

# A New, Simple Implant-Level Impression Technique for Dental Implants in Limited Interproximal Space

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Acceptable dental implant function and esthetics are dependent on many factors, including ideal soft tissue environment and ideal surgical placement of the implants.<sup>1</sup> The placement of dental implants without appropriate prosthetic treatment planning may lead to significant problems that can begin during the impression-making phase. The design and function of the prosthetic device, access for oral hygiene procedures, and esthetic appearance may be compromised as a result.

Fabrication of a simulated implant-level soft tissue cast and articulation of the casts are common procedures that allow the dentist to evaluate and diagnose implant placement, abutment selection, and confirm previously planned prosthodontic options.<sup>2-5</sup> Occasionally dental implants are located in positions or angulations that make it impossible to attach the impression copings and thus make an implant-level impression. These situations may require the clinician to deviate from routine impression approaches. McCartney<sup>6</sup> presented a technique for making an abutment-level impression when implants have close contact interferences; this technique advocates using a gold cylinder as an alternative impression coping. Chaimattayompol et al5 described an impression technique in which screwretained titanium or frictional fit plastic implant index copings are used for implant position registration when unfavorable implant positions are present. Michalakis et al<sup>7</sup> used a modified impression coping to overcome the difficulties associated with this clinical situation. Ahuja et al<sup>8</sup> described a technique that consists of making an implant-level impression using a transfer coping for the posterior implant. A positional index, which contains a registration of the second transfer coping, the healing

#### Abstract

Making an implant-level impression when implants are placed in limited interproximal space or compromising angulations can be a time-consuming procedure. This article presents a new method for developing a master cast for two implants clinically placed convergent and very close to each other. The technique consists of making an implant-level impression using a transfer jig fabricated on dental abutments.

abutment reattached from the transfer in the impression, and the adjacent teeth, is then fabricated intraorally. The master cast is altered using this positional index to incorporate the second implant analog. Selecman et al<sup>9</sup> advocated the use of a solid plastic, press-fit, closed tray impression coping to overcome this problem.

This article presents a new method for developing a master cast for two implants clinically placed convergent and in very close proximity (Figs 1 and 2).

#### Technique

- 1. Intraorally, remove the healing abutments and place a closed-tray impression coping (XiVE; DENTSPLY Friadent, Mannheim, Germany) on the medial implant and secure it with the screw (Fig 3).
- 2. Make an impression with medium-body monophase vinyl(poly siloxane) (Zhermack S.p.a., Badia Polesine, Italy) using a stock tray.
- 3. Remove the impression coping from the medial abutment and attach the healing abutments.
- 4. Attach an implant analog (XiVE) to the impression coping and tighten the screw.
- 5. Place the attached impression coping and implant replica in the impression.
- 6. Inject the gingival mask material (Zhermack S.p.a.) around the implant analog to have a 1 to 2 mm thickness and pour the cast with type III dental stone (Whip Mix Louisville, KY). This results in a cast with one implant analog.



Figure 1 Dental implants in close proximity.



Figure 2 Periapical radiograph.



Figure 3 Medial dental implant with impression coping.

- 7. Intraorally, do the same for the other implant to obtain a cast with the other implant analog (Fig 4).
- 8. Select the appropriate abutment for each implant on the respective cast.
- 9. Prepare the abutments to have correct gingival contours with a tapered round-end, super-coarse (150  $\mu$ m) diamond bur (5856.018, Brasseler USA, Savannah, GA)



Figure 4 Lateral dental implant with impression coping.



Figure 5 Selected abutment in the mouth.



Figure 6 Splinted abutments.

and carbide titanium-cutting bur (H283FQ.010, Brasseler USA).

- 10. Place the abutments intraorally and prepare them as necessary to be seated without interferences (Fig 5).
- 11. Splint the abutments intraorally with low shrinkage autopolymerizing polymethacrylate (PMMA) resin (Pattern resin LS, GC Corp., Tokyo, Japan; Fig 6).
- 12. Remove the splinted abutments from the mouth (Fig 7).
- 13. Alter the cast with a 701 fissure bur (Brasseler USA) in the area of the mesial implant, allowing for enough space to attach the accompanying implant analog. Attach the analog



Figure 7 Primary cast and splinted abutments.



Figure 8 Altered cast.



Figure 9 Definitive prosthesis.

to the mesial abutment and fill the voided area with type III dental stone (Whip Mix) (Fig 8).

14. This results in a master cast with a two-implant analog used for final preparation of implant abutments and fabrication of the definitive restoration (Fig 9).

## Discussion

The proposed method offers an easy and precise method of making an implant-level impression of implants with proximity that makes it impossible to use two adjacent impression copings at the same time. The advantage of this method, when compared to previously described methods, is that it does not require additional components such as gold cylinders or frictional fit plastic copings. This is important as the accuracy and reliability of solid plastic, press-fit, closed tray impression coping has not been evaluated. Another advantage is that the impression copings were not modified, which can damage their structural durability and accuracy.

## Summary

Making an implant-level impression when implants are placed in limited interproximal space can be a time-consuming procedure. This article presents a new method for developing a master cast for two implants that are clinically placed convergent and very close to each other. The technique consists of making an implant-level impression using a transfer jig fabricated on dental abutments.

## References

- Hussaini S, Canela-Pichardo D: Palatal impression template for a fully edentulous arch during Stage I implant placement. J Prosthet Dent 1997;77:630-632
- Baumgarten HS, Salama H, Nelson A: Abutment head selection as a prosthetic discipline. Compendium 1991;12:942-947
- Kupeyan HK, Lang BR: The role of the implant impression in abutment selection: a technical note. Int J Oral Maxillofac Implants 1995;10:429-433
- Giglio GD: Abutment selection in implant-supported fixed prosthodontics. Int J Periodontics Restorative Dent 1999;19:233-241
- Chaimattayompol N, Arbree NS, Wong SX: A simple method of making an implant-level impression when presented with limited space, unfavorable implant positions, or problematic implant angulations. J Prosthet Dent 2002;87:684-687
- McCartney JW: Management of implant malalignment precluding transfer coping placement. J Prosthet Dent 1992;67:423-425
- Michalakis KX, Kalpidis CDR, Kang K, et al: A simple impression technique for dental implants placed in close proximity or adverse angulations. J Prosthet Dent 2005;94:293-295
- Ahuja SA, Wicks RA, Brandt RL: Developing a fixture level cast for implant with interfering axial convergence. J Tenn Dent Assoc 2010;90:28-29; quiz 30-1
- Selecman AM, Wicks RA: Making an implant-level impression using solid plastic, press-fit, closed-tray impression copings: a clinical report. J Prosthet Dent 2009;101:158-159

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