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AMERICAN ACADEMY OF COSMETIC DENTISTRY

CELEBRATING 25 YEARS OF EXCELLENCE

AACD MISSION STATEMENT

The American Academy of Cosmetic Dentistry is dedicated to advancing excellence in the Art and Science of Cosmetic Dentistry and encouraging the highest standards of ethical conduct and responsible patient care.

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Editor's Message

From Here to There

Have you ever asked yourself, *"How did I get here?"*

Once, while on vacation, I was driving around exploring and enjoying the scenery with no particular destination in mind. After a few turns I found myself lost and thought, *"How did I get here?"* But was I really lost? My belief is no, I was not, because I began my journey with no destination in mind and had thus predetermined that wherever I ended up would be fine. I was more interested in the journey and scenery, and less interested in the final destination. That is, of course, until I "arrived."

Often we may find ourselves at a place in life that surprises us; usually it is because we had no predetermined expectations. That surprise may come in our environment, in our relationships, financial situation, physical health, and even spiritual connections. Have you been asking yourself, *"How did I get here?"* in any area of your life? Would you have a greater sense of security if you had a stronger vision of where you wanted to be when you finally "arrived," or would having a destination or goal in mind only limit your journey to that one place? I firmly believe that setting a goal is an important ingredient to achieving success, and continually reevaluating and resetting goals is equally important to keeping the journey's momentum moving forward.

Where to Go from Here

You have all seen the maps at the mall that allow you to see the entire layout of the mall, with big red letters and an arrow that says "You Are Here." It helps you assess where you are and what you need to do to get to where you want to go. Wouldn't it be great if you could have one of those maps for your life? Well, you can! It just takes some imagination, goal setting, and a big red arrow! Don't limit yourself, dream big.

Create Your Own Map

Create a "map" of your life. Identify where you are, then decide where you want to go and chart your course. Don't limit your thinking; consider all areas of your life: Relationships, financial, professional, and physical and spiritual health. This is not the time to have limiting beliefs—if you can't dream it or envision it, you probably won't be able to have it.

Step 1: Map It Out

Reflect on the area of choice and identify where you are. Be truthful, and write it down. It is critical to be honest with yourself—you need to assess where you're really starting from to know what challenges lie ahead.

Step 2: Chart Your Course

Ask, *"What do I want this area of my life to look like, feel like, and what do I want to experience?"* Dream a little, dream a lot! This is the "what" of your goals, not the "how am I getting there?" Even though the journey is very important, equally important are the reasons to even embark upon the journey. Dream first, and the "how" will come in time. Knowing the reason why we do what we do gives piece of mind and "grounding" to better accomplish the "how." In this process, it is very important to write it down. Give yourself a list to look at, contemplate, and focus upon. In addition (and contrary to what I just said), also find time to forget about your goals, and come back to them at a later date. A freed-up mind can solve many problems.

Step 3: Stay the Course

Review your new expectations as frequently as possible. Live with intention. It is through the process of reasoning, estimating, and calculating where you want to go that you are able to predict or ensure the outcome of your journey. In addition, it will help you get back on course when you find yourself in a place you don't want to be. Reassess periodically, and don't be afraid to go back to Step 1 if you fall far off track. Goals are also made to be reevaluated and changed. Changing your mind is OK! Remember, you are in the driver's seat; decide what destination works for you, it's *your* road map. Want it, dream it, live it!

****

I would like to take this opportunity to welcome Dr. Jim Hastings and Dr. Ed Lowe, who will be coordinating and helping new authors with the "Accreditation Essentials" section of the *Journal*; along with Dr. Rebecca Pitts, who will be writing the Examiners' Perspectives. In addition, I would also like to thank Dr. Susan Hollar and Dr. Lynn Jones, who previously coordinated the Accreditation articles; Dr. J. Fred Arnold, who wrote the Examiners' Perspectives; and Dr. J.A. Reynolds, who coordinated the Accreditation Success Stories. The *Journal of Cosmetic Dentistry* has come a long way since its inception, and it can continue to thrive only with help from our members and contributors. Thank you all so much.

In all things, may your expectations be forever exceeded.

Michael J. Koczarski, DDS, Editor

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President's Message

The Value of Membership

What makes the AACD special to you? I often have heard members call the AACD my "professional home." But why? Do you look to the Academy to provide education, insight, and connections in order to help you achieve your dream practice or laboratory? Do you belong to be affiliated with the world's leading clinicians? Do you seek a competitive advantage by informing your patients that you are part of the forefront of dentistry? If you answered "yes" to any or all of the above, then the AACD is helping you pursue excellence in cosmetic dentistry.

A percentage of involved members provides input, but there are many members we have never met. We want to get to know you and explore your needs. I challenge you in 2009 to get more involved with your Academy, especially during these difficult economic times. You can only benefit by taking advantage of the many opportunities the AACD offers.

Mission Statement

The Academy has a sophisticated mission statement and strategic plan for the future, which have been developed during intensive planning sessions by the Board of Directors, the American Board of Cosmetic Dentistry, and the Board of Trustees. Information gathered from members who have expressed their desires in response to surveys and personal contacts also was considered. The AACD mission statement is as follows:

The American Academy of Cosmetic Dentistry is dedicated to advancing the art and science of cosmetic dentistry and encouraging the highest standards of ethical conduct and responsible patient care. The AACD fulfills its mission by:

-Offering superior educational opportunities

-Promoting and supporting a respected Accreditation credential

-Serving as a user friendly and inviting forum for the creative exchange of knowledge and ideas

-Providing accurate and useful information to the public and profession.

Vision

To be globally recognized as the pre-eminent resource for cosmetic dentistry information, knowledge, and credentialing for the dental profession and the public.

Some members mistakenly believe that the Academy's purpose is different from what our mission states. Some feel their membership means they will acquire new patients (this may be the result of the primary mission).

Benefits

Education

High-end education in cosmetic dentistry is the most significant benefit. The annual AACD scientific session (acclaimed by many as the best in dentistry), the new regional meetings, the content-rich *Journal of Cosmetic Dentistry*, our eLearning program, publications such as *A Guide to Accreditation Criteria* and *A Guide to Accreditation Photography*, and lectures available on DVD are the most notable.

Influence

Our Academy bands together as a community of dental professionals to make a difference in the dental world overall, and also to the public. In recent years, our Marketing and Advocacy Committees have made remarkable strides on your behalf, to influence state boards, the public, and the press for the betterment of cosmetic dentistry.

Camaraderie

Camaraderie might be defined as colleagues traveling the same road who spur each other along to reach greater heights. For many seeking personal professional excellence, it may be very lonely in your hometown. These personal connections alone are worth the price of membership.

Philanthropy

The AACD Charitable Foundation gives members the opportunity to participate in philanthropy through the Give Back A Smile™ program. Many survivors of domestic violence have had their smiles restored by AACD members.

Personal Growth

The Academy provides an opportunity for personal growth. Serving on boards and committees gives one the opportunity to develop many organizational skills while helping the profession move forward.

(continued on page 11)

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President

Message From The President

According to the latest surveys conducted by North America's top marketing gurus – the new currency is *...caring*.

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About the Cover

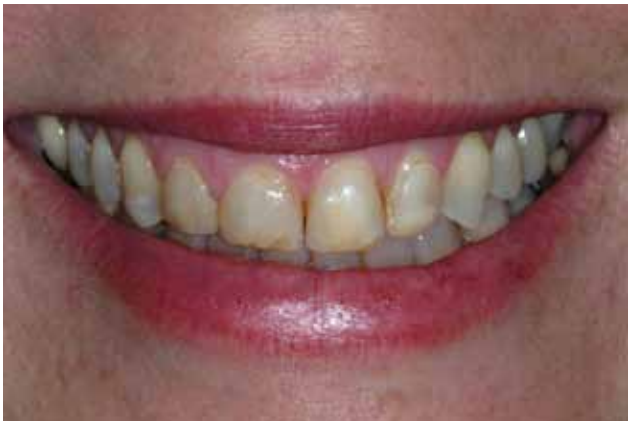
About the Cover

by M. Johnson Hagood DDS, AACD Accredited Member (AAACD)

Life-Changing Results with Simple Cosmetic Dentistry

According to the patient, *"I had been unhappy with my teeth for the past 10 to 15 years. I was embarrassed to smile because of my teeth and wondered why I couldn't have nice teeth like other people."*

The patient's dental history started with tetracycline staining of most of her teeth. Decalcification of the enamel around orthodontic brackets and chipped incisal edges of her centrals as the result of a bicycle accident further detracted from the esthetics of her smile.



Before

After

She had had her maxillary centrals and laterals treated with direct composite veneers, but the restorative material broke down over time, as can be seen in her preoperative photograph. An analysis of her smile revealed problems with tooth color, smile line, tooth shapes, tooth size proportions, and gingival zenith positions. Her treatment plan included whitening, followed by restoration of teeth ##6-11 with indirectly fabricated porcelain veneers, and recontouring of the gingival tissue margins of #7 and #8. She also intends to restore some of her lower teeth at a later time.

After whitening, the treatment began with preparation of the patient's maxillary anterior teeth. Fortunately, her previous restorative treatment involved very little removal of enamel, which allowed for minimal preparation and near total bonding of porcelain to enamel. Recontouring of the gingival zeniths was accomplished via gingivectomy with an electrosurge. The pristine, healthy appearance of the marginal tissues as evidenced in the postoperative photograph is the result of careful measurement and care for the periodontal sulcus/biologic width complex. Provisionals were placed, "road-tested" for several days, and communicated to the technician. Pressed ceramic veneers (Ivoclar Vivadent; Amherst, NY) were fabricated using E01 ingots that were cut back and layered with internal characterization. They were bonded with Ivoclar Variolink composite cement.

The happy patient's response to her results was, *"Having my teeth fixed was definitely life changing… I almost want to cry when I say that. I walked out of the office and I couldn't stop smiling. It's like having a 'face lift' for your teeth!"*

For more on this patient's treatment, please see the Cover Story on page 78.

Dentistry and clinical photography by M. Johnson Hagood, DDS, AACD Accredited Member (AAACD) (Vero Beach, FL). Ceramic artistry by Rick Shafer, CDT (Bay View Dental Laboratory, Chesapeake, VA). Cover photography by Martina Tannery (Martina's Photography; Vero Beach, FL). The patient is an avid tennis player and chose her neighborhood tennis court for the photo shoot.

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President's Message (continued from page 8)

Accreditation

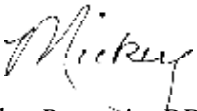
An abundance of time and energy has been expended making the AACD credential what it is today. The Accreditation program exists for those who seek acknowledgment for their abilities and skills and for those who seek to improve their skills. Many members benefit from the well-designed Accreditation courses even if they are not interested in becoming Accredited. The entire membership benefits from the existence of this wonderful aspect of our Academy by the prestige it engenders.

International Growth

The Academy is growing internationally. We now have members in more than 70 countries and have 11 international affiliates. Beginning with our 25th anniversary year, we will further expand our educational message abroad with regional meetings, the eLearning program, stepped-up affiliate relationships, and by building closer relations with international leaders.

We should all take great pride in the benefits of AACD membership and the accomplishments it has achieved over the last 25 years. These and many additional benefits are available. It is up to each member to take advantage of the opportunities.

It has been my honor to serve the AACD this year, and I thank all of you who have given your time unselfishly to make this organization the best it can be. I leave you in very good hands with the leaders to follow.



Mickey Bernstein, DDS
President, AACD Accredited Member (AAACD),
GBAS Volunteer

by Mickey E. Bernstein, DDS,
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New York, NY
www.estheticacademy.org

JOINING FORCES FOR THE INTERNATIONAL FEDERATION OF ESTHETIC DENTISTRY (IFED)

Over the past several years, the American Academy of Cosmetic Dentistry (AACD) and the American Academy of Esthetic Dentistry (AAED) have worked together to strengthen ties in the cosmetic/esthetic dental community. Representatives from both organizations have attended one another's annual meetings. Our respective leadership teams have conducted joint planning meetings to share educators, concepts, and strategic initiatives to advance our profession jointly. Although there are distinctions and some structural differences in each organization, we are unified in the mission to advance the art and science of esthetic dentistry on a global scale.

IFED was founded in 1994 by a coalition of esthetics-based organizations in order to contribute to the progress and development of worldwide esthetic and oral health, and to enhance communication between member organizations. IFED now consists of 29 member academies, including AAED (a founding member); and AACD, which has participated for many years.

This partnership will come to life in support of the IFED's 6th World Congress, to be held at the Bellagio Resort in Las Vegas, Nevada, from Sunday, August 2, to Wednesday, August 5, 2009. As co-members of IFED and the only two U.S. affiliates, our support of this global gathering of leading dental professionals is critical to its success. Past meetings in Washington, D.C.; Venice; and Seoul drew thousands of attendees from countries around the world, and we expect the international allure of Las Vegas to produce the same results.

World-renowned educators from both organizations, including Dr. Frank Spear, Dr. John Kois, Dr. Gordon Christensen, Dr. Elizabeth Bakeman, Dr. Gerard Chiche—the list goes on—constitute one of the premier continuing education programs in the world. The August Congress in Las Vegas is a unique opportunity to join this unprecedented gathering of dental luminaries on U.S. soil. As a member of AACD or AAED, you will receive special reduced rates for registering. Check out the full slate of presenters at: www.ifed2009.com.

We look forward to seeing you in Las Vegas!

Mickey Bernstein, DDS, AAACD, AACD President
Vincent Celenza, DMD, AAED President-Elect

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In This Section:

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Botox and Fillers: Will Cosmetic Dentists Catch the Wave?

by Martin Braun, MD, and
Susan Braun, DMD
Vancouver, BC, Canada
www.vancouverlaser.com

The goal of this section is to provide insight into the thoughts and perspectives of premier educators. Dr. Braun is scheduled to present at the AACD's 25th Anniversary Scientific Session, *Excellence in Cosmetic Dentistry 2009*, in Honolulu, Hawaii, on Tuesday, April 28. For more information, log onto www.aacd.com.

Martin Braun, MD, is medical director of the Vancouver Laser and Skin Care Centre, Vancouver, BC, Canada. For the past 12 years, he has practiced with his wife, Susan Braun, DMD. She has provided a splendid focus from the dental perspective.

Introduction

Over 20 years have passed since the first Botox Cosmetic® (botulinum toxin A) injections were done for unsightly frown lines between the eyebrows in 1987. Now that the long-term safety of Botox has become clinically established, with millions of men and women having received injections,[1] Botox treatments have become the most commonly performed cosmetic procedure in the U.S. In fact, statistics from the American Society of Plastic Surgery illustrate that all surgical and nonsurgical cosmetic surgery procedures in the United States generated gross revenues of $12.2 billion last year.[2] Botox injections alone made up $2.3 billion of this amount, exceeding even the combined revenue from breast implants and liposuction. The use of Botox injections has increased 488% in the past seven years.[2]

Botox treatments have become the most commonly performed cosmetic procedure in the U.S.

Botox and Dentistry

Unfortunately, the cosmetic dentist generally missed this tsunami of nonsurgical cosmetic rejuvenation of the face. This is despite the fact that cosmetic dentists have the prerequisite knowledge of facial anatomy and physiology necessary to inject Botox and soft tissue fillers. They have elegant and sophisticated offices especially conducive to providing elective procedures for those

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with discretionary funds. The dental profession has always been far ahead of the cosmetic physician in marketing savvy. Many of the marketing consultants that currently advise cosmetic dermatologists actually came from the dental profession!

If a patient is interested in spending thousands of dollars to enhance their smile, is it not logical that they would also like to reduce perioral lip lines, mouth frown, a deep mentalis crease, or a gummy smile? In fact, why stop with Botox to improve these conditions—why not enhance the actual structure of their lips, nasolabial, and melolabial folds with a natural, temporary filler? In 2009, a smile cannot be optimized or considered "finished" without the concurrent use of Botox and fillers.[3,4] Why not make the effort to learn how to use these injectables for the benefit of your patients?

Furthermore, injections of Botox and temporary soft tissue fillers, such as hyaluronic acid, have completely reversible effects. This makes them close to the ideal cosmetic procedures: Simple, quick, minimally invasive, and relatively inexpensive compared to surgical solutions that are frequently irreparable if something goes wrong.

Unfortunately, there is a great deal of misinformation printed about Botox.

Misinformation

Unfortunately, there is a great deal of misinformation printed about Botox. And nothing generates more controversy in the lay press than this Botox phenomenon: *"It will paralyze your face,"* or *"You'll look like you are wearing a mask,"* or *"There are no long-term data on its safety,"* and so on. Botox has been given safely to millions of people for over two decades now. The only thing that a patient in 2009 has to worry about when contemplating Botox for the first time is that it is psychologically addicting! Almost everyone who has received Botox loves the smooth, relaxed look that literally helps relieve the tension of day-to-day life. The uses of this modern-day natural medicine miracle expand daily—Botox is now being used to treat enlarged prostates;[5] painful scars;[6] chronic pain syndromes;[7] migraine headaches;[8] temporomandibular joint (TMJ) dysfunction;[9] and, lately, even depression.[10] Imagine—if you look better, you feel better—who would have thought?

Use of Fillers

If Botox is the great relaxer, what about a great filler? As we age, we lose fat under the skin of our face. It is estimated that we also lose 1-2% of our dermal hyaluronic acid annually after age 20. Thus, if you eat appropriately and exercise in order to remain trim and fit as you enter middle age, it is truly unfair that your face will lack volume and appear aged with more folds and wrinkles. One of the great temporary fillers is hyaluronic acid, which is a carbohydrate. Hyaluronic acid is the gel that makes up our skin. It is completely natural and safe, and is used to plump up cheeks, folds, and lips. Examples of well-known hyaluronic acid fillers are Restylane® and Juvederm.® European physicians have a huge choice of fillers available to them, and hyaluronic products are still their number one choice.

Botox Mechanism

How did the Botox phenomenon develop to become a regular part of grooming for so many millions? The answer is quite simple: Since Botox injections target wrinkles that are due to daily muscle contraction—smiles, frowns, or squinting at the sun—almost anyone is a suitable candidate. Unfortunately, repetitive contractions of our facial muscles cause deep wrinkles and grooves in the skin, despite the best skin care regimen. Furthermore, all our wrinkles are exacerbated by sun exposure. One 10-minute treatment—a few tiny injections—blocks the nerve impulses and relaxes the muscles. As the muscle relaxes, the dynamic wrinkle overlying the muscle is smoothed away.

Facial Expression and Sensation

Botox treatment relaxes only the muscle beneath the line at the injection site, and thus has little effect on other elements of facial expression and sensation in the area. A few days following a Botox injection, most people see a more relaxed, calm, friendlier appearance when looking in the mirror. The effects of Botox usually last three to four months, at which time another injection is required. After several treatments, improvements usually appear to last longer as the skin "redrapes" itself. Repeated use is truly anti-aging, and is often done twice yearly.

Botox is close to being the perfect cosmetic procedure. When done properly, it is quick, relatively painless, without any serious adverse consequences, and results in no downtime. Side effects such as bruising or the dreaded "droopy eyelid" are rare, especially when a skilled

and experienced injector performs the procedure. Furthermore, any problem that does develop is temporary and usually mild. The same holds true for hyaluronic acid fillers (Figs 1 & 2).[11]

Guide to "Off-Label" Uses

Botox is approved by the Canadian federal department Health Canada for cosmetic use throughout the entire face. While Botox has U.S. Food and Drug Administration (FDA) approval only for the glabellar frown lines between the eyebrows, it is used "off-label" (use not approved by the FDA) by injectors for many other cosmetic concerns, as follows.

Horizontal Forehead Lines

Look in the mirror and lift your eyebrows. Some foreheads have so many lines that they resemble an oven rack. A good practitioner will put in just enough Botox to soften those forehead lines without having the patient completely lose the ability to lift the brow. People communicate with their brows, and if the forehead does not move at all, the appearance is one of fatigue or the "deadpan" expression that everyone dreads.

Around the Eyes

As we age, the sun, wind, time, and laughter all create wrinkles around the eyes called "crow's feet." Some patients tell me that they have "earned those lines," but that is like saying that middle-age spread points to a well-spent life. Just six to 12 units of Botox around each eye can often result in a more wide-eyed, alert, and attractive appearance.[12]

Botox can also lift the brow, and for most women, the brow is everything. They like to have more of a "plateau" for their eye makeup, and some have called the skin below the lateral brow the most valuable "real estate" on a woman's face (Figs 3 & 4).

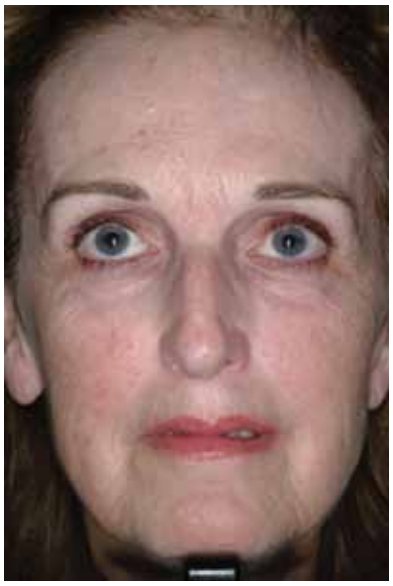

Figure 1: Before Botox, Restylane, laser treatment to improve skin tone and fine lines.

Figure 2: After; note the elevation of the brow.

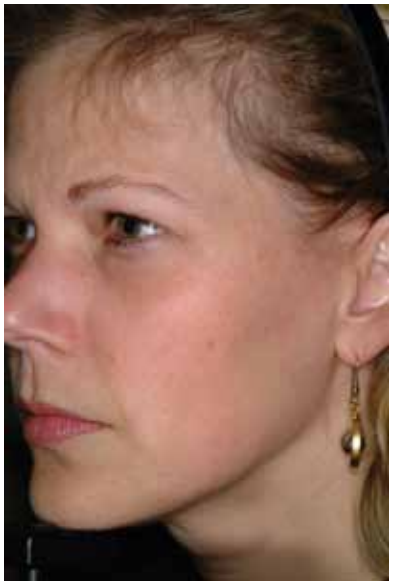

Figure 3: Before Botox to elevate the brow and open the eyes.

Figure 4: After; note the elevation of the brow and smoothening of the skin around the eyes.

Around the Mouth

Vertical lip lines are, like cellulite, the bane of many a woman's existence. A misnomer for these wrinkles is "smoker's lines." While smoking will exacerbate these lines, most of the women seeking treatment for these vertical lip lines have never smoked. The appearance of these lines, as well as their progression, can be improved by the judicious use of a few units of Botox around the mouth. Often, the Botox

injections into the upper lip result in increased lip show with better profile of the upper lip border.

As we age, we also develop a downturn of the lateral edges of the mouth. This is called "mouth frown" and it portrays a bitter expression. Who doesn't prefer the "Mona Lisa" smile? Botox can help your smile muscles lift the corners of your mouth when injected into the opposing muscles that pull it down. We cannot do anything about gravity, but we can weaken the muscles that pull your face down.

Botox can also be injected into the point of the chin, softening a dimpled chin appearance. Studies have shown that if the lip is enhanced with a filler at the same time as the Botox treatment, the filler will last longer as it is not subject to the severe forces that caused the dynamic lines to become static creases in the first place.

Medical Conditions

During the last two decades, Botox has also been used with increasing frequency for a growing number of medical conditions. One of the most exciting observations by patients undergoing Botox injections in their frown areas was that they experienced fewer headaches. Botox injections are also placed in the masseter muscles for lower facial reshaping in order to maintain a more triangular, youthful face.[13] In addition, Botox can be injected into the temporalis muscle and/or masseter to alleviate TMJ pain and augment the clinical improvements seen with bite blocks.[14]

I have heard many patients describe treatment with Botox as "the miraculous antidote of the 21st century."

Conclusion

Look better, feel better, and be more confident. As a cosmetic physician, I have heard many patients describe treatment with Botox as "the miraculous antidote of the 21st century." That is why I recommend the treatment to those who wish to repair the damage of photoaging with the toll taken on their faces by too many smiles and too many frowns in too many passing years.

