BRIDGING THE GAP

Restoring Partially Edentulous Spaces and Maximizing Treatment Options with the Inclusive® Tooth Replacement System

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Dental implants have become an important method of restoring missing teeth with function and esthetics. Many edentulous and partially edentulous patients are requesting — some even demanding — implant therapy. Clinicians are leveraging the continual improvements in surgical and restorative technology, materials and methodology, and approaching implant cases with more certainty and predictability than ever. At the same time, these trends are broadening clinical flexibility while allowing us to treat an increasing variety of dental conditions with implant therapy. Whether a case involves a partially edentulous space or a fully edentulous arch, advances in implantology are maximizing the range of treatment options available to patients.

The Inclusive® Tooth Replacement System (Glidewell Laboratories; Newport Beach, Calif.) offers the many benefits of clinical flexibility while bringing together all of the elements required to provide implant treatment in a single package, with a streamlined, clinical workflow that can be followed for single or multi-unit restorations. Regardless of the indication, this comprehensive approach to implant dentistry is focused on the final result throughout the restorative process, using patient-specific components and CAD/CAM technology to help guide any case toward predictable success.

The placement of dental implants involves a comprehensive understanding of both surgical and prosthetic applications. Today's implant dentistry is restorative driven, and there must be a clear visualization of the completed case prior to any surgical intervention. With the Inclusive Tooth Replacement System, the final restoration is conveyed through every phase, from initial placement of the implant, through healing and temporization, all the way to delivery of the final crown; or, as seen in the case presented here, the final bridge.

The case that follows involves the restoration of an edentulous anterior maxilla. As with all cases, limitations need to be recognized prior to surgical

placement of any dental implants. Anatomic considerations must be addressed, including the position of nerves and undercuts. The thickness and angulation of bone, as well as the integrity of the buccal and lingual plates, must be studied and clearly understood. The esthetic zone of the anterior maxilla is a critical consideration in achieving an acceptable restoration for the patient. Simply placing an implant where there is adequate bone is no longer acceptable. Smile design and emergence profile have developed into art forms unto themselves. With the Inclusive Tooth Replacement System, soft tissue is trained with patient-specific components from the outset, making establishment of the emergence profile and the transition to the final restoration a smooth and predictable endeavor.

The patient-specific contours of the Inclusive Tooth Replacement System's custom healing abutments begin training the soft tissue immediately following placement of the implants. In the case presented here, a composite transitional bridge was fabricated to further encourage proper tissue healing while meeting the esthetic needs of the patient. Following full osseointegration and healing of the soft tissue, final impressions were taken to convey the gingival architecture and precise position of the implants to the laboratory for fabrication of the final restoration.

CASE REPORT

The patient in this case is a 42-year-old white female who presented with a mobile conventional bridge spanning teeth #7–10. She has a fairly high smile line that made our final prosthetic esthetics a challenge. Although her existing bridge was done well, the patient felt that the prosthetic teeth were too yellow and too short. There were no significant health findings except for her slightly elevated blood pressure and a prosthetic joint that required premedication. A bovine graft had been placed previously by another clinician following extraction of non-restorable tooth #8 and #9. The patient was anxious to obtain a more stable prosthesis.

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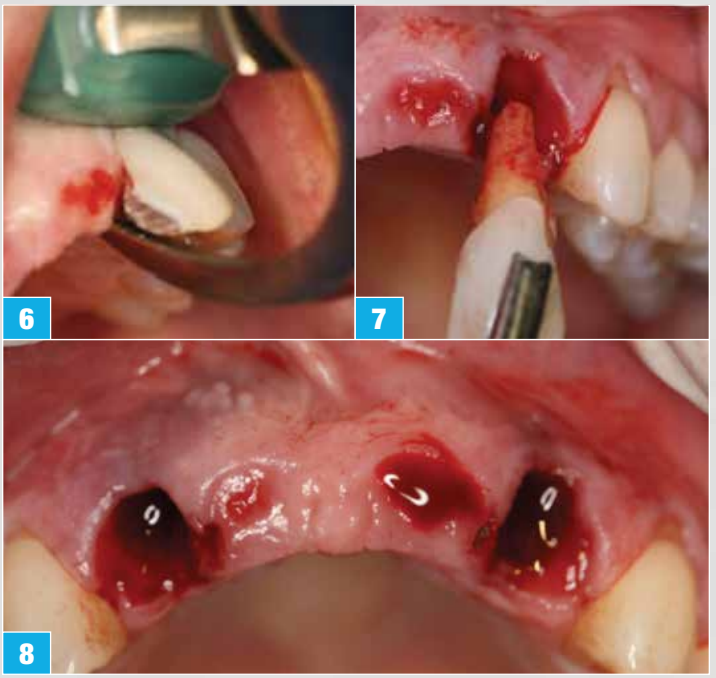
As with any edentulous maxillary aterior space, conventional treatment options to consider included a removable partial denture, fabrication of a longer-span anterior conventional bridge, or placement of two dental implants following extraction of the remaining non-restorable, mobile teeth. For this particular case, we chose a 4-unit, implant-retained bridge seated on the maxillary right and left lateral incisors, combining the use of a traditional bridge with the clinical flexibility afforded by recent advances in implantology.

