Efficiently Restoring Proper Form and Function

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**Efficiently Restoring Proper Form and Function**

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**INTRODUCTION**

Advances in clinical techniques and materials continue to revolutionize dentistry, enabling clinicians to practice with a greater degree of predictability and confidence than ever before. Also, with increasingly affordable dental implants, more and more patients are opting for some form of implant therapy, fixed or removable. Utilizing not only the savings in dental implants, but also advancements in dental materials, clinicians are reporting reduced chair time and increased patient satisfaction when reconstructing patient's smiles.

This article focuses on the sequences involved in the edentulation of the affected dentition; grafting these areas to build the foundation and final implant reconstruction.

**CASE REPORT**

*Diagnosis and Treatment Planning*

A female patient presented with a complaint of constant throbbing pain on several teeth in the upper and lower arches (*Figure 1*). Moreover, she expressed displeasure with the overall appearance of her smile in the aesthetic zone, as well as the function of her existing teeth and restorations. Upon clinical examination, it was discovered that the patient suffered from generalized advanced periodontal disease, as well as several caries. In fact, the majority of her teeth in the upper and lower arches, including the mandibular fixed bridges, had Class II mobility and some form of decay. The patient also complained of tenderness and discomfort to hot/cold temperature changes.

In cases such as this, dentists will encounter teeth that are so affected by caries and periodontal disease that no other treatment is possible except for extraction. For these patients, the treatment of full-mouth extractions is the only option, followed by immediate dentures, and consequently, implants.

Because of fear of the possibility of complications, such as not being to get all the teeth out or risk of damaging a vessel or nerve, many general dental providers may choose to refer out multiple extraction cases. However, having a method that allows the dental provider a way to extract multiple teeth in an effective and efficient manner will allow the practitioner complete control of the patient's treatment surgically and prosthetically. By doing so, there is no loss in communication among provider, patient, and specialist, since there is only you and the patient. In fact, most patients who present to our office for this type of treatment would like to have everything done in one visit, under one roof, and usually by one provider who will take full responsibility for the treatment outcome. With the proper...
training, methods, and materials, there is no need to have to refer out full-mouth edentulation cases. However, the work should always be referred to a specialist when the clinician is not comfortable and/or fully competent in providing a particular procedure for their patient.

When recommending full edentulation in the lower arch, I will always recommend at least 2 dental implants in the tooth Nos. 22 and 27 areas with some type of overdenture attachment, because conventional mandibular dentures oftentimes present problems of retention, phonetics, function, and pain due to instability, no matter how well they are made.

Once patients have committed to having all their teeth extracted, they usually want it done painlessly, in one visit, while being totally “knocked out” through IV sedation. Not only does utilizing IV sedation make the appointment easier for the clinician, patients like it because they have no memory of the surgery and the actual process of having all their teeth removed. Most importantly, we can intravenously regulate medications to prevent swelling, infection, and pain. It is important to note that when patients are IV-sedated, the airway must be protected with a throat pack at all times, and the operator must work in one quadrant at a time.

The Physics Forceps (Golden Dental Solutions) have made full-mouth extractions much easier. This is because the forceps are designed to act as a Class I lever, where the only force applied is with simple wrist motion (Figure 2). The tooth is engaged on the lingual aspect with the beak of the instrument, where the bumper with soft latex-free coating is placed on the buccal alveolar ridge at the location of the mucogingival junction. Using a buccal rotation, the extraction of a tooth is usually accomplished within 30 to 90 seconds, depending on the size and root structure of the tooth (Figure 3).

After the teeth in each quadrant were removed, any sharp areas of the alveolar crest were smoothed off with a bone-shaping bur (H8 FGSG [Axis|SybronEndo]) (Figure 4), and bone grafting material (Maxxeus Cortical Mineralized/Demineralized Bone Blend [Maxxeus]) was placed into the sockets (Figure 5). Once the immediate denture
was tried-in and verified for accuracy and fit, any excessive tissue was trimmed and then sutured (Figure 6). Once completely sutured, a water-soluble lubricant was placed over the site to prevent the sutures from being pulled during the reline procedure. The soft reline material used in this case was UFI Gel Soft Reline (VOCO America) (Figure 7). The soft reline material was adhered to the inner aspect of the immediate denture (Glidewell Laboratories) with a bonding agent enclosed in the kit.

When placing implants immediately after extraction and leveling, I will routinely select dental implants that have an aggressively threaded tapered design, so that they may be immediately fixated into bone until osseointegration takes place within 6 to 8 weeks. In this particular case, five 3.7 x 13 mm Inclusive (Glidewell Laboratories) dental implants were placed (Figure 8), utilizing the surgical motor (AEU-7000 [Aseptico]) with corresponding 20:1 reduction handpiece (Mont Blanc [Anthogyr]). Any voids in the sockets or around the implants (Figure 9) were filled with bone grafting material (Maxxeus Cortical Mineralized/Demineralized Bone Blend). Primary closure was achieved by suturing the tissue with 3.0 mm Black Silk Sutures (Blue Sky Bio). Similar to the upper immediate denture, the lower immediate denture (Glidewell Laboratories) was also relined with the UFI Gel Soft Reline material and then allowed to heal for several months (Figure 10).