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Give Back A Smile and Give Back A Life: Restoring the Smile of a Domestic Violence Survivor in Florida

by Caitilin R. Martini, DMD
Tampa, FL
www.
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Introduction

Intimate partner violence (IPV) is "a pattern of assaultive and coercive behaviors that may include inflicted physical injury, psychological abuse, sexual assault, progressive social isolation, stalking, deprivation, intimidation, and threats."[1] According to the U.S. Department of Health and Human Services, "nearly one third of American women will experience intimate partner violence or domestic violence."[1] The Family Violence Prevention Fund indicates "these behaviors are perpetrated by someone who is, was, or wishes to be involved in an intimate or dating relationship with an adult or adolescent, and are aimed at established control by one partner over the other."[1]

Domestic violence or violence between intimates "is difficult to measure because it often occurs in private, and victims are often reluctant to report incidents to anyone because of shame or fear of reprisal."[2] However, studies indicate that injury location is one possible predictor associated with IPV-related injury.[3] In fact, it has been reported that "94% of victims of domestic violence have head, neck, and facial injuries."[4] According to Zeitler, "a woman seeking treatment of a facial injury has a one in three chance of being a victim of violence and abuse."[5] This includes trauma to the teeth, oral structures, and the temporomandibular joint (TMJ).

In general, "women experiencing IPV are more likely to report poor physical and mental health"[6] and in fact are at greater risk for health issues. Studies indicate that IPV poses a significant risk to the physical health of women and is associated with, among other issues, worse general health.[7] "An estimated 1.3 million women are victims of physical assault by an intimate partner each year."[8] In 2006, in the State of Florida alone, there were 115,170 reported cases of domestic violence.[8]

Give Back A Smile Program

The American Academy of Cosmetic Dentistry's (AACD) Give Back A Smile™ (GBAS) program is dedicated to helping the survivors of domestic violence.

OraVerse™
(Phentolamine Mesylate) Injection

it's about time.

Give your patients
a new measure of comfort –
bring them back to normal sensation
in less than half the time.[1]

Let's face it. When patients leave your office, they can be limited by the lingering numbness of local anesthesia. Now you can accelerate their return to normal sensation and function with **OraVerse™**.

Adding OraVerse to your regimen is easy too – a simple injection with a standard dental syringe, just like anesthetic.

And you can confidently treat patients aged 6 and older with OraVerse.[2] Nationwide clinical studies prove the safety and efficacy of this novel formulation for phentolamine mesylate, a vasodilator used in medical applications for the last 50 years.

We think it's about time you found out more.
Call us at (888) 888-1441 or visit www.novalar.com.

Important Safety Information

Tachycardia, bradycardia, and cardiac arrhythmias may occur with the use of phentolamine or other alpha-adrenergic blocking agents. Although such effects are uncommon with OraVerse (phentolamine mesylate), clinicians should be alert to the signs and symptoms of these events, particularly in patients with a history of cardiovascular disease. Following parenteral use of phentolamine at doses between 5 to 15 times higher than the recommended dose of OraVerse, myocardial infarction, and cerebrovascular spasm and occlusion have been reported, usually in association with marked hypotensive episodes producing shock-like states.

1 Median time to recovery was reduced by 85 minutes (55%) for lower lip and by 83 minutes (62%) for upper lip compared to control.

2 OraVerse is not recommended for use in children less than 6 years of age or weighing less than 33 lbs.

See prescribing information on the reverse side of this ad.

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0104, Rev. 01/2009

OraVerse™

(Phentolamine Mesylate) Injection

BRIEF SUMMARY OF PRESCRIBING INFORMATION

Please see package insert for complete prescribing information.

1. INDICATONS AND USAGE

OraVerse is indicated for reversal of the soft-tissue anesthesia, i.e., anesthesia of the lip and tongue, and the associated functional deficits resulting from an intraoral submucosal injection of a local anesthetic containing a vasoconstrictor.

OraVerse is not recommended for use in children less than 6 years of age or weighing less than 15 kg (33 lbs).

2. DOSAGE AND ADMINISTRATION

2.1 General Dosing information

The recommended dose of OraVerse is based on the number of cartridges of local anesthetic with vasoconstrictor administered:

Amount of Local Anesthetic Administered	Dose of OraVerse [mg]	Dose of OraVerse [Cartridge(s)]
½ Cartridge	0.2	½
1 Cartridge	0.4	1
2 Cartridges	0.8	2

OraVerse should be administered following the dental procedure using the same location(s) and technique(s) (infiltration or block injection) employed for the administration of the local anesthetic. Note: Do not administer OraVerse if the product is discolored or contains particulate matter.

2.2 Dosing in Special Populations

In pediatric patients weighing 15-30 kg, the maximum dose of OraVerse recommended is 1/2 cartridge (0.2 mg).

(Note: Use in pediatric patients under 6 years of age or weighing less than15 kg (33 lbs) is not recommended. A dose of more than 1 cartridge [0.4 mg] of OraVerse has not been studied in children less than 12 years of age.)

3. DOSAGE FORMS AND STRENGTHS

0.4 mg/1.7 mL solution per cartridge

4. CONTRAINDICATIONS

None

5. WARNINGS AND PRECAUTIONS

5.1 Cardiovascular Events

Myocardial infarction, cerebrovascular spasm, and cerebrovascular occlusion have been reported to occur following the parenteral administration of phentolamine. These events usually occurred in association with marked hypotensive episodes producing shock-like states. Tachycardia and cardiac arrhythmias may occur with the use of phentolamine or other alpha-adrenergic blocking agents. Although such effects are uncommon after administration of OraVerse, clinicians should be alert to the signs and symptoms of these events, particularly in patients with a prior history of cardiovascular disease.

6. ADVERSE REACTIONS

In clinical trials, the most common adverse reaction with OraVerse that was greater than the control group was injection site pain.

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. Dental patients were administered a dose of either 0.2, 0.4 or 0.8 mg of OraVerse. The majority of adverse reactions were mild and resolved within 48 hours. There were no serious adverse reactions and no discontinuations due to adverse reactions.

Table 1: Adverse Reactions with Frequency Greater Than or Equal to 3% and Equal to or Exceeding Control

Adverse Event	OraVerse				Control
	0.2 mg (N = 83)	0.4 mg (N = 284)	0.8 mg (N = 51)	Total (N = 418)	Total (N = 359)
	N (%)	N (%)	N (%)	N (%)	N (%)
Patients with AEs	15 (18)	82 (29)	20 (39)	117 (28)	96 (27)
Tachycardia	0 (0)	17 (6)	2 (4)	19 (5)	20 (6)
Bradycardia	0 (0)	5 (2)	2 (4)	7 (2)	1 (0.3)
Injection site pain	5 (6)	15 (5)	2 (4)	22 (5)	14 (4)
Post procedural pain	3 (4)	17 (6)	5 (10)	25 (6)	23 (6)
Headache	0 (0)	10 (4)	3 (6)	13 (3)	14 (4)

Table 1 lists adverse reactions where the frequency was greater than or equal to 3% in any OraVerse dose group and was equal to or exceeded that of the control group. An examination of population subgroups did not reveal a differential adverse reaction incidence on the basis of age, gender, or race. Results from the pain assessments in Study 1 and Study 2, involving mandibular and maxillary procedures, respectively, indicated that the majority of dental patients in both OraVerse and control groups experienced no or mild oral pain, with less than 10% of patients in each group reporting moderate oral pain with a similar distribution between the OraVerse and control groups. No patient experienced severe pain in these studies.

6.2 Adverse Reactions in Clinical Trials

Adverse reactions reported by less than 3% but at least 2 dental patients receiving OraVerse and occurring at a greater incidence than those receiving control, included diarrhea, facial swelling, increased blood pressure/ hypertension, injection site reactions, jaw pain, oral pain, paresthesia, pruritus, tenderness, upper abdominal pain and vomiting. The majority of these adverse reactions were mild and resolved within 48 hours. The few reports of paresthesia were mild and transient and resolved during the same time period.

6.3 Post Marketing Adverse Reaction Reports from Literature and Other Sources

The following adverse reactions have been identified during postapproval parenteral use of phentolamine mesylate. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. Acute and prolonged hypotensive episodes and cardiac arrhythmias have been reported with the use of phentolamine. In addition, weakness, dizziness, flushing, orthostatic hypotension, and nasal stuffiness have occurred.

7. DRUG INTERACTIONS

There are no known drug interactions with OraVerse.

8. USE IN SPECIFIC POPULATIONS

8.1 Pregnancy *Pregnancy Category C*

There are no adequate and well-controlled studies in pregnant women. OraVerse should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

8.4 Pediatric Use

In clinical studies, pediatric patients between the ages of 3 and 17 years received OraVerse. The safety and effectiveness of OraVerse have been established in the age group 6-17 years. Effectiveness in pediatric patients below the age of 6 years has not been established. Use of OraVerse in patients between the ages of 6 and 17 years old is supported by evidence from adequate and well-controlled studies of OraVerse in adults, with additional adequate and well-controlled studies of OraVerse in pediatric patients ages 12-17 years old [Studies 1 (mandibular procedures) and 2 (maxillary procedures)] and ages 6-11 years old [Study 3 (mandibular and maxillary procedures)]. The safety, but not the efficacy, of OraVerse has been evaluated in pediatric patients under the age of 6 years old. Dosages in pediatric patients may need to be limited based on body weight.

10. OVERDOSAGE

No deaths due to acute poisoning with phentolamine have been reported.

Overdosage with parenterally administered phentolamine is characterized chiefly by cardiovascular disturbances, such as arrhythmias, tachycardia, hypotension, and possibly shock. In addition, the following might occur: excitation, headache, sweating, pupillary contraction, visual disturbances, nausea, vomiting, diarrhea, or hypoglycemia. There is no specific antidote; treatment consists of appropriate monitoring and supportive care. Substantial decreases in blood pressure or other evidence of shock-like conditions should be treated vigorously and promptly.

14. CLINICAL STUDIES

The safety and efficacy of OraVerse when used for reversal of soft-tissue anesthesia (STA), i.e., anesthesia of the lips and tongue following a dental procedure that required local anesthesia containing a vasoconstrictor, were evaluated in the following clinical studies. OraVerse induced reversal of local anesthetic effects on the teeth, mandible and maxilla has not been assessed.

Two Phase 3, double-blinded, randomized, multi-center, controlled studies were conducted in dental patients who had mandibular (Study 1) or maxillary (Study 2) restorative or periodontal maintenance procedures and who had received a local anesthetic that contained a vasoconstrictor. The primary endpoint was time to normal lip sensation as measured by patient reported responses to lip palpation. The secondary endpoints included patients' perception of altered function, sensation and appearance, and their actual functional deficits in smiling, speaking, drinking and drooling, as assessed by both the patient and an observer blinded to the treatment. In the mandibular study, the time to recovery of tongue sensation was also a secondary endpoint. Patients were stratified by type and amount of anesthetic administered.

OraVerse was administered at a cartridge ratio of 1:1 to local anesthetic. The control was a sham injection. OraVerse reduced the median time to recovery of normal sensation in the lower lip by 85 minutes (55%) compared to control. The median time to recovery of normal sensation in the upper lip was reduced by 83 minutes (62%).

In Study 1 (mandibular), OraVerse accelerated: a) the recovery of the perception of normal appearance and function by 60 minutes (40%), b) the recovery of normal function by 60 minutes (50%), and c) the recovery of normal sensation in the tongue by 65 minutes (52%). In Study 2 (maxillary), the recovery of the perception of normal appearance and function was reduced by 60 minutes (50%) and the recovery of normal function was reduced by 45 minutes (43%).

Study 3, a pediatric, Phase 2, double-blinded, randomized, multi-center, controlled study was conducted in dental patients who had received 2% lidocaine with 1:100,000 epinephrine. Dental patients (n = 152, ages 4-11 years) received ½ cartridge of local anesthetic if they weighed ≥15 kg but <30 kg, and one-half or one full cartridge if they weighed ≥30 kg at a cartridge ratio of 1:1 to local anesthetic.

The median time to normal lip sensation in patients 6 to 11 years of age who were trainable in the lip-palpation procedures, for mandibular and maxillary procedures combined, was reduced by 75 minutes (56%). Within 1 hour after administration of OraVerse, 44 patients (61%) reported normal lip sensation, while only 9 patients (21%) randomized to the control group reported normal lip sensation. In this study, neither the patients' perception of their appearance or ability to function nor their actual ability to function was evaluated.

16. HOW SUPPLIED/STORAGE AND HANDLING

OraVerse (phentolamine mesylate) Injection 0.4 mg/1.7 mL is supplied in a dental cartridge, in cartons of 10 and 50 cartridges. Each cartridge is individually packaged in a separate compartment of a 10 cartridge blister pack.

NDC 45293-101-01
NDC 45293-101-02

Store at controlled room temperature, 20-25°C (68-77°F) with brief excursions permitted between 15-30°C (59-86°F) Protect from direct heat and light. Do not permit to freeze.

Manufactured by Novocol Pharmaceutical of Canada, Inc., Cambridge, Ontario, Canada
For Novalar Pharmaceuticals, Inc., San Diego, CA 92130

US Patent Nos.: 6,764,678; 6,872,390; 7,229,630 Trademark of Novalar Pharmaceuticals, Inc.

17. PATIENT COUNSELING INFORMATION

Patients should be instructed not to eat or drink until normal sensation returns.

Figure 1: Hilary's smile when she presented for her first visit shows caries, and staining from smoking.

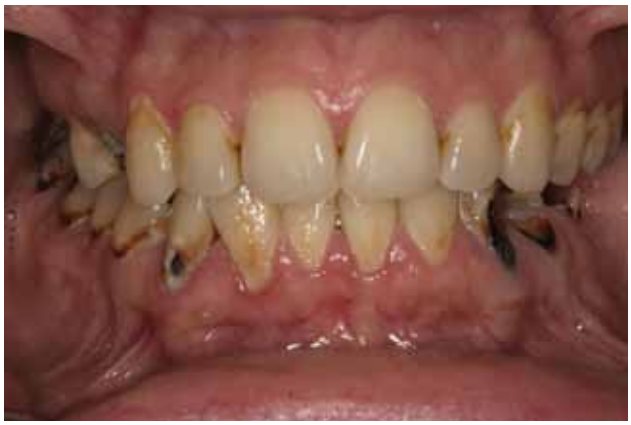

Figure 2: Retracted view; teeth in occlusion show the extent of caries present.

Dental services are provided to qualified survivors at no cost. The program hopes to raise the awareness of domestic violence by giving volunteer members of the AACD a chance to give to the community, while giving survivors hope for tomorrow by restoring their oral health.

Survivors of IPV and oral/ Overall Health

Oral health is one of the domains of health that can affect functioning and hence the overall feeling of health. "Oral health problems can result in pain and discomfort and lead to problems in eating, communication, and appearance, and consequently to embarrassment, social problems, and low self esteem."[9] In order to maintain good oral health, an individual must seek care consistently. It has been shown that victims of IPV often are prevented from receiving care because they are prevented from seeking care. The link between socio-economic status and oral health outcomes reflects this. Income has a direct effect on the ability to access goods and services. Victims of IPV are also denied the funds needed to seek treatment. According to Locker, "… inequalities, including inequalities of opportunities, life chances, and achievement, are accompanied by inequalities of respect and self esteem."[10]

Oral health is one of the domains of health that can affect functioning and hence the overall feeling of health.

A myriad of psychological problems also affect the overall well-being of IPV survivors. Self-esteem often is an issue for victims of domestic violence, and there are many links between low self-esteem and depression.[11] One's self-esteem in turn affects quality of life. Oral health conditions are known to affect various aspects of quality of life such as "pain, impaired speech chewing ability, taste, and appearance."[12] Additionally, "the number of missing teeth, function, and number of filled teeth were all significant for well-being."[12] This clearly positions the oral health status of an individual as affecting his or her overall mental health. According to Locker and Allen, "when talking about oral health, our focus is not on the oral cavity itself but on the individual and the way in which oral disorders, diseases, and conditions threaten health, well being, and quality of life."[13] According to the World Health Organization, *health* has been defined as a "state of complete physical, mental, and social well being, not merely the absence of disease or infirmity."[14] The job of GBAS volunteer dentists is to help survivors of domestic violence get one step closer to overall health.

Oral health conditions are known to affect various aspects of quality of life.

Case Report

Patient History

"Hilary" was referred to our office by the GBAS program. My office staff and I were excited about the opportunity to help. Hilary had been subjected to physical abuse as well as restrictive behaviors. She had been prevented from obtaining health care and from having insurance, making medical and dental treatment cost-prohibitive. Female victims of IPV are generally less likely to have access to preventive and injury-related health care, com-

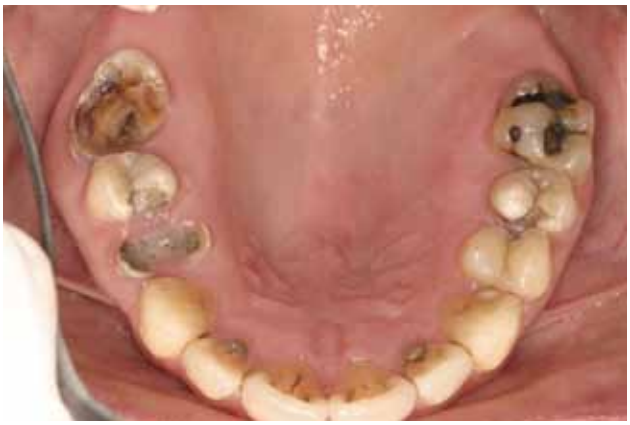

Figure 3: Maxillary occlusal view at initial examination.

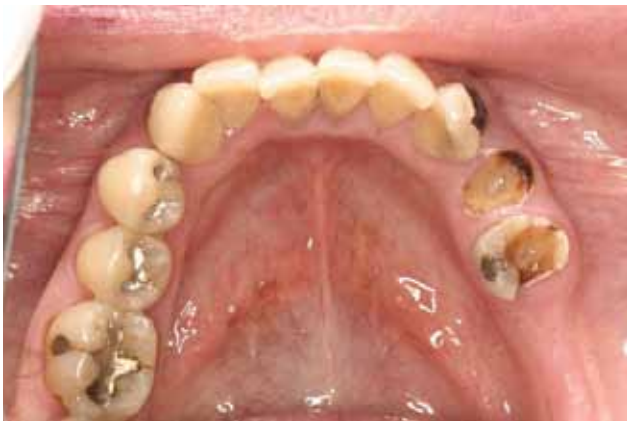

Figure 4: Mandibular occlusal view at initial examination.

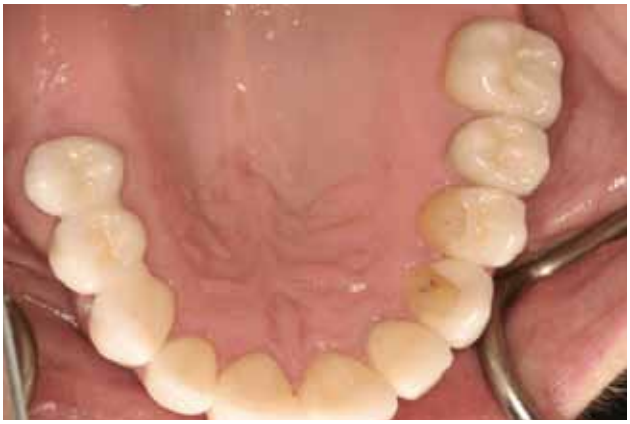

Figure 5: Restored maxillary occlusal view.

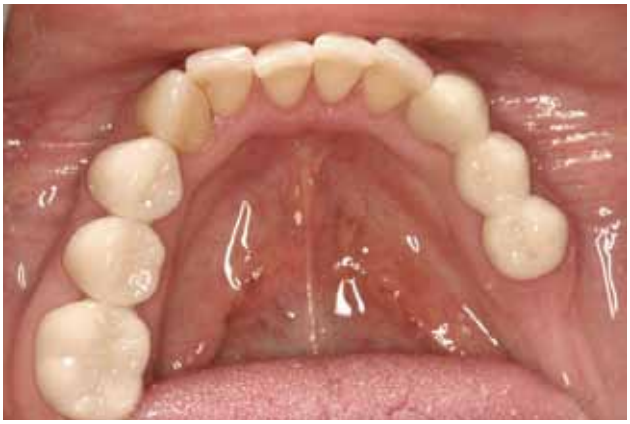

Figure 6: Restored mandibular occlusal view.

pared to women who have not been abused.[1]

Even though Hilary lives more than an hour from our office, she would come to her appointments filled with anticipation about the outcome. She was dedicated to reaching her goal of optimum oral health and regaining her smile.

Hilary had several broken teeth, as well as several teeth that were grossly decayed due to neglect. Her teeth also were extremely stained from smoking (Fig 1). Women who experience IPV are more likely than women who are not abused to use tobacco.[1] After much physical and psychological abuse she felt dejected and hopeless.

Diagnosis, Findings, and Treatment Plan

Lack of dental care had resulted in Hilary having several severe dental problems and generally compromised oral health. A comprehensive examination—including examination of the muscles in the head and neck, a complete periodontal probing of all teeth, an oral cancer screening, a hard and soft tissue exam, as well as a TMJ exam and evaluation of her occlusion—was completed. During this visit radiographs, intraoral photographs, and digital photographs were taken. Several nonrestorable teeth and teeth needing endodontic treatment were noted. Caries was noted on nearly every tooth; in many instances, it was wrapping around the entire cervical area of the anterior and posterior teeth (Figs 2-4). Subgingival calculus was also present in all four quadrants. The extent of her caries and the number of missing and hopeless teeth made this a much more complicated case than originally anticipated. Anterior esthetics

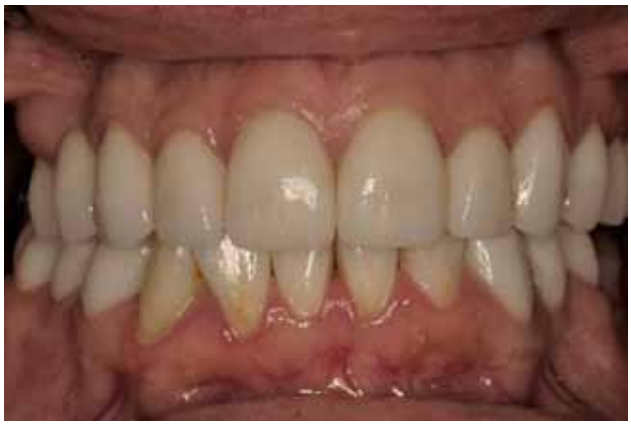

Figure 7: Restored retracted view with teeth in occlusion.

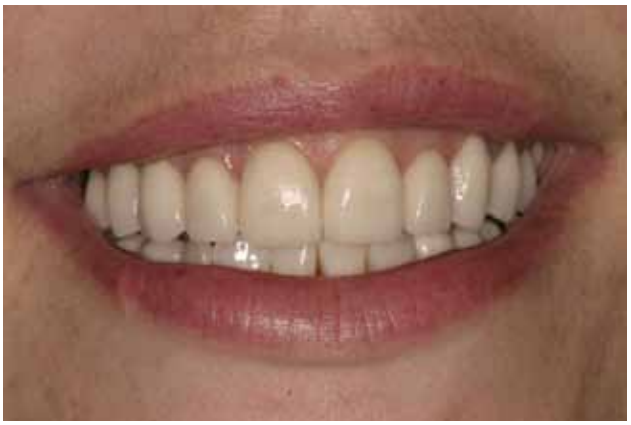

Figure 8: Smile view after all restorative treatment and whitening had been completed.

became involved, in addition to the restoration of form and function.

Impressions for study models and a facebow recording were taken. A centric bite was taken using a leaf gauge. Along with photographs, this information was sent to Suncoast Ceramic Studio (Brandon, FL), the volunteering dental laboratory, for a diagnostic wax-up. Because Hilary was in need of several phases of dentistry to reach optimum oral health, specialists would also need to be involved.

Discussion

My concerns with this case were many. Although I already had a local dental laboratory that volunteered with GBAS, I would also need to approach an endodontist and an oral surgeon to ask them to donate their services. In addition, I suspected the extent of caries on several teeth to be greater than evident, possibly changing treatment. Bridges would be needed in a couple of areas and material selection and shade matching would be an issue.

Keeping Hilary motivated through the many appointments needed might also be a challenge; educating her on how to better care for her teeth was also important. However, as obtaining a new smile and a healthy mouth were her chief aims, I knew that with patience and determination we could achieve her goals.

