

# Contemporary Esthetics

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AND  
RESTORATIVE  
PRACTICE®

1 HOUR OF CE CREDIT BY DENTAL LEARNING SYSTEMS



## Fill in the Blanks: Closing Diastemata

Nara Pereira d'Abreu Cordeiro, DDS

Luis Roberto Marcondes Martins, DDS, MS, PhD

Mario Fernando de Goes, DDS, MS, PhD

Daniel C. N. Chan, DMD, MS, DDS



**Correcting Worn  
Dentition with  
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Ross W. Nash, DDS



**Esthetic  
Rehabilitation After  
Traumatic Injury**  
Jorge Pinero, DDS



# Quick Tips

## Esthetic Full-Arch Transitional Appliances, After Tooth Removal, Using the Master Diagnostic Model®



**Paul S. Petrunaro, DDS, MS, FICD, FACD, DICOI**  
Private Practice  
Contemporary Periodontics & Implantology  
Stillwater, MN  
Phone: 651.351.2994  
Fax: 651.351.3161  
Email: DrPaul@Petrunaro.com  
Website: www.petrunaro.com

**M**anagement of the healing phase for patients undergoing implant reconstruction has become easier to navigate with the advent of transitional implants.<sup>1-4</sup> These small-diameter titanium anchors support a transitional appliance and allow the surgical site to heal uneventfully. Most importantly, patients immediately experience the benefits of implant dentistry, and are always in a dentate state.

Formation of the transitional appliance is most effectively generated from the Master Diagnostic Model® (MDM®, Valley Dental Arts)<sup>5,6</sup> technique. After maxillary and mandibular study models are obtained and a bite transfer registered, the models are returned to the laboratory and mounted on a KaVo PROTAR Articulator (KaVo America). Once the models are mounted, the laboratory then recreates in wax the hard and soft tissues that will be altered, replaced, or augmented. From this waxing, surgical evaluations can be obtained, transitional appliances can be generated, and treatment planning can be simplified. (For a complete description of the MDM® process and benefits, please refer to the references cited.)

The following case report demonstrates how the MDM® simplifies treatment planning, provides a surgical guide, and allows for the transitional appliance to be generated in a quick and easy fashion while ensuring esthetics in the temporary restoration.

**CASE REPORT**

A 48-year-old woman presented with advanced periodontal destruction in the maxillary arch, and at teeth Nos. 18 and 31 (Figures 1 through 3).

The patient was a smoker who had undergone periodontal surgical therapy two separate times, and after a complete medical and dental history and evaluation and extensive treatment planning visits, she opted for tooth removal and reconstruction with dental implants. Esthetics was a primary concern for the patient, and after viewing the MDM®, the patient agreed to treatment and was pleased with the esthetics to be provided based on what had been presented from the diagnostic waxing.

After mounting the diagnostic casts as previously described (Figure 4), the completed MDM® was obtained for the maxillary arch (Figure 5). Note how the MDM® corrected the occlusal plane, tissue height discrepancies, and the esthetic concerns of the patient in the esthetic zone.

The initial surgical visit consisted of removal of all maxillary teeth and teeth Nos. 18 and 31. Thorough debridement of all remnants of periodontal ligaments and granulation tissue from the extraction sockets was followed by placement of six BioHorizons implants (BioHorizons Implant Systems, Inc.) (Figure 6) and six MTT™ (Modular Transitional Implants™, Dentatus USA), which would support the transitional appliance constructed from the MDM® (Figure 7). Before closure, all peri-implant defects, extraction sockets, and ridge deformities were grafted and corrected by a combination Platelet Rich Plasma/PepGen P-15™ (CeraMed Dental) graft complex. The author used the SmartPrep™ (Harvest Technologies) system to prepare the 55 cc of whole blood harvested from the patient before surgery. The centrifugation of the whole blood in the Smart Prep™ dual centrifugation system separated the plasma and suspended platelet concentrate, which would be used to deliver growth factors locally to the graft complex, the pregrafted site, the implant surfaces, and the soft tissue wound closure area.

PepGen P-15™ was chosen for the substrate because of its unique properties.<sup>7</sup> PepGen P-15™ is a new concept in bone replacement graft materials that is based on more than 8 years of laboratory and clinical research.



Figure 1—Pretreatment smile.



Figure 2—Pretreatment clinical view, centric relation.



Figure 3—Preoperative radiograph showing periodontal destruction of the maxillary arch.



Figure 4—Mounted study models.



Figure 5—Completed MDM®, maxillary arch.



Figure 6—Clinical view of the BioHorizons implants placed within the extraction sockets.



Figure 7—Occlusal view of the MTT™ transitional implants placed for support of the transitional prosthesis.



Figure 8—PRP/graft complex to augment ridge and peri-implant defects.



Figure 9—Occlusal view, closure.



Figure 10—Esthetic transitional prosthesis derived from the MDM® and supported by the MTT™ temporary implants.



Figure 11—Two-week clinical postoperative view.

The ideal bone graft is a viable implant of autogenous bone containing the inorganic (calcium phosphate) and organic (type-I collagen) components necessary for bone repair (Figure 8). PepGen P-15™ is the first and only bone replacement graft material to mimic both the inorganic and organic components of autogenous bone.<sup>7</sup>

After grafting completion, closure was obtained by using a continuous sling suturing method with 5.0 Monocryl sutures from Ethicon, Inc. (Figure 9). At this point, the acrylic shell provided from the laboratory, derived from the MDM®, was ready to be relined with acrylic and seated over the transitional implants. After allowing the acrylic to harden, the esthetic transitional appliance was removed, recontoured, and polished. After evaluation of the patient's occlusion,

the finished transitional appliance was cemented with a strong temporary cement (IMProv™, Nobel Biocare USA) (Figure 10). Additional application of the growth factors took place over the entire surgical area to promote and enhance soft tissue healing and maturation. A 2-week postoperative clinical view can be seen in Figure 11. Note how the entire treatment planning process used the MDM® technique, and the surgical protocol that included the use of growth factors allowed the patient to proceed throughout the initial surgical phase with virtually no pain, swelling, or disfiguration, while maintaining a constant vertical dimension throughout the process. The esthetic parameters set forth in the original MDM® allowed for a pleasant experience for the patient throughout the ini-

tial surgical phase, and eased the trauma of tooth removal.

## CONCLUSION

The MDM® technique is an effective device to generate esthetic transitional appliances in both implant reconstruction and dental rehabilitation, in addition to being a powerful tool for the simplification of the treatment planning process for surgical, esthetic, and reconstructive dentistry. ■

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