

Customizing Impression Trays for Children: A Novel Technique

Abstract

Dental anxiety is a common problem in children, be it for a simple procedure like impression making or the appearance of an unsightly instrument. Dental Impression procedure in children can be a difficult task due to poor compliance, reduced mouth opening, increased gagging and even compounded if the trays are ill fitting. This article explains the procedure about custom fabrication of acrylic impression trays for children, where use of prefabricated tray becomes difficult.

Key Words

Custom fabricated; acrylic impression trays; pediatric dentistry

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INTRODUCTION

The foundation for practicing dentistry for children is built on the ability to guide them through the dental experience^[1,2] and manage their dental fear. Behaviour management strategies have been proposed to reduce stress during dental treatment in children and are mainly divided into two broad categories. The first module consists of behaviour shaping and modification techniques while the second category consists of pharmacologic techniques.^[3] Child's fear starts from fear of unknown which could be for simple procedures in the operatory like changing the chair position; scaling or making impression. Impression making in pediatric dentistry is done by use of custom fabricated trays or preformed metal or plastic trays. Preformed trays are more or less accurate, with minimal alterations or modifications made. But presence of metallic trays, larger size plastic tray, small and narrow oral commissures, alteration in ridge form (dental arch) generally leads to failure in comfortable and accurate impressions. Modifications in impression techniques for patients with cleft lip and cleft palate (CLCP)^[4,5] have been discussed but alteration in impression making of child with healthy dentition, crowded narrow arch, oligodontia, anodontia etc., has not been discussed much in detail. Through the method discussed

below we attempt simplification of impression making in children with increased comfort.

CASE REPORT

A female patient aged 5½ years reported to Department of Pedodontics and Preventive Dentistry, Terna Dental College, Nerul, Navi Mumbai with chief complaint of unerupted milk teeth in lower arch. General examination showed scanty hair and eyebrows, dry skin. On intraoral examination she had micrognathia, with multiple missing deciduous teeth in both the arches, poor development of alveolar ridge and microstomia. On radiographic examination she had multiple deciduous teeth and permanent tooth buds missing. Her clinical presentation and radiographic findings confirmed the diagnosis as ectodermal dysplasia. A removable partial denture was the treatment opted for her (Fig. 1, Fig. 2 & Fig. 3). Preformed metal and plastic trays were checked for making impression but were found to be large and unfit. Impression making being an important step; since there was alteration in her dento-alveolar morphology and taking into consideration her anxiety towards the procedure; a modification of primary tray was undertaken. Following steps were used in making a custom tray:

- a) Arch form recording
- b) Fabricating wax rim
- c) Preparation of acrylic trays



Fig. 1: Front intra oral view and cross bite

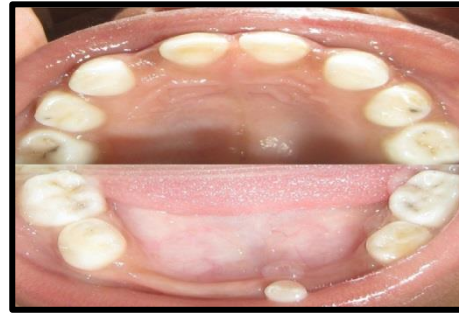


Fig. 2: Maxillary and Mandibular occlusal view

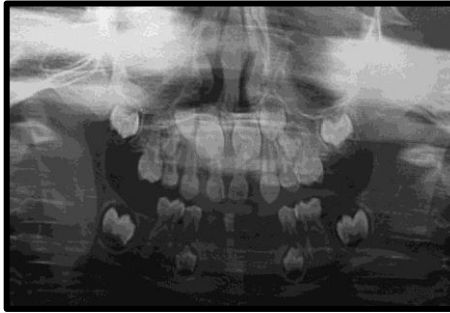


Fig. 3: Orthopantomograph



Fig. 4: Arch form recording



Fig. 5: Wax templates



Fig. 6: Impression trays constructed

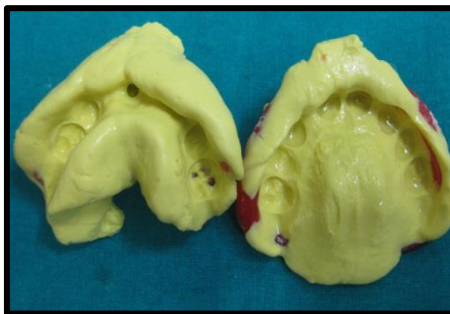


Fig. 7: Upper and lower impressions

d) Border lining with wax

STEP I

Recording Arch form

Classification of arch form recording techniques

Anodontia/oligodontia	Dentulous
Wax template	Wax sheet (moulding)
Impression compound moulding	Bite registration (with wax)