Treatment

Hilary went through full-mouth scaling and root-planing procedures, using local anesthesia as needed. She was given oral hygiene instructions and a Sonicare electric toothbrush (Philips; Stamford, CT). Because she had expressed an interest in quitting smoking, we provided her with materials from the University of South Florida's (USF) Area Health Education Center (AHEC), a department of the USF College of Medicine dedicated to tobacco cessation. Along with the materials provided by AHEC, we gave Heather a fax referral to the Florida Department of Health's QuitLine, a toll-free telephone-based tobacco use cessation service. Any person living in Florida who wants to quit smoking can use the QuitLine (877.822.6669). Once our office faxed the referral to the QuitLine, a QuitLine counselor contacted Hilary to assist her with smoking cessation.

Nonrestorable teeth #3, #5, #18, #21, and #31 were extracted by Dr. Theodore Peters (Tampa, FL). Several teeth needed endodontic therapy. Hilary was sent to Dr. Christian Kamaris (Tampa, FL) for root canals on #4, #13, #20, and #22. Both of these dentists had graciously agreed to help complete the case at no charge.

Hilary was then treated in two phases. All of her maxillary teeth were restored at one time. As caries was removed, it was determined that full coverage was needed on most teeth to restore form and function. The maxillary anterior teeth exhibited extensive Class III caries and cervical caries wrapping around the teeth, prohibiting the use of veneers or fillings (Fig 2). Crowns therefore became the best restorative option. Hilary's maxillary arch was temporized using the wax-up from the laboratory as a guide. She presented for a follow-up visit to evaluate and modify her temporaries. After she accepted the temporaries, the restorations were fabricated. E.max (Ivoclar Vivadent; Amherst, NY) restorations were chosen for strength and so that color matching between materials would not be an issue. A bridge was fabricated to replace tooth #12. The remaining maxillary teeth were restored with crowns or veneer/onlays (Fig 5).

Figure 9: Hilary, very happy to have her smile back.

In the mandibular arch, crowns were placed on ##28-30. A bridge was fabricated from #20 through #22 (Fig 6). The mandibular arch was then treated with 10% Opalescence (Ultradent; South Jordan, UT) in custom trays. Occlusion was checked and anterior guidance was confirmed.

When Hilary presented for a postoperative evaluation she was extremely comfortable. All of her tissues were healed. Final photographs were taken (Figs 7 & 8). Impressions were taken for fabrication of a nightguard. Hilary was very pleased with her final results—she finally had her smile back (Fig 9)! Her confidence was returning and her outlook on life had improved.

Hilary can truly smile now; we helped to restore her self-esteem.

Rewards

It was incredibly moving to be allowed into Hilary's world. She shared her story with us and trusted us to help her. She touched everyone in our office with her positive attitude and unrelenting desire to succeed. Over the months that we worked with her we all became friends, sharing daily stories and experiences. Hilary can truly smile now; we helped to restore her self-esteem. Since completing her dental treatment she is working consistently and is a more productive member of society. Because she now has reliable income she will be better able to seek health care. I feel very fortunate to have helped Hilary in her journey to a more fulfilling life. The opportunity to be able to use my skills as a gift to improve someone's life was priceless.

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—Dr. Martin Luther King, Jr.

The journey to earning the AACD's credential in cosmetic dentistry often does begin with a step of faith. Many who have succeeded have done so because they have taken that first step of faith and discovered the many resources available to them through the Academy. Two excellent resources are the Examiner mentoring program and the Accreditation workshops. A third is the fine *Journal of Cosmetic Dentistry* (*JCD*). A fourth, the AACD's eLearning program, is sure to become an industry standard for education and another resource for improving clinical skills. And finally, but certainly not least, is the opportunity to network with colleagues in this Academy. The camaraderie felt at AACD's annual scientific sessions must be experienced to be understood. If you have not yet attended one of the annual AACD scientific sessions, it is not too late to register for the 25th Anniversary AACD Scientific Session taking place in Honolulu, Hawaii, Monday, April 27–Friday, May 1. This is an educational and social event that is not to be missed.

While the testing process for the Accreditation credential is the most rigorous and probably the most fair in the profession, the standards have not been compromised. Today's testing process owes a debt of gratitude to many individuals: Drs. Larry Addleson, Bert Chodorov, Corky Willhite, Chip Steel, Bill Cohen, and Marty Zase (as well as myself) composed the first credentialing board, which began in 1999. With the support of the AACD Credentialing Department—Lisa Weber, Kim Hollenbeck, and Doreen Blome—we worked tirelessly to create new protocols for an examination process. Today's credentialing board, the American Board of Cosmetic Dentistry, has further refined the examination process to one that is without compare and beyond reproach.

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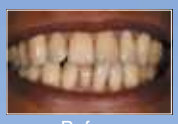

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With this issue of the *Journal of Cosmetic Dentistry*, Dr. Ed Lowe and I take over as co-editors of the "Accreditation Essentials" section. We owe a great debt of gratitude to the past editors of this section, Drs. Corky Willhite and Elizabeth Bakeman, as well as to our immediate predecessors, Drs. Lynn Jones and Susan Hollar.

In this issue of the *JCD* we profile two different case types. Case Type IV, anterior direct resin, was done by Dr. Patrick Gochar of Clarksville, Maryland. Dr. Gochar's approach to treatment of this case was unique as he did more than was asked in the protocol. His patient, a 14-year-old high school student, presented with multiple diastema in the upper arch, a classic case of arch length redundancy. Dr. Gochar treated six teeth, using an additive technique only, and on several treated teeth did only partial coverage, beautifully blending tooth structure and restorative material. This is a case where understanding of technique met a more comprehensive approach to dentistry. I will expand on this discussion in the Examiners' Perspective portion of this section.

The other case profiled here is Case Type III, tooth replacement. This is arguably the most challenging case type to execute successfully. Dr. Marilyn Gaylor's patient was faced with the loss of an upper central incisor. Through excellent communication with a skilled periodontal specialist, a talented laboratory technician, a cooperative patient, and patience along with a thorough understanding of tissue management, Dr. Gaylor was able to obtain a superlative result. Dr. Rebecca Pitts will discuss this case further in the Examiners' Perspective section.

Both Drs. Gochar and Gaylor are to be congratulated on obtaining a fine result in their respective efforts. And if you are not yet a candidate in the Accreditation process, remember, it is not so much the test as it is the process that tempers your skills. Have faith. Each and every one of you who wants to earn the credential is able to do so. Take that first step!

❖

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Accreditation Clinical Case Report, Case Type IV: Anterior Direct Resin (Diastema Closure)

by Patrick W. Gochar, DDS
Clarksville, MD
gochardds@earthlink.net

Introduction

Cosmetic dentistry can offer multiple solutions to esthetic challenges so as to meet patients' specific needs. Serving as a trusted advisor, a dentist is able to present treatment options with associated benefits and risks, and the patient can decide which solution works best for his or her situation. One such solution for a young patient with multiple maxillary diastemata is the placement of direct composite resin. This approach can be used to provide an excellent esthetic result while conserving a maximum amount of tooth structure.

She was unhappy with her generalized anterior spacing and wanted to change her smile before entering high school.

Case Study

Chief Complaint

The patient was a 14-year-old female who was not satisfied with the appearance of her smile. She was unhappy with her generalized anterior spacing (Figs 1 & 2) and wanted to change her smile before entering high school. The patient also desired whiter teeth and had completed tray whitening with Opalescence PF 15% (Ultradent; South Jordan, UT).

Patient History

The patient had an unremarkable medical history, a stable periodontium, and a negative history of caries. Sealants had been previously placed on permanent molars. All permanent teeth except for the third molars were fully erupted and in occlusion. The patient showed some wear on her canines.

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Figure 1: Before, full-face image.

Case Type and Rationale for Treatment

Since the patient was a minor and her parents were paying for her dentistry, their desires were considered in creating our treatment plan. While wanting their daughter to have a more pleasing smile, they strongly suggested that finances were a concern.

Diagnosis and Treatment Plan

To plan this case, the AACD photographic series and study models were obtained. Using Adobe Photoshop CS2[1] and a wax mock-up, a simulation of the desired result was presented to the patient and her parents for comments prior to treatment (Fig 3). Starting with "an end in mind" will most often lead to a predictably successful end result.

During the case planning, it was noted that tooth #8 was positioned slightly lingual to tooth #9 (Fig 4). This was corrected in the wax-up by bulking out #8. A decision was made to keep treatment on #6 and #11 very conservative by restoring proper form to the incisals without veneering the tooth, to help with space closure to the mesial. A compromise with this treatment plan was a greater potential to have the laterals incisors slightly wider than ideal. However, this decision allowed the case to be treated at a cost savings to the parents.

This "banking" of tooth structure will leave all future treatment options on the table.

It also was decided to treat this case purely as an additive procedure with no removal of the patient's tooth structure. This "banking" of tooth structure will leave all future treatment options on the table. Due to the patient's age, the possibility of future gingival display changes was discussed and the parents understood that future corrective changes might be needed. A concern was raised about the likelihood of fracture because the patient was a catcher on a softball team. The patient agreed to wear a custom-fabricated athletic mouthguard after completion of the case. An upper centric relation (CR) bite plane was fabricated after treatment to wear during sleep, to protect against the possibility of increased stress on the incisal edges due to eccentric bruxism. The possibility of orthodontics was discussed, but it was felt orthodontic movement of teeth would not effectively solve this esthetic dilemma and would be unstable long term. The option of laser gingivectomy to raise gingival tissue slightly for #7 and #8 was also presented. Because the patient did not display these areas when smiling, this option was declined.

The parents understood that future corrective changes might be needed.

Treatment Description

The enamel surfaces of ##6-11 were prepared with a pumice scrub. The interproximal surfaces were lightly abraded with a Soflex XT coarse disc (3M ESPE; St. Paul, MN), followed by gentle roughening of the subgingival enamel with GC strips (GC America; Alsip, IL).[2] The patient was not anesthetized for this

Figure 2: Before; smile. After; at completion of treatment.

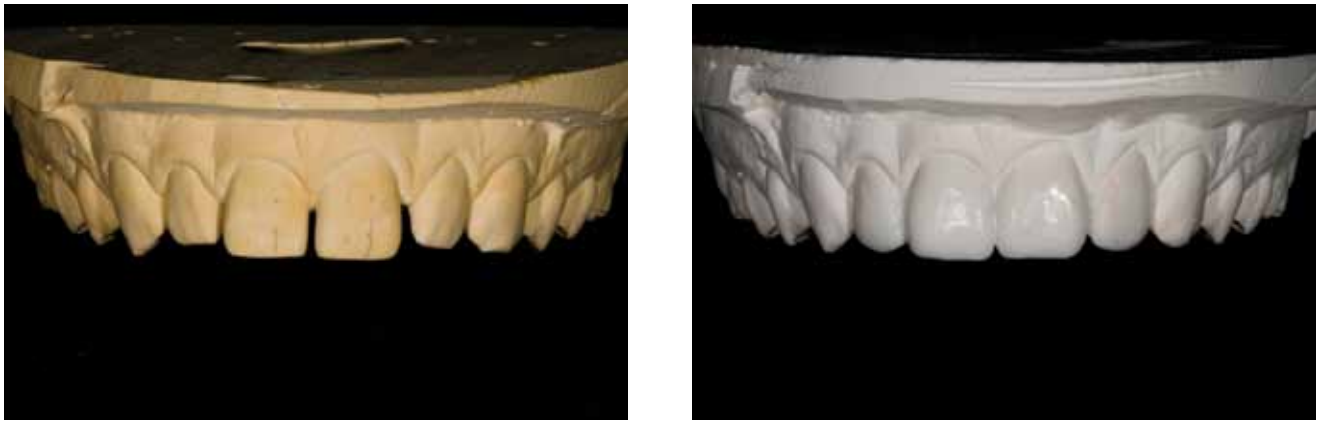

Figure 3: Left; preoperative model. Right; completed wax-up illustrating the proposed end result.

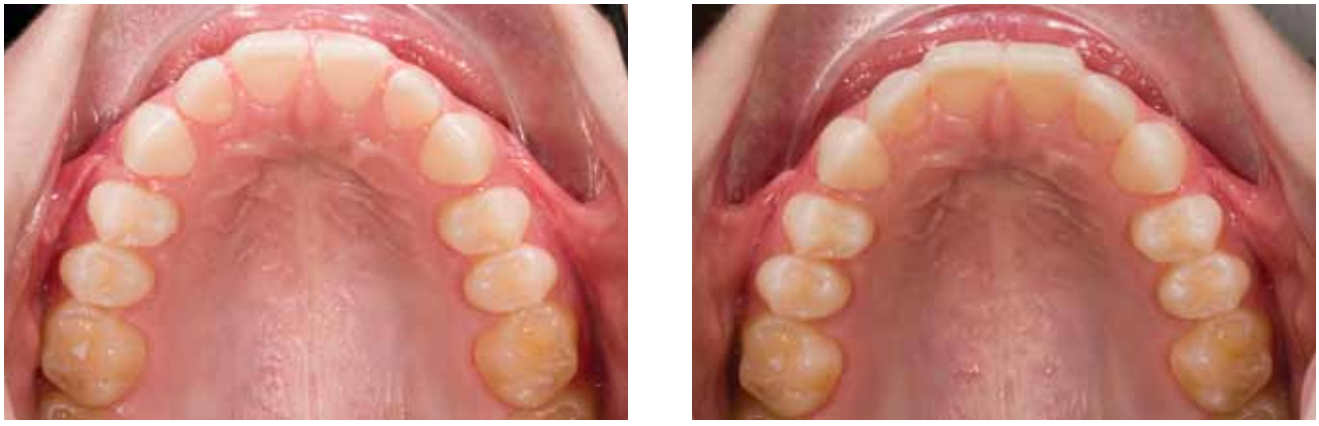

Figure 4: Before; maxillary occlusal view showing position of central incisors. After; completed treatment.

Figure 5: Left; evaluation of the treatment before finishing. Right; completed 1:2 right retracted view.

procedure. Ultrapak cord #00 (Ultradent) was gently placed for ##7-10 to deflect the gingivae to provide access for bonding. A See-More retractor (Discus Dental; Culver City, CA) was used. A linguo-incisal index, created from the mock-up, was checked intraorally for proper seating.

Tooth #8 was restored first. Adjacent teeth were protected with plumber's tape. The facial and lingual of the tooth were etched with Ultra-Etch (Ultradent). OptiBond FL adhesive (Kerr; Orange, CA) was applied and then suctioned to remove excess. The tooth was light-cured for 20 seconds using an Optilux 401 curing light (Kerr). A thin layer of composite wetting resin (Ultradent) was placed against the lingual surface of the index. An appropriate amount of Filtek Supreme Plus shade WE (3M ESPE) was loaded and seated firmly intraorally to form a lingual "frame" for tooth #8.[3] Great care was taken to properly shape the proximo-gingival extension of the resin. After 20 seconds of light-curing, the index was removed and the excess resin (partially cured) was carefully removed from the gingival extent of the lingual.

A digital caliper was used to confirm the proper width of the proximal extension. Also, as viewed from the front of the patient, the proximal surface was checked and refined so that it was parallel to the vertical axis of the face. Next, an appropriate amount of Durafill VS, shade B1 (Heraeus Kulzer; Armonk, NY), was placed to form the facial and blend into the "frame" created. Great care was taken to form an interproximal surface as close to ideal as possible. All primary anatomy was sculpted with plastic instruments.

Lastly, a #3 artist's brush was used with modeling resin to refine the contour of the facial and proximal surfaces. The restorative material was light-cured and glycerin was placed and light-cured again. The glycerin was applied to allow complete curing of the surface of the composite resin, thereby removing the "oxygen-inhibited layer."

The proximal surface and primary anatomy were refined to ideal. Progressively finer Soflex discs and then a PoGo diamond polishing disc (Dentsply Caulk; Milford, DE) were used to bring only the interproximal surfaces to high shine. This was to minimize the chance of undesired bonding of the newly restored proximal surface to the composite yet to be placed on adjacent teeth.[4] The width of tooth #8 and orientation of the proximal surfaces were again checked.

Next, tooth #9 was restored in the same way. It is noteworthy to mention the technique in forming the interproximal contact, as described by Fahl[4] and by Willhite.[2] If properly executed, an ideal interproximal contact and proper interdental form can be established.

During the placement of the "frame," or lingual layer, great care was taken to contour the gingival/proximal extent. Also, attention was given to place the lingual half of the contact area up against the already restored proximal surface of #8. This provided a closed contact. After light-curing, a Mylar strip (GC America) was placed between #8 and #9. With the addition of the Durafill VS, a Mylar pull-through technique was used to help form the facial embrasure.[2] The proximal contours were carefully sculpted to develop proper areas of deflection and reflection of light, taking care to keep symmetry between #8 and #9.[4]

This tooth was finished in the same way as #8. Teeth #7 and #10 were then restored as well. Teeth #6 and #11 were restored by adding Filtek Supreme Plus on the lingual surfaces, followed by Durafill on the facial to obtain proper form (Fig 5).

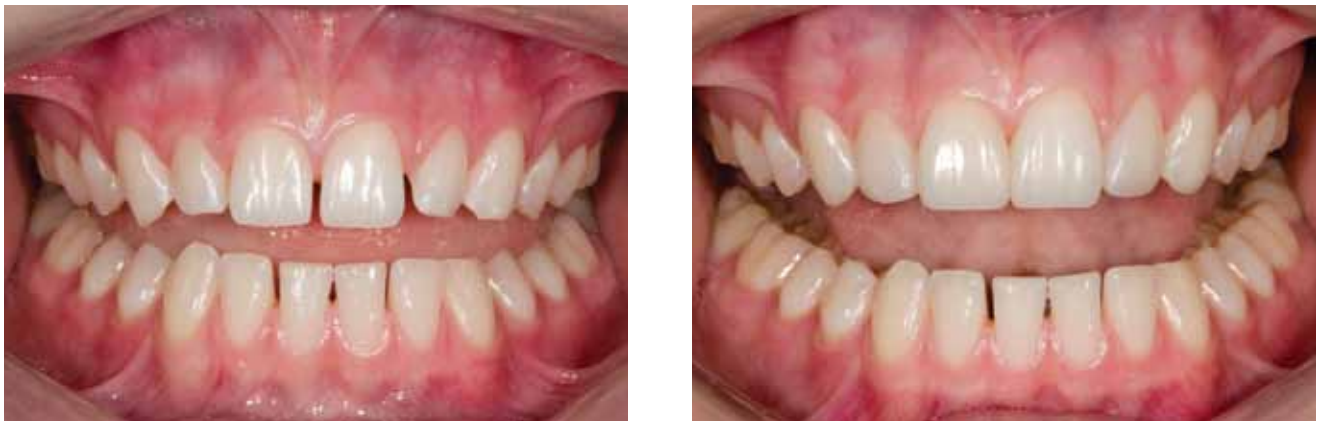

Figure 6: Before; retracted frontal view. After; completed case, retracted frontal view.

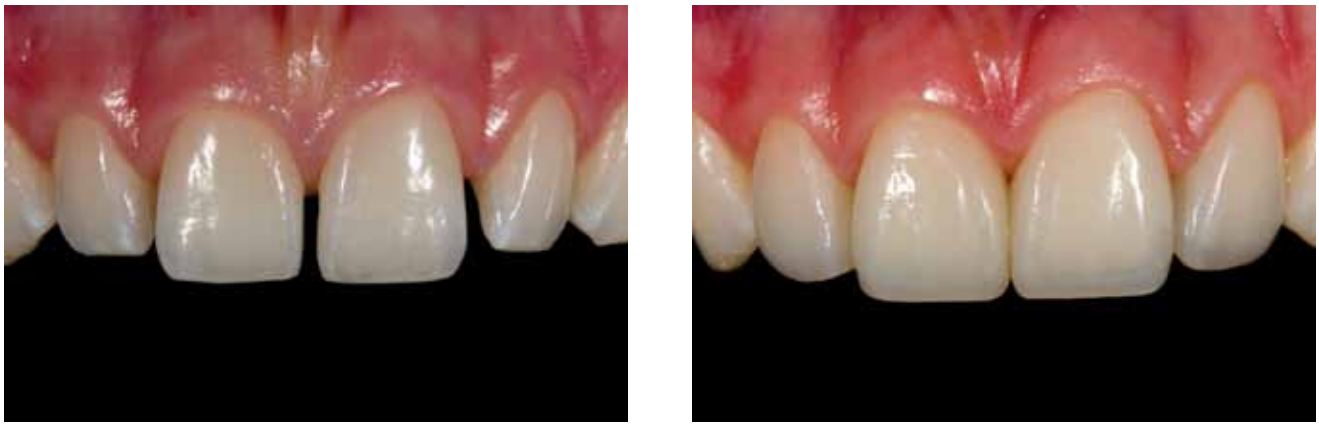

Figure 7: Before; 1:1 retracted view. After; 1:1 view, completed case.

In this case, Filtek Supreme Plus/WE was used for strength and ability to provide a semi-translucent milky white frame. This allows for some light transmission through the incisal edge, providing a more natural-appearing result. Durafill VS/B1 was used for its ease of sculptability, ability to retain a high level of polish over time, and its ability to blend seamlessly into the existing dentition.[3]

Occlusal contacts were verified and excursive movements checked. Primary anatomy was obtained and the patient was asked to return one week later for refinements (interproximal, secondary, and tertiary anatomy). At the following visit a #12 blade, GC finishing strips, and Epitex strips (GC America) were used to verify ease of flossing with no shredding of waxed dental floss (Johnson & Johnson; New Brunswick, NJ) when pulling against proximal surface of tooth from subgingival toward incisal. The patient did have some gingival inflammation at this second visit, which resolved once subgingival refining/polishing was completed. (The patient continues to have excellent gingival health post-treatment.)

The patient… was thrilled with the result.

The incisal edges and embrasure anatomy were developed with various Soflex discs. Pencil lines were drawn to see line angle placement and to divide the facial planes both horizontally and vertically into thirds. Next, a fine tapered diamond was used with a low-speed friction grip handpiece to create lobe depressions and some irregularity to the surface, giving some texture.[3] The goal was to recreate a similar surface texture modeled after the patient's natural teeth. A Pogo polisher was used to buff the surface to provide shine and evaluate the amount of texture. Once final surface texture was attained, Enamelize (Cosmedent; Chicago, IL) was applied to the teeth and polished with a Jiffy Goat Brush (Ultradent). An ultra luster was achieved (Figs 6 & 7).

Conclusion

The patient was then given a mirror to view her new smile. She was thrilled with the result of the case (Fig 8). Records were taken and an upper CR bite plane and athletic mouthguard were fabricated and delivered to the patient.

For this case of diastema closure, direct composite resin placement was able to accomplish the patient's esthetic goals in a very conservative manner, leaving many options for any future treatment.

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4. Fahl N. (2005). The art and science of direct resin restorations [DVD]. National Dental Network: Excellence in Cosmetic Dentistry 3.

Figure 8: Portrait of a happy patient.

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Examiners' Perspective for Dr. Patrick Gochar

by James H. Hastings, DDS,
AACD Accredited Member
(AAACD)
El Dorado Hills, CA
www.smilesbyhastings.com

The ability to place, shape, and polish direct resin is fundamental to success for the accomplished cosmetic dentist. The protocol for treatment of Case Type IV is described at www.aacd.com/accreditation. This can be downloaded from the AACD Web site in .pdf format under "Dentist Protocol." There it is described as Anterior Direct Resin (Options: Class IV or diastema closure). An interesting point to note in study of the protocol is that fewer instructions allow for more latitude in execution.

In the case presented here, Dr. Patrick Gochar demonstrated an aptitude for handling direct resin and an understanding of smile design principles. In his case, Dr. Gochar went beyond the usual number of teeth treated for Case Type IV by closure of multiple diastemata. This is because space closure with direct resin is most often thought of as being confined to the treatment of one or two teeth.

Dr. Gochar's patient presented with multiple diastemata in a classic case of arch length redundancy. When treating several teeth for space closure, as described in the clinical case report, orthodontic treatment "would not effectively solve this esthetic dilemma," meaning that diastemata would still remain after orthodontic treatment and some means of space closure would still be needed.

Dr. Gochar's approach considered the patient's youth and healthy tooth structure. It left all options available for any future treatment, and was of the most conservative nature possible.

This case passed unanimously, with one examiner adding no faults. The minor faults noted by other examiners were slight midline cant and loss of papillae height between teeth #8 and #9. Examiners also noted the shape and size of tooth #10, and possible show-through of tooth structure on #10.

