The basics and beyond with mini dental implants

Dr. M. Dean Wright illustrates the advantages of mini implants as a denture stabilization option

Abstract: M. Dean Wright, DDS, has been placing various types of implants for more than 30 years, and describes the popularity of mini dental implants in his practice. The case illustrated demonstrates a denture stabilization treatment with six mini implants in the maxilla to stabilize a full upper denture, as well as four mini implants in the mandible to support a partial. The implants were placed in 1 day and immediately loaded. This case represents a classic example of denture stabilization with mini implants; a future article will highlight a more advanced case in which 25 teeth were extracted, and 15 implants placed in a 1-day treatment.

The “law of the instrument” holds that if the only tool you have is a hammer, it is tempting to treat everything as though it were a nail. As implant practitioners, it is important that we keep this in mind. In today’s dental market, we need more than just one tool or method of treatment to offer patients solutions that will meet their needs in terms of convenience and affordability.

I began placing traditional implants in 1977 and to date have placed over 13,000 implants of various types and sizes, developing my toolbox far beyond just a hammer. In 2001, I began investigating what was then the IMTEC Sendax MDI System (now 3M™ ESPE™ MDI Mini Dental Implants). After my first case attaching a maxillary denture to six mini dental implants, it was clear that MDIs offered a new and revolutionary technique that patients could afford, quickly accept, and appreciate.

Implant practitioners are likely familiar with the chief benefits of mini dental implants. A primary advantage of these implants is that because of their small size, they provide a treatment option for many patients who are not ideal candidates for traditional implants, whether due to lack of bone or other health conditions. Mini dental implants are also significantly more affordable than traditional implants, as a typical case can be treated with a flapless, 1-day procedure at one-fourth to one-third the cost of traditional implant treatment. The potential to complete treatment in just 1 day is very appealing to patients who are faced with a choice of investing months of healing time in a traditional implant process, versus having mini implants placed and being able to immediately load the denture and enjoy their normal lifestyle.

A decade of data
After more than a decade in use, the clinical data in support of mini dental implants continues to grow more significant. Published success rates have ranged from 91% to 98.3%. The 98.3% figure comes from a recent prospective clinical study that followed implants for a 1-year observation period, while a 5-year study of 2,500 implants found a 94.2% success rate.

In my practice, we have now placed over 10,000 MDIs, and continue to treat new cases every day, placing approximately 100 MDIs each month. The dramatic success that my practice has realized by offering this solution highlights the niche in the market that these implants fill. Many denture patients are unhappy with the stability of their dentures, and feel self-conscious during everyday activities like eating and socializing. However, traditional implant options, which tend to be better known by patients than minis, can be prohibitively expensive. There is a huge need in the patient population for an implant treatment that is more affordable and also more accessible for patients with resorbed ridges and other health conditions, which inevitably rule them out for traditional implants. Although my practice offers a full range of implant options, we estimate that 70% of our implant volume is in MDIs—a testament to their popularity and enthusiastic reception by patients.

While they are primarily marketed for denture stabilization, MDIs can also be used for crowns and bridges. Their versatility makes them helpful in challenging cases like treatment of cancer sufferers and accident victims. (An upcoming article will demonstrate the use of 15 MDIs to stabilize dentures for a quadriplegic patient.) I have even used them to fix a lower denture onto a 3 mm tall mandible with no grafting.

The case shown here presents what is, for me, a typical denture stabilization procedure. While cases are often shown with four implants supporting dentures in the mandible or maxilla, I typically prefer to place more, often six to eight. This case shows treatment with six MDIs in the upper arch to support a full denture, and four MDIs in the lower to stabilize a partial denture.

Case presentation
The patient presented to the office with an existing upper denture. Numbers 21-27 were intact in the mandible, but the patient was seeking a solution that would provide her with a fuller and brighter smile. She was also unhappy with the stability...
of her existing maxillary denture. After consultation, it was confirmed that the patient was an appropriate candidate for treatment with MDIs. She consented to the fabrication of a new maxillary denture as well as a lower partial denture, both to be stabilized with MDIs. The existing lower teeth would also be bleached during this process.

Impressions were captured for the new dentures, and a jaw relation was taken. The patient completed bleaching treatment, and a wax try-in was done to confirm the fit of the new dentures. Once the new dentures were completed, the patient returned to the office for implant placement. It was determined that six upper implants and four lower implants would provide the best stability. The locations of the implants were marked on the patient’s tissue with a marker, and each implant was

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placed in turn (Figure 1).

To place each implant, a 1.1 mm pilot drill was placed over the entry point and lightly pumped up and down to penetrate the cortical plate. The pilot hole was drilled to a depth of approximately one-third the threaded length of the implant. The implant was inserted into the pilot opening and rotated under pressure, allowing the self-tapping implant to advance further. The implant was advanced until there was noticeable resistance, after which a winged thumb wrench was used to further thread the implant into place. The insertion process was finalized with the 3M™ ESPE™ Graduated Torque Wrench with Adaptor. The implants were inserted until the heads protruded from the tissue with no thread portions visible (Figures 2 and 3).

The dentures were relieved to fit over the implants, and implant housings were fit on the o-ball heads of each implant (Figure 4). Reline impressions were then captured, and the case was sent to the lab to have the housings processed in the denture and partial. Both were returned from the lab the same day, and the dentures were then seated in the patient’s mouth (Figures 5-7).

The patient was very happy with the outcome of the procedure and felt comfortable enough to go out to dinner that night. She returned to the office for a minor adjustment 1 week following, and has been satisfied with the dentures since.

Discussion
By the year 2020, statisticians estimate that 37.9 million people will be in need of one or two complete dentures. This is an increase of 4.3 million from the early 1990s. Currently, 25 percent of people aged 65 to 74 are edentulous in both arches. These statistics are included here to emphasize the current need for denture stabilization solutions, as well as the fact that this need will only continue to grow in the future. We have all likely read stories about the demands of Baby Boomers and the fact that this generation is intent on aging well and living comfortably. For many patients of this generation, living with a loose-fitting denture is not an acceptable option.

In light of these trends, dentists would be well served to familiarize themselves with the available denture stabilization options and be prepared to counsel patients on what treatments might be most appropriate for them. After more than 10 years of placing MDIs, I have seen time and again the difference they make in patients’ lives, and I have never seen a procedure where patients are consistently so happy with the result.