Immediate, Esthetic Tooth Replacement with the Hahn™ Tapered Implant and BruxZir® Anterior Solid Zirconia

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With more patients seeking dental implant treatment, it's no surprise that growing numbers of clinicians are providing this service. Surgical implant procedures have become mainstream and are commonly performed by general dentists and specialists alike. As providers of implant therapy, we must be able to properly and fully address the needs of our patients when replacing missing or damaged teeth. Once a dentist obtains the prerequisite education and training for placing implants, he or she is on the path to becoming competent in this mode of treatment.

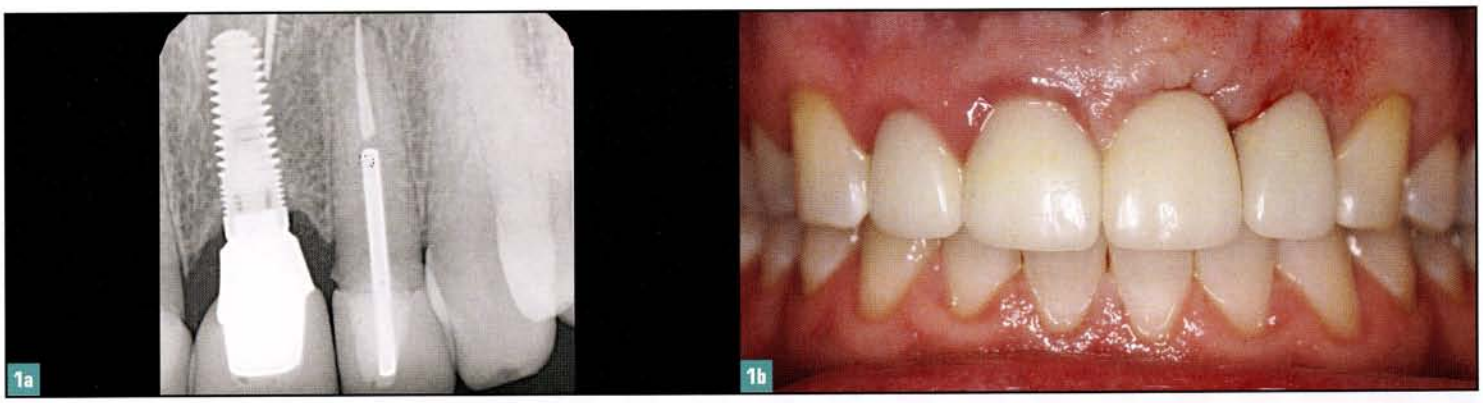
The increased demand for implant therapy can be attributed in part to the improved predictability brought about by innovations in implant design. For instance, the Hahn™ Tapered Implant System (Glidewell Direct; Irvine, Calif.) provides an efficient solution that simplifies implant placement for even the most challenging cases, including fresh extraction sites in the anterior. Additionally, due to innovations in all-ceramic restorative materials, providing esthetic results is easier than ever before.

By utilizing the most advanced implants and restorative materials, even experienced implantologists have the potential to benefit from an improved clinical workflow and more esthetic results. The case report that follows demonstrates immediate tooth extraction and placement of the Hahn Tapered Implant in the area of a lateral incisor. A temporary bridge, custom implant abutment, and a highly esthetic final crown are utilized to facilitate a natural-looking final restoration.