The examiners felt that Dr. Gochar demonstrated an outstanding ability to imperceptibly blend treated and untreated tooth structure. He showed excellent handling of direct resin and understanding of smile design principles. While case selection created more challenges than is usually seen in Case Type IV, Dr. Gochar met all challenges and executed the case beautifully.

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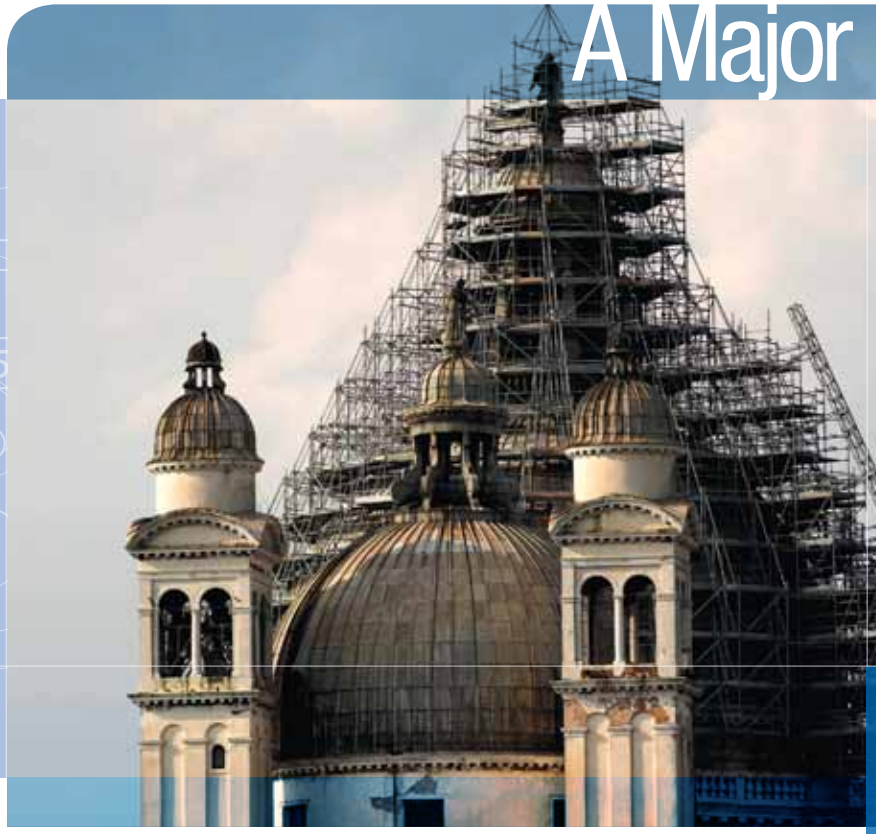

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Monday, April 27, 2009

Membership Meeting

Voter Registration 5:00 pm – 5:30 pm, Meeting 5:30 pm
This open forum meeting provides you with the opportunity to learn more about your Academy and share your perspective with your Academy colleagues.

Tuesday, April 28, 2009

Navigating the Deep Blue Ocean – Orientation for New Members and First-Time Attendees

6:45 am – 7:45 am
Join your AACD colleagues for breakfast as your Academy leaders and staff give you an in-depth overview of the 25th Anniversary AACD Scientific Session, from the layout of the educational program to the must-attend social and networking events. AACD's orientation will help you determine how to reach your educational goals while getting the most out of your scientific session experience.

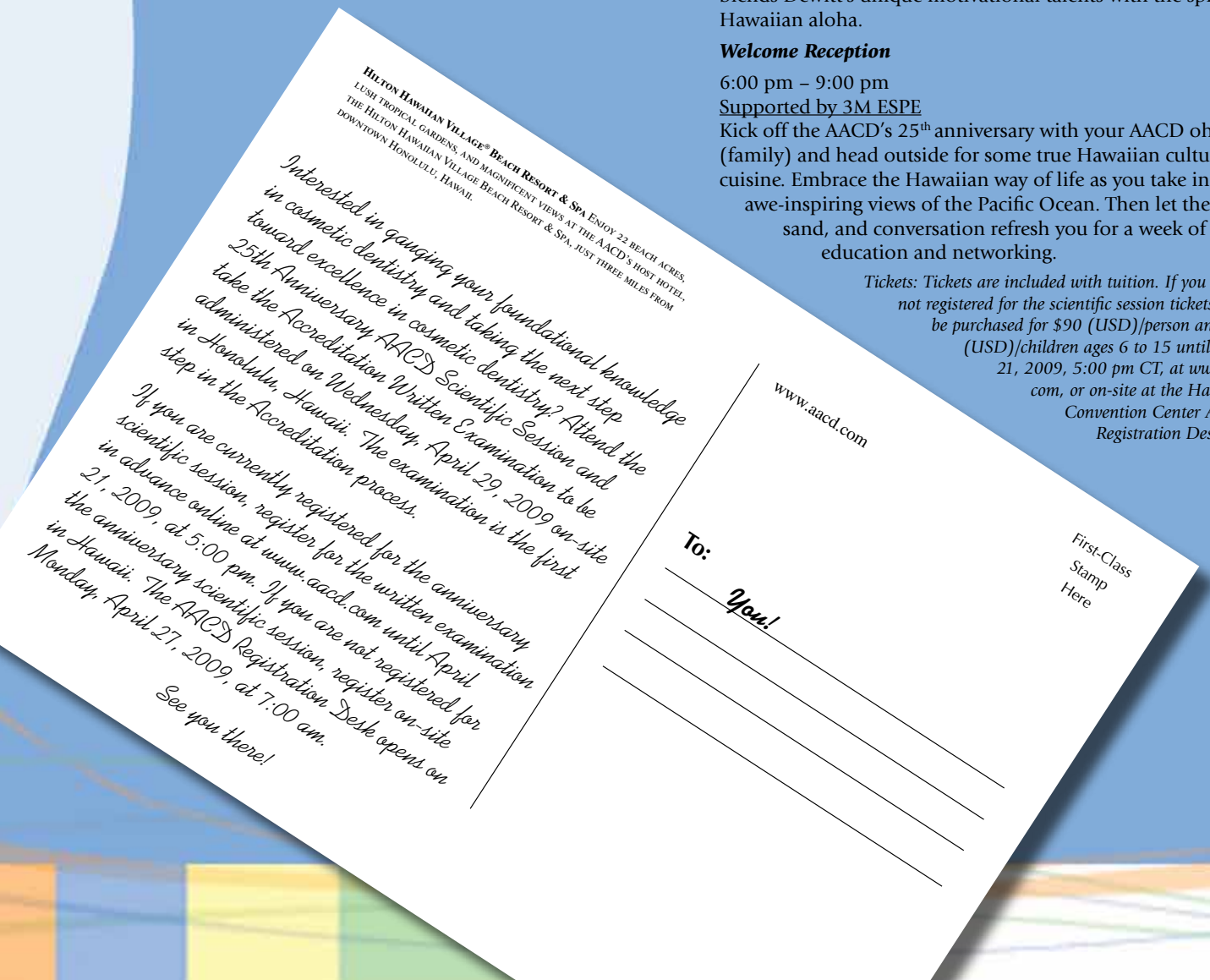
General Session with National Geographic Photographer Dewitt Jones

8:00 am – 9:15 am
Explore the themes of vision, passion, purpose, and creativity as they are interlaced with stories and images drawn from Dewitt's time in the beautiful Pacific Isles. This performance blends Dewitt's unique motivational talents with the spirit of Hawaiian aloha.

Welcome Reception

6:00 pm – 9:00 pm
Supported by 3M ESPE
Kick off the AACD's 25th anniversary with your AACD ohana (family) and head outside for some true Hawaiian culture and cuisine. Embrace the Hawaiian way of life as you take in the awe-inspiring views of the Pacific Ocean. Then let the sunset, sand, and conversation refresh you for a week of quality education and networking.

Tickets: Tickets are included with tuition. If you are not registered for the scientific session tickets can be purchased for $90 (USD)/person and $45 (USD)/children ages 6 to 15 until April 21, 2009, 5:00 pm CT, at www.aacd.com, or on-site at the Hawaii Convention Center AACD Registration Desk.



Celebrating 25 Years of Excellence

Wednesday, April 29, 2009

General Session with Colt Munchoff

8:00 am – 9:15 am
Colt Munchoff will share his personal story to inspire us to accelerate forward both personally and professionally even in times of tragedy.

Journal of Cosmetic Dentistry (JCD) Reception

5:30 pm – 7:00 pm
Are you actively involved as an author, advertiser, or reviewer? Are you interested in contributing? If so, you are invited to this reception designed to celebrate the successes of your Academy's peer-reviewed *Journal of Cosmetic Dentistry*.

Matrix Band Event

7:00 pm
Enjoy an evening of dancing, fun, and celebration featuring the Matrix Band and special guest 90s pop star Glenn Medeiros. Proceeds from this event will be donated to the Give Back A Smile program and Dustin Jack Wells Educational Foundation.

Tickets: $75 (USD)/person, free/children under 12, through a link found on www.aacd.com. Includes appetizers and two drink tickets.

Thursday, April 30, 2009

General Session with The Brothers Cazimero

8:00 am – 9:15 am
Musical talent, incredible showmanship, and infectious humor are at the center of this Grammy-nominated duo who have bridged cultural gaps that naturally exist with ethnic music and dance. Expose yourself to their aloha spirit during the final general session of the week.

AACD Charitable Foundation (AACDCF) Celebration of Smiles Event

6:00 pm – 9:00 pm
Experience the tastes of Hawaii as the AACDCF *Celebration of Smile*s event presents an evening of culinary artistry, showcasing the finest chefs of Hawaii. Celebrate the spirit of generosity and the 10th anniversary of the primary program of the AACDCF, Give Back A Smile.

Tickets: $100 (USD)/person until April 21, 2009, 5:00 pm CT, at www.aacd.com, or $125 (USD)/person on-site at the Hawaii Convention Center AACD Registration Desk.

Friday, May 1, 2009

5K Fun Run/Walk

6:00 am – 8:00 am
Get some exercise while glimpsing exquisite views of Waikiki Beach and Diamond Head. Proceeds from this event benefit the AACDCF.

Tickets: $25 (USD)/person until April 21, 2009, 5:00 pm CT, at www.aacd.com, or on-site at the Hawaii Convention Center AACD Registration Desk.

7th Annual AACD Golf Tournament

11:00 am – 5:00 pm
For the seventh year in a row, Aurum Ceramic Dental Laboratories is sponsoring the AACD Golf Tournament. This year's tournament will take place at the Ko'olau Golf Club. A portion of the proceeds from this event will benefit the AACDCF.

Registration: $159 (USD)/person, Aurum Ceramic Dental Laboratories will donate $20 (USD) from every tournament entry fee to the AACDCF, register by contacting Aurum Ceramic Dental Laboratories directly at 800.661.1169.

Celebration of Excellence Gala

6:00 pm – 12:00 midnight
Wrap up the 25th anniversary week at the *Celebration of Excellence* gala. Dress in style and enjoy an incredible evening with your AACD ohana. The night starts with a cocktail reception, followed by the recognition of the newly Accredited members and Accredited Fellows. Next enjoy five-star dining, then onto the AACD awards ceremony, the inauguration of the new AACD President, and finally, live music and dancing!

Tickets: $95 (USD)/person until April 21, 2009, 5:00 pm CT, at www.aacd.com, or on-site at the Hawaii Convention Center AACD Registration Desk.

We look forward to hosting you and your team in Honolulu, Hawaii from Monday, April 27 – Friday, May 1, 2009.

Purchase your social event tickets today at www.aacd.com or call 800.543.9220 or 608.222.8583.

Accreditation Clinical Case Report, Case Type III: Tooth Replacement

by Marilyn S. Gaylor, DDS,
AACD Accredited Member
(AAACD)
Atlanta, GA
www.drmarilyngaylor.com

Introduction

As a result of the knowledge that we have acquired about bone and soft tissue reaction to tooth extraction and its effect on the esthetics of dental implants, an implant-retained restoration can now be fabricated with an outcome that is beautiful and natural in appearance.

The case discussed here was done with careful consideration during the treatment-planning phase. This helped to determine the final restoration. By completing this case, I learned the value in all of the questions asked in the Accreditation Written Examination about soft tissue management and surgical procedures, which seemed irrelevant to me at the time. The restorative dentist must be familiar with predictable, documented outcomes for specific procedures in order to plan and complete this case type. In addition, he or she must have a periodontist or surgeon who is both familiar with and can achieve results that have been documented in the literature.

The case was started with the final outcome visualized through the analysis of photographs, radiographs, and a comprehensive clinical examination. After the treatment plan was completed, key team members began to create the definitive crown restoration. These members were the restorative dentist, the periodontist, and the laboratory technician. It was the collaboration of all three together that made this case a success.

The tooth was nonrestorable, and extraction was necessary.

I would like to commend the endodontist who referred this case to me. He went through his patients to find one that fit the category that I needed for this challenge, and asked her dentist's permission to refer the case to me. Without his thoughtfulness, this case would not have been done.

Figure 1: Preoperative and postoperative full-face images.

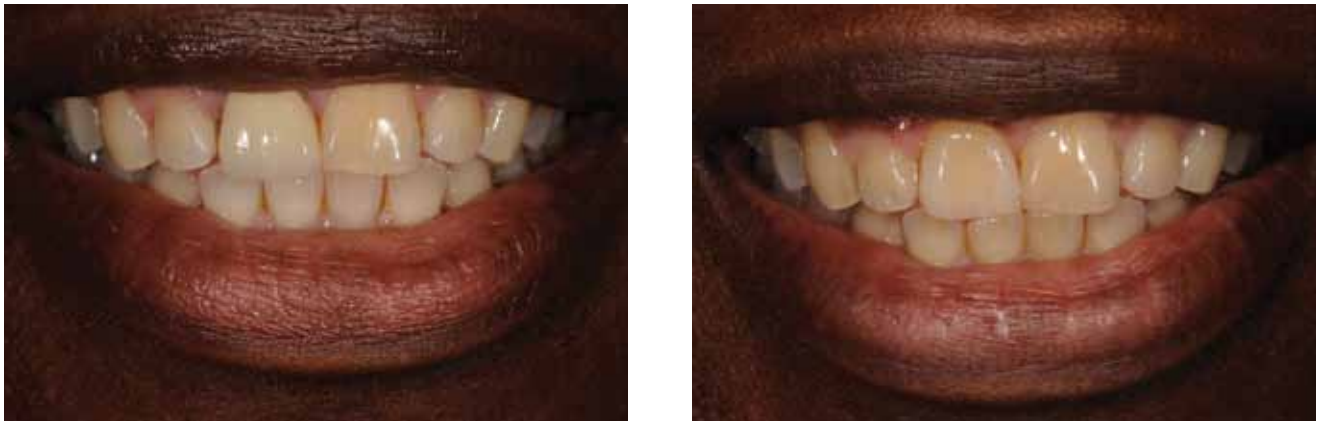


Figure 2: Preoperative and postoperative 1:2 smile.

Patient History

The patient was a 56-year-old female, who had had breast cancer two years earlier. Her dental history revealed that she had recently had scaling and root planing in all four quadrants and Arestin placed on the mesial buccal of #14. Examination of the head and neck revealed no history of joint pain, clicking, popping, or headaches. She had been hit in the mouth with a soda bottle approximately 20 years earlier, fracturing tooth #8. It was subsequently restored with a root canal, post, core build-up, and crown. When the root canal failed the patient was referred to an endodontist, who discovered a vertical root fracture. The tooth was nonrestorable, and extraction was necessary (Fig 1).

As the adjacent teeth were unrestored, the patient chose a single tooth implant in order for them to remain untouched and conserve tooth structure.

Diagnosis and Clinical Evaluation

The diagnosis for this tooth was vertical root fracture. The only possible treatment was extraction. Several treatment options exist for this single anterior tooth replacement:[1]

- bonded bridge
- traditional fixed bridge
- implant crown.

The patient was given all three options, along with the pros and cons of each one. As the adjacent teeth were unrestored, the patient chose a single tooth implant in order for them to remain untouched and conserve tooth structure. Consideration was given to several issues (Fig 2).

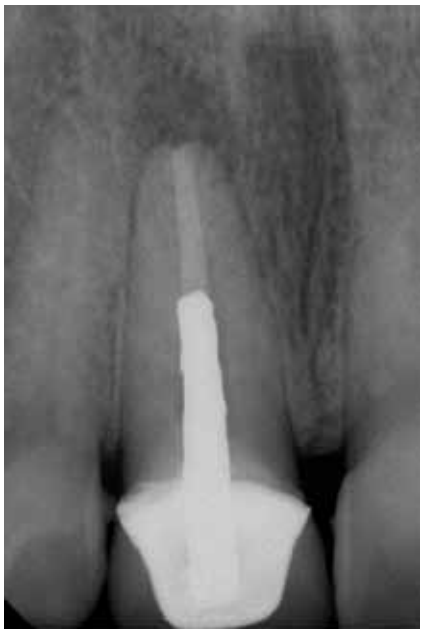
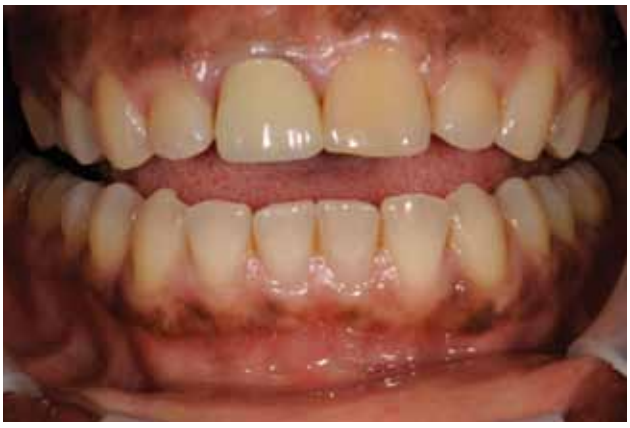
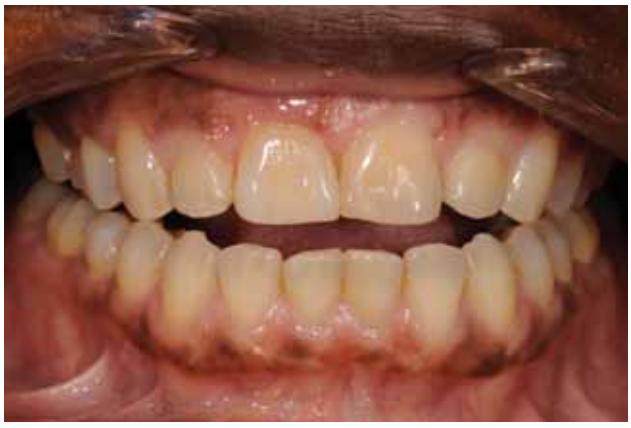


Figure 3: Preoperative x-ray.





Figures 4a and 4b

Figure 4c

Figures 4a-4c: Preoperative 1:2 smile retracted; gingival level of #8 is 1 mm coronal to #9. Postoperative 1:2 smile retracted; free gingival margin level is more ideal on tooth #8 and closer to the free gingival margin level of tooth #9.

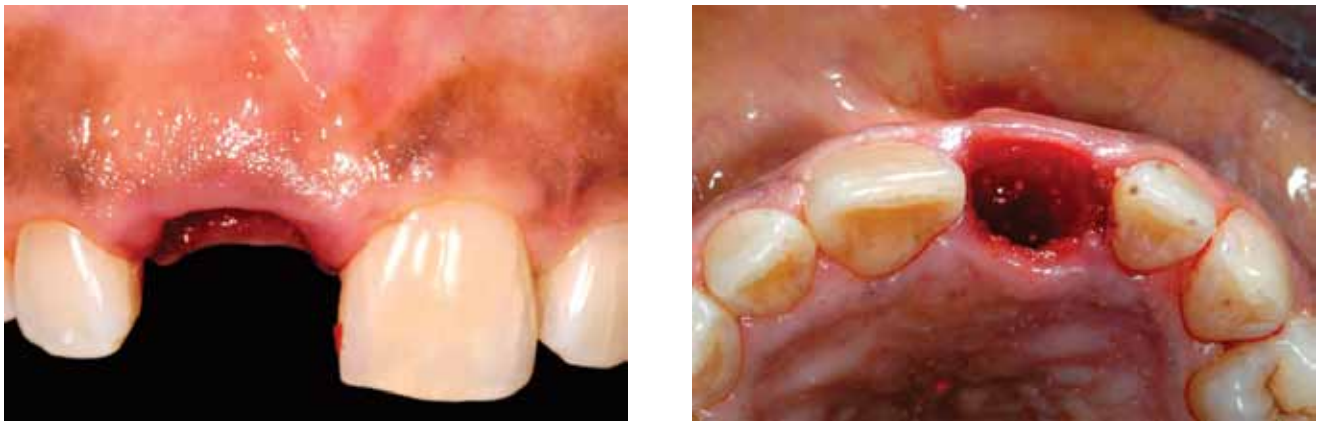


Figure 5: Atraumatic extraction of #8 with particulate bone graft placed. Papillae remain at ideal levels after extraction.

Biologic Considerations

- Was there enough bone available for an implant?
- Was there adequate space between the roots for an implant? (5 mm to 7 mm is needed between the roots of the adjacent teeth for successful placement of an implant crown).[2]

The bone levels on the facial and interproximal teeth were ideal because the tooth had supra-erupted. Facial bone was 4 mm below the free gingival margin, and the patient had no loss of interproximal bone (Fig 3).

Esthetic Considerations

Soft tissue ridge evaluation: The free gingival margin was 1 mm coronal to the adjacent tooth as illustrated in the preoperative view of Figure 4. In implant placement, the patient will lose 1 mm of gingival tissue apically from this margin if the bone is 4 mm from the free gingival margin.[1]

Papillary Heights

When the contact is within 5 mm from the crest of bone, no black space will be present.[3] The papillae will regenerate at least 5 mm from the crest of bone with the presence of an adjacent tooth. With implant placement, this tissue level is 4 mm from the height of bone. In this case, the papillary heights were 1 mm coronal to the adjacent central. Because tooth #8 was supra-erupted, this would put the free gingival margin and papillary heights equal to that of tooth #9 after extraction and implant placement and when 1 mm tissue height was lost (Figs 4a-4c).

By choosing to place the implant immediately at the time of extraction, the soft tissue and bone would remain supported, and loss of bone and tissue would be minimal if an atraumatic extraction could be accomplished.[4]

In this case, tissue and condition of bone found at the time of extraction would also determine the need for grafting. Considering the normal loss of tissue and bone being .5 to 1 mm after extraction of the tooth, the tissue levels will be ideal if the soft and hard tissue is not destroyed by trauma during extraction. These things are greatly dependent upon the surgical techniques used. The surgeon should be aware that this type of extraction may take longer and adequate time must be allotted for the surgery. Whereas the typical extraction may take three minutes, the atraumatic extraction may take an hour or more.

Functional Considerations

Overbite and overjet: This patient had a 1-mm overbite and 1-mm overjet. Her occlusion was on the other anterior teeth in centric relation, and anterior guidance was on the other anterior teeth in excursive movements. This again was the ideal situation for an implant restoration because there would be no excessive stress placed on the restoration. Considering all of these factors, this case was ideal for immediate implant placement without grafting.

Types of Implant Crown Retention

Screw-retained versus cement-retained implant crowns: The cons of screw-retained implant crowns are esthetics and occlusion.[1] Because this was an upper anterior tooth, the access hole would be on the lingual and not in the esthetic zone. The pros are no concerns with residual cement and ease of retrievability. For these reasons, a screw-retained crown was chosen for this case.

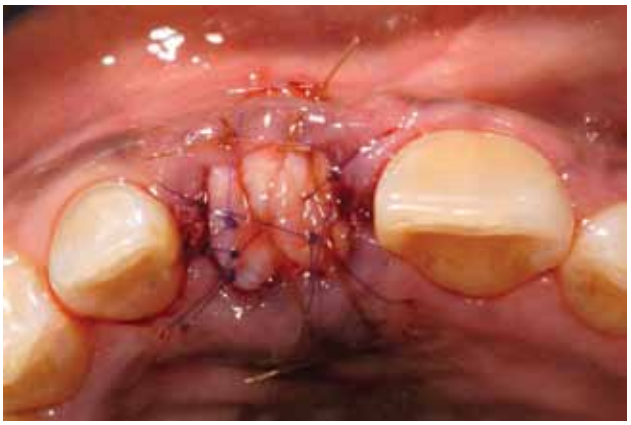


Figure 6: Socket preservation with connective tissue graft in place. Collagen plug to hold papillae and free gingival margin in place during three-month healing period of bone graft placed at the apex of the socket.

