One population that has been overlooked or avoided by many in the dental profession is denture wearers. For one reason or another, the denture patient has caused many frustrations for the providing dentist, especially in regard to the mandibular denture. Conventional mandibular dentures for patients with severely atrophic mandibles oftentimes present problems of retention, phonetics, function and pain due to instability.

Endosseous implants have been successfully used to restore edentulous mandibles with implant-supported fixed bridges, hybrid prosthetic dentures and removable overdenture prostheses. However, atrophy of edentulous ridges might limit implant placement in the mandible. Anatomic limitations and resorbed alveolar ridges might compromise implant number, length and inclination. The use of traditional implants sometimes requires extensive surgery, ridge augmentation or bone grafting.

Small-diameter implants placed with flapless surgery to support pre-existing conventional dentures present an alternative method of restoring patients with atrophic mandibles. Small-diameter implants are an excellent example of this trend. They dramatically broaden the spectrum of mandibular overdenture patients who can be successfully treated. These small-diameter implants (1.8-2.9mm in width) 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 small-diameter 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 make this implant ideal for medically, anatomically and financially compromised patients.

Case History

A woman in her early 60s presented to our office frustrated with her lower complete denture. She complained that it was non-retentive and non-functional always falling out during speech or during eating. The patient suffered from hypertension, which was controlled with medication. She had been a denture wearer for the last 25 years resulting in resorption of the mandible.

Palpation and radiographic examination revealed a moderately narrowed mandibular ridge. Crestal bone width and ridge height were sufficient to receive a length of 2.2x13mm Sterngold ERA (Zimmer) small-diameter implants. The mental foramina were located on either side, and it was determined that four implants could be safely placed within the cuspid-to-cuspid area.

All risks, benefits and alternatives were reviewed with the patient before initiating treatment. The patient was draped and a clean operating environment established. Local infiltration of anesthetic was administered (Fig. 1). Markings were placed to designate landmarks and areas of insertion. Keeping correct alignment, the implant drill was advanced through the gingival tissue and the cortical plate. During this stage it was very important to accompany each step of drilling with generous amounts of sterile water to prevent over-heating of the bone. Once pene...
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Implants

Intration had been achieved through the cortical plate, paralleling pins were placed to check the angulation and position of the pilot holes (Fig. 2). Once these positions were confirmed clinically and radiographically, a tissue punch was utilized to atraumatically remove the tissue (Fig. 3) in the areas of where the small-diameter implants were to be placed. After confirmation, the first small diameter implant (Sterngold ERA) was placed with the finger driver (Fig. 4) until firm resistance was met. At that time, the ratchet wrench was employed, using small, carefully controlled incremental advancements until the implant was fully seated. Full seating of all four small-diameter implants was achieved when the threads and base of the implants were subgingival and only the ERA abutment head was exposed (Fig. 5). It was important that the implant be absolutely tight at that point. If it was not, the quality of the bone would indicate a poor prognosis.

At that point, the location of each implant was transferred to the denture using Crown and Bridge Fit Test (VOCO America). These areas were relieved to a diameter of 5mm and the denture was reseated, confirming adequate relief had been established to passively seat the denture. A small piece of rubber dam was placed over each implant, allowing only the ERA abutment head to be exposed. This step prevented problems of the reline material locking around the implants. Sterngold ERA (Zimmer) housings were then placed over each implant. Retentive fit and mobility were then again verified.

The cleaned and dried recesses in the denture were filled with cold cure acrylic, Quick Up (VOCO America), and seated onto the implants allowing for full polymerization. Before complete setting of this material it was important to border mold the flanges for an accurate fit. Upon setting the denture was relieved of flash and any voids were filled (Fig. 6). The patient was then instructed in denture placement, removal and oral hygiene.

Conclusion

A small-diameter implant overdenture 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 small-diameter implant has given general dentists an easy, less costly and rapid way of solving many of the difficult problems that arise in dental practices with complete dentures. It is estimated that more than 36 million patients in the United States have lost their teeth, however, only one half of one percent have received implant therapy. This striking disparity signifies a huge untapped market for implants and dentures.

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Author’s Bio

Dr. Ara Nazarian maintains a private practice in Troy, Michigan, with an emphasis on comprehensive and restorative care. He is a Diplomate 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 aesthetic 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 at the website wwwaranazariandds.com.