

Implant Impression for Full-Banded Orthodontic Patient

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INTRODUCTION

Implant dentistry now forms an integral part of routine dental practice, and implants are used in multidisciplinary treatment. Dental implants are becoming popular in orthodontic treatment. They can be used to reposition natural teeth and to increase treatment options.^{1,2} Treatment that combines orthodontics and implantology is now extensively used in dentistry.

In certain cases, implants replace teeth prior to termination of orthodontic treatment. However, accurate impressions are difficult to obtain at this time because the bands and wires trap the impression material. Also, orthodontic devices can tear the impression material. Few techniques for implant impression in orthodontic patients have been reported. Lorton³ described a method to facilitate impressions of orthodontically banded teeth using strips of occlusal indicator wax. Drago² obtained intact, accurate irreversible hydrocolloid impressions to make a maxillary splint. Sukotjo¹ proposed the fabrication of a simple implant surgical template to be used in implant therapy involving orthodontics devices. Maeda et al⁴ referred to a method of mouthguard fabrication for orthodontic patients that allows reproduction of the occlusal and incisal surfaces using irreversible hydrocolloid. However, with these methods, a precise casting of the implant is not possible. Obtaining a precise impression with stable dimensions of implant is necessary for passive fit, and it demands precise transfer of the spatial relationships of the implant from the mouth to the master cast to ensure passive fit of implant framework. Irreversible hydrocolloid is useful in preliminary impressions, diagnostic casts, mouthguards, bleaching trays, and orthodontics casts.⁵ In implant impressions, however, it has the disadvantages of low dimensional stability and reduced capacity for detail reproduction.⁶ On the other hand, the usual impression materials for implants are too rigid to allow removal from the mouth.

This article proposes a simple impression implant technique for an orthodontic patient without bracket removal. Combining 2 types of impression materials makes it possible to obtain an exact reproduction of the implant position, yet the material can be easily removed.

TECHNIQUE

A 60-year-old man in the course of full-banded orthodontic therapy needed repositioning of his maxillary right canine using an osseointegrated implant.

The impression technique involved the following steps:

1. Manufacture a custom impression tray using light-polymerizing tray material (Triad Tru-Tray, Dentsply International Inc, York, Penn). Perforate the tray for retention of impression material and access to the implant impression coping.
2. After archwire removal, the undercuts around the brackets must be blocked out with modeling wax (Utility wax, Coltène/Whaledent, Cuyahoga Falls, Ohio) (Figure 1).
3. Place light-bodied polyvinyl siloxane impression material (Imprint, 3M ESPE, St Paul, Minn) around the coping (Figure 2).
4. Mix irreversible hydrocolloid material (Orthoprint, Zhermack, Rovigo, Italy) according to the manufacturer's instructions, and load the material into the tray (Figure 3).
5. Remove the tray and impression after setting.
6. Check the impression for presence of voids or pits and other artifacts (Figure 4).

DISCUSSION

In the literature, several techniques to facilitate impression taking in orthodontics have been described. Nevertheless, irreversible hydrocolloid is not recommended for implant impression because it is inadequate for fine-detail reproduction and has low dimensional stability. Current materials (polyvinyl siloxane, polyether) for implant impression are necessary to obtain a master cast that exactly replicates the implant position. However, the aforementioned materials preclude removal from the mouth removal due to their rigidity.

