With greater public awareness about smile enhancements, dentists are often faced with greater challenges. They need to be well equipped and their techniques constantly need to be up to date. Furthermore, dentists must be more skillful verbally to address their patients’ ever-increasing desires as a result of media-driven standards. As ethical dentists, they must also preserve tooth strength, periodontal health, and proper function. Furthermore, all this has to be harmonious with their non-dental requirements such as comfort, budget, and time availability. A conscientious esthetic dentist takes all these into consideration and educates his/her patients on all possible alternatives. Quite often, minimally invasive procedures such as bleaching and bonding can be useful at meeting all of the above requirements.

Performing minimally invasive procedures requires creative solutions that dentists must pull from their myriad of skills. Often minimally invasive procedures give dentists (and their patients) more control in creating dental anatomy, color, and gingival contour positioning; they also gain a deeper understanding of the complexities of smile enhancement. Without a doubt, mastering these minimally invasive procedures and techniques allows an esthetic dentist to orchestrate a symphony of disciplines that often are multidisciplinary in scope and dictate indirect restorations. The following case report demonstrates the use of several conservative techniques putting the above minimally invasive procedures into reality.

**Case Report**

A 28-year-old US Army veteran was finishing his career in the military and he wanted to enhance his smile before he sought a job in the private sector. He wanted to remove his engraved gold crown as well as brighten his other teeth. He also desired better uniformity of shapes (Figures 1 and 2). Because of his impending move and desire to start a family, he and his wife also desired a conservative plan that would fit into their time as well as financial budget.

**Diagnosis**

Clinical codiagnostic examination of the patient revealed a great deal of findings. Esthetically, the gold crown on tooth No. 8 was a liability. Furthermore, a reverse smile line was not pleasing. Because of the patient’s military career and masculine hobbies (racing cars, sports, etc), the round teeth were deemed too soft looking; the moderate breakdown in the wisdom teeth, the rest of the dentition was very strong.

Digital photographs, radiographs, and preoperative study models were made to further review the patient’s conditions. Lastly, the patient chose a Smile Style 53 from the Discus Smile Guide (Discus Dental, Inc). All these materials were used to collaborate with the patient about his future dental goals.

**Treatment Plan**

At a review of the findings with the patient and his wife, the author discussed several options with them. Given the clinical factors and their circumstances, a minimally invasive strategy was devised. The outcome agreed upon would be to create a brighter appearance with a more masculine shape and more pleasing smile line. Indirect laminates were presented as more durable options to provide better cuspid guided excursions. However, because of the patient’s budget, focus would be placed on teeth Nos. 7 through 10 restoratively while harmonizing the occlusal relationships as much as possible. The laterals would be augmented with direct bonding for conservativeness, timeliness, and economics. The centrals would both be made indirectly to maximize esthetics and decrease chances of untimely shade mismatches and remakes. Slight gingival sculpting and retraining would improve the esthetic proportions. Home whitening would raise the value of the surrounding teeth.

A very critical part of this plan was to choose a durable composite to augment teeth Nos. 7 and 10. Strength suitable for the stress bearing of an incisal edge was required, and a very esthetic, polishable material would create esthetic neighbors to match porcelain augmentation of the central incisors.

Venus (Heraeus Kulzer, Inc) universal microhybrid was chosen because of its many beneficial characteristics:

- High flexural strength of 128 MPa approaching enamel
- Excellent handling
- Lifelike translucency
- Color adaptive matrix optimized refractive index of fillers

Performing minimally invasive procedures requires creative solutions that dentists must pull from their myriad of skills.
Case Study

Figure 5—A putty matrix made with Sil-Tech on the wax-up to create a "scaffold" to build contours.

Figure 6—Shades are best taken preoperatively to avoid inaccuracies caused by dehydration.

Figure 7 and 8—Using a digital caliper, ideal proportions can be created in the provisionals.

and matrix that allows Venus to take on the shade of the adjacent tooth structure.

Two layer shade system that allows for a layered shade guide made from Venus composite that is extremely accurate. These features would greatly contribute to helping us achieve a predictable, esthetically pleasing, and durable result.