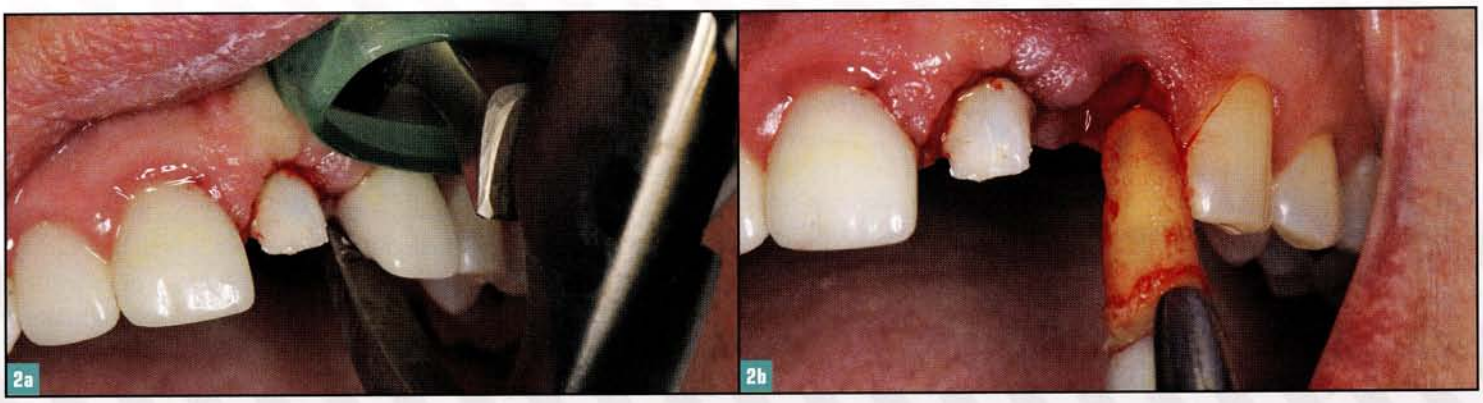
CASE REPORT

A 40-year-old male presented with no medical complications and desired a nice smile for his business interactions. His existing implant crown in the area of his maxillary left central incisor had suffered damage, and the adjacent lateral incisor had fractured *(Figs. 1a, 1b)*. The patient's excessive parafunction was likely a contributing factor. Endodontic evaluation had determined that the lateral incisor was untreatable. The patient accepted a treatment plan in which the lateral incisor would be extracted and an implant immediately placed. Due to its exceptional performance in immediate extraction and implantation cases, a Hahn Tapered Implant was selected for the procedure. Additionally, the damaged restoration in the area of tooth #9 would be replaced as part of the treatment plan.

To begin treatment, the non-restorable lateral incisor was extracted atraumatically *(Figs. 2a, 2b)*. Removing the tooth in this manner maintained the facial plate of bone as well as the interseptal bone that helps support the interdental papillae. A pilot drill was utilized to create the initial osteotomy



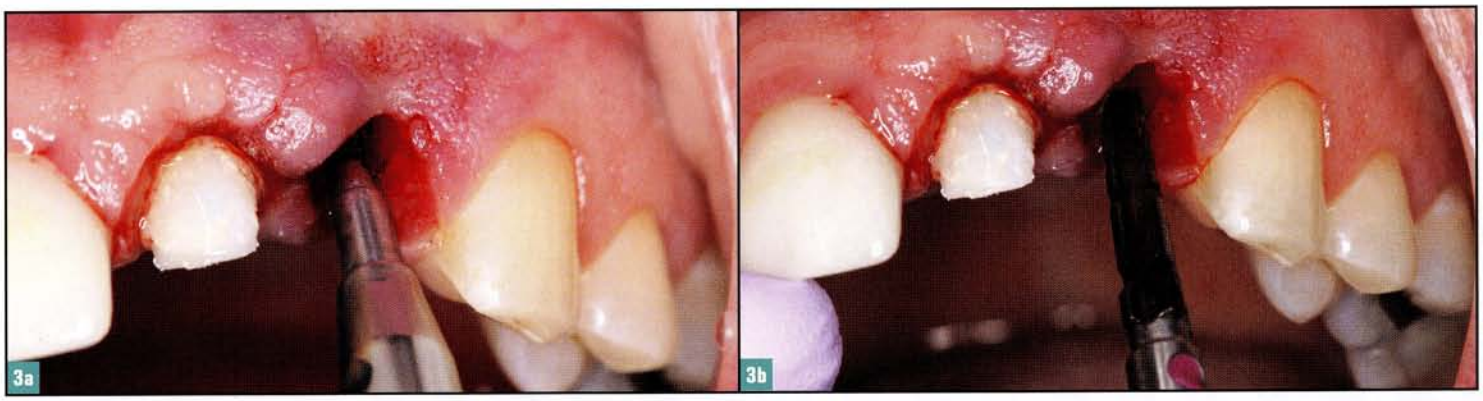
Figures 1a, 1b: *The patient presented with a damaged implant crown in the area of tooth #9 and a fracture in the root of tooth #10. An endodontist had deemed his lateral incisor non-restorable. NOTE: Oral hygiene procedures had left the tissue slightly inflamed prior to surgical intervention, and the preoperative soft tissue between the central and lateral incisor was not optimal.*



Figures 2a, 2b: *The non-restorable lateral incisor was atraumatically removed using Physics Forceps® (Golden Dental Solutions; Roseville, Mich.).*

approximately 3 mm apical to the adjacent cementoenamel junction, and a 3.5-mm-diameter Replace Select™ drill (Nobel Biocare; Yorba Linda, Calif.) was used to complete preparation of the implant site *(Figs. 3a, 3b)*. Because it is compatible with widely used surgical instrumentation, transitioning to the Hahn Tapered Implant System is simple. Grafting material was placed at the extraction site *(Fig. 4)*.

