Simple, Cost Effective Overdenture With Implants

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Implants have become the state-of-the-art form in today’s dentistry, particularly in the treatment planning and fabrication of full dentures. Although many practitioners claim they can make a retentive mandibular denture, most of us can’t achieve that kind of result on a consistent basis and have to deal with never ending adjustments and unhappy patients. An unhappily patient has yet to be encountered with lower dentures retained by implants. The time has come where we can offer dental implants to all our edentulous patients. Patients who are edentulous in the mandible seem to almost always present with quality symphyseal bone that will accept implant placement which makes most, if not all mandibular edentulous patients, good candidates for implant dentistry. Even those patients who have some kind of medical compromise may qualify for this treatment modality.

There are basically two ways of restoring the edentulous mandible with implants and a removable overdenture. A bar that splints the implants, and non-splinted implants with attachments placed directly into the implants. One must visualize the end result when planning mandibular implant retained restorations and careful assessment of vertical dimension and freeway space are essential to evaluate the design of splinted bars as well as the selection of the different types of implant attachments. It is wise to follow all denture fabrication steps and take the prosthesis at least to the wax-try-in stage to determine how many implants will be needed, where they will be placed, and if there will be enough room for a splinted framework. Measuring from the crest of the ridge, a minimum of 13 mm is needed for a mandibular implant restoration that comprises a framework, and anywhere from 8 mm-10 mm for one that is retained by attachments within the implant. Once this is determined, the case becomes much simpler to do both for the surgeon and for the restorative dentist. All that is left to do is duplicate the prosthesis and fabricate a surgical stent, according to the teeth in wax. Many restorative dentists have found that non-splinted implants with attachments survive as well, and in some cases, better than splinted ones.

When implants are splinted, a large percentage of the load is placed on the fixtures even though the restoration is tissue borne. Non-splinted implants with their attachments rely mainly on tissue support. It is much easier to evaluate the tissue support of an overdenture on individual implants than it is on splinted ones, unless sufficient space is provided by the laboratory within the denture where the splinted bar lies and this is usually not the case. Although the jury is still out, mini-dental implants are rapidly becoming part of everyday edentulous dentistry, but at least four of these marvelous implants are recommended for a mandibular overdenture. Experience demonstrates that only two implants provide sufficient retention for a well-fabricated ball attachment overdenture. Four conventional implants with ball attachments provide excessive retention most of the time and three borders on too much. In fact, there are many cases where the deactivation of two attachments in a four conventional implant restoration has been needed due to excessive retention. The Dalbo ball attachment system provides the restorative dentist some leeway in this respect because the system allows for retention adjustments after the housings are picked up in the overdenture.

Several implant designs are fortunately available today as well as choice of attachments. In this article, a mandibular implant restoration with Camlog implants will be addressed along with Dalbo attachments.

This patient is a 54-year-old female who requested dental treatment because her teeth didn’t feel right and she had been in pain for several years and unable to chew. Inability to masticate is creating gastrointestinal problems. She is otherwise in good health and presents with advanced generalized chronic periodontitis. Tooth migration, loss of vertical dimension, and infection is obvious as well as the lack of self-esteem. Conversing with the patient revealed family problems and financial burden. It was decided to do the case gratis in gratitude and for the love of dentistry.

The panoramic x-ray reveals the advanced loss of bone and rampant calculus (Fig. 1).

Fig. 1

Fig. 2

Pathologic migration, tenacious calculus and inflammation have been a part of this patient’s life for many years (Fig. 2). After careful analysis it was decided that preservation of teeth was not in the best interest of this patient and total removal was recommended with concomitant placement of two Camlog Root Line implants in the mandible to provide this first time denture user a chance for quick adaptation (Figs. 3 & 4).
Careful debridement and alveoplasty was done with a mental picture of what the ideal ridge should look like after healing takes place.

A midline incision provided access to the apical bone without the need for manual retraction of the gingival tissue, for the immediate placement of the implants and to obtain tension free primary flap closure for these implants. The sockets were purposely left open with the intent to obtain a wide ridge while the bone regenerates within the socket. Most surgeries use a split thickness flap, which keeps the periosteum in place and provides proper blood supply for the bone and tissue, also allowing for proper tissue handling and placement. Healing therefore is quicker with less discomfort.