Step-by-Step Technique

A wax-up was created on mounted diagnostic models with a Stratos 200 articulator (Ivoclar Vivadent, Inc) (Figure 4). This blueprint provided a guide to functional incisal edge position. It gave the patient and the dentist an estimate of relative proportions of teeth Nos. 7 through 10. Lastly, it provided a (3-D) starting point for creating labial and lingual contours.

During the time the wax-up was being constructed, the patient was home bleaching with Discus Dental, Inc's Day White (7.5% peroxide strength) and being equilibrated using conservative coronoplasty aided by the T-Scan II (Tekscan).

A putty matrix made with Sil-Tech (Ivoclar Vivadent, Inc) was adapted to the lingual and incisal surfaces of the wax-up to create a scaffolding to guide placement of the respective contours (Figure 5). This was certainly important esthetically, but it also more densely adapted the composite to the teeth.

Before beginning treatment, shades were taken to plan the revitalization of teeth Nos. 7 through 10. This is best done beforehand to avoid dehydration of the teeth, which takes place during dental procedures (Figure 6). The Venus 2 Layer shade system was extremely helpful because the shade tabs were made of real composite and make...
“CAN’T LIVE WITHOUT” PRODUCTS
RECOMMENDED BY DENTISTS
OFFERS VALID THROUGH - SEPTEMBER 30, 2005

TISSUE MANAGEMENT
Hemostasis and Fluid Control

“With the excellent tissue management [system of] cord, Astringent and Viscostat, I hardly ever have to remake an impression. And my staff will tell you that I’m hard to please in my crown and bridge work.”

-- Dr. Mark Huntsman, Scottsville, KY

“It works every time! I was able to do away with my long list of supplies that I would possibly use to combat the problem of bleeding tissue adjacent to a crown prep or restoration site. You couldn’t depend on any one of these products to work. Viscostat is highly dependable, very easy to deliver with the tip you attach, and takes the worry out of tissue management.”

-- Dr. Maryann Lehmann, Darien, CT

$93.99

649 • 1-1.2ml IndiSpense Viscostat syringe, 3-each #00, 0, 1 & 2 Ultrapak cord, 1-Fischer’s Ultrapak packer, 1-Ultrapak cord organizer, 20-Metal Dento-Infusor tips, 20-1.2ml empty syringes

ENDOREZ
Canal Sealer

“[ENDOREZ] is the most significant breakthrough in canal obturation in years. Its simplicity and easy learning curve make it hard to beat as part of endodontic treatment.”

-- Dr. Mark Jensen, Glendale, AZ

$89.99

1100 • 1-6ml TwoSpense syringe, 20-Ultra-Mixer tips

ULTRA-ETCH
Etchant

“I have used Ultra-Etch daily since it was first introduced many years ago. It has always had the same consistency and flowability yet it stays exactly where placed on enamel or dentin and is easily rinsed away.”

-- Dr. David C. Woodcock, Tacoma, WA

$26.99

163 • 1-1.2ml syringes, 20-Blue Micro tips

VIT-lescence™
Esthetic Restorative Material

“[Vit-lescence] is the only product I have used that gives me excellent handling properties, great shade matching and good polishability in the same product. My anterior composite restorations are far superior esthetically since I switched.”

-- Dr. Denise Hering, Reynoldsburg, OH

$199.99

5018 • Essentials Kit
Dentin shades: A1, A2, A3 & B1
Enamel Shades: Opaque Snow, Pearl Frost, Pearl Neutral, Trans Mist, Iridescent Blue, 1-PermaFlo A4 syringe, 1-PermaFlo Translucent syringe, 1-Shade guide, 1-1/2 Size syringe organizer

ULTRASEAL XT PLUS
Pit & Fissure Sealant

“We use this wonderful product [UltraSeal XT plus] on at least 30 patients a day. . . . The best testimony is having moms, who were our patients, bring their kids to us for sealants. Many of the moms still have sealants in place and have no cavities. We love UltraSeal XT plus.”