The implant was threaded into place and demonstrated high primary stability *(Figs. 5a, 5b)*. Maximizing primary stability is crucial in implant therapy, particularly for immediate extraction and implantation. This illustrates why the Hahn Tapered Implant was the ideal selection for this case. The tapered body of the implant is suitable for tight areas and sites where esthetics are important, and its prominent buttress thread and widened apex help establish excellent stability in all bone types. The dual-lead thread pattern and self-tapping grooves of the implant allow for swift insertion, and the coronal microthreads aid in the preservation of crestal bone.



Figures 3a, 3b: *The pilot drill was utilized to create the initial osteotomy. A Replace Select drill was used to complete the osteotomy for the placement of a Hahn Tapered Implant.*

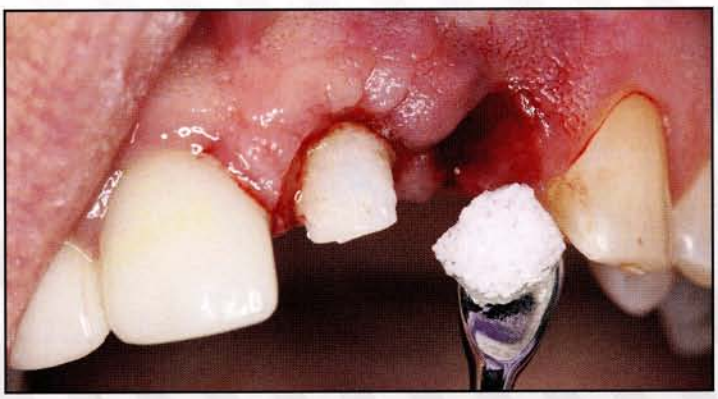
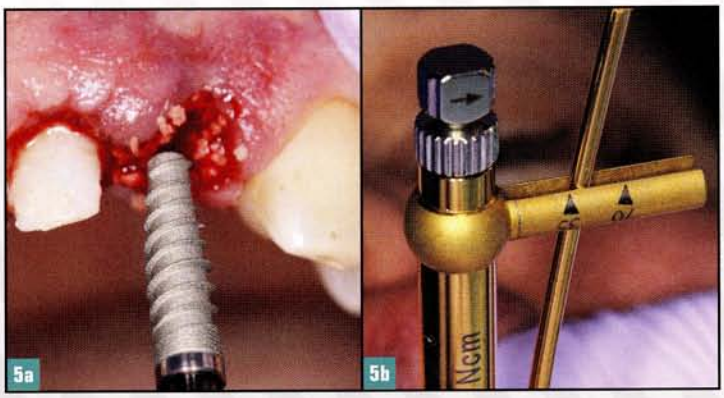


Figure 4: *Cerasorb® M Ortho grafting material (curasan; Research Triangle Park, N.C.) was placed in the osteotomy site.*



Figures 5a, 5b: *A 3.5 mm x 13 mm Hahn Tapered Implant was threaded into the osteotomy until fully seated and exhibited significant initial stability.*

Radiography confirmed the implant was placed in an optimal position *(Fig. 6)*. A transitional bridge was fabricated to minimize speech problems, help support the soft tissue, and maintain natural emergence profiles in the areas of tooth #9 and #10 during the healing period *(Fig. 7)*. The implant site was allowed to heal for approximately four months. After completion of the healing period, the temporary bridge was removed. As expected, esthetic soft-tissue contours were revealed *(Fig. 8)*. An open-tray final impression was taken with medium- and heavy-body vinyl polysiloxane material *(Figs. 9, 10)*.

Inclusive® Zirconia Custom Abutments with titanium bases were produced by the lab and maintained natural emergence profiles upon delivery, a critical outcome for meeting the esthetic desires of the patient *(Figs. 11a, 11b)*. BruxZir® Anterior, a monolithic zirconia material specially formulated for the smile zone, was chosen for the final restoration because

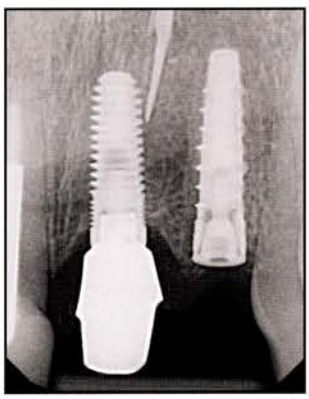


Figure 6: *Periapical radiograph illustrates the ideal positioning of the Hahn Tapered Implant in the area of tooth #10.*

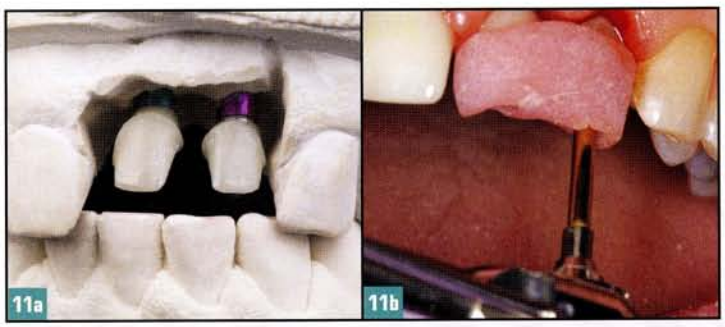
Figure 7: *The transitional bridge accommodated the patient and helped shape the soft tissue during the healing process.*