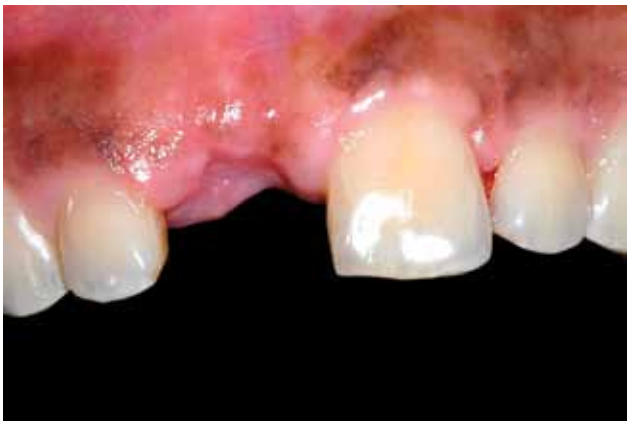


Figure 7: Healed extraction site #8, three months after extraction of tooth #8.

Figure 8: Open tray implant-level impression coping made on day of implant placement.

Treatment Plan and Treatment

The treatment plan consisted of atraumatic extraction of tooth #8 and immediate implant placement.

Unforeseen Circumstance

The tooth was extracted atraumatically. In this case, however, the periodontist was unable to place the implant at the time of extraction because primary stabilization of the implant within the envelope of bone was not achievable (Fig 5). There was a lesion at the apex of the root that made stabilization impossible. Therefore, a staged approach was used. Now the extraction/immediate placement turned to a delayed approach with the focus on socket preservation. The implant site was grafted with Puros cancellous particulate allograft (Zimmer Dental; Warsaw, IN) and a collagen plug. This allows bone to regrow at the apex of the extraction site, and the collagen plug would hold the papillae in place (Fig 6).

An Essex stent with the patient's own tooth sectioned at the cemento-enamel junction was used as a temporary.[5] The surgical site was allowed to heal (Fig 7).

Implant Placement

At the next appointment, three months later, a NobelActive implant (Nobel Biocare; Yorba Linda, CA) was placed using a punch incision to preserve peri-implant tissue. To simplify shaping of the zirconia abutment, at the time of surgery, an index was made using an open tray impression coping (Fig 8). The surgical index, impression coping, and prefabricated zirconia abutment along with photographs were given to the laboratory technician.

At the next appointment, five days later, final impressions were

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Dentistry courtesy of Dr. Greg Solich, Colorado Springs, CO.
Restorations fabricated by Aurum Ceramic.

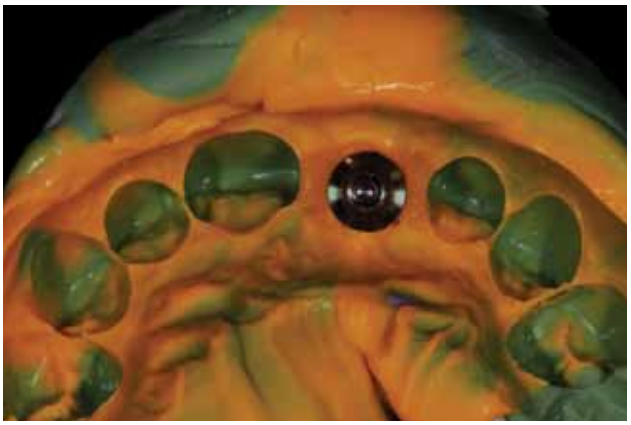


Figure 9: Final impression with coping picked up.

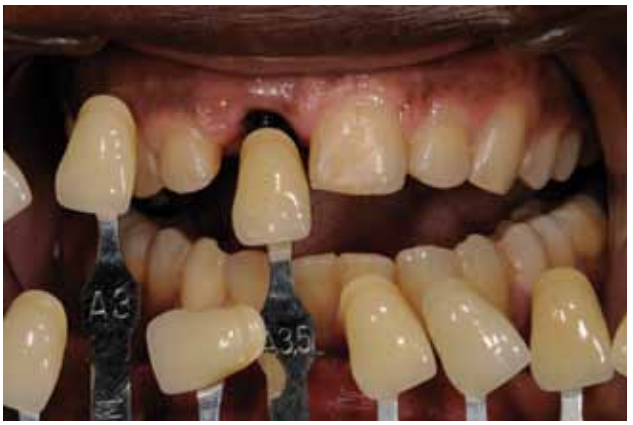


Figure 10: Final shade photograph with shade guide.

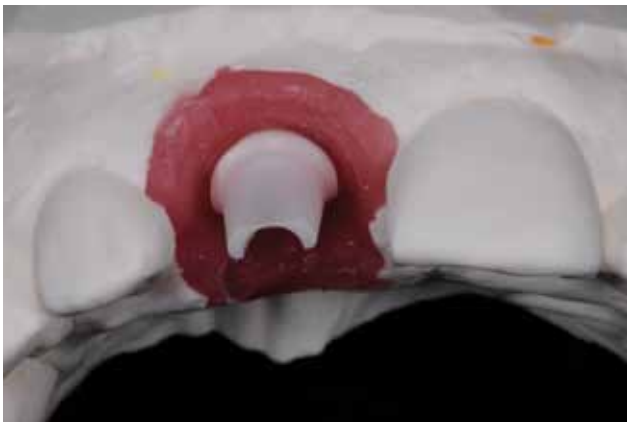


Figure 11: Prefabricated abutment tried in on model.

made with an open tray 6-mm impression coping; the laboratory technician was present to check custom subgingival contours of the zirconia abutment and evaluate final shade and shaping. The healing abutment was again placed and an Essex stent was again used as a temporary.

The impression was sent to a laboratory with a digital picture of a Vita 3D shade tab (Vident; Brea, CA) (Figs 9 & 10). The laboratory fabricated the model with a soft tissue to better manage the subgingival emergence profile. The prefabricated zirconia Procera esthetic abutment (Nobel Biocare) was tried in on the model to see how much soft tissue support was necessary (Fig 11).

Zirconia

The Venus porcelain system (Heraeus Kulzer; Armonk, NY) has a special adhesive paste specifically for zirconia that is called ZR adhesive paste and is applied to the zirconia framework. The organic pigments in the adhesive offer increased control of the application and burn out without leaving residues. The firing temperature is 1050° C with a hold time of 10 minutes. This first step is important for any zirconium crown or bridge as well as custom abutments. This firing simultaneously results in the cleaning of the framework and realigns the monoclinic zirconium oxide crystals into the tetragonal phase. ZR adhesive provides an unsurpassed bonding to the zirconia coping, as well as enhancing the fluorescent quality of the framework. The zirconia option allows for well-integrated margins, as well as the ability to create lifelike restorations with surface characteristics for optimal results. Shoulder ceramic with HT (neck translucent)

Figure 12: Fabrication of the zirconia core restoration.

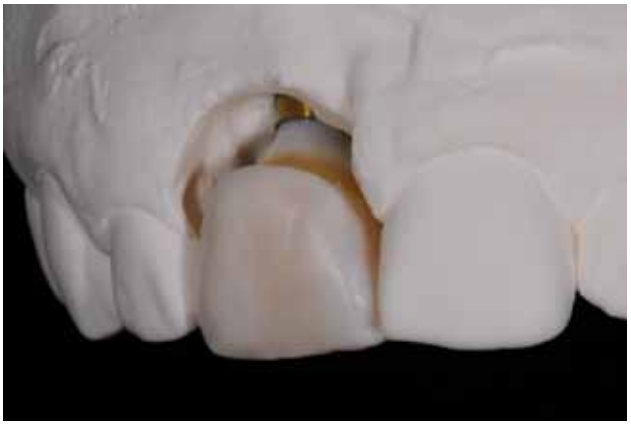


Figure 13: Translucent ceramic laid to full contour.

Figure 14: Final restoration stained and glazed.

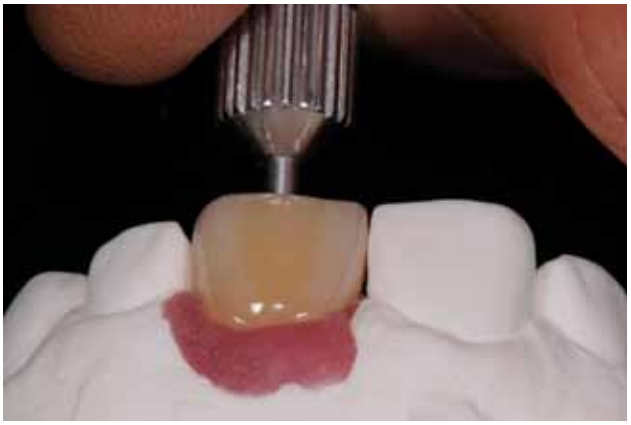


Figure 15: Facial contours of the screw-retained restoration.

(Creation ZI, Willi Geller, Jensen Industries; North Haven, CT) was applied to create the support for the subgingival esthetic zone. The shoulder ceramic has high fluorescence and transmits more natural light.

FABRICATION

The fabrication process for an all-ceramic restoration using a zirconia core is similar to the process used for porcelain-fused-to-metal restorations (Fig 12). After the first bake, the ceramic was characterized with stain and baked to set the effects in place. After evaluating the intensity of the effect, more translucent ceramic was overlaid to a full contour (Fig 13).

After the bake, it was shaped and texturized, and a final glaze cycle was done and then manually polished. It is very important to look at the shape from different angles (Fig 14).

Implant placement to the lingual allowed us to fabricate a screw-retained restoration, so as to have accessibility to retrieve when we needed to and eliminate the cement line (Fig 15).

The ceramist chose zirconia as a restorative material because it is more esthetic than metal and more biocompatible with soft tissue.

The use of this zirconia implant system also allows the technician to easily create a lifelike layer and brilliant surface characteristics with

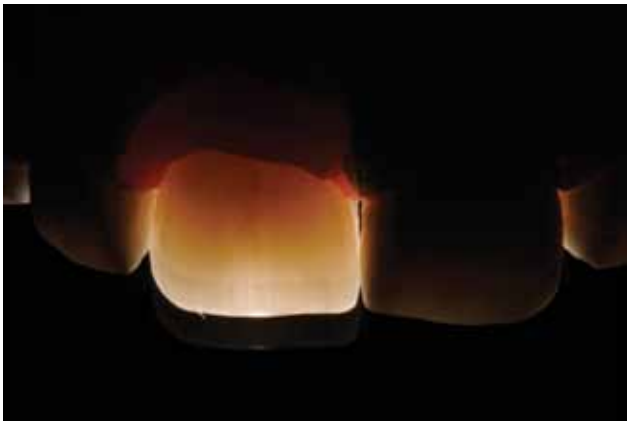


Figure 16: Light transmission of the zirconium restoration.

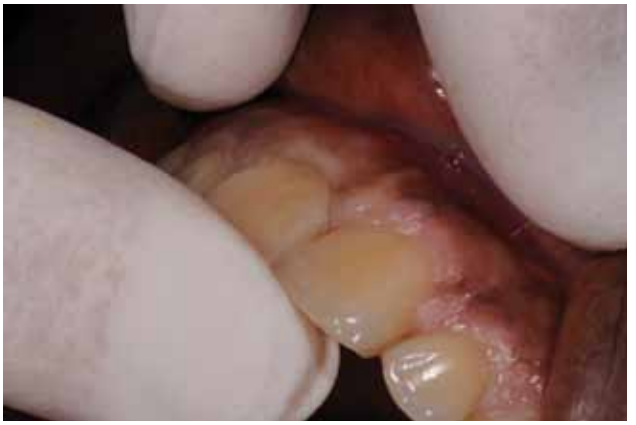
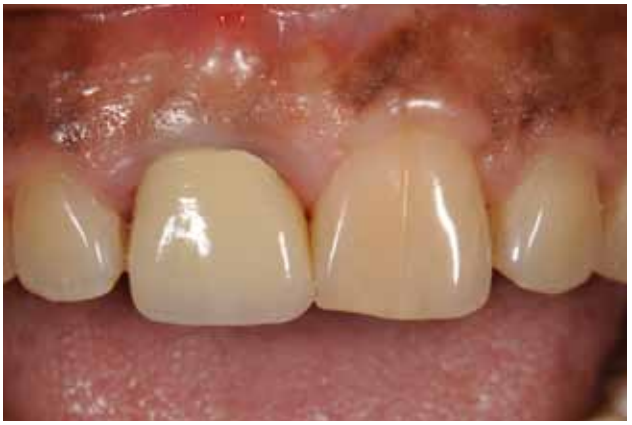


Figure 17: Try in of final crown and blanching of tissue, as ideal crown contour pushes soft tissue into optimal position equal to that of tooth #9.



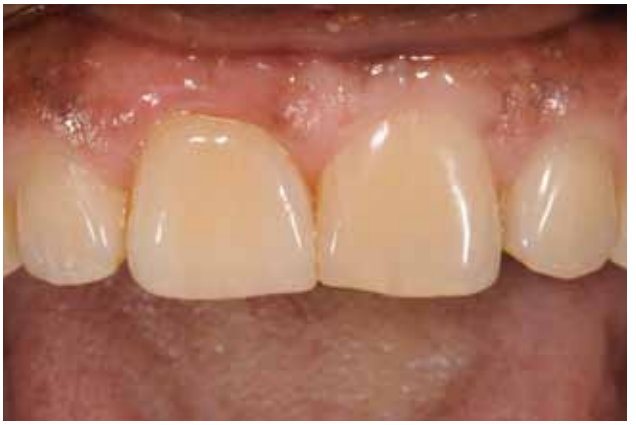


Figure 18: Preoperative and postoperative 1:1 smile.

a simple straightforwardness, enabling light transmittance (Fig 16).

Evaluation

At the next appointment, the laboratory technician evaluated the crown and manually polished the crown to create a natural texture and luster. Photographs were taken and downloaded onto a computer for evaluation.

The finished implant was placed and screwed in slowly to allow the soft tissue to adapt and reshape to match the natural contralateral side (Fig 17). This process can take up to 10 minutes.

The crown was seated and retained with a screw on the lingual. A cotton pellet was placed and the hole was covered with Cavit (3M ESPE; St. Paul, MN).

The potential site must be evaluated prior to tooth extraction, and all biologic and esthetic criteria must be taken into consideration.

Final Appointment

The patient returned one week later for the final appointment. At that time the Cavit filling and cotton pellet were removed. The porcelain was etched with hydrofluoric acid (PorcelEtch, Cosmedent; Chicago, IL) for four minutes and then silanated (Silanator, Cosmedent). One drop each of Clearfil photo catalyst (Kuraray America; New York, NY) and Universal bonding agent were mixed together well and applied to the porcelain lingual hole.

It was light-cured for 20 seconds and a second coat of the bonding agent was placed. Esthet-X composite (Dentsply Caulk; Milford, DE) was placed to fill and cover the lingual hole and light-cured for one minute. The restoration was finished and polished. Final photographs were taken. The ceramist chose zirconia as a restorative material because it is more esthetic than metal and more biocompatible with soft tissue. With the proper ceramic selection and skills of the ceramist, it is no longer an impossible task to match even a single implant; the blend is harmonious with the existing central incisor (Fig 18).

Conclusion

In this case, an interdisciplinary approach to treatment proved successful. Implants can be placed in the esthetic zone with predictable outcome. For this to be a clinical reality the potential site must be evaluated prior to tooth extraction, and all biologic and esthetic criteria must be taken into consideration. It is essential that the team members know how to implement procedures that have previously been proven to be successful.

Acknowledgments

The author extends special thanks to periodontist David Pumphrey, DDS (Atlanta, GA); ceramist Pinhas Adar, MDT, CDT (Atlanta, GA); and endodontist Mark Barr, DDS (Atlanta, GA). Without the knowledge and excellent work of all of these team members, this case would not have been accomplished.

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Examiners' Perspective for Dr. Marilyn Gaylor

by Rebecca K. Pitts, DMD,
AACD Accredited Fellow
(FAACD)
Lake Mary, FL
www.drrebeccapitts.com

Accreditation Case Type III, tooth replacement, presents numerous challenges. It requires that the candidate produce a restoration that appears to be emerging from the soft tissue in the same fashion as a natural tooth. Additionally, the soft tissue architecture as well as the clinical crown of the restoration must mirror the contralateral site.

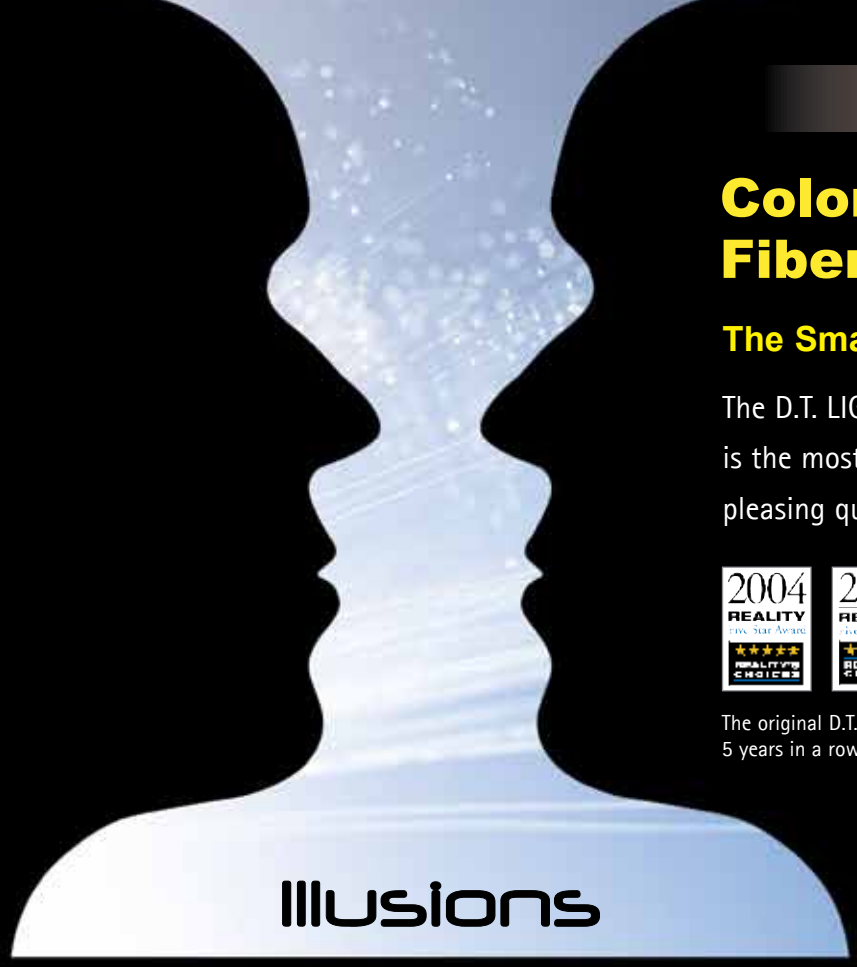
Dr. Marilyn Gaylor chose to replace this patient's failing right central incisor with an implant-supported restoration. She worked together with an oral surgeon and her ceramist to deliver a beautiful result. The crown appropriately emerged from the gingiva. The interdental papillae were well maintained and their peaks were congruent with the neighboring papillae. The zenith of the facial gingival margin was level with that of the left central incisor. Moreover, the ceramic restoration closely matched the contralateral tooth.

Examiners who reviewed the case passed it unanimously. An issue noted by the examiners, however, was the elements of shade. The restoration had slightly higher value and less intense incisal translucency than the left central incisor. Another area observed was the facial gingival margin around the restoration, which was rolled and slightly irregular. A minimal amount of gingival inflammation was observed at the palatal margin. It was also noted that the facial line angles of the restoration could have been improved to further match the two central incisors. This can be verified from the occlusal view and the highlights captured in the frontal view. The issues mentioned above were considered minor by the examiners.

Dr. Gaylor and her team are to be congratulated for their exceptional execution of a challenging case.

AACD Acknowledgment

The American Academy of Cosmetic Dentistry recognizes Dr. Rebecca K. Pitts as an AACD Accredited Fellow (FAACD) and Accreditation Examiner.



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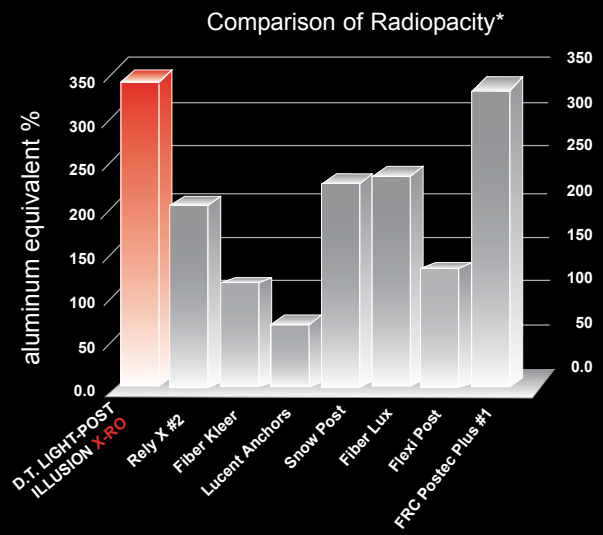

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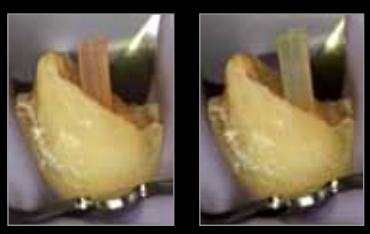

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Cynthia McKim, DMD, FAACD

Dr. McKim received her doctorate in dental medicine from the University of Kentucky College of Dentistry in 1989. She practiced overseas for six years, providing care for a variety of expatriate nationalities. Dr. McKim has a practice in Boise, Idaho, where she focuses on cosmetic restorative dentistry. Her work and techniques have been published in numerous journals and magazines. Dr. McKim has attended many prestigious educational programs including the Eubank Teaching Institute, UCLA Continuums, The Kois Center for Restorative Excellence, the Hornbrook Group, and others. Dr. McKim and her husband, Tom, live in Boise with their two sons. She enjoys the equestrian sport of dressage, scuba diving, and skiing.

Thomas E. Oppenheim, DMD, FAACD

Dr. Oppenheim received his dental degree from the Medical College of Georgia School of Dentistry and completed a general practice residency in 1979. He has maintained a comprehensive restorative practice with an emphasis on esthetics for over 20 years in Thomasville, Georgia. Dr. Oppenheim achieved Accreditation in the AACD in 1996, and now serves as a mentor and Accreditation Examiner. He has written and lectured on the topics of smile design and having a "no-compromise" approach to pursuing excellence in cosmetic dentistry. He is an honorary Fellow of the International Academy for Dental-Facial Esthetics and is a continual student of the rapidly changing field of restorative and cosmetic dentistry.

John F. Weston, DDS, FAACD

Dr. Weston graduated from the University of Oklahoma College of Dentistry in 1989. As a commissioned officer in the U.S. Navy, he completed a general practice residency at the U.S. Naval Hospital, San Diego, and was deployed to the Middle East during Operation Desert Storm. Dr. Weston has served twice as chair of the AACD's Professional Education Committee. He is a member of the AACD Board of Directors, and is an active Accreditation Examiner. Dr. Weston lectures nationally and internationally, publishes articles, and is the director of Scripps Center for Dental Care, a multispecialty dental center located at Scripps Memorial Hospital, La Jolla, California.

Gregory Wright, DDS, FAACD

After graduating from the University of Oklahoma College of Dentistry in 1988, Dr. Wright completed a general practice residency with the Dallas VA Hospital in 1989. He then entered private practice as an associate. In 1992, Dr. Wright and his wife, Cindy, opened a private practice in Southlake, Texas. An AACD member since 1994, Dr. Wright became Accredited in 2000. He serves the Academy as an Accreditation Examiner, a member of the Ethics Committee, and as chair of the Written Examination Committee. He considers earning his fellowship a highlight of his career and thanks his family and staff for their support and encouragement; special thanks go to Dr. Jeff Morley and Dr. Jimmy Eubank.