-- Dr. James A. Heffner, Baltimore, MD

$43.99

725 • Opaque White 1275 • Shade A1
563 • Clear 723 • Shade A2
1-1.2ml UltraSeal XT plus syringe, 1-1.2ml Ultra-Etch syringe, 2-1.2ml Primadry syringe, 20-Inspiral Brush tips, 20-Black Micro FX tips

TO ORDER CALL
800.552.5512 ULTRADENT.COM

© Copyright 2005 Ultradent Products, Inc. All Rights Reserved.

$69.99

615 • 2-1.2ml PQ1 syringes, 2-1.2ml Ultra-Etch syringes, 20-Blue Micro tips, 40-Inspiral Brush tips

When ordering mention source code # 129.
“TrèsWhite has taken our practice to a new level. We offer every hygiene patient a complimentary sample and we have had a tremendous response. Finally, a whitening product that is effective, affordable, and simple to use. Patients who have always been thinking about professional whitening are now doing so and it is leading to veneers and more aesthetic dentistry - which is fun for me!”

-- Dr. Angela R. Gasser, Wadsworth, OH

“[PermaFlo] allows us to restore so many different situations. The material seems to ‘flex’ better in those difficult Class V restorations which serves us and our patients more successfully.”

-- Dr. Pat Prendergast, Englewood, CO

“Opalescence definitely helped me build my practice and has generated a lot of referrals. Patients love Opalescence because it is easier to use than competing products and consistently gives outstanding results. It is definitely a ‘must have’ product. In fact, it is probably the only product I use that I would not consider changing.”

-- Dr. Andrew Lazaris, Plano, TX

“I’ve used and recommended numerous whitening materials that all claimed to have minimal cases of cold sensitivity. Opalescence PF is the only one that has proven to be true… not one person has made a comment in regards to sensitivity while using this product.”

-- Dr. Hedy Atashbar, Silver Springs, MD

“[Ultra-Cal XS] for years to help ‘cool down’ abscessed teeth... It is a great product that consistently yields predictable relief. My patients and I love it.”

-- Dr. Charles William Boyce, Sikeston, MO

“There are many areas inside an excavated tooth where caries can go undetected if not stained. I am convinced that if you are not using Seek prior to a tooth restoration, you will leave caries unexcavated more often than you’d expect. I won’t work without Seek.”

-- Dr. Stephen Muench, Reading, PA

ULTRA-LUME® LED 5
LED Curing Light

“The Ultra-Lume LED 5 provides greatly improved access for both children and adults because of its low profile design. Its output displays the true power of light. It allows me to cure all my materials with the same source. My patients view its use as another ‘high tech’ reason to come to our office. It sets us apart using state of the ART technology. This allows me an opportunity to educate my patients of other conditions in their mouth such as cracks or caries using the different tips.”

-- Dr. Pamela DiTomasso, Sacramento, CA

“[Ultra-Lume LED 5] is the first LED to cure all resins.”

-- Dr. Pamela DiTomasso, Sacramento, CA

The Ultralume LED 5, 1683 • 1-Ultra-Lume LED 5,
5-Standard cure lenses, 5-Point cure lens,
1-Proxitchek lens, 2-UltraLume lens,
1-Surface bracket with tape, 10-Barrrier covers with bands

“[The Luer Vacuum Adapter and Capillary Tips] allow me to leave the canals very close to bone dry, thereby absolutely minimizing the use of absorbent points. This is not only a cost saver but an extreme time saver which has permitted me to achieve superior endodontic results in substantially less time.”

-- Dr. Louis Feldman, Cape May, NJ

“TrèsWhite has taken our practice to a new level. We offer every hygiene patient a complimentary sample and we have had a tremendous response. Finally, a whitening product that is effective, affordable, and simple to use. Patients who have always been thinking about professional whitening are now doing so and it is leading to veneers and more aesthetic dentistry - which is fun for me!”

-- Dr. Angela R. Gasser, Wadsworth, OH

“[PermaFlo] allows us to restore so many different situations. The material seems to ‘flex’ better in those difficult Class V restorations which serves us and our patients more successfully.”

-- Dr. Pat Prendergast, Englewood, CO

“Opalescence definitely helped me build my practice and has generated a lot of referrals. Patients love Opalescence because it is easier to use than competing products and consistently gives outstanding results. It is definitely a ‘must have’ product. In fact, it is probably the only product I use that I would not consider changing.”

