An Affordable Option for an Edentulous Ridge in the New Economy

By Ara Nazarian DDS

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As the Baby Boomer population increases in number and size so does the number of edentulous and partially edentulous patients, since tooth loss and age are totally related. Whether it is due to neglect, caries, medications or other systemic reasons, patients are presenting to practices all over America needing several extractions that can even lead up to full mouth edentulation.

Patients that undergo full mouth extractions are concerned of ill fitting or loose dentures and the inability to eat or function without teeth. Because of these concerns, most dentists do not want to be the provider who converts patients to a complete denture, unless they incorporate some type of implants into the plan. Implants, whether small or traditional, allow patients with dentures to eat and function like they once did when they had teeth. In other words, having some type of implant retained prosthesis makes the transition from having teeth to total edentulism much easier without the common denture problems of instability, sores and pain.

Endosseous implants have been successfully used to restore edentulous ridges with implant supported fixed bridges, hybrid prosthetic dentures and removable overdenture prostheses for many years. However, due to deficiencies in the remaining bone, complicated medical history, or financial reasons, not everyone is a candidate for traditional implants. Practicing in Michigan, where the economy has not been the greatest for several years, I have personally found that small diameter dental implants offer a great alternative to traditional dental implants.

Small diameter implants placed with flapless surgery to support dentures presents an alternative method of restoring patients with atrophic jaws. They dramatically broaden the spectrum of overdenture patients who can be successfully treated. These small diameter implants (1.8mm-3.0 mm) differ from their full-sized counterparts in a number of significant ways. The configuration of the implant permits a more conservative placement protocol. No tissue flaps or tapping procedures are required, which results in fewer traumas to both gingival tissue and bone. Their smaller size also permits placement in ridges that might not otherwise be suitable for full sized implants.

The implants are firmly seated in place in intimate contact with bone. Once they have been fixed in place, they can be immediately loaded. There is no need for a long waiting period or second stage surgery. The simplified protocols, conservative procedures, and elimination of gingival surgery makes small diameter implants ideal for medically, anatomically, and financially compromised patients.

Case History

A man in his early fifties presented to our office frustrated with his upper partial denture and maxillary teeth that opposed a natural lower dentition from teeth #19-#30 (Figure 1). He complained that his upper partial denture was non-retentive and non-functional always falling out during speech or during eating. In fact, he mentioned that when he did use moderate amounts of adhesive to keep the prosthesis in, it would cause him to gag severely. Also, the maxillary teeth (#2, 8, 9, and 10) that were present had several areas of decay causing intermittent pain and discomfort (Figure 2).

Palpation and radiographic examination revealed a moderately narrowed maxillary ridge in the edentulous areas distal to his maxillary anterior teeth (Figure 3). Because of this, it was important to maintain as

Figure 1. Full Face View (Pre-Surgery)

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Figure 2. Retracted Frontal View (Pre-Surgery)

Figure 3. Retracted Occlusal View (Pre-Surgery)

Figure 4. Utilization of the Physics Forceps

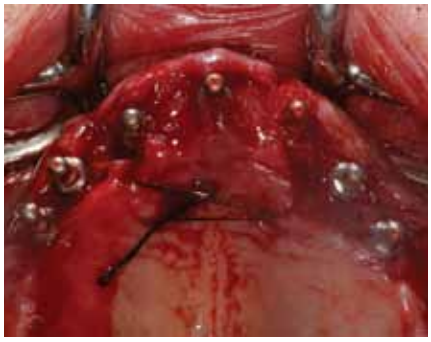

Figure 5. Placement of Grafting and Implants

Figure 6. Soft Reline of Immediate Denture

much bone as possible after the intended extractions. By using the Golden Physics Forceps (Golden Dental Solutions), the remaining maxillary teeth (#2, 8, 9, and 10) were atraumatically extracted preventing any buccal bone loss (Figure 4).

The Physics Forceps act simply like a class I lever, where only one force is applied with the beak on the lingual aspect of the tooth. Once the beak is placed, the bumper is placed on the alveolar ridge at the approximate location of the mucogingival junction to balance the beak. The beak grasps the tooth, while the bumper is the fulcrum to provide leverage and stability for the beak and wrist movement.

