



“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. In fact, I recently started the Reconstructive Dentistry Institute in Michigan, where general dentists come to train in the various services necessary to rebuild a dentition to proper form and function. For those dentists who do not want to incorporate this type of service, specialists would be involved to provide a team approach for this type of patient care.

Many patients have put off treatment due to the economy. When they finally return to the dentist, they have a variety of multiple problems that need attention and care. These problems might 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 and have taken more time or 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 appoint-

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ments. 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 dental services within the various disciplines of dentistry to fulfill his demands for an aesthetic and functional smile. In my practice and dental lectures, I have described this treatment as the "Ultimate Dental Treatment." This article will illustrate an efficient and effective approach in preparation, bonding, implants, prosthetics and more!

Case Presentation

A man in his late 50s presented to the practice dissatisfied with the appearance of his smile (Fig. 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 as well as broken portions of tooth structure causing occasional discomfort.

Initial diagnostic evaluation consisted of a series of digital images with study models, a panoramic X-ray 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 (Fig. 2). According to the patient, these restorations had been placed about 10 to 15 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 and cold as well as to biting.

Planning

To develop a treatment plan and determine if the vertical dimension could be increased, a diagnostic wax-up was fabricated (Fig. 3). 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 the edentulous area of #29 restored with a dental implant. For the areas of #30 and #31 the patient did not desire to undergo block grafting for the deficient amount of bone. All risks, benefits and alternatives to various treatments were clearly reviewed with the patient.

As a result of the information gathered from the diagnostic wax-up and the patient's desires for treatment, it was determined that restoring the entire upper and lower dentition would enhance aesthetics and function. The final treatment plan would consist of Noritake Katana crowns (teeth #2-15 and teeth #18-28), core restorations where needed and implant placement of tooth #29 with corresponding abutment and crown.

Preparation

Using a coarse grit chamfer diamond bur 856 (Axis), the teeth were prepared for all-ceramic Noritake Katana crowns. Utilizing Expasyl (Kerr) we not only



Fig. 1: Pre-operative facial shot



Fig. 2: Pre-operative retracted view



Fig. 3: Wax-up



Fig. 4: Retracted view of temporaries

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Fig. 5: Full face shot of temporaries



Fig. 6: Lab work of zirconia copings



Fig. 7: Close up of crowns seated



Fig. 8: OCO Biomedical TSI Implant (9080)



Fig. 9: Implant placed in the #29 area.

controlled hemorrhaging, but also achieved gingival retraction. After approximately two minutes in the sulcus, the Expasyl was rinsed off with copious amounts of water. Utilizing a full-arch tray (Pentron) and fast-set impression material (Take One Advance, Kerr) an impression was taken for the final restorations. 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 Siltec (Ivoclar Vivadent) impression of the diagnostic wax-up. Using Temphase (Kerr) temporary material, this mold was quickly filled and placed on the patient's prepared dentition (Fig. 4). Within minutes, the temporary was fabricated and the margins trimmed with fine trimming burs (Axis). The next day, the patient returned for evaluation of aesthetics, phonetics and bite. Already the patient exhibited excitement and confidence with his provisional restorations (Fig. 5); however, he selected a whiter shade (010 Bleach Shade) for his final restorations. Information was recorded and the patient was informed to rinse with Oris (Dentsply) chlorhexidine gluconate rinse to keep his gingival tissues healthy.

Cementation

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 (Kerr) paste. After the patient was shown the retracted view for acceptance, the cementation process was initiated. The prepared dentition was cleaned with chlorhexidine 2% (Consepsis, Ultradent Products, Inc.) for 15 seconds and rinsed to remove any contamination during the temporary phase. The preparations were then desensitized (Gluma, Heraeus Kulzer), and the final Katana (Noritake) crown restorations 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 (Dental Arts Lab) were seated utilizing self-etching, self-adhesive resin cement (Maxcem Elite, Kerr). Excess cement was easily removed 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. Any adjustments to the occlusion were achieved using the Zir-Cut Polishing Set (Axis Dental). The overall health and structure of the soft tissue and restorations was very good (Fig. 7). The patient was very pleased with the restorations and was now eager to start treatment on the edentulous area of #29.

Before the surgical appointment, a CBCT scan was taken to accurately treatment plan this case to make certain that no complications would arise from the conservative non-flap approach. SimPlant software (Materialise Dental, Glen Burnie, Maryland) was used through 3D Diagnostix virtual assistance to precisely plan the placement of a 4mm x 12mm TSI (OCO Biomedical) dental implant (#29).

The area was anesthetized using 1.8ml 4% Septocaine (Septodont) with 1:100,000 epinephrine. Using the surgical guide provided by 3D Diagnostix, the site for the implant was begun with a #8 surgical bur (Axis) in a high-speed hand-piece through the soft tissue extending approximately a millimeter into bone.

A 2.0mm pilot drill was placed into the site and advanced to a depth of 14mm measuring from the tissue surface. This additional 2mm was the same depth of the tissue height to bone. A paralleling pin was placed in the site of the osteotomy and an X-ray taken to check the angulations of the pin within the mandible. Using a rotary tissue punch, provided in the kit (OCO Biomedical), an outline was created over the initial osteotomy and the tissue plug removed with a curette. Since there was unevenness in the ridge of bone, 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 due to the dense cortical bone that was present. Once the osteotomy was completed, an implant finger driver was used to place the dental implant until increased torque was necessary (Fig. 8). The ratchet wrench was then connected to the adapter and the implant torqued to final depth reaching a torque level of 55Ncm (Fig. 9). A healing cap was hand-tightened to the implant. A post-operative radiograph was made of the implant and the healing cap to ensure complete seating. The implant was evaluated clinically after one week. The patient stated he had no post-operative discomfort or swelling.

Four months later, the healing cap was removed and the implant tested with the ISQ meter (Osstell) to ensure osseointegration. An impression was taken of the implant using an impression post from OCO Biomedical. The impression was captured using a full-arch tray and fast-set polyvinylsiloxane impression material (Take One Advance, Kerr).

When the patient returned for the seating appointment the Katana (Noritake) crown (Fig. 10) was placed on the implant/corresponding abutment and another X-ray was taken to verify an accurate fit. Since there were no open margins and the contacts and occlusion were good, the crown restoration was then seated using Maxcem Elite (Kerr) cement. Once the cement reached its gel stage, it was quickly cleaned off and any excess removed.

The patient was very pleased with the end result (Figs. 11&12) and was surprised at how atraumatically the dental implant was placed through the gingiva and that the whole process of his dental reconstruction was accomplished “under one roof.”

Today, patients like to get all their services under one roof. They know, trust and feel comfortable with their general dentist and usually prefer him/her to perform dental procedures necessary to reach optimum dental health. I am not advocating general dentists offer procedures they are not comfortable with or not properly trained for. However, it is my opinion that general dentists should implement a multi-disciplinary approach into their practices – “Ultimate Dental Treatment.” Because of time constraints, fear of going to multiple offices and increasing costs, patients will seek providers who are reconstructive in nature. ■



Fig. 10: Implant crown



Fig. 11: Post-operative retracted view



Fig. 12: Post-operative facial shot

Author's Bio

Dr. Nazarian maintains a private practice in Troy, Michigan, with an emphasis on comprehensive and restorative care. He is a diplomate in the International Congress of Oral Implantologists (ICOI). His articles have been published in many of today's popular dental publications. Dr. Nazarian is the director of the Reconstructive Dentistry Institute. 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 the Web site www.aranazariandds.com.