Approximately 3 to 4 months later, the area was evaluated for the uncovering of the dental implants (Figure 11). In order to keep the procedure atraumatic, a diode laser (Picasso [AMD Lasers, a DENTSPLY International Company]) was selected to remove the excessive tissue from over 2 of the implants (Figure 12). Not only was the laser procedure less traumatic to the tissue with no bleeding issues, operator control was much better as compared to using a scalpel.

When using a diode laser for uncovering dental implants, several factors must be considered. For example, when you are excising any keratinized gingival tissue,
caution must always be taken to ensure that sufficient attached tissue remains in the area afterwards. With an energy setting at about 3.0 W on the diode laser, the initiated tip was angled at about 45° before starting the incision. Once the tip was activated, it was moved side to side and positioned progressively as it removed excess tissue from around the healing caps. Once completed, taller healing caps were placed on the implants and allowed to heal for 2 weeks before placing the overdenture attachments onto the dental implants.

The overdenture system selected was the LOCATOR (Zest Anchors) overdenture attachment system. Some of the advantages of the LOCATOR attachment system include: a self-aligning feature, dual retention (from its design), and one of the lowest implant attachment profiles available. The self-aligning ability of the LOCATOR attachment aids the patient in positioning the prosthesis, so that it can be properly seated without damage to the attachment components. I have personally found this to be true when a patient is lacking anatomical structures necessary to orient his or her denture due to a severely resorbed mandibular ridge.

There are several advantages when using self-standing attachments like the LOCATOR for overdentures. The first advantage is that it is a much lower cost compared to a custom milled bar or lab-fabricated bar. In addition, there are less prosthetic limitations when using self-standing attachments as compared to a bar, because the attachments take up very little room within the overdenture. In regards to maintenance and cleaning, the LOCATOR can be easily cleaned with a toothbrush, as compared to having to use a floss threader or Waterpik to get under any framework.

Utilizing a marking stick (Dr. Thompson's Marking Sticks), we identified the areas in the denture that would require removal for the overdenture housings (Figure 13). Once relieved, Quick-Up Test C&B silicone (VOCO America) was injected into the overdenture recesses. The overdenture was seated over the attachment caps, and the Quick-Up Test C&B (VOCO America) was allowed to set before the overdenture was removed. Any interference that was
detected between the denture base and attachments was checked and eliminated (Figure 14).

Quick-Up Adhesive was painted into the overdenture recesses to enhance retention between the denture base and the material. Petroleum jelly was applied to the surrounding surfaces of the denture to prevent unwanted adherence of excess resin. Quick-Up self-curing luting resin (VOCO America) was then injected about two thirds of the height of each recess and onto the attachments (Figure 15), and then the overdenture was seated. The prosthesis was gently held in place by hand and, after a total of 3 minutes, the overdenture with the incorporated caps was removed. Slight voids around the caps or in the access openings were filled with a matching light-cured flowable composite resin (Quick-Up LC [VOCO America]) (Figure 16).

At the completion of the prosthetic phase, the patient stated how pleased she was to be able to smile and function without the prosthesis wobbling or falling out. Most importantly, from a clinical standpoint, we were pleased to see the areas in the upper (Figure 17) and lower arches (Figure 18) healthy and free of infection.

**CLOSING COMMENTS**

More and more patients are presenting to dental practices requiring full-mouth extractions, implants, and overdenture treatment. By providing multiple services, in a smaller number of visits under one roof, the dental provider will find more patients who will accept treatment. In doing so, not only are you helping patients get to proper form and function, you are also helping your practice prosper even during these economic times.
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POST EXAMINATION QUESTIONS

1. Utilizing not only the savings in dental implants, but also advancements in dental materials, clinicians are reporting reduced chair time and increased patient satisfaction when reconstructing patient’s smiles.
   a. True  
   b. False

2. Work should always be referred to a specialist when the clinician is not comfortable and/or fully competent in providing a particular procedure for their patient.
   a. True  
   b. False

3. The Physics Forceps are designed to act as a class I lever; where the only force applied is with simple wrist motion.
   a. True  
   b. False

4. Utilizing a laser procedure in this case was less traumatic to the tissue with no bleeding issues; operator control was much better as compared to using a scalpel.
   a. True  
   b. False

5. The first advantage in using self-standing attachments (such as the Locator) is that the cost is much lower when compared to a custom-milled bar or lab-fabricated bar.
   a. True  
   b. False

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Please check the correct box for each question below.

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