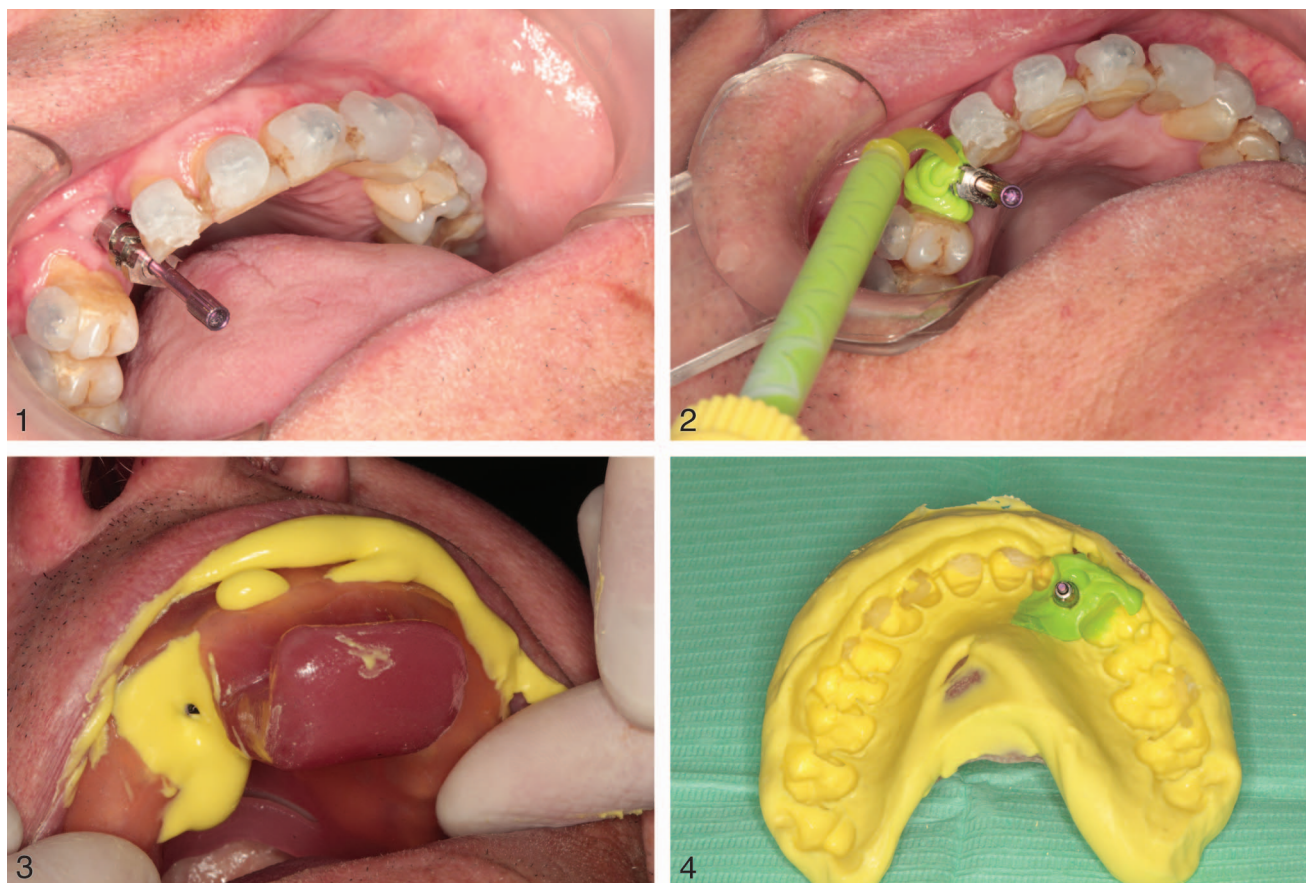
This article describes 2 impression materials. With the proposed method, a cast with sufficient accuracy is possible. The first impression material, irreversible hydrocolloid, is elastic enough to access the undercuts to reproduce the teeth, yet it allows removal from the mouth. On the other hand, the second impression material, polyvinyl siloxane, is the most suitable for implant reproduction.

The major disadvantage is tearing of the irreversible hydrocolloid, which commonly occurs on the buccal surfaces, although it is not a major problem. Another probable disadvantage is the absence of adhesion between the materials, which can result in displacement. Nevertheless, penetration of the materials into the perforations of the tray can prevent this.

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FIGURES 1–4. **FIGURE 1.** View of implant impression coping and blocking brackets by modeling wax. **FIGURE 2.** Light silicone around impression coping. **FIGURE 3.** Individual tray loaded with irreversible hydrocolloid in the mouth. **FIGURE 4.** View of the 2-material impression, polyvinyl siloxane and irreversible hydrocolloid.

This article proposes a simple method to obtain an accurate implant impression for use in multidisciplinary cases involving orthodontic devices. Polyvinyl siloxane impression material is set around the coping and then the irreversible hydrocolloid impression is made. The method uses materials common in clinical practice, and an expensive digital appliance is not necessary.

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