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Kenneth L. Banks, DDS, AAACD

Dr. Banks is a 1984 graduate of West Virginia University School of Dentistry and has been an affiliated member of the AACD since 1996. Dr. Banks and his team practice in Inwood, West Virginia. He has completed cosmetic continuums at Louisiana State University School of Dentistry, Dr. David Hornbook's PAC-Live, and Dr. Newton Fahl's Mastering Composite Artistry in Brazil. He is also a member of the American Dental Association, the West Virginia Dental Association, and the Eastern Panhandle Dental Society. Dr. Banks had an article published in the Summer 2007 Journal of Cosmetic Dentistry. *He lives in Inwood, West Virginia, with his wife, Rhonda, and their two children.*

Sandra Cook, CDT, AAACD

Ms. Cook became a technician in 1984, after pursuing an education in art and design at the University of Illinois. An active member of the AACD since 2003, her work has been featured on two covers of the Journal of Cosmetic Dentistry, *and has won awards in Smile Gallery competitions. She specializes in creating beautiful smiles in porcelain, and works with many of the leading clinicians in the U.S. Ms. Cook has taught a number of advanced-level courses for both doctors and technicians. She has worked at CMR Dental Laboratory in Idaho Falls, Idaho, for the past 13 years.*

Keri Do, DDS, AAACD

Dr. Do received her doctorate in dental surgery from the University of Southern California in 1996. She then continued her studies at Loma Linda Veteran's Hospital with a general practice residency. She is currently a committee member for the AACD's Give Back A Smile™ program. She has previously served as an examiner for the Hawaii State Dental Board, and is a member of the Academy of General Dentistry, the International Association for Orthodontics, the American Dental Association, the Hawaii Dental Association, and the Honolulu County Dental Society. Dr. Do practices and lives in Honolulu, Hawaii, with her husband and two children.

Rick Durkee, CDT, AAACD

Mr. Durkee graduated from the Dental Technology Institute in Tustin, California, in 1973, and became a certified dental technician in 1979. Since 1980 he has been the owner of and lead ceramist at Lafayette Dental Laboratory in Phoenix, Arizona. Mr. Durkee attends 100+ hours of continuing education each year. In addition to maintaining his certification requirements, Mr. Durkee has studied extensively with leading ceramists such as Willi Geller, Makoto Yamamoto, Masahiro Kuwata, Oliver Brix, and Dr. Edward McLaren. He also spends time in Germany each year studying with master ceramist Klaus Mutertheis.

Newly Accredited Members

Marilyn Gaylor, DDS, AAACD

Dr. Gaylor is a 1984 graduate of the University of Tennessee School of Dentistry. She has completed numerous hours of continuing education at such institutions as the Spear Institute, The Pankey Institute, The Dawson Academy, and Louisiana State University's Cosmetic Dentistry Continuum parts I and II. In addition to membership in the AACD, she is a member of the American Dental Association and the Pierre Fauchard Academy, and is a Fellow of the Georgia Dental Association. Dr. Gaylor is a visiting faculty member at the Spear Institute, and maintains a private practice in Atlanta, Georgia, with an emphasis on reconstructive and cosmetic dentistry.

Steven A. Gorman, DDS, AAACD

Dr. Gorman received his dental degree from the University of Minnesota School of Dentistry in 1981. He currently practices comprehensive esthetic, reconstructive, and implant dentistry in North Oaks, Minnesota. Dr. Gorman is a founding member and past president of the Minnesota Academy of Cosmetic Dentistry and is a faculty member of The Implant Learning Center. He has studied extensively with Robert Nixon, and at The Pankey Institute and The Dawson Academy. He also credits Drs. Frank Spear, John Kois, and Jimmy Eubank for their influence on his work. Dr. Gorman enjoys time with his wife, Connie, and their three daughters.

Jack Griffin, DMD, AAACD

Dr. Griffin has maintained a full-time practice emphasizing cosmetics and doing all phases of dentistry in St. Louis County, Missouri, since 1988. He is honored to have helped teach many dentists how to improve their dental skills with digital photography, direct bonding techniques, efficiency with porcelain veneers, practice management, CAD/CAM dentistry, and other topics in lectures and publications. He is currently the chair for continuing education and MasterTrack coordinator for the Missouri chapter of the Academy of General Dentistry and is head of the Greater St. Louis area CEREC study club. Dr. Griffin is thankful to be surrounded by those who help to make the dental experience rewarding and enjoyable.

Edgar Jimenez, AAACD

Mr. Jimenez started his career 13 years ago as an in-office dental technician. That experience showed him the importance of communication between the dentist and technician. Mr. Jimenez has studied at The Dawson Academy, the Institute for Oral Art and Design, and the Spear Institute. He learned advanced ceramic techniques under Brad Jones at Professional Dental Arts. Mr. Jimenez now owns and operates a boutique laboratory, Edgar Jimenez Dental Studio, located in North Oaks, Minnesota, which specializes in full-mouth reconstruction and cosmetic dentistry. He also maintains a faculty position at the Implant Learning Center in Lake Elmo, Minnesota.

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Suzanna N. Lee, DDS, AAACD

Dr. Suzanna Lee graduated in 1996 from the University of the Pacific School of Dentistry in San Francisco, California. She currently maintains a private practice with her sister, Dr. Trinh Lee, in Mountain View, California. She is a firm believer in continuing education (CE) and has completed over one thousand hours of CE courses at institutions nationwide. Dr. Lee has achieved a Fellowship and a Mastership from the Academy of General Dentistry; a Fellowship from the International Congress of Oral Implantologists, and a Fellowship from the Misch Implant Institute. She enjoys spending time with her husband, and their five-year-old son and two-year-old daughter.

Trinh N. Lee, DDS, AAACD

Dr. Trinh Lee graduated from the University of the Pacific School of Dentistry in 1998. Since then she has actively pursued additional training in all aspects of dentistry in order to expand on her dental knowledge and skills. Besides being an active member of the AACD since 2002, She is also a Fellow of the Misch Implant Institute, a Fellow of the International Congress of Implantologists, and a Fellow and Master of the Academy of General Dentistry. Currently, she is in private practice with her sister, Dr. Suzanna Lee, in Mountain View, California. She and her husband, Hieu, enjoy spending quality time with their two children.

Stevan J. Orser, DDS, AAACD

Dr. Orser graduated from Loyola School of Dentistry in Chicago in 1975, after which he completed a general practice residency at Chicago's Rush-Presbyterian-St. Luke's Medical Center. He has reviewed esthetic articles for the Journal of the American Dental Association *and is a member of the American Dental Association; he is also a member of the American Equilibration Society. He is an assistant faculty member at the Eubank Institute in Plano, Texas, teaching the occlusion system developed by Dr. Jimmy Eubank. Dr. Orser is a founding member and senior partner of Arlington Adult Dentistry in Arlington Heights, Illinois. The group has been in practice for more than 25 years.*

William K. Parks, CDT, AAACD

Mr. Parks received his initial laboratory training in 1972 in the United States Air Force. He is the owner of Precision Dental Designs, a certified dental laboratory located in Anchorage, Alaska, specializing in comprehensive restorative techniques. He is also co-founder of The Alaska Academy of Dental Technology. Mr. Parks is a sustaining member of the AACD. He has lectured throughout the United States and Canada on fabrication techniques for IPS Empress, Authentic, and Noritake porcelain systems. He has written numerous technical articles for laboratory trade magazines. His passion for the work has led him to study under many of the masters in the field of dental technology.

Newly Accredited Members

Wayne Payne, AAACD

Mr. Payne graduated from the Pasadena City College School of Dental Technology in 1975. After three years working as an in-office technician, he established Payne Dental Lab in San Clemente, California, where his team includes his son, Tyler. Mr. Payne has completed occlusion continuums at Loma Linda University and Occlusion I and II courses at The Kois Center. He has taken live patient courses at University of the Pacific, at Pac-Live with Dr. David Hornbrook, and with Dr. Tom Trinkner; and esthetic ceramic courses from Matt Roberts, Don Cornell, and Oliver Brix. He also has studied CAD/CAM ceramics under Lee Culp and prepless veneer technology with Mark Willis.

Christopher Ramsey, DMD, AAACD

Dr. Ramsey received his dental degree from Temple University School of Dentistry in 1999. He maintains a practice in Jupiter, Florida, focusing on comprehensive esthetic and general dentistry. An alumnus of The Pankey Institute, Dr. Ramsey is an editor for Dental Compare *and an editorial review board member for the* Journal of Cosmetic Dentistry *and* PPAD. *He also is a product consultant for* The Dental Advisor *and for numerous dental manufacturers. His memberships include the American Dental Association and the Florida Academy of Cosmetic Dentistry. Dr. Ramsey is past president of the North Palm Beach Dental Society.*

Bonnie J. Rothwell, DMD, AAACD, FAGD

Dr. Rothwell is a 1996 graduate of the Medical University of South Carolina College of Dental Medicine in Charleston, South Carolina. After graduation, she attended the Advanced Education in General Dentistry residency program in St. Petersburg, Florida, affiliated with the University of Florida School of Dentistry. Dr. Rothwell has been in private practice on Hilton Head Island, South Carolina, for over 11 years. She has enjoyed membership in the AACD since 1996 and has taken hundreds of hours of continuing education including Louisiana State University's Cosmetic Continuums I and II. Dr. Rothwell is active in a number of local and regional dental societies.

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Clinical Science and Art

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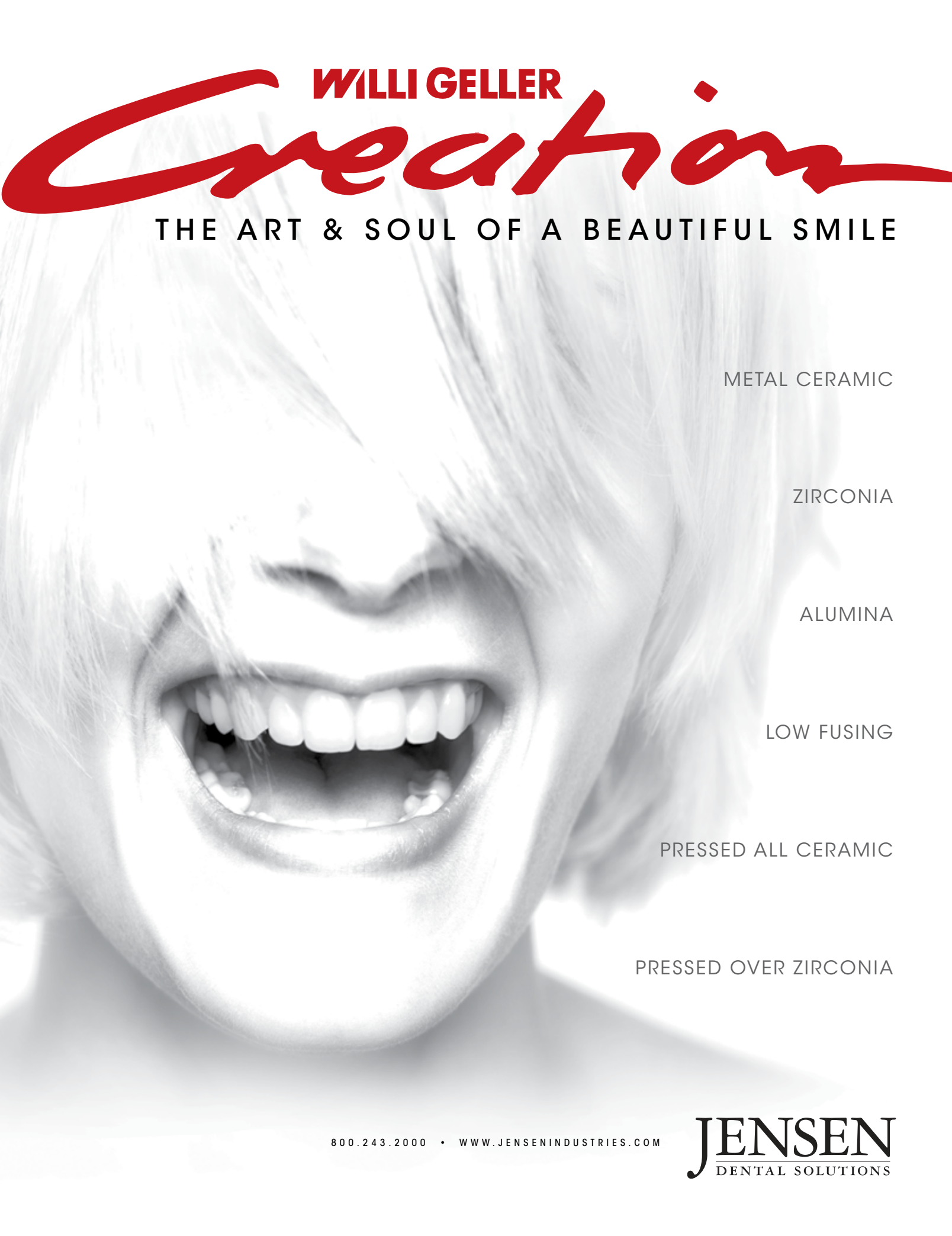
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Cover Story

by M. Johnson Hagood, DDS, AACD
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Vero Beach, FL
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Introduction

A life-changing impact can be made on our patients' lives with simple, minimally invasive cosmetic dentistry. In the case discussed here, a smile was transformed from "embarrassing" to stunning with whitening, gingival recontouring, and restoration of six maxillary anterior teeth with minimally prepared indirect porcelain veneers.

A life-changing impact can be made on our patients' lives with simple, minimally invasive cosmetic dentistry.

Patient History

The patient, a 30-year-old mother of two young sons, had been unhappy with her teeth for more than a decade. Tetracycline staining affected most of her teeth. The enamel of many of her anterior teeth had suffered decalcification during orthodontic treatment, and a bicycle accident resulted in damaged incisal edges of her central incisors. A previous dentist had treated her maxillary central and lateral incisors with direct composite veneers, which gradually broke down over time. Fortunately, that dentist completed the treatment with little to no removal of tooth structure. Nevertheless, the patient had been embarrassed to smile for many years and wondered why her teeth could not look as nice as other people's (Fig 1).

Figure 1: Preoperative facial view.

EXAMINATION, RECORDS, AND CO-DIAGNOSIS

OCCLUSION

The patient's goal was simply to "fix my smile." In this case esthetic dentistry was an easy sell, but significant effort was invested in helping the patient to understand and appreciate the functional requirements that make beautiful dentistry last.

Significant effort was invested in helping the patient to understand and appreciate the functional requirements that make beautiful dentistry last.

A thorough examination included evaluation of the temporomandibular joints, masticatory musculature, and occlusion; these revealed Piper Class I joints, normal comfortable musculature, and some undesirable occlusal contacts due to the absence of good anterior guidance.[1] Her teeth contacted prematurely in the left posterior in centric relation (CR), and her mandible slid forward and vertically by approximately 1 mm as she squeezed her teeth into maximum intercuspation (centric occlusion). This typical occlusion can be duplicated with mounted study casts with extreme precision using an E-tab CR bite registration as described by Dr. Jimmy Eubank.[2] Along with impressions for study casts and an Artex facebow (Jensen Industries; North Haven, CT), the relationship between upper and lower arches in CR was precisely duplicated on an Artex articulator.[2]

Fabrication of an E-tab involves temporary bonding of composite resin to upper and lower anterior teeth. The lower bead of composite resin becomes a central bearing point placed on the incisal edges of the central incisors. The upper portion is built into a flat plane on the central incisors, placed so as to receive the central bearing point of the lower.

Using bimanual manipulation in CR, a repeatable point of contact can be found for most patients. This closed position was recorded for this patient using Blu Mousse bite registration material (Parkell; Edgewood, NY) and was verified to be accurate when, upon removal from the mouth, a well-defined hole in the registration material was visible without excess flash of material where the central bearing point meets the upper plane. Dr. Eubank calls this successful bite registration a "zero-flash bite."[2]

Using bimanual manipulation in CR, a repeatable point of contact can be found for most patients.

An accurate representation of the actual clinical occlusion allows for a thorough analysis of the current occlusal scheme, as well as predictable treatment planning for occlusal correction through trial equilibration and diagnostic work-up on mounted casts. This level of attention to function is important to predictable long-term comfort and stability of the case; therefore, time was taken to discuss these principles with the patient during the process of examination and record taking. This process of co-diagnosis, first described by the late Dr. Bob Barkley,[3] is paramount to comprehensive treatment acceptance and creation of a healthy, collaborative relationship between dentist and patient.

BIOLOGY

A full series of radiographs was taken and all hard and soft tissues of the mouth were evaluated. Full-mouth periodontal pocket-depth measurements were recorded, with

Figure 2: Before and after smile.

Figure 3: Before and after retracted view.

special attention to the exact sulcus depths of the maxillary anterior teeth. This portion of the examination yielded no significant findings and little evidence of risk involving biologic systems.[4]

Esthetics

A full series of photographs was taken with a D-200 camera (Nikon; Melville, NY) and Commander flash system (Nikon). The photographs, along with other records and data, were reviewed with the patient at a subsequent appointment. During this review, smile-design concepts were discussed, educating the patient so that she could become more involved in the planning of her treatment. The following esthetic problems were noted:

- asymmetric smile-line (the incisal edges of the maxillary anterior teeth did not parallel the upper border of the lower lip)
- uneven gingival display (the gingival zeniths of #7 and #8 did not match those of #9 and #10)
- uneven tooth-size proportions (the lengths of the right anterior teeth did not match those of the contralateral teeth)
- excessive width-to length ratios
- diastema between the central incisors
- color and morphology of enamel (tetracycline staining, decalcified enamel, incisal chipping, and failing composite restorative material) (Figs 2 & 3).

The patient wanted to solve these problems and do so with minimal invasive dentistry, long-lasting results, and reasonable financial investment. Options of whitening, and direct and indirect veneer options were reviewed and a plan of treatment was agreed upon.

TREATMENT PLAN

The treatment plan was as follows:

- deep bleach whitening
- equilibration
- gingivectomy #7, #8
- indirect porcelain veneers ##6-11.

TREATMENT

WHITENING

To diminish as much of the antibiotic staining as possible, we chose an aggressive whitening treatment. The deep bleaching technique, as described by Dr. Rod Kurthy,[5] was used. It involves specific fabrication of trays designed to hold bleaching gel in contact with target enamel overnight; a one-hour clinical whitening with Aquabrite 16% hydrogen peroxide gel (Aquamed Technologies; Chicago, IL); followed by 14 consecutive nights wearing the gel-filled trays; and, finally, another half-hour of clinical whitening. Each application of whitening gel was preceded and followed by application of Aquaseal desensitizing agent (Aquamed) containing hydroxy ethyl methacrylate, fluoride, and benzalkonium chloride. The treatment resulted in several shades of difference in value and chroma content and helped minimize the need for heavier reduction in order to block color with the restorations.

TISSUE RECONTOURING

To create symmetry among the gingival zeniths of the patient's anterior teeth, a "gum-lift" was needed for teeth #7 and #8. Periodontal sulcus depths at the height of contour of the facial tissue margins of those teeth measured approximately 2.5 mm. This allowed for 1.5 mm of marginal tissue removal, leaving a 1.0-mm sulcus depth, which both satisfied the desired tissue heights and did not violate the biologic tissue attachment complex. Therefore, removal of osseous crest was not needed in order to gain healthy, stable soft tissue margins in the area.[6] The gingivectomy was accomplished using electrosurgical excision (Sensimatic Electrosurge 500SE, Parkell), being careful to avoid removal of interdental tissue comprising papillae.

TOOTH PREPARATION

For over five decades we have known that bond strengths to enamel are significantly greater than that to dentin.[7] Conversely, a minimal amount of reduction is almost always required to facilitate placement of bonded porcelain restorations, and their long-term integrity requires the need for a sufficient and homogeneous ceramic thickness to provide the restoration with some intrinsic mechanical resistance.[8] With these two opposite parameters in mind, the diagnostic work-up of the desired length and contours of the final restorations is critical in maximizing both enamel bonding and porcelain thickness. In this case, two Sil-Tech putty (Ivoclar Vivadent; Amherst, NY) molds were made from the diagnostic work-up. One was used for fabrication of provisionals and one was cut back as a preparation guide. The preparation guide was used to help provide for minimal and uniform space for porcelain while concomitantly minimizing the need for reduction of enamel.

Marginal preparation was extended right to the gingival margins. Ultrapak size 000 retraction cords (Ultradent; South Jordan, UT) were placed subgingivally, and the margins were further extended by .10 to .25 mm apically.[9] A second set of Ultrapak size 00 retraction cords was placed to provide for lateral retraction and was subsequently removed for two reversible hydrocolloid impressions (VanR; Oxnard, CA). These impressions were immediately poured with Resin Rock (Whipmix; Louisville, KY) die stone.

Provisionals were fabricated directly with shade B05 Protemp Garant (3M ESPE; St Paul, MN), relined as needed, trimmed, polished, and bonded using a spot-etch technique.

The patient tested the provisionals for several days and returned for a crucial appointment. At this visit, the patient was asked to critically evaluate the provisional, providing feedback regarding esthetics, speech, and comfort. Adjustments were made and the provisionals were recorded with a series of photographs, an impression, and facebow. The lower working cast was mounted against the upper facebow-mounted provisionals, offering the best representation on the articulator of the clinical provisionals for the technician's most predictable ability to provide an appropriate smile line perpendicular to the long axis of the patient's face.

Vita shade OM1 (Vident; Brea, CA) was selected as the basic intended shade for the final restorations, although a color gradient, as described by Dr. Jim Fondriest,[10] ranging from OM1 in the incisal thirds of the centrals and laterals to A1/A2 in the cervical and interproximal of the canines, was color-mapped and discussed with the technician.[10]

LABORATORY

Esthetic pressed ceramic (Ivoclar Vivadent) was used to fabricate the veneers. Shade EO1 ingots were pressed to full contour restorations and then cut back and built back with layering porcelain, enabling

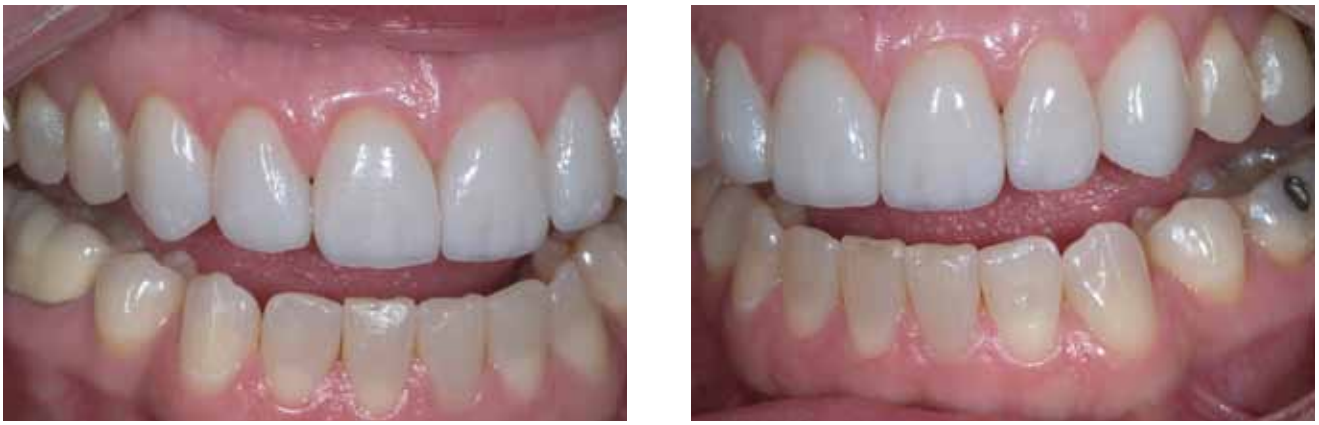

Figure 4: Note marginal tissue health and blending of final restorations with surrounding dentition.

Figure 5: Postoperative full-face view.

all color and characterization to be contained internal to the restorations.

It was careful planning, adherence to proven protocols, and collaboration with the patient that made the case so simple and successful.

Delivery

The provisionals were removed and all residual composite resin cement was removed with a high-speed smooth diamond bur. The restorations were tried in and the patient was able to view and accept them.