-- Dr. Andrew Lazaris, Plano, TX

“I’ve used and recommended numerous whitening materials that all claimed to have minimal cases of cold sensitivity. Opalescence PF is the only one that has proven to be true… not one person has made a comment in regards to sensitivity while using this product.”

-- Dr. Hedy Atashbar, Silver Springs, MD

“I have used [Ultra-Cal XS] for years to help ‘cool down’ abscessed teeth... It is a great product that consistently yields predictable relief. My patients and I love it.”

-- Dr. Charles William Boyce, Sikeston, MO

“There are many areas inside an excavated tooth where caries can go undetected if not stained. I am convinced that if you are not using Seek prior to a tooth restoration, you will leave caries unexcavated more often than you’d expect. I won’t work without Seek.”

-- Dr. Stephen Muench, Reading, PA

ULTRACAL® XS
Calcium Hydroxide Paste

“[Ultra-Cal XS] is a product that consistently yields predictable relief. My patients and I love it.”

-- Dr. Charles William Boyce, Sikeston, MO

“[The Luer Vacuum Adapter and Capillary Tips] allow me to leave the canals very close to bone dry, thereby absolutely minimizing the use of absorbent points. This is not only a cost saver but an extreme time saver which has permitted me to achieve superior endodontic results in substantially less time.”

-- Dr. Louis Feldman, Cape May, NJ

ON SOURCE CODE # 129
The single dose version was...

An opaque dentin layer was established.

September 2005 Contemporary Esthetics and Restorative Practice

A silicone matrix generated the dead soft matrix isolated the lateral incisors during the bonding procedures. Dreams allowed the laboratory to recreate the color layering needed for a natural result.

Photographs of the preparation, the temporary appearance for the lateral incisors during the bonding procedures.

Lastly, the author preoperatively trained by refining the papilla, the gingival margins and contours. By subtly molding the papilla, the gingival tissues were aided by the matrix and varying incisal/opaque composites.

The transitionals were carefully modified to control incisal edge position. After a thin layer of SB2 was placed to fill the gap to create the color for a natural-looking incisal halo. Both were blended into the body material using a sable brush wetted with unfilled resin® (Figure 12).

The labio-incisal component was placed with a combination of semitranslucent enamel shades B1 and SB1 (warm) for the body and a translucent T2 with the SB1 shade for the incisal colors. Thin layers of enamel were placed cervically (B1) and central body (SB1) at varying thicknesses to create a vital, natural-looking tooth. Care was taken to blend the shades with a sable brush and not to encroach on the incisal anatomy that had been created. Because the mammelons were conservative in nature to avoid too youthful a tooth for this patient, less translucent shade was necessary as we built the incisal effects. With the matrix replaced to control incisal edge position, a small cylinder of T2 was pressed into the mammelons area to intersperse a clear medium for translucency. This layer was kept just shy of the incisal-labial edge of the stent and cured for 20 seconds. Then a very thin layer of SB2 was placed to fill the gap to create the color for a natural-looking incisal halo. Both were blended into the body material using a sable brush wetted with unfilled resin® (Figure 12).

The transitionals were carefully loosened, which allowed for fine finishing of the bonding with H135TDF safe end (Axis Dental

Instead of creating a compromised result or the patient electing to decline treatment, the author was able to create a predictably healthier and esthetically pleasing result.
Would you like to be the next Cosmetic Practice of the Year?

Now is the time to submit your application for the prestigious 2005 Cosmetic Practice of the Year Award.

“Today, cosmetic dentistry is helping enhance self-esteem for millions of Americans by giving them the smiles of their dreams. The Cosmetic Practice of the Year Award ranks among the premier honors a dentist can receive in this growing field. This prestigious award recognizes clinical excellence, superior case presentation, and outstanding achievement in cosmetic dentistry. The AACD proudly recognizes these achievements and enthusiastically supports this exceptional effort.”

Nicholas Davis, DDS
President
American Academy of Cosmetic Dentistry

“Levin Group is honored to support this acclaimed cosmetic award. The Cosmetic Practice of the Year program is designed to give dentists throughout the United States an opportunity to measure their practices against the most successful practices in the country. The Cosmetic Practice of the Year award honors superior performance in a practice’s management, team development, productivity and profitability, physical environment, and use of current technologies.”

