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THE MAGAZINE

OCTOBER ISSUE 2008

SUCCESS

The true meaning of CEREC success

By Dr. Mark Fleming and Dr. Darren Greenhalgh

THE ONE-VISIT CEREC: Standard Protocol vs. CEREC Protocol

An insightful look at the CEREC anterior central incisor

By Dr. Dean C. Vafiadis

THE CEREC ADVANTAGE IN THE LANDSCAPE OF DENTISTRY & THE MYTH OF CLIENT LOYALTY

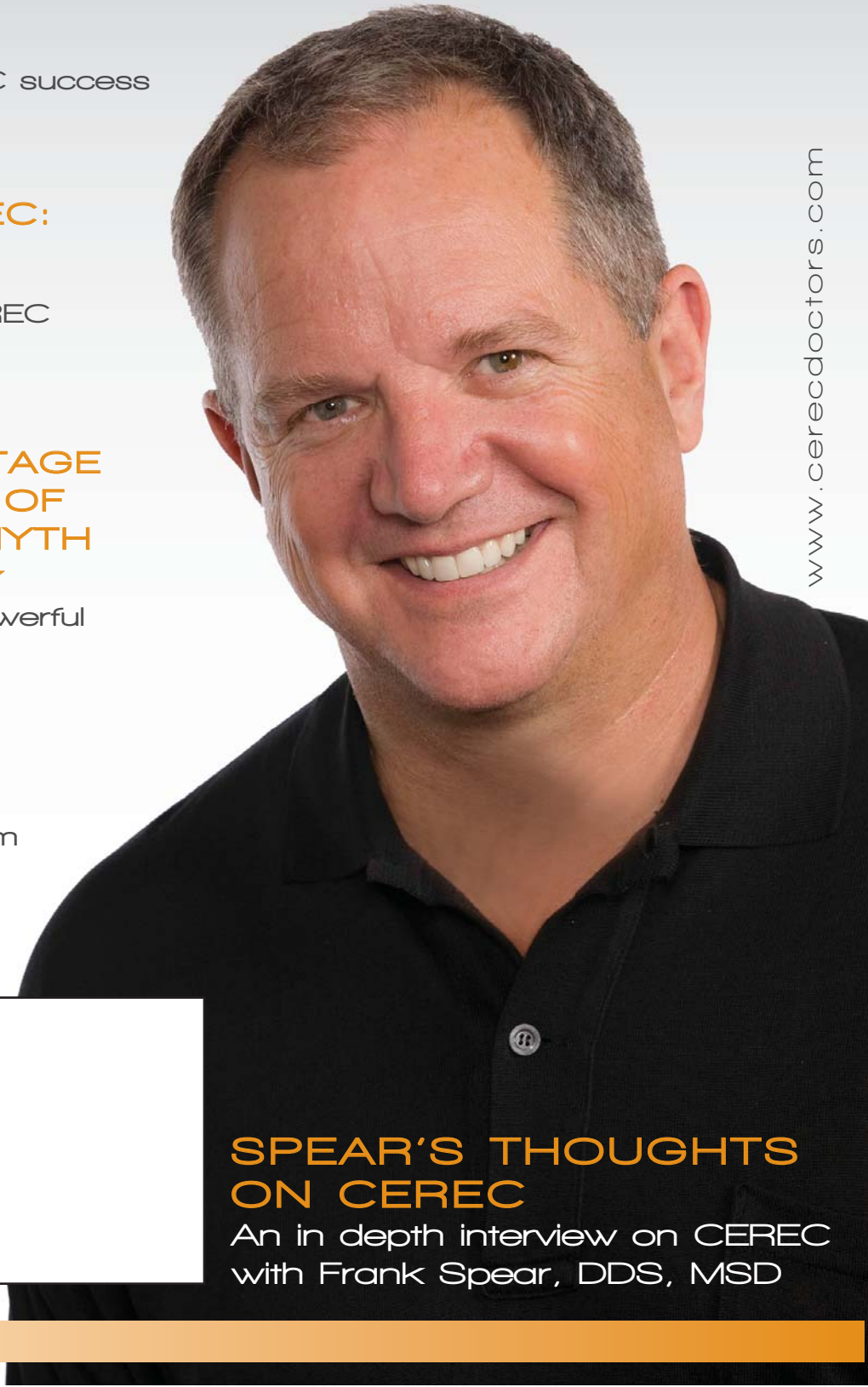
The role of CEREC as a powerful tool in dentistry today

By Imtiaz Manji

ADVERTISING YOUR CEREC

CEO of major advertising firm shares his ideas on the best way to promote your CEREC

By Fred Joyal



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An in depth interview on CEREC with Frank Spear, DDS, MSD

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Mark J. Fleming, DDS
Darren Greenhalgh, DDS

EDITORIAL success

In our first issue, we shared our vision of creating a magazine that helps CEREC users get the most from their experience with this exciting technology. That is our purpose; the reason why we put this magazine together.

In publishing our second issue, we asked ourselves if our first issue was a success. That depends on whether you, the reader, found the information contained in that first issue to be beneficial. More importantly, it depends upon your definition of success.

Success has been defined as attaining an object or goal. But is that it? Recently we had the opportunity to attend a workshop given by Imtiaz Manji called *The Breakthrough Practice*. Mr. Manji believes that success is an ongoing target which will mean different things at different times. Let's examine how that definition may impact you.

