

Desired Smiles in Today's Economy

by Ara Nazarian, DDS, DICOI

More and more people are becoming aware of what cosmetic dentistry has to offer in their everyday lives, especially in today's job market. With this awareness, there appears to be an increase in the demand for general dentists to offer cosmetic dentistry in a predictable, fast and effective manner. More than ever before, dentists are challenged to create a beautiful smile utilizing various modalities of restorative dentistry.

Zirconia crowns and restorations are becoming popular as an alternative to conventional porcelain-fused-to-metal restorations when full coverage restorations are needed. Zirconia restorations offer function, aesthetics, longevity and gingival health. Coincidentally, it is the restoration of choice for many dental providers because they are metal free, aesthetically translucent and stronger than most other restorative materials.

Today, dental laboratories use zirconia blocks and discs to mill zirconia copings, frameworks or full contour zirconia

crowns and bridges. These blocks are formed under pressure from zirconium oxide powder stabilized with yttrium with additional additives for bonding and translucency. This amazingly strong and biocompatible space-age material has been in use for nearly two dozen years in some of the most demanding technical environments known to man, including the space shuttle and other industrial and medical applications (i.e., hundreds of thousands of hip joints replacements).

Zirconia substructures with porcelain overlay are a wonderful conservative modality for creating and restoring aesthetics in the human dentition. The beauty of the porcelain is unsurpassed because of the natural light transmission that occurs through the coping and ultimately through the tooth. It is color stable, strong and has the capacity to last for many years.

Preparation

It is not necessary to use a shoulder preparation, and feather-edge preparations are acceptable. Ideal minimum margin preparation is .3mm chamfer, but all margin preparations may be used, including a full shoulder.

- 1mm axial wall reduction
- 1mm cingulum/occlusal reduction required

Note: As with any all-ceramic, no sharp or right angles.

Adjustment Tips

- When adjustments are necessary for fit, adjust prepped tooth.
- When occlusal adjustments are required on the monolithic zirconia material, use a diamond with water.
- Avoid carbide use.



Fig. 1: Pre-operative retracted view

"Completion of this aesthetic dilemma with a quick restorative solution satisfied the patient's demands of straight, white teeth in order to meet the demands of today's job market."



Fig. 2: Pre-operative occlusal view



Fig. 3: Diagnostic wax-up



Fig. 4: Clear preparation guide

This article presents a case report in which zirconia substructures with porcelain overlay were utilized to restore a patient's smile to proper form and function.

Case Study

A young woman in her mid-40s presented to the practice for an aesthetic consultation. The patient was not pleased with her smile and did not feel comfortable in social circumstances and in the work force. In particular, the patient was dissatisfied with the size, shape and color of her anterior maxillary teeth (Fig. 1). Upon clinical examination, her anterior maxillary teeth exhibited multiple failing composite restorations (Fig. 2). Although she had a Class I bite, her maxillary anterior teeth were somewhat flared. After considering the obstacles, a diagnostic wax-up (Fig. 3) from Arrowhead Dental Lab was fabricated to help visualize the solution. By visualizing the pre-operative models and reviewing the diagnostic wax-up, the patient was able to begin with the end result in mind. In order to achieve the patient demands, the placement of Zirconia substructures with porcelain overlay (Elite Porcelain System, Arrowhead Dental Lab) on teeth #2-#12 would be utilized.

Once informed consent was obtained from the patient, treatment was initiated. Using a coarse grit diamond bur 5878K (Komet), the teeth were prepared for all Elite Porcelain System (Arrowhead Dental Lab) crowns. A clear treatment stent (Arrowhead Dental Lab) was placed over the teeth to evaluate the preparations for adequate reduction and preparation (Fig. 4).

Utilizing Expasyl (Kerr) we not only 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.

Following sequential preparation of the maxillary teeth, a stick-bite registration was taken using a bite registration material (Correct Plus Bite Superfast, Pentron). This stick-bite would aid the technician in preparing the model and mounting the case. It also communicated to the ceramist the orientation of the interpupillary line, so that the incisal edges of the final restorations would not appear canted. Using a Siltec matrix (Ivoclar Vivadent) of the proposed wax-up (Fig. 5), the provisional restorations

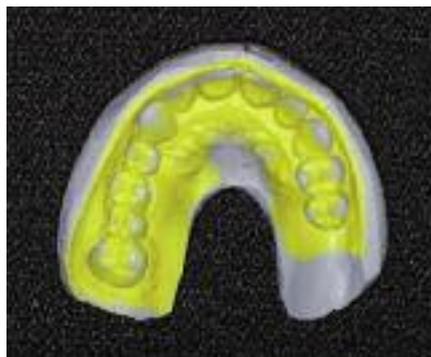


Fig. 5: Siltec impression of wax-up

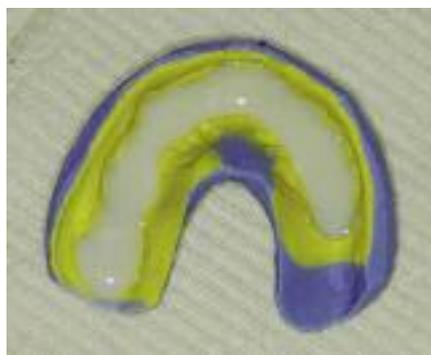


Fig. 6: Filling of temporary material

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Fig. 7: Retracted view of provisional



Fig. 9: Post-operative retracted view



Fig. 8: Restorations on model



Fig. 10: Post-operative occlusal view

were fabricated using Tempspan (Pentron) (Fig. 6), then trimmed and glazed with Tempspan glaze (Pentron) (Fig. 7).

Cementation

Before try-in of the definitive restorations (Fig. 8) to verify fit and shade, the provisional restorations were removed and any remaining cement was cleaned off the prepared dentition. After the patient was shown the retracted view for acceptance, the cementation process was initiated.

A resin luting cement (Maxcem Elite, Kerr) was applied to the restorations starting from the centrals and then the laterals, canines and premolars. While firmly holding the restorations in place, a rubber tip applicator was used to remove all excess luting cement from the margins. The restorations were tacked at the gingival margin using a small diameter turbo tip in the Demi light (Kerr).

While the restorations were still firmly held in place, the restored dentition was flossed and any excess luting cement was carefully removed. When most of the excess cement was

removed, the restored dentition was completely light cured from both facial and lingual sides. Any residual cement was removed with a No. 15 scalpel or finished with a fine diamond. After complete polymerization of the restorations, the occlusion was verified and adjusted. The overall health and structure of the soft tissue and restorations were very good. The patient was extremely satisfied (Figs. 9 and 10) and informed us that she would like to now have two dental implants placed in her upper left region in the areas of teeth #13 and 14.

Conclusion

Completion of this aesthetic dilemma with a quick restorative solution satisfied the patient's demands of straight, white teeth in order to meet the demands of today's job market. By using zirconia substructures with porcelain overlay (Elite Porcelain System, Arrowhead Dental Lab), a substantial improvement was achieved quickly. It is important that dentists ensure that their patients are completely informed of all risks, benefits and alternatives before initiating treatment. By having patients act as partners in exploring various treatments, a dentist will not merely meet their expectations, he or she will surpass them.

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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.