Roger P. Levin, DDS
CEO
Levin Group, Inc.

To receive a 2005 Cosmetic Practice of the Year application contact Levin Group, Inc.
888-973-0000 or CPOY@levingroup.com
www.levingroup.com
Using the modalities of direct and indirect restoratives allowed us to conservatively improve this patient’s smile efficiently and with sensitivity to his nondental issues.

The patient was beam ing with joy over his transformation (Figure 16). His self-confidence was greatly enhanced with his wife's overwhelming excitement when she came into the treatment area to celebrate the completion of treatment. The overall composition of the smile (Figure 17) became aesthetically pleasing from replacing the gold crown and from the minimally invasive enhancement of the smile line, embra sure forms, lengths, and colors. The naturalness of contours and textures, and the layering of materials created dramatic improvements bioesthetically (Figure 18).

Conclusion

Using the modalities of direct and indirect restoratives allowed us to conservatively improve this patient’s smile efficiently and with sensitivity to his nondental issues. Instead of creating a compromised result or the patient electing to decline treatment, the author was able to create a predictably healthier and esthetically pleasing result. The Venus composite system was very instrumental in achieving these goals. Lastly, by careful planning with wax-ups and matrices, as well as executing the techniques intraorally, the indirect procedures were improved. The blending of these disciplines was extremely gratifying for the restorative team and the patient.

Acknowledgment

The author would like to thank Wayne Payne, of San Clemente, California, his laboratory technician, and his dedicated team for their contributions to this patient's treatment. The author's family, as usual, are acknowledged for allowing him to share these techniques with the dental community.

Disclosure

The author received an honorary from Heraeus Kulzer, Inc for writing this article.

References

1. Kois J. Diagnostically Driven Interdisciplinary Treatment Planning. Presented to: The Atlanta Dental Study Group; December 2002; Atlanta, Georgia.


Product References

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
<th>Location</th>
<th>Phone</th>
<th>Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Scan II</td>
<td>Tekscan</td>
<td>Chicago, Illinois</td>
<td>800.248.3669</td>
<td><a href="http://www.teksan.com">www.teksan.com</a></td>
</tr>
<tr>
<td>Waterlase</td>
<td>Zihlman Dental Technology, LLC</td>
<td>San Clemente, California</td>
<td>888.424.6527</td>
<td><a href="http://www.biolase.com">www.biolase.com</a></td>
</tr>
<tr>
<td>Enfocare</td>
<td>Orascoptic Corporation</td>
<td>Des Plaines, Illinois</td>
<td>800.369.3698</td>
<td><a href="http://www.orascoptic.com">www.orascoptic.com</a></td>
</tr>
<tr>
<td>Luxtemp Plus, LuxBite</td>
<td>Zhermack, Inc</td>
<td>Amherst, New York</td>
<td>800.261.6729</td>
<td><a href="http://www.zhermack.com">www.zhermack.com</a></td>
</tr>
</tbody>
</table>

Cases Study

Figure 17—Better balance and composition made this smile more attractive.

Figure 18—Carefully using varying materials and techniques created better bioesthetics.
VOCO's advanced Nano technology for reliable clinical results

APPLY, DRY, CURE IN ONLY 35 SEC

Simple and Fast Technique - Reliable Clinical Results

Futurabond NR
Nano Reinforced Single Step Self-etch Adhesive

- Over 30 MPa adhesion to dentin and enamel
- Reinforced with nano particle
  - increased bonding values
  - increased marginal integrity
- Fast and easy one-coat application
- Moisture tolerant
- No refrigerated storage, no shaking necessary
- Low post-operative sensitivity

For more information or to place an order, please contact your Patterson representative, local Patterson branch or call VOCO at 1-888-658-2584.

In Canada all authorized dealers.

Distributed in the U.S. exclusively by

Patterson Dental

VOCO America, Inc. · 48-30 40th Street · Suite 7F · Sunnyside · NY 11104 · www.voco.com/usa · info@voco.com

Call toll-free 1-888-658-2584