this is not possible in such patients, a modification of the standard impression procedure is often necessary to accomplish this fundamental step. This modification is done by using sectional tray when limited mouth opening will not allow use of a full-size impression tray.^[1]

MATERIAL AND METHODS

Design-1

Perforated maxillary plastic stock tray was obtained and the tray was cut in two- sections along the midline. In the handle area of one section three serrations were made and on the second section, steps were developed

by acrylic resin which fits in the serrations when two tray sections were joined together; these serrations and steps allow easy orientation of two sections of the impression tray. The two sections were stabilized at the posterior border of tray by fixing a four to six mm acrylic projection with a diameter of two mm on either section of tray in midline, these two projections were joined by a custom-made strip with a hole of two mm diameter on either side and two buttons that fitted precisely on the said projections over the strip to hold this strip in place [Figure 1].

Design-2

This is a modification of design-1. In this design, along with steps and serrations on sectional tray handles, a four to six mm acrylic projection in the canine region and one in molar region on either section of perforated mandibular plastic tray were fixed. For stabilization, these projections were joined by custom-made strips or elastics [Figure 2].

Design-3

A perforated maxillary metal stock tray was obtained

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and modified. On handle of the tray, a hole with a diameter of four to six mm was made along the midline. A locking nut and screw fitting in the said prepared hole was made. The nut and screw were removed and the tray divided into two halves, by cutting along the midline.^[2] The two halves could be joined by positioning them together, put the screw and tighten the nut to ensure a precise and rigid connection [Figure 3].

Design-4

A perforated maxillary plastic stock tray was

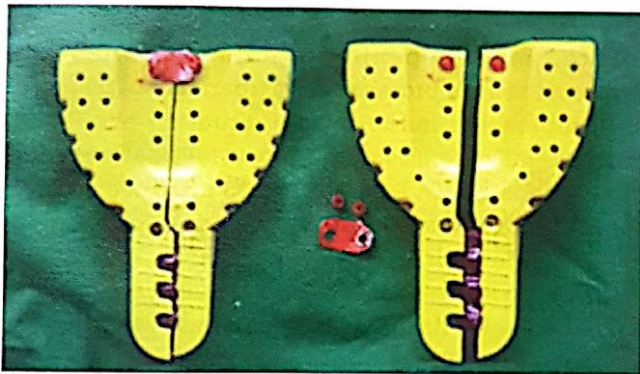


Figure 1: Serrations and step type of sectional tray

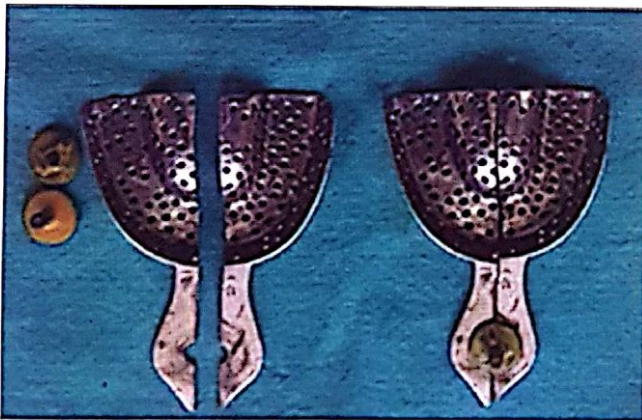


Figure 3: Nut and screw type of sectional tray



Figure 5: Hinge type of sectional tray

sectioned into two halves. A screw, six to seven mm in diameter, was fixed on either halves in posterior region and a metal locking clip was fabricated over the tray handle. The two halves were joined by positioning them together and the locking clip was fitted over tray handle; the two screws were joined by elastic for stabilization [Figure 4].

Design-5

The hinge was used to orient the two halves of the tray inside the mouth as well as to reorient the trays outside. To fabricate this design the mandibular perforated metal stock tray was sectioned into two halves along the midline and a hinge mechanism was welded on either section in midline with a "J" shaped hook.^[3] The "J" shaped hook will engage into



Figure 2: Modified serrations and step type of sectional tray

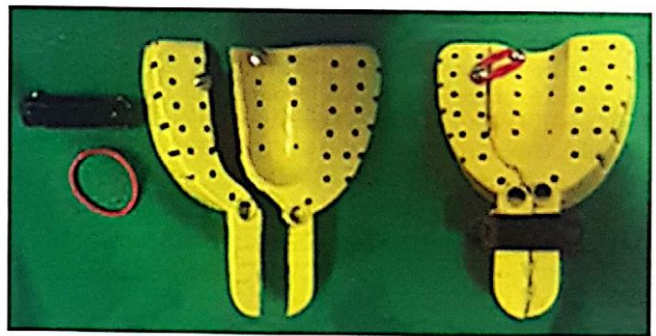


Figure 4: Locking clip and screw type of sectional tray



Figure 6: Nail head type of custom made sectional tray

the hollow parts of the hinge on both sides of the midline to orient and join the two sectional halves as a single unit [Figure 5].

Design-6

It is a custom-made sectional tray design. To fabricate this design, preliminary irreversible hydrocolloid impression by sectioning a stock disposable plastic tray was made and cast was poured in dental stone. The custom tray was designed and two halves of the custom tray using auto polymerizing polymethyl methacrylate resin were fabricated on the duplicate cast separately. Handle, buccal and lingual segment edges were aligned in one plane at the midline so that the first tray half joined easily with the second half of sectional tray. A four to five mm long horizontal acrylic projection with diameter of two to three mm was made on the medial surface of first half tray handle that is passing through the hole having diameter of three to four mm on the medial surface of second half tray handle [Figure 6]. This acrylic projection was used as a fixed point for orienting the two halves together both inside as well as outside the mouth.

A horizontal locking component in the form of

latch was made separately and attached to the superior surface of first tray half to form a nail head to secure the horizontal locking latch. To ensure hinge movement, the latch was manipulated back and forth around the new resin material.^[4] The resin material was allowed to cure for five to six minutes and again the locking component was checked for the required hinge movement at which point curing was completed. The two halves should fit together and function as a single unit with no visible space or movement [Figure 6].

CONCLUSION

Limited mouth opening often complicates and compromises the prosthodontic treatment of patients. The impression made in this situation should be nearly ideal and perfect for successful treatment and quality prosthesis. Keeping this in mind we have to modify the routinely used trays and provide newly designed trays for ease and betterment. This article attempts to illustrate very simple, quick, and readily available methods of dealing with patients in whom placement of full size impression tray is hindered by microstomia.

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