The present case had hypodontia with 73 to 83 and 52,62 missing. Method used to record arch form was using a wax template. A modeling wax sheet in shape of U was used as a template to record tentative dimensions and shape of arch (Fig. 4).

For Other Clinical Conditions

Bite registration

Modeling wax sheet strip or alu wax is softened and moulded as per the arch shape with extension till the last erupted lower molar and ask the patient to bite. Spray water with three-way syringe to reduce alteration of arch form during removal.

Wax sheet (Moulding)

A wax strip measuring 1cm x 6cms was thermally softened and adapted over the dental arch, extending up to the vestibular depth.

Impression compound-

Used in edentulous arches where thermally softened impression compound is moulded to the tentative shape of the arch.

STEP II

Once wax template is made, it acts as a guide over which wax rims of height and width approximately 3-5 mm are prepared (Fig. 5).

STEP III

Acrylic tray is prepared over wax rim using salt & pepper or dough method .In maxillary tray the

palatal extension is removed giving it horseshoe shape appearance. This design would assist excess impression material mixed at right consistency to flow and record the palatal vault area, thus avoiding posterior extension and gag reflex.

STEP IV

Checking for adequate thickness of acrylic tray.

STEP V

Removal of wax from the acrylic tray.

STEP VI

Clean, trim, sand paper the trays. Prepare vents for flow of excess material. Line the trays with wax, to avoid any sharp edges (Fig. 6). This customization of trays improves patient comfort and acceptability (Fig. 7).

DISCUSSION

Impression procedures in children pose a unique set of challenges and are often difficult to use conventional methods for fabricating dentures.^[5,6]

Hence, factors influencing alterations in primary tray for impression technique:

- a) Less mouth opening / Small oral commissure
- b) Small arch form (in infants)
- c) Behaviour aspects
- d) Fear to metal objects / Fear of unknown
- e) Difficulty in understanding / cooperation
- f) Alterations in arch form
- g) Sensitivity of mucosa (to sharp objects)
- h) Manufacturer's defect

CONCLUSION

Modifications and alterations should be adapted and practiced when the need arises in patients in whom preformed trays are deemed to be unfit. Accuracy from step one leads to better results and this present method proposes an alteration in basic steps for comfort, ease and as a add on towards perfection in clinical dentistry.

Why this paper is important to paediatric dentists

1. Modifying impression techniques to suit the arch form.
2. Acceptable by children as the sizes of the trays are customised.
3. Can be useful in cleft patients, anodontia, ectodermal dysplasia, reduced mouth opening.

REFERENCES

1. Suprabha BS, Rao A, Choudhry S, Shenoy R. Child dental fear and behavior: the role of environmental factors in a hospital cohort. *J Indian Soc Pedod Prev Dent* 2011;29(2):95-101.
2. Elango I, Baweja DK, Shiva Prakash PK. Parental acceptance of pediatric behavior

management techniques. A comparative study. *J Indian Soc Pedod Prev Dent* 2012;30(3):195-200.

3. Salem K, Kousha M, Anissian A, Shahabi A. Dental fear and concomitant factors in 3-6 year old children. *J Dent Res Dent Clin Dent Prospects* 2012;6(2):70-4.
4. Pani SC, Hedge AM. Impressions in cleft lip and palate – A novel two stage technique. *J Clin Pediatr Dent* 2008;33(2):93-6.
5. Bachhav VC, Aras MA. A simple method for fabricating custom sectional impression trays for making definitive impressions in patients with microstomia. *Eur J Dent* 2012;6(3):244-7.
6. Ravichandra KS, Vijayaprasad KE, Vasa AAK, Suzan S. A new technique of impression making for an obturator in cleft lip and palate patient. *J Indian Soc Pedod Prev Dent* 2010;28(4):311-4.