A Modified Sectional Custom Tray for Making Master Impression in Microstomia Patient: Case Report

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Abstract: Patients with limited mouth opening are often found during prosthodontic practice. Microstomia has been defined as an abnormally small oral orifice associated with various etiopathologic factors. Management of these patients poses extreme difficulties in every procedures during fabrication of prosthesis. Restricted mouth opening of the patient makes the insertion and removal of the tray extremely difficult. So sectioning of the tray is necessary, so that the trays can be inserted and removed in sections. The main problem encountered during this procedures reorientation of the tray back in position. This article present a simple technique for easy handling of the sectioned tray.

Key words: Sectional, Microstomia, Press Buttons, Constricted, Reorientation.

INTRODUCTION

Microstomia has been defined as an abnormally small oral orifice. It can occur either due to trauma or burns of electrical, thermal or chemical origin. The condition can be result from genetic disorders, plumper-vinson syndrome, scleroderma, surgical treatments of orofacial tumors and reconstruction of lip defects. Prosthetic Rehabilitation microstomia patients presents difficulties from primary impression to insertion of dentures. This is mainly due to the decreased oral opening and tongue rigidity. A maximal possible mouth opening does not accommodate the smallest impression trays. Insertion and removal of impression tray is extremely difficult and various modification of the trays have been tried in the past. Mirfazalian for example used orthodontic expansion screws to fabricate sectional trays. Cura et al used metal pins and an acrylic resin block to attach the sections of the impression trays. Bennetti et al used a flexible plastic tray intended for fluoride application to make the preliminary impression. On one of sections, Benetti et al prepared a stepped butt joint to make a definitive impression.

The purpose of this article is to describe a sectional custom tray system that is much helpful for making final impression with a constricted oral opening without giving any oral injury and tearing down of impression.

CASE REPORT

A 54 year old edentulous male patient with limited oral opening appeared in the department of prosthodontics, IDS, Bareilly, (U.P), India. for complete dentures prosthesis giving the history of surgery followed radiotherapy on the right side of the cheek three years back due to carcinoma. Oral opening was found 22mm (Fig1). Because of reduced oral opening, it was impossible in making accurate impressions with usual custom tray. So in this patient, sectional custom tray using press buttons was planned for making final impression of maxilla and mandible with Zinc oxide euginal paste.

Sectional impression tray was designed with right and left sections that could be detached and rejoined together in correct original position and outside the oral cavity for final impression and cast making procedure. For each tray a total of five 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.

PROCEDURE

1) Conventional custom trays for maxilla and mandible was first fabricated using autopolymerizing acrylic resin and then with diamond disc each custom tray was divided into two equal halves at the midline along with the handle. (fig 2,4,9,10)
2) Two male component of press buttons were attached with autopolymerizing acrylic resin on both sides of sectional trays.
3) Then two acrylic plates were fabricated with female component of press buttons on each side(fig 3,10).
4) Female component on acrylic plate engages the male component on the sectional trays when pressure is applied with fingers.(fig 4,11)
5) On the handle of maxillary tray one male-female component of press buttons attached for extra rigidity as it is large in size.
6) With each section of sectional tray, first border molding was done.(fig 6,12)
7) After that sectional impression tray were inserted into the patients mouth in two separate pieces –left and right loaded with zinc oxide Eugenol impression material.
8) After placement the sections of sectional tray were stabilized by means of preformed acrylic resin plate in patients mouth.
9) After impression material was set, the acrylic resin plates were removed first and the right and left sections of impression were removed separately from the oral cavity by carefully fracturing the impression material.(fig 7)
10) Then extraorally female component on acrylic resin plate reattached with the male components on sections of sectional tray with help of press buttons and thus we get the final impression (fig 8, 13).

11) Carefully determine that the fracture line was joined smoothly and then dental stone was poured to get master cast.

DISCUSSION
It is always problematic to make an accurate impression with a complete maxillary and mandibular arch for patients with a constricted oral opening. Various pins, bolt and lego pieces, orthodontic devices have been used for locking mechanism of sectional impression trays fabricated for patients with limited oral openings and fixation of all these devices into trays requires expert work. Here sectional trays were reoriented in and outside the oral cavity accurately using autopolymerizing acrylic plate by press buttons system and the technique was simple.

The main advantages for making sectional tray are decreased patient trauma and no tear down of impression during removal, moreover these trays has easy accessibility in patients mouth and are less costly and easy to fabricate. The disadvantages are additional time required for precise fabrication of sectional tray. Extreme care should be taken during reorientation of sections of sectional impressions in and outside the oral cavity.

CONCLUSION
It is often difficult to apply conventional clinical procedures in fabricating complete denture prosthesis for microstomia patients who demonstrate limited oral opening. However with careful treatment planning, the use of sectional impression procedure, many of the apparent clinical difficulties can be overcome.

REFERENCES


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Fig- 2,3,4- Sectional Special Tray With Press Buttons

Fig : 5
Fig : 6
Fig : 7
Fig : 8

Fig 5,6 - Border Molding

Fig 7,8 - Final ZOE Impression

Fig 9,10,11-sectional special tray with press buttons

Fig: 9
Fig: 10
Fig: 11

Fig : 12
Fig : 13

Fig 12,13 –final ZOE impression

Fig : 14

Fig : 15

Fig 14,15- complete denture in patient mouth

MANDIBULAR SECTIONAL TRAY AND IMPRESSION