Alternative One Visit Impression Technique for Multiple Tooth Preparations and Implants

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ABSTRACT

This article describes a modified method of tray fabrication using autopolymerizing acrylic resin and an impression technique for both implants and natural teeth simultaneously. This method can be used for accurate replication of multiple prepared teeth and implants to be made at one sitting in the mandibular arch for the difficult case to control.

Key words : Simultaneous impression, Implant and natural teeth, Tray

INTRODUCTION

Accurate replication of the hard and soft tissues of the oral cavity is one of the most important factors for successful prosthodontic treatment. Various technical and practitioner variables influence the precision of impression construction. Most of these factors can be controlled by careful manipulation. However, some patient factors are inevitably beyond the dentist's control, including the gag reflex, microstomia, limited mouth opening, difficulties in saliva control, and bleeding. In the situation of a full arch impression for multiple prepared teeth in full mouth rehabilitation, the inherent limited working time of the impression material coupled with patient factors results in a challenging clinical procedure. A total working and setting time of 4 minutes with a snap set is generally considered adequate for most procedures[1]. Furthermore, it could be more complicated if multiple implants and abutment teeth are present. Modifications of impression tray fabrication to accommodate limited mouth opening, full mouth rehabilitation, and other technical challenges are found in the literature[2-5]. However, few useful methods have been reported concerning impression making of multiple prepared teeth and implants. This article describes a method to design and fabricate a segmental tray system which allows the clinician to focus on syringing impression material around no more than two or three teeth at a time, which will improve the accuracy of the margin and a narrow zone of unprepared tooth apical to the finishing line[2-4]. In addition, we introduced an effective way to create accurate impression of multiple prepared teeth and implants as a single procedure.

A 33-year-old female patient underwent orthodontic treatment and implant surgery; prosthodontic treatment was then planned. Mandibular left first and second premolars, mandi-

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bular right lateral incisor, canine, and first premolar had been prepared and provisionalized with acrylic resin during orthodontic treatment. Final impression was then needed for fabrication of metal ceramic crowns on the prepared teeth and for implant restoration on mandibular left first molar, mandibular right first molar and second premolar.

TECHNIQUE

Tray fabrication

The impression tray was fabricated using the following procedure[5]:

1. Construct the diagnostic cast (Fig 1).
2. Divide the arch for the impression into two or three segments, each of which may include two or three prepared teeth for ease of management. Mark each segment with a pencil.
3. Construct the individual segmental tray (Fig 2). Use one sheet of baseplate wax (Modeling wax, Densply, York (PA), USA) for relief and then extend the acrylic resin (Bosworth®, Fastray™, Skokie, Illinois, USA) mixture, in the dough stage, 1-2 mm over the cervical margins of the prepared teeth. Attach a small wing to the buccal or labial side of the segmental tray to allow the simultaneous removal of both segmental trays and

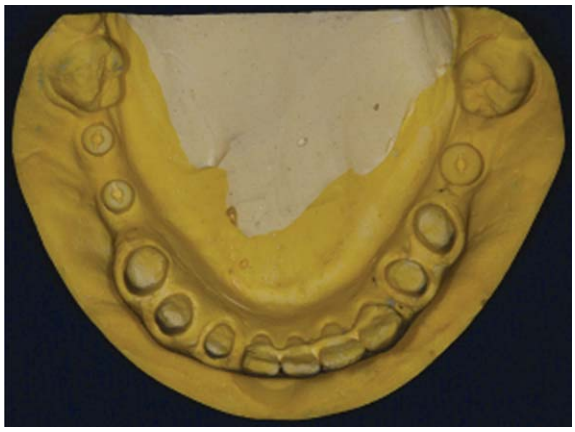

Figure 1. *View of cast requiring impression of multiple prepared teeth.*

Figure 2. *Two segmental trays for both prepared teeth were positioned. Each had buccal wing for snap removal.*

Figure 3. *Lateral view of overall trays. Note indentation around handle. There is 1 mm of leeway between lateral side of handle and overlay tray.*

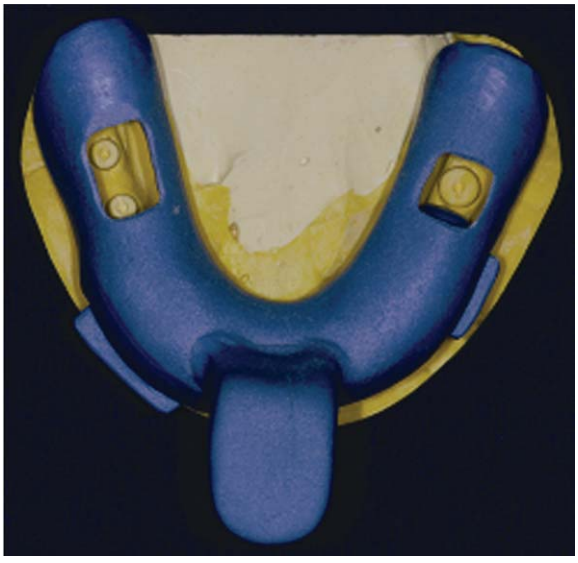

Figure 4. *Occlusal view of completed segmental trays and overlay tray.*

an overlay tray. The segmental tray should have sufficient thickness to maintain its dimensional stability.

4. After each individual segmental tray is seated on the cast, fabricate an overlay tray with base plate wax relief. Precisely position the overlay tray with the aid of an indentation around the each wing with 1 mm leeway (Fig 3).
5. After the overlay tray's positioning, create windows on each side of the tray for implant coping impression using an open tray technique (Fig 4).

Impression procedure

1. After a conventional gingival displacement procedure, apply the appropriate adhesive to both the internal and external surfaces of the segmental trays.
2. After retraction cords are removed, syringe the impression material (Pentamix; 3M ESPE, Seefeld, Germany) around the prepared teeth involved in a segment, and position a segmental tray containing impression material. Remove excess material from around the tray to ensure the precise vertical positioning of the overlay tray.
3. After the impression material of a segmental tray is polymerized, repeat the above procedure for the next segment without removing the segmental tray from the previous impression.
4. Connect implant transfer copings (Implantium, Dentium, Suwon, South Korea) to each implant on the arch, and position an overlay tray containing the impression material to take an impression of the implants.
5. After loosening impression coping screws, remove all trays together by holding both wings of the segmental trays and a handle or margin of an overlay tray; this is required to avoid dimensional change and flexing deformation of the impression material despite the presence of segmentally different paths (Figs 5 and 6).

Figure 5. *Completed definitive impression with 2 of segmental tray and 3 of implant copings.*

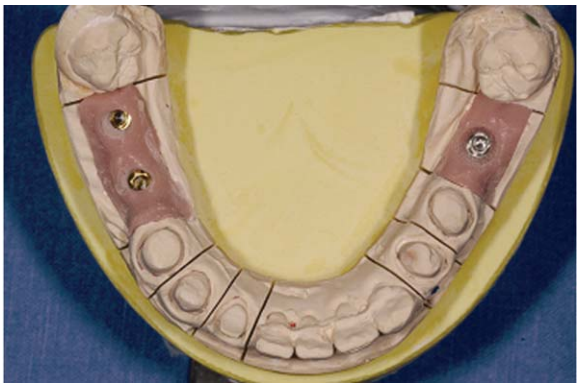

Figure 6. *View of an impressed master cast.*

SUMMARY

This report described a modified impression technique for multiple prepared teeth and implants using the segmental and overlay tray. If any structure that can acts as a stop of the sectional tray could be designed, a more accurate master model could be produced with this technique.

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