

Multidisciplinary Rehabilitation Within the General Practice



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INTRODUCTION

“*Reconstructive Dentistry*” is probably the broadest and most inclusive term used to describe the concept of replacing, rebuilding, or creating the elements and relationships between teeth, the upper and lower jaws, and overall facial structures. In order to provide this type of reconstructive dental treatment, the goal of the provider is to utilize a wide variety of dental services, such as restorative, endodontic, periodontic, implant, and prosthetic care to produce the precise outcome desired by the patient. For those dentists who do not want to incorporate these types of services into their general practice, specialists would be involved to provide a team approach to accomplish all of the various procedures that the patient requires.

Many patients have delayed having needed dental care due to their personal economic situation these days. When they finally return to the dentist, they often have a variety of problems that need attention. These problems may require root canals, scaling and root planing, extractions, grafting, fillings, or implant placement. In my practice, we are able to address all these concerns utilizing oral or IV sedation within a couple of appointments, whereas before they would be referred out to various specialties, thus taking more time and often with multiple visits. In other words, patients who have the least amount of time for what seems to be a considerable amount of dentistry (multiple implants or reconstructive procedures) are accommodated with special appointments. Our office’s ability to schedule these appointment blocks enables patients with overflowing work schedules or active lifestyles to obtain needed treatments with the least amount of visits and the least inconvenience.

This article describes a case where the patient needed several types of dental services within the various disciplines of dentistry to fulfill his demands for an aesthetic and functional smile. It will also illustrate an efficient and effective approach in preparation, bonding, endodontics, implants, prosthetics and more!

CASE REPORT

Diagnosis and Treatment Planning

A young man in his late 30s presented to the



Figure 1. Preoperative condition retracted view.



Figure 2. Preoperative occlusal view of maxillary teeth.

practice dissatisfied with the appearance of his smile (Figure 1). He commented that he felt that his existing teeth and restorations were unattractive because of size, shape, and color. He also mentioned that he could feel some chips in his restorations and areas of broken tooth structure causing occasional discomfort.

Initial diagnostic evaluation consisted of a series of digital images with study models, a panoramic x-ray (Panorex) and full set of radiographs. Upon clinical examination, it was very evident that the patient had some failing composite and amalgam restorations with recurrent decay (Figure 2). According to the patient, these restorations had been placed about 8 years prior. Overall marginal integrity appeared to be compromised with these restorations. Examining these restorations from the occlusal view, one could see multiple cracks and craze lines. In the posterior maxillary and mandibular regions, there were several teeth the patient had complained of discomfort to hot, cold, and upon biting.

To develop a treatment plan and determine if the vertical dimension of occlusion could be increased, a diagnostic wax-up was

fabricated by the dental laboratory team. Based on information gathered from the initial consult, it was determined that all the remaining teeth should be cleaned of any caries, cored if necessary, and crowned, and that several teeth would require endodontic therapy or endodontic retreatment.

By using the information derived from the diagnostic wax-up, it was determined that aesthetics and function could be improved by restoration of the entire upper and lower dentitions. The final treatment plan would consist of zirconia all-ceramic crowns (Lava [3M ESPE]) on teeth Nos. 5 to 14 and teeth Nos. 19 to 31; endodontic therapy or re-treatment would be considered for teeth Nos. 2, 5 to 7, 10, 12, 19, 22, 25, 27, and 29 to 31; and implant replacement of teeth Nos. 3 and 4 with their corresponding abutments and crowns would be done.

Endodontic Treatment and Tooth Preparation

The first phase of our treatment consisted of endodontic therapy followed by core placement and crown preparation. Prior to the administration of local anesthesia, an appropriate estimated working length from the preoperative radiograph was selected for the teeth requiring endodontics. After anesthetic was administered, a carbide bur (H031RS [KOMET]) was used to remove any old restorations or decay and access the pulpal chambers. The access openings were widened utilizing an endo-safe bur (H269GK [KOMET]) in order to achieve proper straight-line access. The preparations were extended to clearly visualize the canals buccal lingually. Using a No. 15 file, the canals were identified and a working length was established. A .08/25 Twisted File (TF [SybronEndo]) was inserted about 3 to 5 mm into the canal orifices (rotating at 500 rpm), using a motion that brushed up and away from the orifice. This technique brushed away the cervical dentinal debris and permitted greater volumes of irrigant to rapidly enter into the canals. After withdrawal, the canals were irrigated with 5.25% sodium hypochlorite, recapitulated and then a .06/25 TF was reinserted. Once complete, the smear layer was cleared with a 2-minute soaking of a liquid 17% EDTA

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solution. Distilled water was then used to flush the 17% EDTA solution out of the canal and then dried with paper points. RealSeal (SybronEndo) was the material used for obturation in this case. It is available both in a master cone-based form and in an obturator-based form and was used exactly as gutta-percha would be. A thin coat of sealer was applied to the walls of the canal and then the master cone was placed to length.