Figure 8: *After the healing period, nicely formed soft-tissue contours were revealed in the interdental papillae.*

of its strength and lifelike esthetics. The all-ceramic material exhibits long-term durability and natural translucency, especially in combination with zirconia hybrid abutments *(Fig. 12)*. The crown, which was digitally designed and milled using CAD/CAM technology, exhibited a precise fit. Final radiography illustrated superb bone preservation at the implant site *(Fig. 13)*. Optimal soft-tissue contours were particularly evident around the beveled edge of the Hahn Tapered Implant, and CBCT scans confirmed ideal implant

Figure 9: *A final impression was taken after placing open-tray impression copings, the complete seating of which was verified radiographically. As shown at the lateral incisor site, the conical connection of the Hahn Tapered Implant allows for excellent seal, stability and strength.*

Figure 10: *The final impression was made using Panasil® tray soft and Panasil initial contact vinyl polysiloxane material (Kettenbach; Huntington Beach, Calif.), capturing the implant positions with the impression copings.*



Figures 11a, 11b: *Inclusive Zirconia Custom Abutments with titanium bases were delivered, maintaining ideal soft-tissue contours and emergence profiles. A seating jig helped keep the abutments stable while the prosthetic screws were torqued to final seating. NOTE: Dental model shown without soft-tissue material.*

Figure 12: *BruxZir Anterior, designed to meet both the high esthetic and functional requirements of the anterior region of the mouth, was ideal for this case because of its durability and lifelike translucency.*

positioning *(Fig. 14)*. The patient was very pleased with the final restoration *(Figs. 15a, 15b)*.

CONCLUSION

The high primary stability, optimal positioning and simplified surgical protocol facilitated by the Hahn Tapered Implant make it ideal for a wide range of indications, including immediate extraction cases and restorations in the smile zone. When combined with BruxZir Anterior and zirconia hybrid custom abutments, a predictable restoration can be delivered that mimics the esthetics of the tooth being replaced. **IM**

Figure 14: *Postoperative CBCT scan illustrates the sagittal view of the facial bone and the optimal position of the dental implant.*

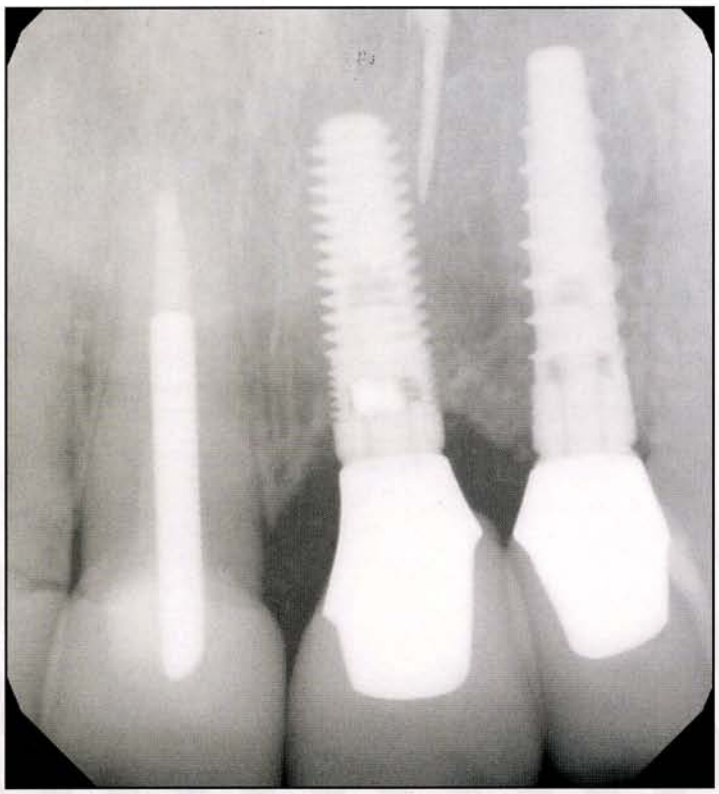


Figure 13: *Postoperative periapical radiograph illustrates excellent integration of the Hahn Tapered Implant (right) with the surrounding bone in the area of tooth #10.*

Figures 15a, 15b: *The final restorations exhibited translucency, color and emergence profiles similar to natural dentition. The patient, who possesses a high smile line, was very pleased with the final outcome.*