The internal surfaces of the restorations were etched with 10% hydrofluoric acid for two minutes, rinsed, dried, and placed in an ultrasonic bath with 95% alcohol for five minutes. This enhanced mechanical retention by removing ceramic residue and remineralized salts after etching. The internal surfaces were then treated with Silicoup silane (Heraeus Kulzer, Armonk, NY).[11] The veneers were bonded using Uni-etch 37% phosphoric acid with benzalkonium chloride (Bisco Products; Schaumburg, IL), etching for 30 seconds, followed by rinsing, application of dentin primer (All-bond 2, Bisco), unfilled resin, and cementation with Variolink translucent shade composite cement (Ivoclar Vivadent). All surfaces were cured for at least 60 seconds with an Optilux 501 curing light (Kerr/Demetron; Orange, CA), and excess

cement was removed. The occlusion was refined and the patient excused (Fig 4).[12,13]

CONCLUSION

This was a simple case when it came time to execute the treatment. But it was careful planning, adherence to proven protocols, and collaboration with the patient that made the case so simple and successful. The patient gained the confidence to smile that she had not had for so long, changing her life for the better; and the case was done with minimally invasive, predictable dentistry (Fig 5).

Acknowledgments

The author thanks technician Rick Shafer, CDT (Bay View Dental Laboratory, Chesapeake, VA); and photographer Martina Tannery (Martina's Photography, Vero Beach, FL).

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The Predictability, Beauty, and Ease of Pressable Ceramics

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Introduction

As our patients' expectations continue to rise, it becomes profoundly important to use techniques that deliver beautiful—and predictable—results. This article details my latest layering technique. This technique will not only give you more control over esthetics' predictability, but it will also help you create restorations that will surpass today's patients' expectations.

This technique will…help you create restorations that will surpass today's patients' expectations.

Case Objectives

This case had several objectives. One was to correct the reverse smile line; we accomplished this by lengthening the incisors. Another objective was to fill the buccal corridors. This was accomplished by adding to the buccal dimension of the posterior teeth, including crown lengthening on teeth #12 and #13 and replacing tooth #14, which was missing. We also wanted to brighten, refine, and feminize the patient's smile (Figs 1-4).

Necessary Tools

I always start by assembling all the tools necessary to complete the case. This begins with a diagnostic wax-up (Fig 5), which will be evaluated from the photographs of the patient's smile in the form of a provisional. I require a complete laboratory esthetic prescription, which includes the goals of the final case; a checklist of the items included with the case; teeth to be restored; type of restoration desired; preparation shade; detailed shade mapping; type of light source used to take the shade; shape desired; crown lengths (centrals,

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Figure 1: Preoperative portrait, 1:10.

Figure 2: Preoperative smile, 1:2.

Figure 3: Preoperative retracted view, 1:2.

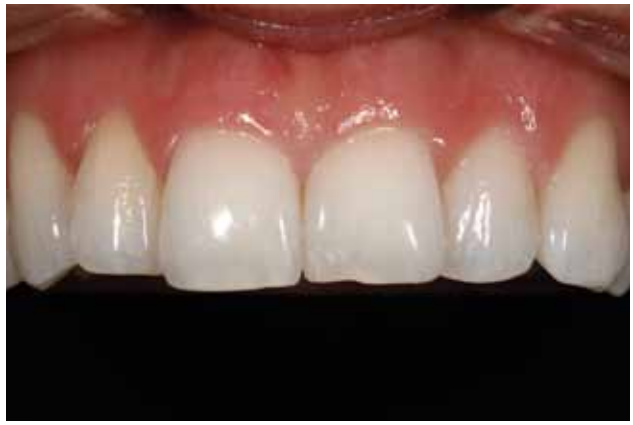

Figure 4: Preoperative, 1:1.

laterals, canines); amount and color of the incisal translucency; surface texture; and any other essential information.

The items that must be included with the case are as follows:

- one or more master impressions
- opposing impression
- preoperative models
- diagnostic wax-up
- bite records
- model or impression of the approved provisionals.

Equally important are these items:

- photographs of the preoperative smile (the 12 standard AACD views)
- eyebrow-to-chin photograph of stick-bite
- eyebrow-to-chin and 1:2 photograph of the natural smile with approved provisionals (taken a couple of days after the preparation appointment) (Figs 6 & 7).

Waxing and Pressing

A silicone putty matrix was formed over the model of the provisional (Fig 8) (any corrections to the provisional model, if necessary, should be made before making the matrix) and quickly placed in a pressure chamber at 60 psi for perfect adaptation (Fig 9). This matrix was

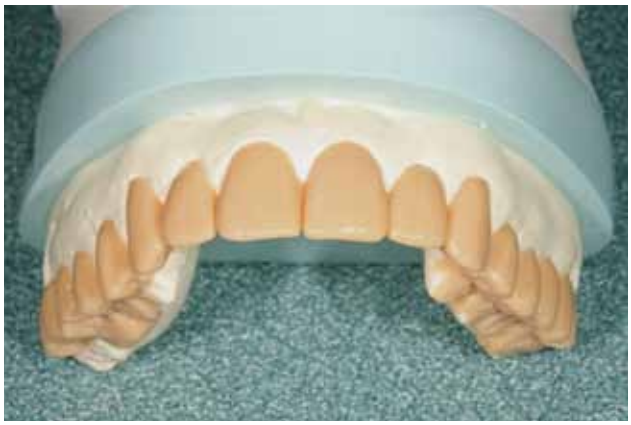

Figure 5: Diagnostic wax-up.

Figure 6: Eyebrow-to-chin view of provisionals.

Figure 7: Lips in repose, provisionals.

Figure 8: Modified model of provisionals.

then placed over the lubricated dies and wax was injected into it (Figs 10-12). The temperature of the wax in the wax injector needs to be very low. The wax should come out of the tip at the consistency of toothpaste. This injection process perfectly reproduced the patient's provisionals on the working model. Using a jeweler's wax injector not only saves six or seven hours of hand waxing, but it also helps to maintain the exact lengths, positions, and tooth forms of the provisionals, which the patient, the doctor, and I approved. (This is where the "predictability" aspect comes in—through accurate matrices and wax injecting.) After the wax had cooled, I carefully removed the matrix (Fig 13).

Using a jeweler's wax injector not only saves six or seven hours of hand waxing, but it also helps to maintain the exact lengths, positions, and tooth forms of the provisionals.

After finalizing the wax-up, I separated the wax units using an ultra-thin knife (Tanaka USA; Skokie, IL). I then sealed the margins, being careful not to disturb the interproximal detail, which closes the black triangles. I invested the wax units in HS Investment (Microstar Corp.; Lawrenceville, GA) with a slight modification to the liquid/water ratio: 15 ml liquid, 10 ml water per 100g of investment powder.

Selecting Materials

In selecting a ceramic material, I first look at the color of the prepa-

Figure 9: Silicone putty matrix of modified provisionals for wax injecting onto the master dies.

Figure 10: Master dies with opaqued framework.

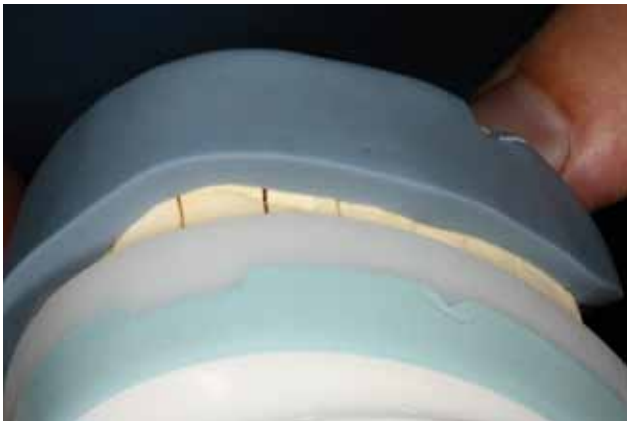

Figure 11: Matrix placement on master model.

Figure 12: Injecting wax.

Figure 13: Removing the matrix.

Figure 14: Color of the preparations.

Figure 15: Incisal facial area beveled back to the pencil line.

Figure 16: Creating a ditch using a knife-edged, diamond-impregnated disk.

Figures 17 and 18: Smoothing out the ditch apically with the contour stone and then with a tapered diamond bur to create a "canvas."

rations. Our patient had perfectly light-colored stumps (stump shade 9) to work with (Fig 14).

I prefer Authentic pressable ceramic (Jensen Industries; North Haven, CT). This system has ingots available in all the different shades in three different values (a "++" is an ingot equivalent to an opacious dentin, a "+" ingot is equivalent to a dentin material, and an ingot without a "+" is equivalent to an enamel). For any given shade, there is an appropriate ingot based on tooth reduction. For instance, if I were to make a veneer for a minimally reduced tooth (.5 mm), I would select an ingot without a "+" because I am just replacing enamel. For a 1-mm reduction veneer, three-quarter crown, or even a full all-porcelain crown, I would select an ingot with a "+." Lastly, if I were taking off an old porcelain-fused-to-metal restoration (particularly if I were dealing with some dark dentin), I would select a "++" ingot.

In this case, my target shade was a bleach shade of 020; to achieve this, I selected a B00+ ingot. This ingot has just enough chroma to hit a 020, and has just enough opacity to still look vital in the mouth while filtering differences in thickness.

CUTBACK AND LAYERING

After divesting and fitting each unit, I was ready to begin my new technique. I outlined the facial and lingual edges of the incisal edge with a red pencil. I then took a .3-mm lead pencil and marked a line .5 mm in from the facial incisal edge. Using a contour stone (Brasseler USA; Savannah, GA), I beveled

Figure 19: Fired internal stain effects.

Figure 20: Internal powder effects.

Figure 21: Fired internal effects.

Figures 22 and 23: Completing the shape and contour.

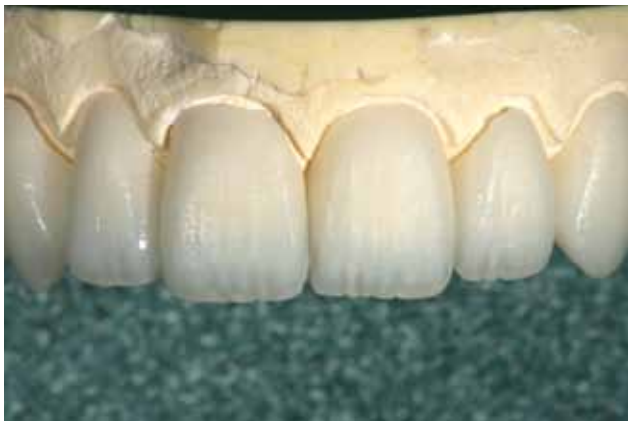

Figure 24: Bisque bake.

Figure 25: Glazed restorations.

Figure 26: Postoperative smile, 1:2.

this incisal facial area back to the pencil line (Fig 15). To preserve the halo, I re-marked the incisal facial perimeter with a red pencil. Then I created a ditch using a knife-edged, diamond-impregnated disk (Komet USA; Rock Hill, SC). I did this not only across the incisal edge, but also in the incisal, mesial, and distal edges, being very careful not to disturb the red pencil line (Fig 16). I then smoothed out this ditch apically (away from the halo) with the contour stone and then with a tapered diamond bur to create a "canvas" (Figs 17 & 18).

Using gray (low value) and vanilla (high value) Universal Stain (Ivoclar Vivadent; Amherst, NY), I started to create the internal effects (Fig 19). After the effects had been baked at 765° Celsius, I used Authentic pearl porcelain for the internal lobe structures, which I brushed out to create a feathery, cloud-like appearance. I used intensive opacious dentin (IOD) number 4 and number 1 (IOD is not as user-friendly, but it is well suited for a shade of 020 or brighter) to emphasize the halo (Fig 20). After I evaluated and was happy with the effects (Fig 21), I was ready to enamel.

In this case, I decided to segment my enameling by using Authentic powders Opal 1 (high value) and Opal 2 (low value). However, if you were trying this technique for the first time I would recommend that you keep it simple and just use Opal 2 for enameling.

I strategically placed three or four segments of Opal 1 (high value), paying particular attention to my internal effects and building them out exactly .5 mm from the incisal edge to full incisal facial contour. (Note that the initial bevel back was .5 mm.) I then filled in between the

Figure 27: Postoperative left lateral view, 1:2.

Figure 28: Postoperative right lateral view, 1:2.

Figure 29: Postoperative retracted view, 1:2.

Figure 30: Postoperative, 1:1.

high-value segments with Opal 2 (low value) to complete the shape and contour (Figs 22 & 23). Because of porcelain shrinkage, it may be necessary to touch up your contour with Opal 2 in an additional enamel bake.

Shaping, Contouring, and Glazing

Once I was satisfied with the bisque bake, I used a medium-sized diamond Komet bur 842R to do my initial smoothing out and perfecting of the shape and contour. I then used Komet bur 850 to develop anatomy lobe structures and perikymata (Fig 24).

I brushed a thin coat of Authentic Pulse glaze paste fluor and glaze medium to a consistency that strings off my brush onto the restorations, being careful not to pool the glaze. After I applied the glaze, I placed each restoration on the tray, which was underneath the raised muffle, and fired them at 765° Celsius under full vacuum with a one-minute hold time.

I carefully knocked down the glassy look of the glaze using a knife-edged carborandium-impregnated white rubber wheel, paying close attention to preserve exactly the amount of perikymata that was desired. To complete the surface reflection, I went over the facial lobe surfaces with a #3 Ceraglaze knife-edge polisher (Axis Dental; Coppell, TX) (Fig 25).

Conclusion

Through the use of a diagnostic wax-up, a matrix of the provisionals, and the use of a jeweler's wax injector; and by following this simple cutback and layering technique, which allows you to develop all of

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Figure 31: Postoperative, lips in repose.

Figure 32: After.

the internal effects to your satisfaction before burying them in enamels, you will be able to predictably surpass your patients' expectations.

I encourage technicians and clinicians to recognize the profound importance of the use of photography, not only to document but also to show your talents (Figs 26-32). To learn portrait photography, I encourage you to take your patient to a portrait studio that will allow you to take portraits alongside the photographer (Fig 33).

AACD Acknowledgment

The American Academy of Cosmetic Dentistry recognizes Bradley L. Jones as an AACD Accredited Member who has donated cases to restore the smiles of Give Back A Smile™ survivors. AACD

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Figure 33: Glamour shot.

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Smiling from the Inside Out

by Shannon L. Pace, CDA
Chesapeake, VA
www.cranhamdentalseminars.com

Introduction

I recently received a gift from one of my patients; it was a small angel. On the angel's foot was the date 11/08/08. The card said, "I wanted you to have this because without you, I would never have had the courage to move forward with my dental treatment. After hearing your story, you made me feel that I had found the right dentist and team."

Sometimes the best way… is to share with them our own dental experiences so they know we truly understand what they are experiencing.

The date on the angel's foot was the date of the patient's preparation appointment and the start of her new life. I knew at that moment that I had to share my experience with my dental colleagues, in hopes that they will understand how we must show compassion and empathy toward our patients. Sometimes the best way to do that is to share with them our own dental experiences so they know we truly understand what they are experiencing.

Background

I sustained head trauma and a green line fracture to the jaw in 1995 in a car accident caused by a drunk driver. That accident also caused teeth #14 and #15 to break, and I needed root canal therapies, core build-ups, and full-coverage crowns. Several years later, full direct resin restorations were placed on teeth ##5-12, and the previously treated tooth #14 had to be extracted due to fracture. Four weeks after that, however, the lateral and canine teeth broke and were subsequently repaired. Eight months later, porcelain veneers were placed, along with a three-unit bridge restoration across teeth ##13-15.

Switching from being chairside to actually being *in* the chair gave me greater empathy toward my patients—as well as a far greater understanding and

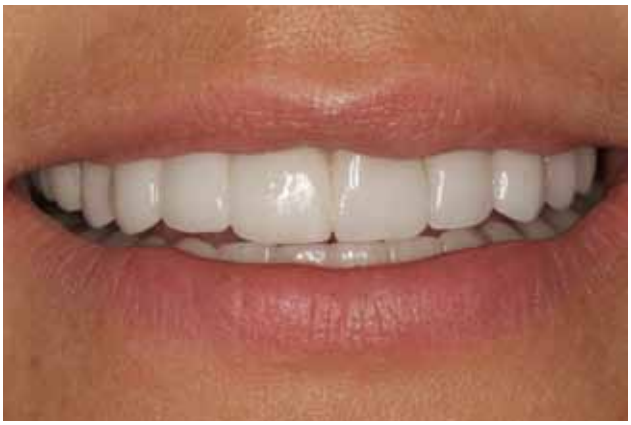

Figure 1: Preoperative view of the natural smile. While the size and shape of the previous restorations were beautiful, the maxillary incisal edges were slightly forward, and the pontic was lighter at bridge ##6-8.

Figure 2: Preoperative left lateral view. Note the missing tooth #14.

appreciation of the respective procedures I underwent.

Eighteen months after receiving the porcelain veneers, I began experiencing migraines, the veneer on tooth #7 broke and was replaced, and an older crown restoration on tooth #31 broke. By the time I presented to Dr. John Cranham, the migraines had continued for five more years and the root of tooth #7 had fractured.

I needed root canal therapies, core build-ups, and full-coverage crowns.

Clinical Case Presentation

When I began working for Dr. Cranham in 2006, I had been experiencing migraines, facial pain, and toothache in the maxillary molar areas. I could not understand why my teeth hurt and had been for some time. Dr. Cranham immediately initiated complete records gathering. This comprehensive examination consisted of obtaining a full series of radiographs, a panoramic view, full mounted study cast, a facebow transfer, bio-joint vibration analysis (based on simple principles of motion and friction), and a centric relation (CR) bite record. He had a difficult time obtaining the CR bite record, and it was then that the decision was made to put me in a splint to deprogram the elevator muscles.

I wore the splint that first night and, upon awaking the next morning and removing it, could feel my teeth hit in areas I had never felt before. I was instructed to wear the splint for a full three days. The anterior deprogrammer was designed to separate the posterior teeth and deprogram the muscles to find centric relation. Dr. Cranham was able to load-test[1] my joints without any signs of tension or tenderness, and CR was verified. A new CR bite was taken and the casts were remounted. The treatment plan would not be as simple and straightforward as I had anticipated (i.e., I thought I would just need some equilibration and some restorations replaced). Rather, Dr. Cranham informed me that something was not right, and he referred me to Dr. Albert Konikoff, a local periodontist, for a cone beam three-dimensional dental imaging scan (ICAT) to get a better look at the teeth that were bothering me. The ICAT revealed the need to extract teeth #3 and #15 due to root fractures. Dr. Konikoff explained that he would need to place bone grafting material in the extraction sockets, allow time for the bone to heal, and then perform inferior sinus lifts while placing the implants. The next day we worked up my treatment plan.

The poor occlusion caused fractured porcelain, headaches and muscle pain, and three fractured roots that led to the loss of three maxillary molars.

Diagnosis

The diagnosis was unbalanced occlusion in CR, combined with a restricted envelope of function due to the presence of thick/steep lingual contours on the previous esthetic restorations. The poor occlusion caused fractured porcelain, headaches and muscle pain, and three fractured roots that led to the loss of three maxillary molars. This was due to a flawed occlusal design combined with parafunction that generated the root and ceramic fractures.

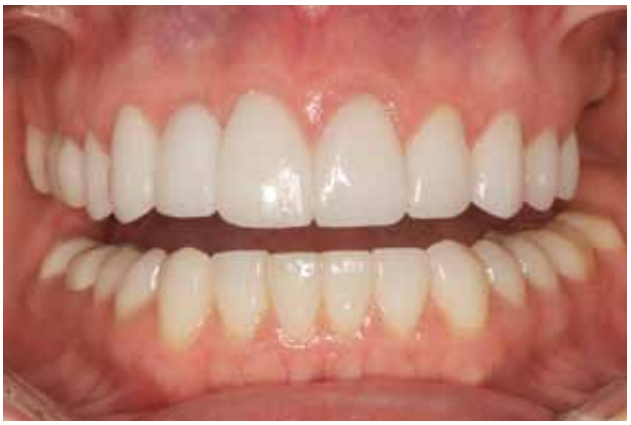

Figure 3: Preoperative retracted view of the maxillary and mandibular arches. Note that the mandibular teeth are a little darker than the maxillary teeth

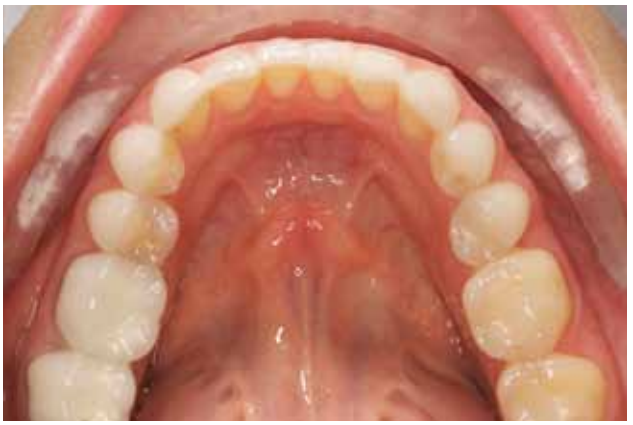

Figure 4: Preoperative occlusal view of the mandibular lower incisors, demonstrating their thickness.

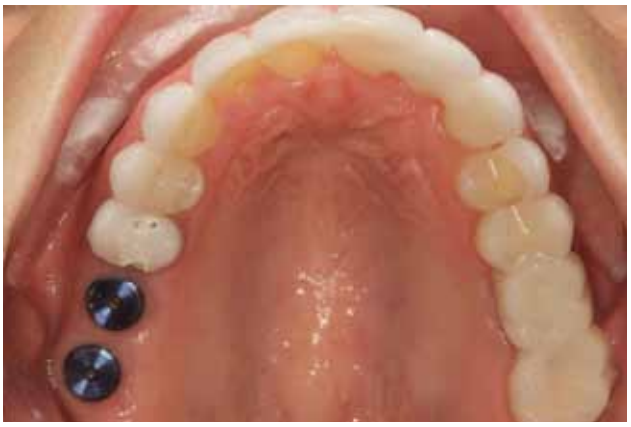

Figure 5: Palatal view after placement of the implants at the sites of teeth #14 and #15.

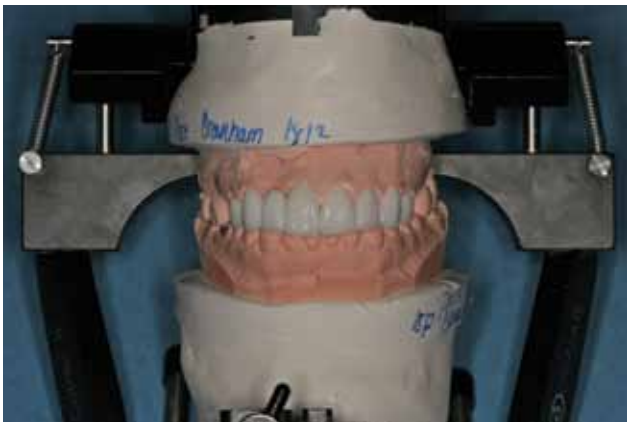

Figure 6: An articulated wax-up mounted in CR with facebow transfer, after deprogramming with an XYZ appliance. The goals of treatment included stabilizing the occlusion and creating harmony between the temporomandibular joints.

Ironically enough, I had all of the signs years ago. I broke so many teeth and never knew why. I assumed it was external factors, such as the materials that were used for my restorations, but did not consider my bite as the cause. As for the migraines, I attributed them to stress and my diet.

Esthetic Evaluation

When I looked at preoperative photographs (Figs 1 & 2), I liked my smile, but I knew there would always be a compromise. I did not feel that the pontic on my bridge matched, and my mandibular teeth were a little darker than my maxillary teeth (Fig 3). Although it was not that long ago, we did not have the porcelains then that we have now that imitate the optical properties of real tooth structure (e.g., opalescence and fluorescence).

While the size and shape of the previous restorations were beautiful, the maxillary incisal edges were slightly inclined facially,[2] causing some issues with the "feel" of the teeth. The teeth felt dry, making it difficult for my lips to come together. Tucking the maxillary[3] incisal edge lingually toward the inner vermillion border of the lip would be all that was required and worked out in the provisional stage. Additionally, the mandibular lower incisors were thick from the occlusal view (Fig 4). These would be made thinner for esthetic and functional reasons. It is important to note that thick maxillary lingual contours[4] in

Figure 7: View of the all-ceramic restorations fabricated for placement on teeth ##6-8. Note the enhanced esthetics and vital appearance. Note the apically positioned contact areas for the FPD, which eliminated "black triangles" or open gingival embrasure space (see Figure 9). Note the contact areas from #7-#8 versus #9-#10. There is a trade-off eliminating black triangles, generating a slight asymmetry to contact areas in the esthetic zone.

conjunction with thick mandibular incisal edges can have a devastating effect on a patient's occlusion.[5] These bulbous contours restrict the natural functional envelope of the mandible. This common error will lead to fractured porcelain, mobile anterior teeth, diastema openings, and distalized condyles. Any of these problems ultimately lead to failure.

