

Simplifying the placement of dental implants

Dr. Ara Nazarian describes a simple method for placing an implant

Today, we see more patients presenting with endodontically treated teeth that have failed for various reasons, such as fracture, recurrent caries, or periodontal problems.^{1,2} In the past, the common dental treatment would be to prepare the adjacent teeth for a three-unit bridge. However, with implant therapy gaining in popularity among patients and providers, the requests for implant treatment has increased.³ It is my opinion that implant tooth replacement is the standard of care. This article discusses a case and includes photos of the replacement of a posterior maxillary tooth using a simplified implant system and technique.

Case report

A 46-year-old man presented for replacement of missing tooth No. 14 (Figure 1). The patient's medical history was non-contributory. The tooth had been extracted 3 years previously due to a vertical fracture. Different options available to replace the missing tooth were discussed with the patient, as well as any risks, benefits, and alternatives. He decided



Figure 1: Clinical view of edentulous area No. 14

to have an implant placed in the area of tooth No. 14.

The area of tooth No. 14 was anesthetized using 1.8 mL 4% Septocaine™ (Septodont) with 1:100,000 epinephrine. After anesthesia was administered, the site for the implant was begun with a #8 surgical bur (Komet) in a high-speed handpiece through the soft tissue, extending approximately 1 mm into bone. The location was centered facial-lingually as well as mesial-distally using a ridge caliber (Dental USA). Because the tooth being replaced was a molar, and there was sufficient bone width and height, a 5 mm x 12 mm OCO Biomedical TSI dental implant was selected.

A 1.8-mm pilot drill was placed into the site and advanced to a depth of 14 mm, measuring from the tissue surface. This additional 2 mm was the same depth of the tissue height to bone. In other words, 12 mm for the osteotomy in bone and 2 mm for tissue thickness was created to place

a single-stage implant with 12 mm of thread. A parallel pin gauge was placed in the site of the osteotomy, and an x-ray was taken to check the angulations of the pin between the adjacent teeth within the maxilla. Using a rotary tissue punch, provided in the OCO Biomedical surgical kit, a 5-mm outline was created over the initial osteotomy, and the tissue plug was removed with a serrated curette (Dental USA). Because there was a thin band of attached gingival tissue, a countersink drill was used to countersink the implant collar. The final drill in the OCO Biomedical surgical drill is side-cutting only and is used to form the final osteotomy because the depth was set by the pilot drill. Intermediate drills are not required in this system, which makes the drilling sequence easy to implement. Once the osteotomy was completed, a 5 mm x 12 mm TSI OCO Biomedical threaded implant was placed in the osteotomy using an implant finger driver until increased



Ara Nazarian, DDS, maintains a private practice in Troy, Michigan, with an emphasis on comprehensive and restorative care. He has earned a Fellowship and Mastership in the International Congress of Oral Implantologists (ICOI). His articles have

been published in many of today's popular dental publications. Dr. Nazarian is the director of the Reconstructive Dentistry Institute. He has conducted lectures and hands-on workshops on esthetic materials and dental implants throughout the United States, Europe, New Zealand, and Australia. Dr. Nazarian is also the creator of the DemoDent patient education model system. He can be reached at (248) 457-0500 or www.aranazariandds.com.



Figure 2: Clinical view of implant placed



Figure 3: Healing abutment on implant



Figure 4: Abutment placed into implant

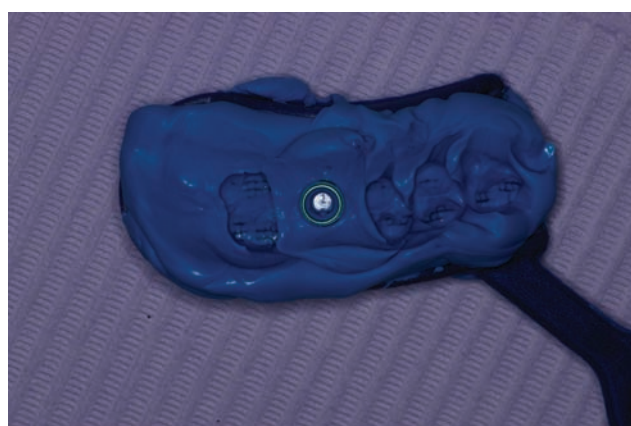


Figure 5: Impression with marginal collar



Figure 6: Model showing transfer of marginal collar



Figure 7: Crown on model

torque was necessary. The ratchet wrench was then connected to the adapter and the implant torqued to final depth reaching a torque level of 65 Ncm (Figure 2). A 5-mm healing cap, included with the implant, was hand-tightened to the implant (Figure 3). A postoperative radiograph was made of the implant and the healing cap to ensure complete seating. The

implant was evaluated clinically after 1 week. The patient stated she had no postoperative discomfort or swelling.

