

TIPS FROM OUR READERS

A modified method for fabricating a radiographic stent with transparent occlusal registration material for implant placement



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For successful implant placement, the evaluation of anatomic structures is important in deciding the diameter, length, position, and angulation of the implant. Various diagnostic methods such as radiographic stent and cone-beam computed tomography (CBCT) can be used to determine the appropriate position.¹ A radiographic stent can stably position a radiopaque marker without inducing scatter. In addition, it can be comfortably retained in the mouth.²

Several methods have been introduced for the fabrication of a radiographic stent, including duplicating the existing restoration with clear resin^{3,4} and using silicone putty or a vacuum-formed matrix on the diagnostic cast.⁵⁻⁷ However, these methods require an additional impression or laboratory procedures.

This article describes a straightforward method of fabricating a radiographic stent with a transparent occlusal registration material at the chairside. It does not require an impression or laboratory procedures. Because a transparent material is used, the location of the radiopaque marker can be confirmed visually. In addition, the position and the angle of the implant can be planned by considering the occlusal relation because the occlusal surface is recorded simultaneously.

Because this method is not based on transferring information from a diagnostic waxing, it cannot be appropriate for an edentulous space or a more extensive posterior edentulous area. However, it is effective for evaluating the quantity and the shape of alveolar bone

using a CBCT image with a radiopaque marker for deciding treatment options at the initial visit.

TECHNIQUE

1. Mount the cartridge of a transparent polyvinyl siloxane (PVS) occlusal registration material (CharmFlex Bite 2; DentKist Inc) to a cartridge dispensing gun (Dentsply Sirona).
2. Evaluate the occlusal relation. Apply the occlusal registration material to the edentulous area and the occlusal surface of the neighboring teeth. Instruct



Figure 1. Apply transparent occlusal registration material.

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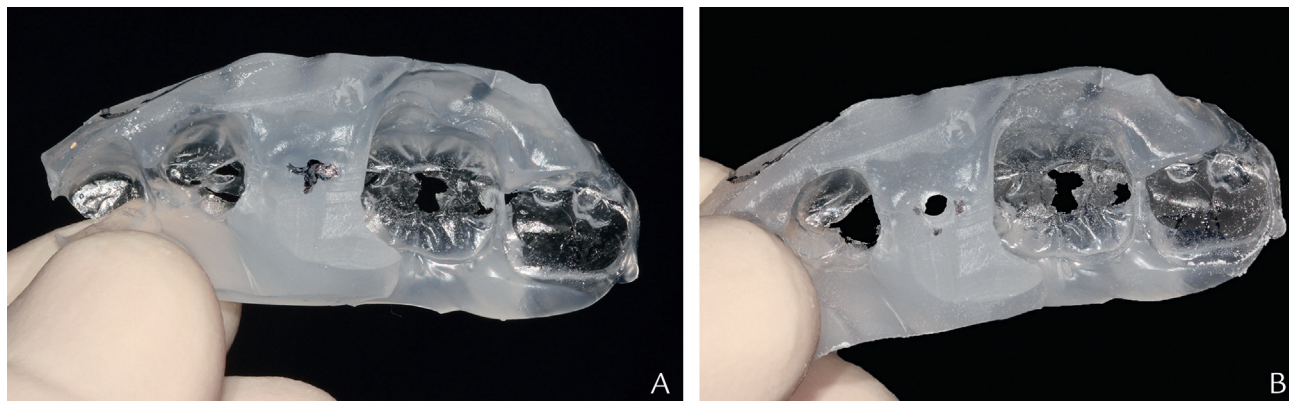


Figure 2. A, Indicate position of implant placement. B, Prepare hole with round tungsten carbide bur.

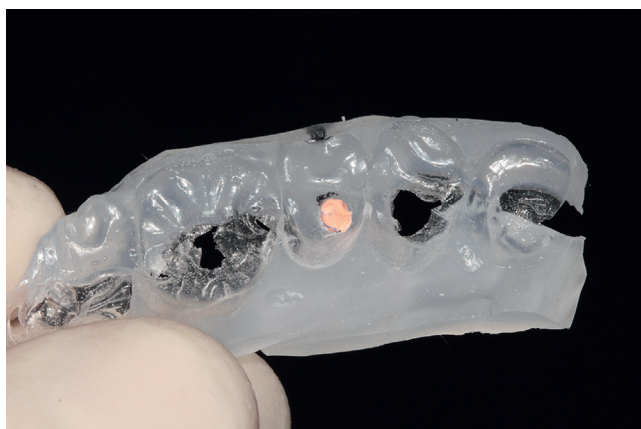


Figure 3. Place gutta percha in hole.

the patient to clench in the maximum intercuspal position (MIP) (Fig. 1).

3. Remove the stent after it has polymerized, trim away the excess PVS, and evaluate the stent intraorally.
4. After confirming the proximal and occlusal surface of the teeth, indicate the position of the implant placement by measuring the mesiodistal and buccolingual distances (Fig. 2A). Make a hole with a round tungsten carbide bur (H71E.HP; Komet USA LLC) on the stent (Fig. 2B).

5. Insert a gutta percha point (#80; DiaDent Group Intl) into the hole, cut, and trim with a hot knife (Fig. 3).
6. Place the radiographic stent intraorally and obtain the CBCT image.

REFERENCES

1. Williams MY, Mealey BL, Hallmon WW. The role of computerized tomography in dental implantology. *Int J Oral Maxillofac Implants* 1992;7:373-80.
2. De Kok IJ, Thalji G, Bryington M, Cooper LF. Radiographic stents: integrating treatment planning and implant placement. *Dent Clin North Am* 2014;58:181-92.
3. Stellino G, Morgano SM, Imbelloni A. A dual-purpose, implant stent made from a provisional fixed partial denture. *J Prosthet Dent* 1995;74:212-4.
4. Tarlow JL. Fabrication of an implant surgical stent for the edentulous mandible. *J Prosthet Dent* 1992;67:217-8.
5. Bannani V, Serre D. Radiographic stent for a quick and precise bone height analysis. *J Prosthet Dent* 2000;83:480-1.
6. Lee SY, Morgano SM. A diagnostic stent for endosseous implants to improve conventional tomographic radiographs. *J Prosthet Dent* 1994;71:482-5.
7. Ku YC, Shen YF. Fabrication of a radiographic and surgical stent for implants with a vacuum former. *J Prosthet Dent* 2000;83:252-3.

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