Treatment Plan

The goals of treatment would include stabilizing the occlusion; creating harmony between the temporomandibular joints, muscles, and teeth; and providing uncompromised esthetics. Because implants would play a significant role in restoring the posterior teeth,[6] proper sequencing was of paramount importance in this case. Therefore, the case was restored in the following manner, which was also significant to stabilizing the occlusion.

1. Teeth #3 and #15 were extracted and the sockets grafted to preserve the form of the ridge.
2. Once the bone had matured, the sinus augmentations were completed and three Nobel Replace Select implants (Nobel Biocare; Yorba Linda, CA) were placed in a one-stage procedure (Fig 5), #3 under provisionals #14 and #15
3. During integration, teeth ##21-28 were prepared[7] and provisionalized while the remaining dentition was equilibrated and contoured (Figs 6 & 7).
4. The mandibular veneers were placed, and the maxillary teeth ##5-12 were prepared, impressions taken, and these maxillary teeth were provisionalized.
5. The restorations for teeth ##5-12 were delivered, and the maxillary posterior teeth were prepared, impressions were taken, including for those that were implant-supported, and the maxillary posterior teeth were provisionalized. Vertical dimension was increased by 1 mm.
6. The maxillary posterior restorations were delivered, and the mandibular posterior teeth were prepared, impressions were taken, and then these teeth were provisionalized.
7. The mandibular posterior restorations were delivered.
8. Postoperative adjustments and final equilibration were performed (Figs 8 & 9).

Treatment

As part of the treatment sequence outlined above, I was in provisionals for almost two-and-a-half years, so I know personally that temporary materials can appear very natural-looking and lifelike. I received laboratory fabricated provisionals for the implants (Bay View Dental Laboratory, Chesapeake, VA) and bis-acrylic temporaries (Venus, Heraeus Kulzer; Armonk, NY) for the other teeth. The veneer temporaries were

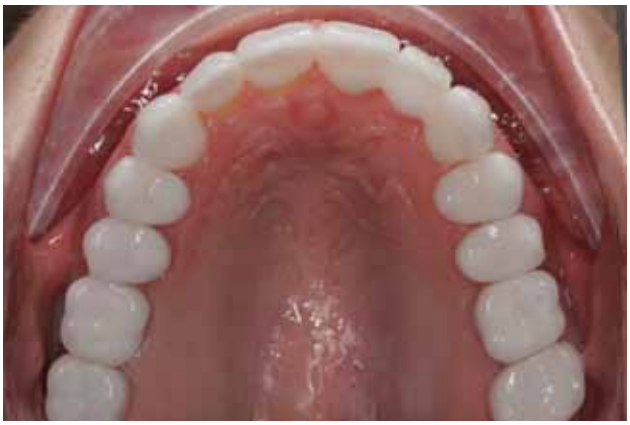

Figure 8: Postoperative palatal view of the completed maxillary restorations. Note the customized lingual concavity that was worked out in the provisional and duplicated in the final restorations.

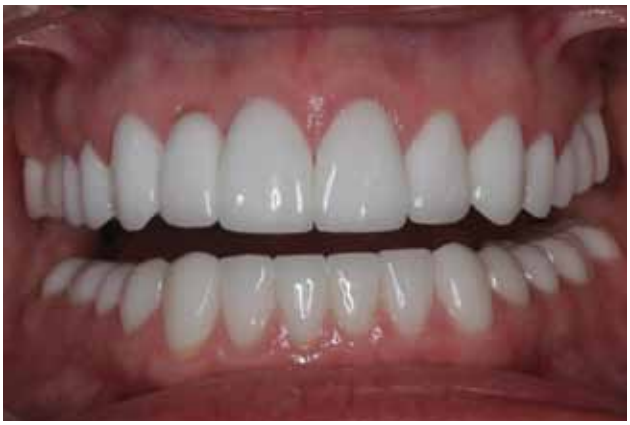

Figure 9: Retracted postoperative view following completion of the treatment sequence.

Tooth #	Planned Restoration
2	IPS e.max ZirCAD crown
3	Implant-supported IPS e.max ZirCAD crown
4	IPS e.max Press crown (i.e., lithium disilicate)
5	IPS e.max Press crown (i.e., lithium disilicate)
6-8	IPS e.max ZirCAD 3-unit bridge
9	IPS e.max Press crown (i.e., lithium disilicate)
10	IPS e.max Press crown (i.e., lithium disilicate)
11	IPS e.max Press crown (i.e., lithium disilicate)
12	IPS e.max Press crown (i.e., lithium disilicate)
13	IPS e.max Press crown (i.e., lithium disilicate)
14	Implant-supported IPS e.max ZirCAD crown
15	Implant-supported IPS e.max ZirCAD crown
21-18	IPS e.max Press veneers (i.e., lithium disilicate)
18-20, 29-31	IPS e.max Press onlay veneers (i.e., lithium disilicate)

Table 1: Planned restorations for each tooth.

placed using a shrink/lock-on technique and bonding resin; the crown provisionals were placed using provisional cement (Ultratemp, Ultradent Products, Inc.; South Jordan, UT), which provided more strength.

The definitive veneer and onlay veneer restorations were cemented with Rely-X veneer cement (3M ESPE; St. Paul, MN), while all other restorations were cemented using a universal resin cement (Multilink, Ivoclar Vivadent; Amherst, NY).

Material Selection

Key to the treatment plan was restoring the dentition with a material that would be strong and provide optimum esthetics across a combination of different restorations. The choice of materials for the definitive restorations would be critical to the success of the case esthetically, functionally, and occlusally. Material selection therefore involved a collaborative discussion between Dr. Cranham and Shoji Suruga (Bay View Dental Laboratory), the ceramist who fabricated the restorations. According to Mr. Suruga, based on this collaborative discussion—which I was also involved in—it was clear that all-ceramic restorations would be ideal.

However, when fabricating a full-mouth reconstruction using dif-

Figure 10: Immediate postoperative left lateral view following completion of the entire treatment sequence.

Figure 11: Final postoperative left lateral view of the natural smile showing enhanced esthetics and no appearance of facial tension.

Figure 12: Postoperative full-facial view of the author chairside—instead of in the chair—where she can help patients fully understand the benefits of their comprehensive dentistry.

ferent restorations and potentially different materials, matching shade and value can be a challenge. The anticipated restorations would include a bridge with pontic, implants, veneers, onlay veneers, and zirconia-based, full-coverage crowns. Recent improvements in materials would enable the restorative team to deliver thinner, properly contoured restorations that would demonstrate the proper strength, fit, and esthetics. A universal all-ceramic system that incorporates zirconia, computer-aided design/computer-aided manufacturing (CAD/CAM), and lithium disilicate pressable techniques. IPS e.max (Ivoclar Vivadent) was chosen for use in fabricating the restorations outlined in Table 1.

When it was introduced, the IPS e.max system provided dental professionals with a simplified way to prescribe the all-ceramic restorations they need for their highly esthetic cases. IPS e.max Press, a lithium disilicate glass ceramic that delivers the fit, form, and function expected from pressable ceramics, demonstrates increased strength and optimized optical properties. The IPS e.max all-ceramic product line also enables CAD/CAM fabrication techniques with the use of its IPS e.max ZirCAD milling block. As a result, laboratories can use a single

restorative system for a variety of indications, making it ideal for combination cases such as this (Figs 10 & 11). E.max offers custom laboratory-milled substructures for potential use in three- to four-unit fixed bridges, and the ability to apply veneering ceramics for superstructure.

Perhaps the most important thing I have learned from this experience is that we must listen to our patients.

Conclusion

Sometimes the best way to be empathic toward a patient is to know first-hand what it is like to experience what they are experiencing. While I am grateful that I have a beautiful new smile, I am also overjoyed that I no longer have headaches, muscle and joint pain, and that my occlusion and overall oral health have never felt this good. It was a great experience that I now relate to patients (Fig 12).

However, as a dental professional, perhaps the most important thing I have learned from this experience is that we must listen to our patients. If they say that something is not right or does not feel good, listen. Sometimes, being in the role of dental expert, we might talk too much and listen too little. I also believe that we must be aware of signs. If a patient is breaking restorations and fracturing teeth at the root, something is definitely wrong. Without having undergone a thorough and comprehensive records-gathering process (e.g., mounting study casts, facebow, ICAT, etc.), I might never have known exactly what the problem was.

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Acknowledgments

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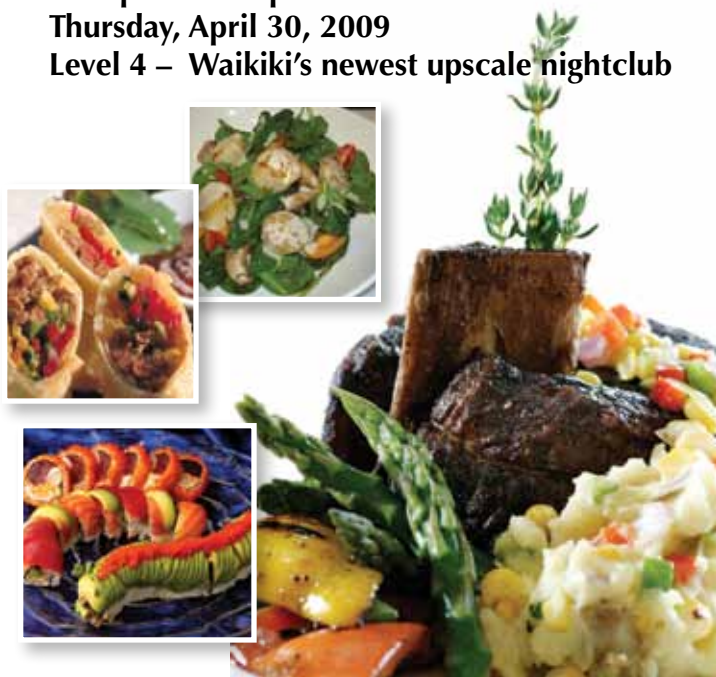

Clinical Management of Patient Decision Making

by Mary Sue Stonisch, DDS, AACD
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Grosse Pointe Woods, MI
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Editor's Note: Dr. Stonisch is the inventor and owner of the Smile Now™ appliance that is discussed in this article.

Abstract

Studies show that almost 90% of human communication is nonverbal, most of it visual.[1-4] Cosmetic dentists who apply this insight by using flexible templates to show potential patients the improvements that can be made are getting to "Yes!" faster than they did with photographs and computer graphics. The cases addressed here assess the effectiveness of using Smile Now™ instant dental templates for immediate case acceptance. The reaction from 30 of 600 dentists polled[5] (a response rate of 5%) indicated that they found Smile Now easy to use and that it had a positive impact in their practice.

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Introduction

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Figure 1: Smile Now instant dental template.

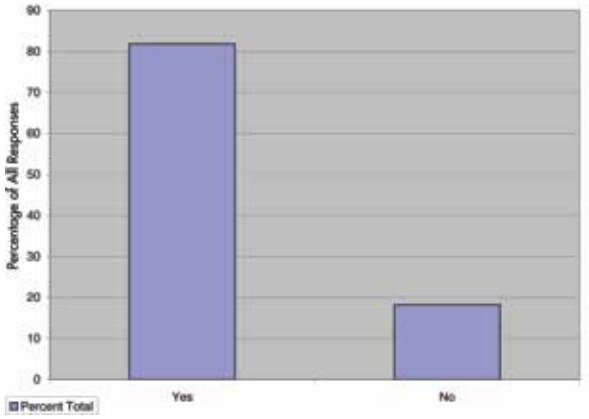

Figure 2: Survey results indicating that Smile Now is easy to use.

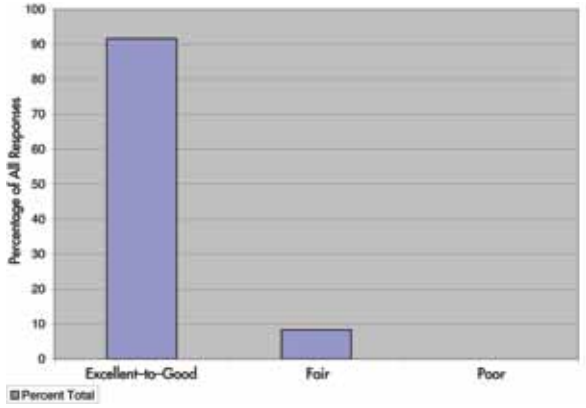

Figure 3: Survey results rating Smile Now as an excellent-to-good product.

The emphasis in today's practice must shift from a focus on the practitioner's technical expertise to a patient-centered approach, one in which we can perform as coaches rather than as omniscient directors. From the patient's perspective, the question should not be *"What can you do to make me look great?"* so much as, *"What do I need to be happy with my appearance?"*

Interpersonal Skills

This is the core of a patient-centered approach, and it demands something of the dentist in the way of interpersonal skills. We must assess the patient's willingness to change, as well as the clinical need for reconstruction. We must determine if the patient's motivation is healthy and realistic. And since we are change agents, we want to create an environment in which assent to treatment is easy and conducive to meeting realistic expectations.

At the same time, we must deal understandingly and flexibly with the financial aspect of treatment—which is a real barrier for many people—while recognizing that, for some, it is a pretext for not changing (or, at best, putting off a difficult decision).

Sometimes there is little that can be said in the clinical setting to advance a reluctant or conflicted patient to "Go." But is there something that can be *shown*? That is a different story. Studies conducted at the Massachusetts Institute of Technology by brain researcher Nancy Kanwisher reveal that almost 50% of the human cortex is dedicated to vision.[7] We can use this dominant sense to persuade potential clients to accept cosmetic smile enhancement.

Figure 4: Case 1, before, full face.

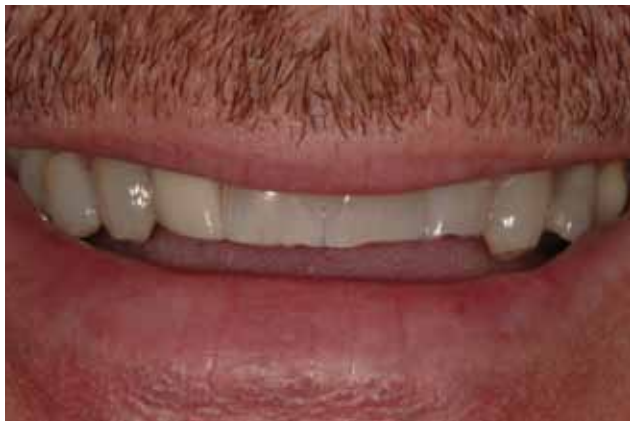

Figure 5: Case 1, before, smile.

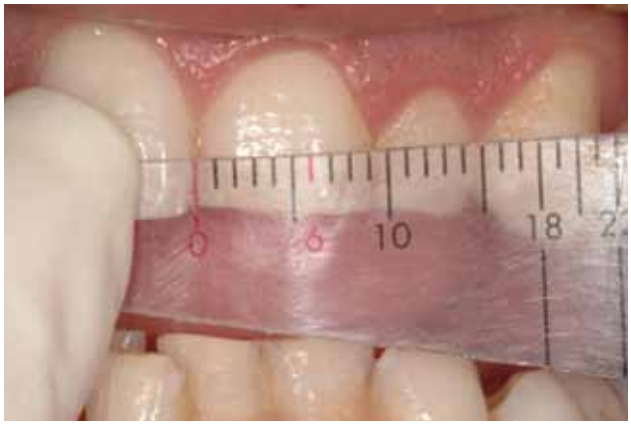

Figure 6: Case 1, measuring patient's central incisor to select appropriate template. Widths correspond to different template sizes. For example, an 8-mm central width corresponds to a small template.

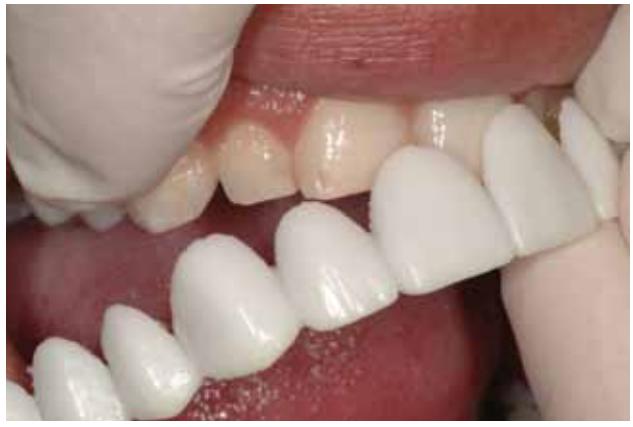

Figure 7: Case 1, insertion of template.

Figure 8: Case 1, template in place.

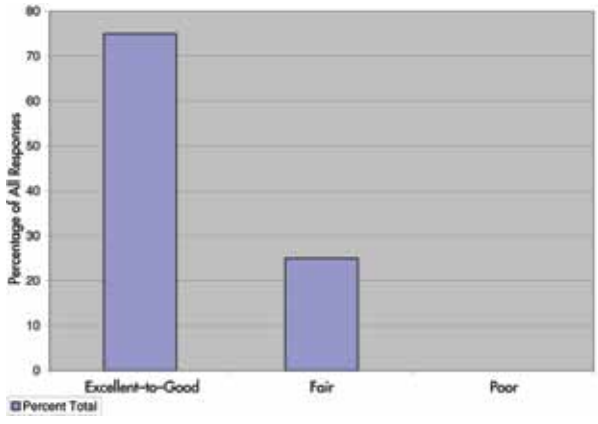

Figure 9: Survey results representing patients who had an excellent-to-good response with Smile Now.

Figure 10: Case 1, after, full face.

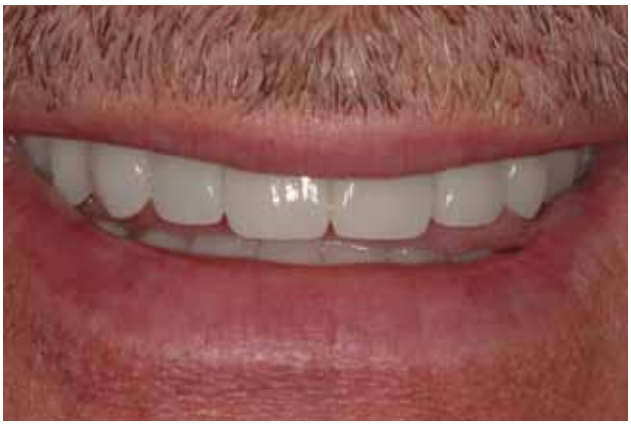

Figure 11: Case 1, after, smile.

Smile Now Appliance

My staff and I have had success using a new visual demonstration tool to foster patient-centered communication and decision making. The tool, Smile Now, is a flexible, disposable polystyrene dental template (Fig 1) that can be applied quickly and easily to the upper arch so that patients can immediately appreciate potential results. In the survey referenced earlier,[5] 81.8% of dentist respondents found Smile Now easy to use (Fig 2). In addition, 91.6% of clinicians rated this product as a good or excellent addition to their armamentarium (Fig 3). As will be seen in the three case studies below, this simple appliance alters communication style to a more nonverbal approach, much like an approach that may be used with digital imaging, but quicker. Similarly, the clinical dialog changes from one in which the dentist (convincingly or not) describes advantages and prospective improvements, to one in which the patient sees the potential and drives the discussion based on a favorable perception of potential results.

Case Study 1

The patient was a 53-year-old male landscaper who came in for a cosmetic consultation. He knew little about what that meant, but was motivated by self-consciousness about teeth that were, in his own words, *"worn down and small"* (Figs 4 & 5). With Smile Now, he saw how he would look if he proceeded with enhancement (Figs 6-8), and was obviously pleased. He also saw the need to treat both his upper and lower teeth. It is interesting that his motivation remained strong enough to see him through a full-mouth rehabilitation before any specific cosmetic measures could be taken.

A comprehensive examination had revealed a Class III malocclusion, worn dentition, multiple missing molars, a lower remnant molar root tip, and faulty as well as missing restorations. Afterward, full-mouth radiographs, models, photographs, and jaw measurements were taken, from which a diagnostic wax-up was completed, and cosmetic enhancement commenced. This patient's response was in the majority based on our recent survey,[5] in which 75% of patients had an excellent-to-good response with Smile Now (Fig 9).

"I always wanted a nice smile," the patient says today. *"When I put the template on, it really surprised me. I could now see myself with larger and whiter teeth. In my business, I prepare three-dimensional landscape pictures for customers based on photographs, so they can see what the property will look like. This was similar to what the dentist did, and I thought it was a great idea. I always wanted to have beautiful teeth. I had the work done, and everyone has noticed. It's great"* (Figs 10 & 11).

Case Study 2

A 62-year-old male manufacturer came to us for general dentistry (we were already taking care of his wife

Figure 12: Case 2, before, full face.

Figure 13: Case 2, template in place.

Figure 14: Case 3, before, full face.

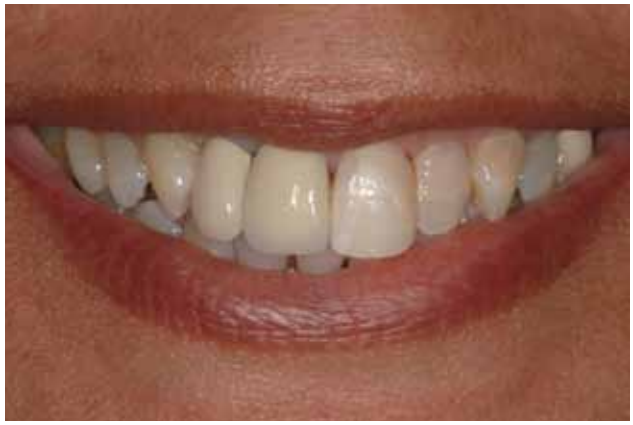

Figure 15: Case 3, before, smile.

Figure 16: Case 3, after, full face.

Figure 17: Case 3, after, smile.

and children), and initiated a conversation about the possibility of cosmetic enhancement for his worn teeth (Fig 12). He was fitted with a large Smile Now appliance (Fig 13), and told us the same day of his decision to proceed with full-mouth reconstruction. He confirmed that the appliance *"...made it real. You could visualize exactly what the change from your existing situation would be. There was nothing more to discuss. It was not a projection of some kind, but a very good, real-time visualization."*

Case Study 3

This 54-year-old female office manager (Figs 14 & 15) learned about our services at a medical open house where we displayed and demonstrated Smile Now. She took a template home and, as she later told us, tried it on and off until deciding that she would proceed with anterior cosmetic dentistry. The template convinced her. *"When you try it, you can see right now what you'll look like, rather than waiting. Later, I went for a consultation and the color card helped me decide on the right shade. Between the template and the card, I knew how I would look"* (Figs 16 &17).

Conclusion

If seeing is indeed believing, there is a scientific basis for the success of Smile Now. It lies in the fact that well over half the cerebral cortex is involved in visual processing.[7] Of the five senses, vision is the most evidentially persuasive, which is why courts depend on eyewitnesses and why magicians enjoy their greatest success with tricks that "fool the eye."

Well over half the cerebral cortex is involved in visual processing.

In our practice, we no longer proceed with models, photographs, jaw measurements, and diagnostic wax-ups before the patient has made a decision. With Smile Now, we are able to increase productivity by allowing the patient's decision, whether positive or otherwise, to drive our activity. When we proceed with models and measurements, it is now for the committed patient, and thus worth the time and effort involved for both the patient and our staff.

Does it work? Based on our experience, emphatically yes, even in cases where the patient does not initially have cosmetic enhancement in mind. That is why we call this approach "patient-centered" and why we are so enthusiastic about the results for our practice as well as for our clients.

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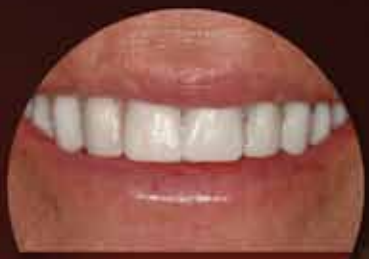

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