Simplified Fabrication of Surgical Template for Orthodontic-Implant Treatment

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This article proposes a simple method to fabricate an implant surgical template that provides good visual access, operator flexibility, and template stability for use in multidisciplinary cases involving orthodontic devices.

J Prosthodont 2006;15:59-61. Copyright © 2006 by The American College of Prosthodontists.

INDEX WORDS: surgical template, multidisciplinary case

COMPREHENSIVE, MULTIDISCIPLINARY treatment planning is key to a successful oral rehabilitation. A treatment that combines orthodontics, periodontics, and prosthodontics will most likely result in a stable, esthetic, and functional solution that fulfills the patient's requirements and expectations.[1]

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Accepted November 24, 2004.

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1059-941X/06

doi: 10.1111/j.1532-849X.2006.00070.x

Implant therapy has become a routine part of modern prosthodontic care. In addition, the use of dental implants in orthodontic treatment is becoming more and more popular.[2,3] Planning and execution of successful implant restorations is dependent upon the use of a surgical template. Yet in certain situations, dental implants may need to be placed prior to termination of orthodontic treatment to save treatment time; however, the complexity of existing orthodontic devices may necessitate modifications of the surgical template for proper dental implant placement.

Although surgical template fabrication has been widely described,[4] the technique to create a template that accommodates the fixed orthodontic devices has yet to be addressed. This article proposes a simple implant surgical template fabrication method that provides good visual access, operator flexibility, and template stability for use in multidisciplinary implant therapy involving orthodontic devices.

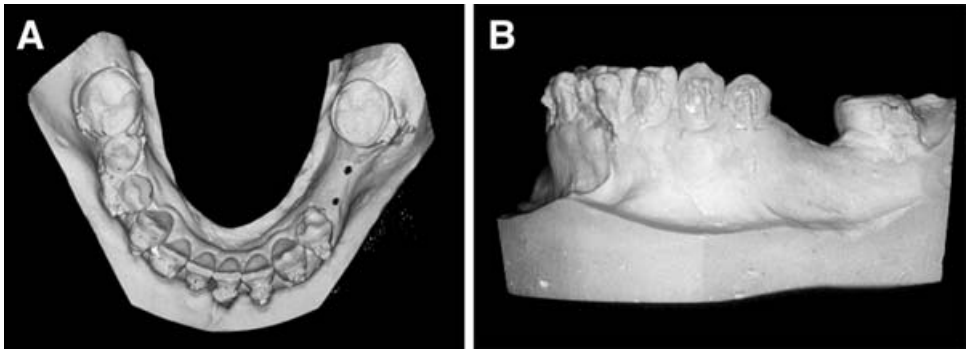

Figure 1. (*A*) The occlusal view of the mandibular orthodontic cast. Although minor orthodontic movements are still needed, adequate space in the mandibular left premolar area for future implant placement has been established. (*B*) Lateral view of the model.

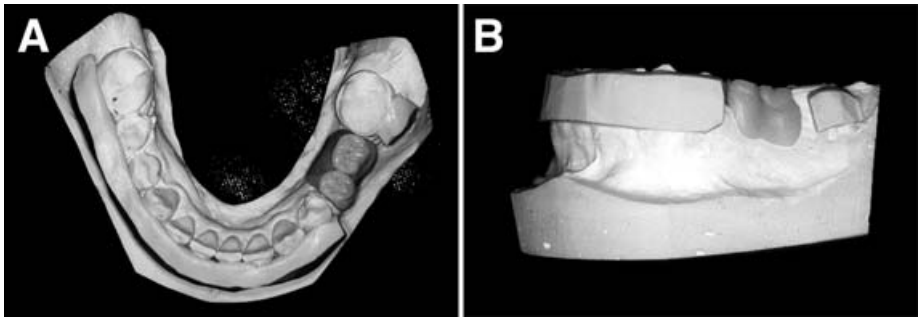

Figure 2. (*A*) Block all of the undercut area (braces) with silicone putty. Trim the silicone putty until the appropriate 2 to 3 mm thickness is attained. Replace the missing teeth with denture teeth and Triad. (*B*) Lateral view of the model.