Once the root canals were completed, the teeth were dried and a seventh-generation adhesive (OptiBond XTR [Kerr]) (Figure 3) was applied to all internal aspects of the preparations, including the cavosurface margins, for 20 seconds. The solution was gently agitated with a Microbrush. Another layer of bond was placed and dried, then cured for 20 seconds with an LED curing light (Demi Plus [Kerr]). In order to achieve a coronal seal, a flow-



Figure 3. OptiBond XTR adhesive system (Kerr).



Figure 4. Retracted view of prepared teeth isolated with Expasyl (Kerr).



Figure 5. Lava (3M ESPE) zirconia crowns on the model.

able resin (Premise Flowable [Kerr]) of shade X-L was placed as the initial layer of composite material. The material selected for the core restorations was a bleach shade of composite (Premise [Kerr]) because of its physical properties, handling, and ability to adapt directly to the residual tooth structure with a composite instrument. The bleach shade would aid us in clearly identifying the position for ideal crown margin placement.

Using a coarse grit diamond bur (5878K [KOMET]), the teeth were prepared for high-strength all-ceramic crowns. Utilizing a proprietary syringeable paste containing aluminum chloride (Expasyl [Kerr]), hemorrhaging was controlled and gingival retraction was also simultaneously achieved (Figure 4). After approximately 2 minutes in the sulcus, the Expasyl was rinsed off with copious amounts of water. Utilizing a full-arch tray (Clear Tray [Pentron Clinical Technologies]) and a fast set impression material (Take One Advance [Kerr]), a final impression was taken. (Note: The same materials and steps were utilized for the mandibular arch.)

Provisionalization

A provisional restoration, which would aid in determining the best size, shape, color, and position, was made from a silicone impression (Sil-Tech [Ivoclar Vivadent]) of the diag-



Figure 6. Cementation of upper crowns with a self-etching, self-adhesive resin cement (Maxcem Elite [Kerr]).



Figure 7. Cementation of lower crowns with self-etching, self-adhesive resin cement.



Figure 8. Clean-up was done in the gel phase.

nostic wax-up. Using Temphase (Kerr) temporary material, this mold was quickly filled and placed on the patient's prepared dentition. Within minutes, the temporary was fabricated, and the patient was released with his new smile. Final trimming of the margins was accomplished with trimming burs (Q-Finishers, H135Q [KOMET]). The next day, the patient returned for evaluation of aesthetics, phonetics, and occlusion. Already the patient exhibited excitement and confidence with the provisional restorations. Information was recorded and the patient was informed to rinse with Oris (DENTSPLY Professional) chlorhexidine gluconate rinse to keep his gingival tissues healthy.

Delivery of the All-Ceramic Crowns

Before try-in of the definitive restorations to verify fit and shade, the provisional restorations were removed sequentially starting from the maxillary anterior region. Any remaining cement was cleaned off the prepared teeth, and bleeding from the gingival tissues controlled with Expasyl paste.

After the patient was shown the retracted view for acceptance, the cementation process was initiated.



Figure 9. Postoperative occlusal view of maxillary teeth.



Figure 10. The surgical guide in place.



Figure 11. Paralleling pins.

The prepared dentition was cleaned with chlorhexidine 2% (Consepsis [Ultradent Products]) for 15 seconds and rinsed to remove any contamination during the temporary phase. The preparations were then desensitized (Gluma [Heraeus Kulzer]), and the final Lava crown restorations (Figure 5) were tried-in to verify marginal fit, contour, contacts, shade, and accuracy. The patient was very satisfied with the look of his new restorations and approved them for final cementation.

The crown restorations were seated utilizing self-etching, self-adhesive resin cement (Maxcem Elite [Kerr]) (Figures 6 and 7). Excess cement was easily removed (Figure 8) from the margins and accomplished within a short amount of time before final curing with the curing light (DEMI [Kerr]) for 20 seconds. No finishing of the cement was necessary along the margins. The overall health and structure of the soft tissue and restorations was very good (Figure 9). The patient was very pleased with the restorations and was now eager to start treatment on the edentulous area in the Nos. 3 and 4 positions.

Surgical Appointment

Before the surgical appointment, a cone beam computed tomography scan was taken to accurately treatment plan this case to make certain that no complications would arise from the conservative nonflap approach. SimPlant software (Materialise Dental) was used through 3D Diagnostix virtual assistance to precisely plan the placement of 2 dental implants (BioHorizons). The sizes selected were 4 mm x 12 mm (No. 4) and 5 mm x 10 mm (No. 3).

