

Esthetics for edentulism

A SMILE MAKEOVER USING MINI IMPLANTS AND DENTURES HELPS MEET THE COSMETIC AND ECONOMIC DEMANDS OF TODAY'S GROWING EDENTULOUS MARKET.

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The concept of cosmetic dentistry entails a set of techniques and procedures used to enhance an individual's teeth, smile, and ultimately, confidence. A smile makeover that significantly improves appearance can lead to a more positive lifestyle, both socially and professionally. General practitioners can use numerous techniques, individually or collectively, to dramatically improve the teeth, gums, and smile. These procedures range from simple tooth whitening to complex multiple-tooth restorations and full-mouth reconstruction.

Aiding the edentulous

However, one significant sector of our society that may have been overlooked in this growing trend of cosmetics are patients who already have lost their teeth. Most of these individuals have become edentulous due to periodontal disease or tooth decay, and are functioning with dentures or other forms of removable dentistry. Many are displeased with and embarrassed by their appearance.

With today's advances in denture materials and fabrications, these patients can have their smiles restored to proper esthetics, form, and function. However, conventional mandibular dentures for patients who have severely atrophic mandibles frequently present problems with retention, phonetics, function, and pain, due to insta-

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NEW DENTURES



(1) More than 10 years old, the patient's existing dentures were not very functional, with severely worn and discolored acrylic teeth and loss of canine guidance that caused increased wear on posterior teeth. (2) The teeth chosen for the replacement denture were set in wax for try-in. (3) The final maxillary and mandibular dentures were delivered and the patient was pleased with the esthetics.

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bility. Over the years, endosseous implants have been used successfully to restore edentulous mandibles with implant-supported fixed bridges, hybrid prosthetic dentures and removable overdenture prostheses.

Limitations and advantages

Implants and dentures can't be used in all cases. Atrophy of edentulous jaws may limit implant placement in the mandible. Anatomic limitations and resorbed alveolar ridges may compromise implant numbers, lengths, and inclinations. The use of

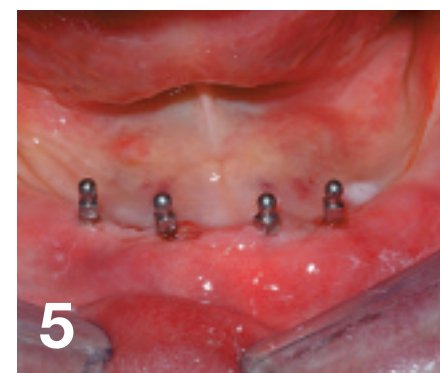
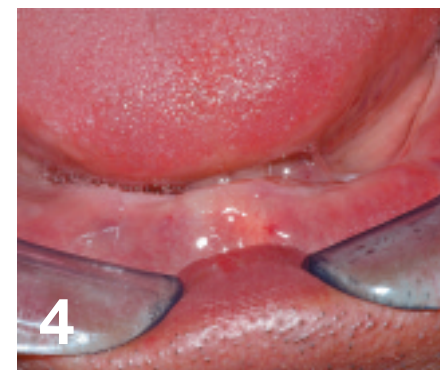
standard diameter implants to support an overdenture often requires ridge augmentation in these individuals to have bone of sufficient volume to allow implant placement. Also, older patients who have serious medical problems or who use anti-coagulant therapy may exhibit an in-

creased risk of complications.

On the other hand, with technological advancements like mini dental implants, even those individuals who may not have had enough bone structure for conventional implants can benefit from implant-retained prosthetics. Small-diameter implants placed with flapless surgery to support pre-existing conventional dentures offer a method of restoration in patients with atrophic mandibles. Advantages of this procedure

Titanium Standard Page

SITE PREPARATION



(4) The mandibular ridge was moderately narrowed. **(5)** Implants are fully seated, with the threads and base subgingival and only the abutment head exposed. **(6)** The location of each implant was transferred to the denture.

include implant placement without any bone augmentation surgery, minimally invasive surgery resulting in virtually no bleeding, and decreased pain and cost of treatment.

The following case presentation illustrates the steps used in meeting the esthetic demands of the edentulous patient with "cosmetic dentures," and the functional component in retaining those dentures with mini dental implants.

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Case presentation

A patient in his late 50s presented to the practice dissatisfied with his existing set of complete upper and lower dentures (see "Before" image, page 34). He mentioned that they were fabricated more than a decade ago.

Upon clinical examination, it was apparent that the patient's dentures were not very functional. The acrylic teeth were severely worn and discolored (Fig. 1, page 28). The patient also exhibited an end-to-end bite. Clearly, there was protrusive wear evident on the maxillary canines and lateral incisors.

The loss of canine guidance resulted in increased wear on the posterior teeth, further reducing the vertical dimension. The edges of the maxillary denture teeth were not very visible in a relaxed position.

All these factors made the patient appear older than his stated age. In addition,

some discomfort presented in the TMJ due to bruxism and an inadequate vertical dimension, and there was very little retention remaining in both the upper and lower dentures. Soft tissue analysis, however, was within normal limits. Having been a denture wearer for more than 25 years, there was very little ridge height remaining in the mandible. In addition, the patient's medical history revealed diabetes and some hypertension.

Snap On Smile

Standard Page

FINAL PREPARATION



(7) Placed over each implant, a small plastic shim allows only the O-ball to be exposed. (8) A female O-ring keeper cap was fitted over each implant.