Once the instrument is properly placed, pressure is slowly applied using only wrist movement applying a steady and gentle pressure toward the buccal. Approximately within 30-60 seconds the internal force or "creep" will build up allowing the bone to slowly expand and the periodontal ligament to release at which point the tooth will disengage from its socket (known as the "pop"). Once the tooth has disengaged from the socket, the instrument has completed its task and another instrument of choice (e.g., rongeurs) or your fingers can be utilized to remove the tooth. Deminerlized Freezed Dried Bone Putty (OCO Biomedical) was placed in the sockets of #8 and #9 to further enhance preservation of the ridge.

Using the interseptal bone between the sockets of #8 and #9 as well as the extraction site of #10, seven dental implants would be placed in the pre-maxilla area to aid in the retention of the prosthesis. Our selection consisted of OCO Biomedical's I-Mini dental implants. These small diameter implants (3mm) were selected for this particular case because of the active aggressive thread design. In addition to the patent pending bull-nose auger tip of the I-Mini (OCO Biomedical) that condenses bone at the tip, the thread pattern and pitch of the implant are designed to immediately maximize bone to thread contact. In summary, it is important to select an implant that allows for immediate loading with deeper threads by resisting lateral occlusal forces especially when softer bone is present.

Keeping correct alignment, a 1.8mm pilot drill was placed into the sites and advanced to the full depth using a surgical motor (AEU-7000E, Aseptico) with generous amounts of cooled sterile water. Paralleling pins (OCO Biomedical) were placed in the sites of the osteotomies and an x-ray taken to check the angulations to ensure proper orientation amongst the implant sites. The final drill in the OCO Biomedical surgical drill is side cutting only and used to form the final osteotomy since the depth was set by the pilot drill. Once the osteotomies were completed, seven (3mm) I-Mini OCO Biomedical dental implants of various lengths were placed in the osteotomies using an implant finger driver until increased torque was necessary (Figure 5). The ratchet wrench was then connected to the adapter and the implants torqued to final depth reaching a torque level of 55Ncm. A postoperative radiograph was made of the implants before initiating the prosthetic phase of treatment.

Using a soft liner (Soft Reline, GC America) the immediate upper denture was relined, so that the area would have a chance to heal for the next few months (Figure 6). The patient was instructed on how to use his new temporary prosthesis and what type of foods to eat.

As the tissue and bone around the implants was completely healed at 3 months (Figures 7 and 8), a medium body polyvinyl siloxane impression (Take One Advance, Kerr) was used to take the definitive impression for the hybrid metal reinforced denture. The metal reinforcement would allow this prosthesis to be much smaller than a traditional maxillary denture and with no palate coverage. The dental laboratory would design a framework where the areas would be open 5mm for the housings to seat passively.

At the time of delivery, a small piece of rubber dam was placed over each implant, allowing only the o-ball of the implant to

Figure 7. Retracted Frontal View (Post-Surgery)

Figure 8. Retracted Occlusal View (Post-Surgery)

Figure 9. Frontal View of Hybrid Denture

Figure 10. Occlusal View of Hybrid Denture

be exposed. This step prevented problems of the hard pick-up material locking around the implants. A female o-ring keeper caps (OCO Biomedical) were then fitted over each implant. Retentive fit and mobility were then again verified. Each o-ring would create a retentiveness of approximately six pounds. Since there were seven implants with corresponding housings, the total amount of force needed to remove the prosthesis would be forty two pounds.

The cleaned and dried recesses the dental lab created in the denture were filled with cold cure acrylic (Hard Reline, GC America) and seated onto the implants and allowed to polymerize (Figures 9 and 10). Upon setting the denture was relieved of any excess flash. The patient was very please with the fit, function and esthetics of the final Hybrid denture prosthesis (Figures 11 and 12).

Figure 11. X-Ray of Implants

Figure 12. Full Face View (Post-Surgery)

A mini dental implant service provides clinical and economic benefits to your practice and restores function and confidence to your patients. Denture retention and function are dramatically improved, and the results are immediate. The advent of the mini dental implant has given general dentists an easy, less costly and rapid way of solving many of the difficult problems that arise in dental practice with complete dentures. ◆

Physics Forceps available in Australia & New Zealand through Amalgadent Dental Supplies Toll-free Phone 1-800-806-450 www.amalgadent.com.au.