When the patient returned 4 months later, the healing cap was removed, and the implant was tested with reverse torque to ensure osteointegration. A solid stock abutment of 4 mm height was tightened into the implant and then

retightened to ensure proper seating (Figure 4), and an x-ray was taken. An impression was taken of the implant and abutment using a TRIP (tissue retraction impression pickup) from OCO Biomedical Company. The TRIP was tried onto the TSI implant and abutment to check clearance for a triple-tray impression. It was important to make sure the TRIP

displaced the gingiva and snapped over the collar of the implant to ensure proper seating. Because there was enough clearance, and a tooth present on either side of the implant, a triple tray was used with a medium-bodied polyvinyl siloxane impression material (Take-One® Advanced™, Kerr). After the impression material was set, it was removed from the mouth, picking-up the TRIP, and a 5.0-mm marginal collar was snapped into the impression and sent to the lab for pour-up. From this pour-up, the marginal collar would reproduce the margin of the implant, and the pour-up would replicate the abutment (Figures 5 and 6). The lab then processed the crown like a crown on a tooth (Figure 7), so there were no additional costs to the provider.

When the patient returned for the seating appointment, the porcelain-fused-to-metal (PFM) crown was placed on the abutment with its margins on the implant, and another x-ray was taken to verify an accurate fit. Because there were no open margins and the contacts and occlusion were good, the crown restoration was seated using Maxcem Elite™ (Kerr) cement (Figure 8). After the cement reached its gel stage, it was quickly cleaned off, and any excess was quickly and easily removed (Figure 9).

The patient was very pleased with the end result and was surprised at how atraumatically the dental implant was placed through the gingival tissue. In fact, he referred his wife and brother to the practice.

Discussion

There are an increasing number of patients who will need tooth replacement due to decay, trauma, periodontal disease, and age. Clinicians who are able to provide dental implant therapy without the complexity of flap surgery or multiple stages will find increasing numbers of patients who are more inclined to accept treatment. Not only is it rewarding psychologically and financially to the provider to implement single-stage implants into their practices, but the patient benefits by having shorter and fewer appointments for a missing tooth. **IP**

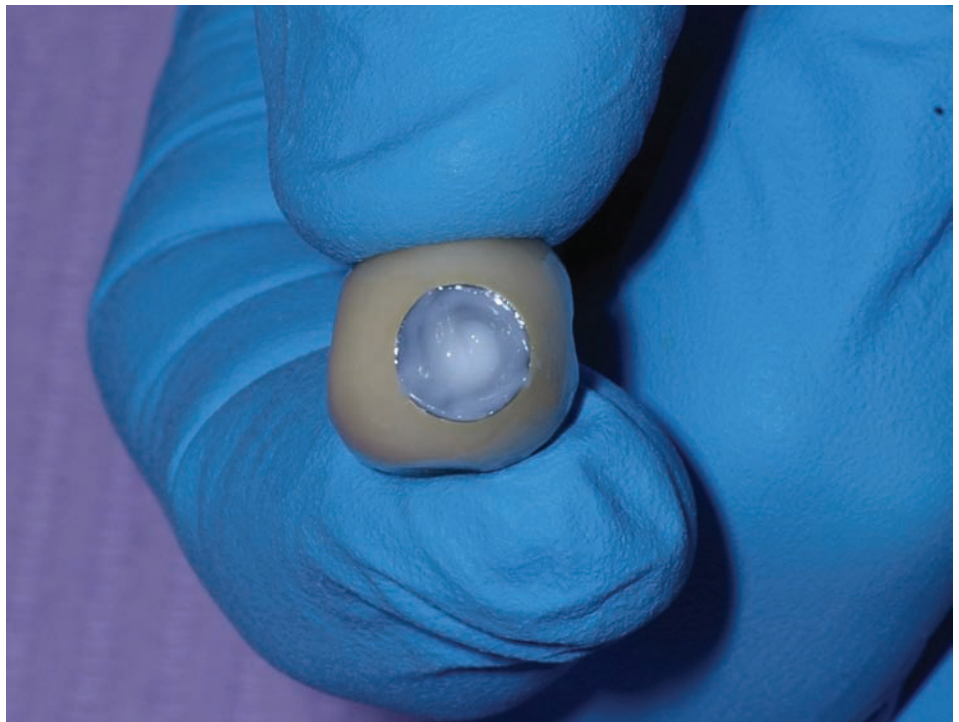


Figure 8: Placement of cement into restoration



Figure 9: Final crown restoration seated

References

1. Misch CE (2008) *Contemporary Implant Dentistry*, 3rd ed. Mosby(need city):Chapter 2; 327-364.
2. National Institutes of Health consensus development conference statement on dental implants (1988) *J Dent Educ* 52:686-691.
3. Millennium Research Group report: US Markets for Dental Implants 2006, USDI 06, June, 2006.