Figures 1, 2: *Preoperative digital periapical radiographs illustrating weakened right and left maxillary lateral incisors maintaining a 4-unit conventional fixed bridge. These teeth were mobile and required extraction. The maxillary central incisors had been extracted and grafted with Bio-Oss® (Geistlich Pharma North America; Princeton, N.J.) several years earlier by another clinician.*

Figures 3, 4: *The patient's conventional porcelain-fused-to-metal bridge was yellow in color and no longer stable.*

Figure 5: *The pontics were sectioned from the conventional maxillary anterior bridge.*



Figures 6–8: *Physics® Forceps (Golden Dental Solutions Inc.; Detroit, Mich.) were used to atraumatically remove the remaining left and right maxillary lateral incisors. Maintenance of the buccal plates was critical to the ability to immediately place two Inclusive® Tapered Implants (Glidewell Laboratories).*

Figure 9: *A 2.3 mm diameter pilot drill was positioned palatal to the socket site and approximately 3 mm palatal to the facial plane, maintaining the integrity of the buccal plate. Implant depth was determined with the pilot drill.*

Figure 10: *A 2.8 mm diameter drill was used to widen the osteotomy site.*

Figure 11: *The final 3.4 mm diameter drill made the final osteotomy site. The site was slightly undersized, making immediate stability of the first 3.7 mm Inclusive Tapered Implant possible.*

Figure 12: *The 3.7 mm x 11.5 mm Inclusive Tapered Implant was initially hand tightened into place using the tactile carrier.*

Figure 13: *Inclusive Tapered Implant in place in the surgical site for tooth #7 after completion of hand tightening.*

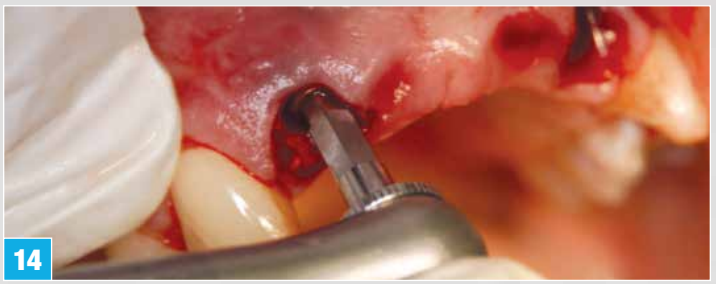
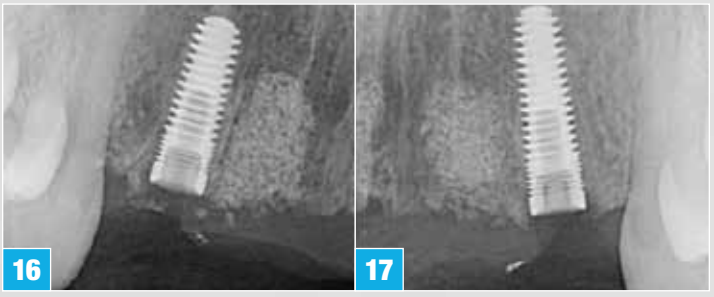


Figure 14: *A torque wrench was used to tighten the implant to proper depth.*

Figure 15: *After placement, both implants were torqued to a little more than 35 Ncm, which provided excellent initial implant stability, even in the immediate extraction sites.*



Figures 16, 17: *Digital periapical radiographs illustrating the implants in proper position.*

Figures 18–20: *Custom impression copings in place over the implants. The Inclusive Tooth Replacement System provides for fabrication of custom impression copings that match the patient-specific soft tissue contours of the system's custom temporary components. The impression copings are fabricated prior to any surgical intervention using the hard tissue preoperative casts and proper radiographs. Because the procedure was atraumatic, with little or no bleeding, the impression copings approximated proper tissue height, providing a good starting point for ideal prosthetic reconstruction.*

Figure 21: *A polyvinyl siloxane impression was made using the prefabricated custom impression copings.*

Figure 22: *The prefabricated BioTemps® provisional bridge (Glidewell Laboratories) spanning teeth #7–10 was seated over the custom temporary abutments attached to the implants. Although not perfect at the margins, it allowed for nice tissue healing prior to final impressions for the final implant-retained bridge.*

Figures 23, 24: *After approximately four months of integration, the transitional appliance and custom temporary abutments were removed, revealing very healthy pink tissue with trained tissue contours. There was no need for extra anesthesia or surgical cutting of the tissue.*

Figure 25: *The final Inclusive® Zirconia Custom Abutments (Glidewell Laboratories) included with the system were fabricated by the dental laboratory and torqued into place at 25 Ncm.*

Figure 26: *Digital periapical radiograph showing one of the fully seated final zirconia abutments.*

Figure 27: *The final implant-retained bridge was cemented into place.*

Figure 28: *Occlusal view of final implant-retained bridge.*

Figure 29: *Digital periapical radiograph of fully integrated implant and the final restoration. The clinical flexibility, restorative phases and patient-specific components of the Inclusive Tooth Replacement System were key in making this treatment option a predictable success.*

Figure 30: *The final implant-retained bridge accommodates the patient's high smile line. The patient was allowed to wear the transitional appliance up until the final bridge was placed and was minimally inconvenienced during the procedure.*

CONCLUSION

Success with dental implants is based on the need to achieve primary stabilization and secondary integration of the titanium fixtures, while maintaining hard and soft tissue contours, to create long-term function and esthetics. Achieving these standards is made easier by the customization and comprehensive approach of the Inclusive Tooth Replacement System, which allows for surgical predictability, terrific initial implant stability and reliable osseointegration. Simple preoperative prosthetic techniques made fabrication of the final implant-retained bridge in this case as easy as, or easier than, conventional crowns.

Patients come to us looking for a better smile and improved function. As practitioners seeking to meet the needs of our patients, implant therapy has opened up a world of options. With modern dental technology, predictable restorative phases and custom components that transition cases toward patient acceptance of the final restoration, we can approach every case with confidence in achieving a successful and esthetic result. **IM**