The Smile Guide reference (Discus Dental, www.discusdental.com) was used to complete the smile analysis necessary in pre-designing the case. The lip line edge versus the incisal edge of the denture teeth suggested that lengthening the incisal edges would enhance the patient's smile. The results of the smile analysis and pre-operative photos were reviewed with the patient to identify a treatment plan to improve his smile and function of his dentures.

The patient expressed dissatisfaction with the appearance of his dentures and desired a better fitting set with whiter, longer teeth that would give him a more youthful appearance. Since very little ridge height remained in the lower arch, the patient requested having his lower denture retained by using mini dental implants, due to their ease of placement and low cost.

Our goal in the rehabilitation was to provide a set of dentures that would meet the patient's esthetic requirements as well as remain retentive enough to eat the foods he desired, within reason. BlueLine teeth (Ivoclar Vivadent, www.ivoclarvivadent.us)

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were selected for their natural-looking esthetics and resistance to wear. Blue Line teeth are fabricated from a Double Cross Linked (DCL) resin material. The density of this DCL material provides high wear- and plaque-resistance, shade, and

stability, as well as resistance to breaking or cracking, and optimal bond to denture base materials. Sendax mini dental implants (IMTEC Corp., www.imtec.com) were selected to provide retention of the mandibular complete denture.

Using the patient's existing dentures as

custom impression trays, impressions were taken using Take 1 medium viscosity polyvinyl-siloxane material (Kerr Corp., www.kerrdental.com). Secondly, a bite registration was taken, using a quick-setting material that set up in 60 seconds. This bite registration would assist the lab in position-

ing the relationship of the maxillary and mandibular arches and vertical dimension.

Once the record bases were fabricated, the chosen teeth were set in wax for try-in (Fig. 2, page 28). The dentures were tried-in and evaluated for proper esthetics, phonetics and function. The patient approved the overall look, size, shape, and color for final processing.

After the final maxillary and mandibular complete dentures were delivered, the

DRAMATIC RESULTS



BEFORE



AFTER

A dramatic improvement in esthetics and function was achieved with a combination of new dentures and mini implants.

patient immediately expressed how pleased he was with the esthetics (Fig. 3, page 28). The fit and occlusion were checked immediately, and any discrepancies in occlusion were relieved. Shortly thereafter, the patient was dismissed with proper denture maintenance and care instructions. (*Note:* It was important to have the patient use his dentures for a few days to identify any sore spots before placement of the mini dental implants.) Once we determined the dentures fit comfortably, the patient was scheduled for implant placement.

From our initial clinical and radiographic examination, it was apparent that a moderately narrowed mandibular ridge existed (Fig. 4, page 30). Crestal bone and ridge height were sufficient to receive 13-mm Sendax mini dental implants. The mental foramen was located, and it was determined that four implants could be safely placed within the cuspid-to-cuspid area.

Implant placement

All risks, benefits, and alternatives were reviewed with the patient before initiating treatment. The patient was draped, and a

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Kerr
Standard Page

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clean operating environment was established. Local anesthetic was administered, and markings were placed to designate landmarks and areas of insertion. While keeping correct alignment, the implant drill was advanced through the gingival tissue and the

cortical plate. No surgical insertion was necessary. During this stage, it was very important to accompany each step of drilling with generous amounts of sterile water. Once penetration had been achieved through the cortical plate, each sterile mini dental implant was placed with the finger driver un-

til firm resistance was met. At that time, we employed the winged thumb wrench. When advancement precluded further advancement, we switched to the ratchet wrench, using small, carefully controlled incremental advancements until the implant was fully seated. Full seating was achieved when the

threads and base of each implant were subgingival, leaving only the abutment head exposed (Fig. 5, page 30). *Note:* It was imperative at this point that the implant be absolutely tight. If not, the quality of the bone would have indicated a poor prognosis.

The location of each implant then was transferred to the denture using bite registration material (Fig. 6, page 30). These areas were relieved to a diameter of 5 mm, and the patient's denture was resealed, confirming establishment of adequate relief.

A small plastic shim was placed over each implant, allowing only the O-ball of the implant to be exposed (Fig. 7, page 32). (This *critical* step prevents problems of the relining material locking around the im-

It is estimated that more than 36 million patients in the U.S. have lost all their teeth, but less than 1% have received implant therapy.

plants.) Next, a female O-ring keeper cap was fitted over each implant (Fig. 8, page 32), and again, retentive fit and mobility were verified.

The cleaned and dried recesses in the denture then were filled with cold-cure acrylic (Secure, IMTEC Corp.), and allowed to polymerize. Upon setting, the denture was relieved of flash and any voids were filled. See the "After" image, page 34, for results. The patient then was instructed in denture placement, removal, and oral hygiene.

Patient confidence restored

In conclusion, general practitioners can prepare themselves for the growing demand of removable dentistry with techniques and materials that allow them to correct a variety of dental frustrations. By doing so, they can restore dental function and confidence to their patients and provide clinical and economic benefits to their practices. The advent of the mini dental implant has given general dentists a rapid, easy, and less costly way to solve many difficult problems that arise on behalf of patients who wear complete dentures. It is estimated that more than 36 million patients in the United States have lost all of their teeth; however, only one-half of 1% have received implant therapy! This striking disparity signifies a huge untapped market for implants and dentures. **DPR**

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Standard Page

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