Three days post op revealed excellent response to the elimination of insult to the gingival tissues, a sign that edentulation was appropriate for this patient. The sutures were removed at three days, as there was no movement of the tissue upon pressure.

At three months (Fig. 5), the implants can be seen through the healthy gingival tissue. The alveoplasty created a wide well rounded ridge.

Attached thick gingival tissue is always a plus when implants are involved. In this case, there was very thin labial attached tissue present so a lingual incision was made in order to roll the tissue buccally and provide keratinized gingiva for the implants (Fig. 6). The release incisions help in the sense that the tissue can be manipulated easier and without trauma.

Once the tissue has been rolled to the buccal, notice how the former crestal gingiva, now the buccal gingiva, hugs the healing abutments (Fig. 7). This simple procedure guarantees attached thick tissue on the labial as well as the lingual, a feature that is desirable in implant dentistry.

Healthy implants surrounded by healthy tissue are indicative of the application of sound surgical principles (Fig. 8).

Normal prosthodontic impression procedures are undertaken. All edentulous patients require two impressions, as follows:

1. Fabrication of a good custom tray 2-3 mm short of the borders is of paramount importance with this technique.
2. Medium body Polyvinylsiloxane impression material is used for the first impression applying positive pressure, and the borders are molded.
3. Removal of 1.5-2 mm of the medium body is done to create space.
4. A wash impression with light body is taken, and border molding is done again. Mounting consists of a face bow transfer. Block out of the healing abutments and creation of space for the ball abutments is done at this stage.

Set up and wax-up are done for the try-in appointment and after the patient and the doctor are satisfied, the dentures are processed (Fig. 9). The laboratory is instructed to relieve the implant sites (Fig. 10).

Placement of the Dalbo ball abutment is easily done at the final appointment. The fixture is visible and confirms implant placement protocol with one of the cams facing the buccal.

continued on page 40
One of the advantages of the Camlog abutment system is the massive abutment screw of the design. They are easily torqued by hand well beyond 10Ncm. These Dalbo abutments were torqued to 30 Ncm (Fig. 11).

Once the torque driver’s head breaks, the attachment is properly torqued (Fig. 12).

Pick up of the attachment housings should be done chairside so a totally passive fit within the overdenture is obtained, therefore the housings must be positioned on the abutments, the overdenture must be tried in and the patient guided to intercuspation without interfering with the attachments (Fig. 13). The white spacers keep the housings from moving laterally and are very stable. The size of the housing is 2.65 mm. The abutments vary in size from 1.5 mm, 3.0 mm and 4.5 mm.

After lubricating the abutments, GC pattern resin is used to pick up the housings because of its rapid, rock hard set (Fig. 14). The distinguishable red color aids in the removal of excess resin from the inside of the denture. The retention of the attachments can be adjusted by screwing the retention inserts in or out with the Phillips style driver included in the Dalbo kit, a very useful feature.

continued on page 42
The use of lingualized occlusion is the first choice in implant reconstructions, where only the palatal cusps engage the central fossae of the mandibular teeth. The stability of the denture, chewing ability, and the process of deglutition are enhanced (Fig. 15).

There’s nothing like making someone’s life considerably better through the art form of dentistry. The satisfaction in this case is total. Finances didn’t play a roll in treatment; the office paid for everything and the euphoric smile is an emotional reward (Fig. 16). It was the purpose of this treatment to give back to dentistry and to humanity what has always prevailed in our profession, kindness.

These cases are straightforward, fun and cost effective for the pt. There didn’t seem to be any difference with the retention or stability of the overdenture with the more spaced implant placement as shown in this case when compared to the first one.

References:

Dr. Maya is a 1981 graduate of the University of Puerto Rico Dental School. He has been in private practice in Tampa for the last 21 years and enjoys practicing reconstructive dentistry. He was past president and charter member of the Tampa Implant Study Club. He has elected to practice a sport that resembles Dentistry in that perfection can never be achieved, one can only strive for perfection, Golf.