The area was anesthetized using 1.8ml 4% Septocaine (Septodont) with 1:100,000 epinephrine. Using the surgical guide provided by 3D Diagnostix (Figure 10), the sites for the implants was begun with a No. 8 surgical bur (KOMET) in a high-speed handpiece through the soft tissue extending approximately 1.0 mm into bone.

A 2.0 mm pilot drill was placed into the site and advanced to a depth of 14 mm measuring from the tissue surface. This additional 2 mm was the same depth of the tissue height to bone.

Paralleling pins were placed in the sites of the osteotomies (Figure 11) and an x-ray taken to check the angulations of the pins within the maxilla. Using a rotary tissue punch provided in the kit, an outline was created over the initial osteotomies, and the tissue plugs removed with a curette. Since

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there was a thin band of attached gingiva, a countersink drill was used to countersink the implant collar. Intermediate drills were sequentially used in this system to work up to the final drill size. Once the osteotomies were completed, an implant finger driver was used to place both dental implants until increased torque was necessary. The ratchet wrench was then connected to the adapter, and the implant torqued to final depth reaching a torque level of 45 Ncm. Per mucosal extension healing caps were hand-tightened to the implants (Figure 12). A postoperative radiograph was made of the implant and the healing caps to insure complete seating.



Figure 12. Healing caps.

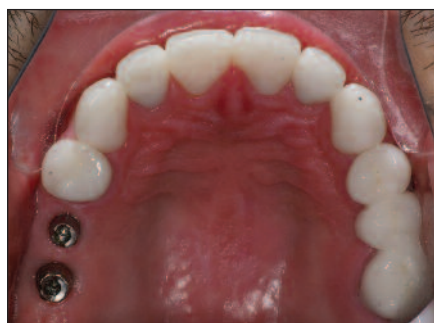


Figure 13. Abutments (3-in-One Abutments [BioHorizons]).



Figure 14. Splinted PFM crowns.



Figure 15. Placement of the resin cement into crowns.



Figure 16. Postoperative occlusal view of maxillary teeth.



Figure 17. Postoperative retracted view.

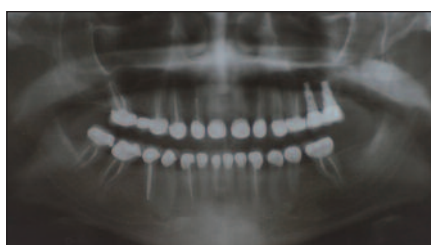


Figure 18. Postoperative panoramic radiograph (Panorex).

The implant was evaluated clinically after one week. The patient stated he had no postoperative discomfort or swelling.

Four months later, the healing caps were removed and the implants tested with reverse torque to ensure osseointegration. An impression was taken of the implants using the implant abutments (3-in-One Abutments [BioHorizons]) that are included with the implants, using a full-arch tray and fast set poly vinylsiloxane impression material (Take One Advance).

Delivery of the Splinted PFM Restorations

When the patient returned for the seating appointment, the PFM splinted crowns were placed on their corresponding abutments and another radiograph was taken to verify an accurate fit (Figure 13). The margins were closed and the contacts and occlusion were good, so the restorations were delivered, again (as above) using Maxcem Elite cement (Figures 14 and 15). When the cement reached its gel stage, excess was quickly and easily removed (Figures 16 and 17). A final panoramic radiograph was taken to document the whole reconstructive treatment (Figure 18).

The patient was very pleased with the end result and was surprised at

how atraumatically the dental implant was placed through the gingiva.

CONCLUSION

Today, if at all possible, patients like to get all their services under one roof. They know, trust, and feel comfortable with their general dentist and usually prefer him or her to perform dental procedures necessary to reach optimum dental health. It is not advised to advocate that general dentists offer procedures they are not comfortable with or for which they are not properly trained. However, it is the author's opinion that general dentists should implement a multidisciplinary approach into their practices. Because of time constraints, fear of going to multiple offices, and increasing costs, patients will seek practices that provide a more complete approach to reconstructive care. ♦

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Dr. Nazarian maintains a private practice in Troy, Mich, with an emphasis on comprehensive and restorative care. He is a Diplomate in the International Congress of Oral Implantologists. His articles have been published in many of today's popular dental publications. Dr. Nazarian is the director of the Reconstructive Dentistry Institute in Michigan, where general dentists have the opportunity to train in the various services necessary to rebuild a dentition to proper form and function. He has conducted lectures and hands-on workshops on aesthetic materials and dental implants throughout the United States, Europe, New Zealand and Australia. Dr. Nazarian is also the creator of the DemoDent patient education model system. He can be reached at (248) 457-0500 or at aranazariandds.com

Disclosure: Dr. Nazarian reports no disclosures.

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