Technique

1. The patient still needs minor orthodontic movements; however, adequate space in the mandibular left premolar area for future implant placement has already been established (Fig 1). At the selected time of implant treatment, remove the orthodontic arch-wire from the patient and make an impression with irreversible hydrocolloid.
2. Block all the undercuts around the brackets on the cast by adapting a mixture of silicone putty (Exaflex, GC America, Inc., Alsip, IL) to the edges of the teeth (Fig 2).
3. Trim the silicone putty using a sharp scalpel until the appropriate thickness is attained, approximately 2 to 3 mm (Fig 2).
4. Replace the missing teeth with prosthetic denture teeth and Triad (Triad Denture Base Material, Dentsply International, Inc., York, PA) in the anticipated position on the edentulous ridge (Fig 2).
5. Fabricate the surgical template with a vacuum-formed thermoplastic technique, using a clear, 0.060 thickness, 5 × 5 vacuum-forming material (T & S Dental & Plastics, Cherry Hill, NJ) (Fig 3A).
6. Trim the excess in the customary manner, paying special attention to trim the buccal area of the template at the edge of the silicone block to provide stability, support, and strength (Fig 3B).
7. Try in the final template in the patient's mouth, and check for stability and complete seating (Fig 4).

Summary

The use of a surgical template is needed in the planning and execution of successful implant restorations. A simple technique to fabricate an implant surgical template that accommodates fixed orthodontics devices is described.

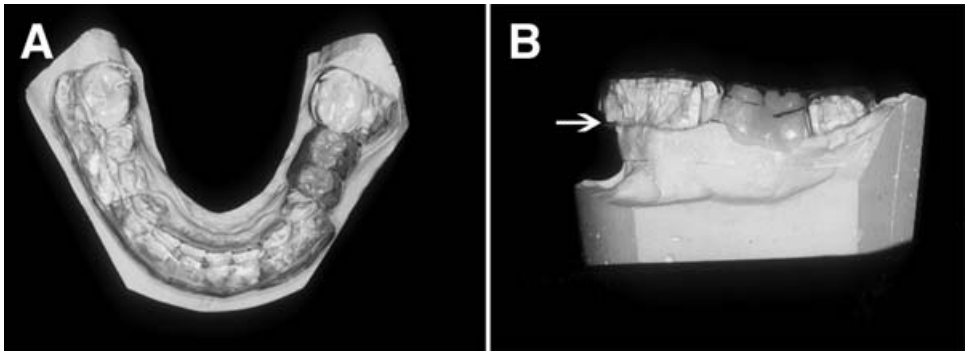

Figure 3. (*A*) Perform a vacuum-formed procedure using surgical template material. Trim the buccal area at the lower edge of the silicon putty to provide template strength (white arrow). (*B*) Lateral view of the model.

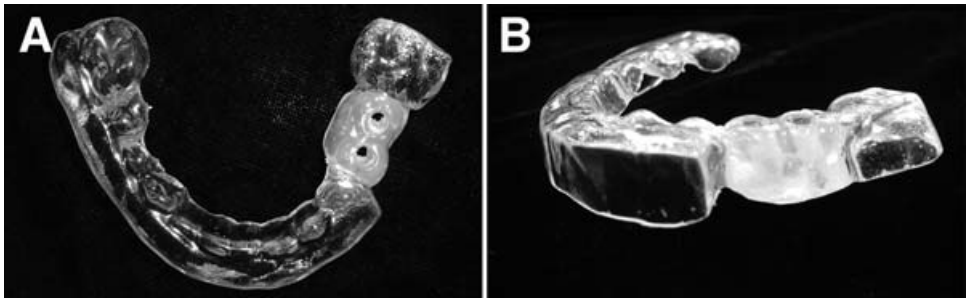

Figure 4. (*A*) Final result of surgical template for orthodontic-implant case is ready to be used. (*B*) Lateral view of the template.

References

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