Predictably Solving a Prosthetic Dilemma

A Partially Edentulous Mandible Opposed by a Worn Maxillary Denture

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ABOUT THE AUTHOR

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INTRODUCTION

Almost all dentists have seen the following scenario when a new patient presents to his or her office: The patient is wearing a very old and worn maxillary denture, opposed by a partially edentulous mandible with the dentition broken down, exhibiting extensive periodontal involvement that makes the cast partial denture he or she is wearing almost useless. The patient has been delaying a definitive solution to this situation because of cost concerns and due to hearing less-than-positive reports about wearing the conventional full lower denture (that is assumed to be the final resolution to these issues). The following case illustrates an effective protocol we use to address such situations in our practice.

CASE REPORT

Diagnosis and Treatment Planning

A 67-year-old male presented with a medical history of coronary artery disease that had necessitated bypass surgery a dozen years earlier. His dental complaints consisted of soreness during mastication due to multiple mobile mandibular teeth; an ill-fitting lower cast partial denture; and an aesthetically unacceptable full upper denture.

The new patient examination, in February of 2011, revealed no soft- or hard-tissue abnormalities beyond a hopelessly involved lower periodontium with several badly broken-down mandibular teeth (Figure 1). His upper edentulous ridge was moderately resorbed and would, in my estimation, adequately support a conventional maxillary complete denture. He exhibited no signs or symptoms of temporomandibular dysfunction. At his diagnosis appointment the next week (as the treatment consultation is known in our office), I reviewed the clinical findings with the patient, and then offered him 3 different treatment plans. All of these included a new full upper denture, 2 contained an immediate full lower, and one involved a referral to a periodontist for what I believed would be heroic efforts to save at least some of his lower teeth to serve as abutments.

Figure 1. The patient’s initial presentation, showing several badly broken-down teeth and extensive periodontal involvement.

Figure 2. The implants immediately after placement, submerged during osseointegration in a dual-stage procedure.
for a new cast partial denture. Of the 2 plans proposing an immediate full mandibular denture, the first posited a conventional one and the other involved an implant-supported unit.

After answering all the patient’s questions (related to cost, prognosis, and the duration of treatment), he decided upon an implant-supported full lower denture, opposed by the aforementioned new complete upper denture. The patient was retired and living on a fixed income; he was only able to entertain this option because of a recent insurance settlement that he had received from an unrelated matter. However, because of negative experiences that were related to him by friends and family regarding conventional full mandibular dentures, he badly wanted implant support on the lower. With the patient having settled on this treatment mode, I referred him to my oral surgeon for a surgical and implant consultation.

Keeping the patient’s wishes and concerns in mind, and that cost issues were a factor here, I modified the treatment plan to use 2 implants instead of 4. We would have him transition from the immediate full lower denture into a final implant-supported prosthesis, instead of only using it as an interim unit. This would represent a significant savings to the patient without compromising the final result of treatment, if executed properly.

In cases like this one, it has been my experience that stabilizing the lower occlusion first results in a better outcome, both functionally and aesthetically. To this end, the treatment plan called for full-arch extractions on the lower with immediate placement of 2 implants at the canine positions before the immediate full denture was inserted. The occlusal registration for the immediate mandibular denture would be taken with a bite rim on the maxillary instead of the patient’s existing upper denture so as to idealize the lower denture tooth setup and to open his vertical dimension by half of the 2 mm needed here. This was because of the deterioration of his lower natural dentition, and the wear of his complete maxillary denture that had resulted in some bite collapse. Appointments between the oral surgeon’s office and ours would be coordinated on the day of surgery; this would be done so that I would see the patient right afterward to adjust his existing full upper denture to the new opposing occlusion.

Ideally, 4 implants would be used to support a complete mandibular denture against distal leveraging forces. This is because significant marginal bone loss can occur when 2 implants are used to support a full mandibular denture.
regardless of the attachment system used, especially during the first year in function.\textsuperscript{2} In this case, because treatment costs were important to the patient, and so only 2 implants would be used, system selection would be essential to bone maintenance. Thus the Ankylos (DENTSPLY Implants) system was chosen due to its well-documented support of peri-implant tissues,\textsuperscript{3,4} and because it is the only system that has been approved by the US Food and Drug Administration to make claims of hard- and soft-tissue growth around its implants.

**Clinical Protocol**
First, the 2 Ankylos mandibular implants were placed by the oral surgeon. Then, 2 months later, once the oral surgeon had confirmed osseointegration (Figure 2) (note the implants were submerged during osseointegration), the implants were uncovered and the system’s sulcus formers were inserted (Figure 3). Again, appointments were coordinated so that I saw the patient immediately after the uncovering to relieve the intaglio of the lower complete denture to accommodate the sulcus formers. After allowing a few weeks for healing of the soft tissue after the uncovering surgery, an abutment level impression (Examix NDS [GC America]) was taken using the lower denture (Figure 4), after further intaglio relief to adjust for the ball attachments that had been torqued onto the implants. This impression would not only be used to insert the female attachments into the complete mandibular denture, but to reline it as well; thus converting the original immediate full lower denture into the definitive implant-supported prosthesis (Figure 5). Upon inserting the converted unit, the patient had to use so much effort in removing it that he stated, “You could pull me around the room by this thing.”

Shortly afterward, with the patient’s lower occlusion stabilized, a new conventional full upper denture was started for him. Again, during the occlusal registration process here, the patient’s vertical dimension was opened by another 1.0 mm to gain the total of 2.0 mm needed to make up for the previously described bite collapse. Two weeks later at the try-in appointment, the patient evaluated and approved the new aesthetics, and the denture was examined for proper occlusion, phonetics, and vertical dimension. The new complete upper denture was then inserted (Figures 6a and 6b).

A panoramic radiograph, taken 13 months later, revealed that the bone levels around the Ankylos implants had actually increased since their placement (Figure 7).

**CLOSING COMMENTS**
There are many dental patients who present to the restorative dentist with conditions like those described and addressed in this article. With proper diagnosis and treatment planning, along with appropriate interdisciplinary coordination and precise implementation, an excellent result, that not only fulfills the patient’s aesthetic and functional desires but also saves the patient time and money, can be obtained. While it may seem tempting from a simplicity standpoint to fabricate both prostheses simultaneously under these circumstances, my experience has been that establishing the stabilized lower occlusion first creates an outcome that is functionally superior and aesthetically appealing.

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**REFERENCES**
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POST EXAMINATION QUESTIONS

1. Often, patients will often delay treatment in cases like the one presented, for economic reasons.
   a. True      b. False

2. The author set the example: it is important to explain all the options and parameters of treatment (cost, prognosis, duration of treatment) before proceeding with any treatment.
   a. True      b. False

3. The clinician waited 6 weeks after the uncovering to relieve the intaglio of the lower complete denture to accommodate the sulcus formers.
   a. True      b. False

4. Upon inserting the converted unit, the patient found the retention to be inadequate.
   a. True      b. False

5. A panoramic radiograph, taken thirteen months later, revealed that the bone levels around the Ankylos implants had actually increased since their placement.
   a. True      b. False
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ANSWER FORM: VOLUME 32 NO. 12 PAGE 62
Please check the correct box for each question below.

1. ☐ a. True ☐ b. False
2. ☐ a. True ☐ b. False
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