Many of you reading this graduated from dental school. To accomplish this, it may have meant you were required to perform a single restoration for a patient in the morning and one in the afternoon as part of your "success" in graduating. Can you imagine resting on just that success? We can't. Over the years, dentists have had to change their definition of what success means as they progress through their careers. That may have meant investing in themselves to become better at delivering quality dentistry to their patients. Many people believe that there is no better opportunity to invest in oneself than to learn from Dr. Frank Spear, who has recently expanded his course curriculum to the Scottsdale Center for Dentistry. He is considered one of the world's best dental educators and he is committed to helping dentists become better clinicians in order to achieve success in their practice.

In 1983 Sirona introduced CEREC 1. This technology revolutionized dentistry but Sirona didn't stop there. They continued to apply the company's resources in order to breakthrough to the next level of excellence. Sirona went on to develop the CEREC 2, the CEREC 3, then the CEREC 3D. Even now, Sirona is spending $50 million a year in research and development to improve the current system. Their team constantly sees possibilities for improving existing technology and how it will positively impact your dental practice.

And what about your CEREC success? Are you satisfied with the occasional posterior CEREC restoration? Or are you the type of clinician that strives for excellence and wants to learn to create the ideal dentistry featured in this magazine? It may be time to check out our website, www.cerecdoctors.com to help you with this goal. For hands-on training from some of the best CEREC trainers in the field, try the Scottsdale Center for Dentistry. Their dedication to ongoing training and continuing education will help you redefine the way you use your CEREC machine with its state-of-the-art technology. We invite you to invest in yourself and the success of your practice!

We hope the first issue of Cerecdoctors.com The Magazine was beneficial to you. Because we have a passion for learning, we will continue in this ongoing process to provide you with the latest techniques, tools and technology to help you perfect your skills and make the most of your CEREC experience. Cerecdoctors.com the Magazine is honored to be a part of your success as we break through the barriers and expand our vision to possibilities that the experience will bring.

Darren Greenhalgh, DDS
Co-Editor

Mark J. Fleming, DDS
Co-Editor

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The Influence of the Step Milling Diamond on CEREC Tooth Preparation Design

Dr. Stephen Tsotsos

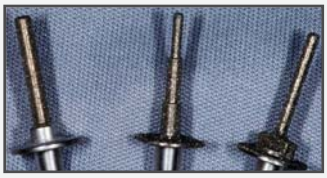

Figure 1: Available CEREC diamond milling tools for cutting the internal aspect of any restoration (from left to right): 1.6mm diameter; step bur 0.9mm diameter at tip; 1.2mm diameter.

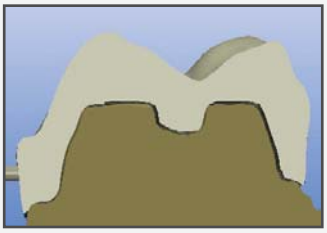

Figure 2a: Good internal adaptation of ceramic with "CEREC preparation" design.

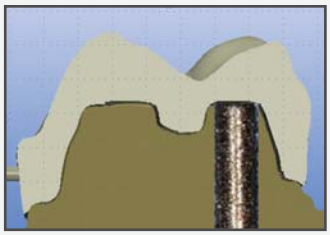

Figure 2b: 1.6mm diameter milling diamond cuts internal aspect of restoration. Occlusal aspect of preparation must be finished as a flat plane at least 1.6mm wide for good internal adaptation of the ceramic restoration.

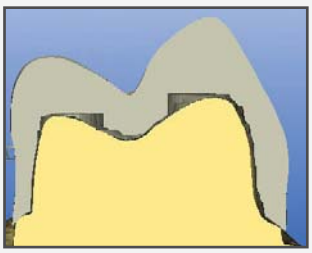

Figure 3: Traditional ("non- "CEREC") preparation exhibiting voids (overmills) at internal aspect of proposed restoration milled with 1.6mm diamond tool.

The introduction of the step milling diamond with its 0.9mm diameter tip may prove to be one of the most brilliant changes to CEREC technology in recent history. The advent of the step milling diamond redefined tooth preparation design required for the CEREC system. The outcome is the ability to prepare teeth as conservatively as required for commercial laboratory manufactured all-ceramic restorations. Also, the latest version of CEREC software version 3.0x has been redesigned to create 0.9mm milling steps so that the step diamond and milling software work in unison to produce the smallest overmilling pattern in CEREC history.

A Historical Perspective

The diameter of the cutting end of the diamond tools (Figure 1) and the milling software that drives those diamond tools demanded a specific tooth preparation, the "CEREC preparation", to ensure proper internal adaptation of the final restoration. (Figures 2a - 2b) Previous versions of the software used 1.6mm flat-end cylinder diamonds to mill out the internal aspect of any restoration. Any tooth preparation performed without taking this into account resulted in overmilling of the ceramic at the internal aspect of the restoration (Figure 3).

Although the voids created by overmilling invariably fill in with resin cement, we have several significant problems. Many CEREC doctors simply remove more tooth structure than necessary to ultimately produce a restoration with at least 1.5mm of ceramic thickness. A "non-CEREC" prep design with its concomitant overmilling pattern must have substantial tooth reduction in order to produce a restoration with a minimum of 1.5mm ceramic thickness. This of course is contrary to the modern day principles of conservation of tooth structure.

A second problem is the thickness of the resin cement in the area of the overmill. Ideally, every all-ceramic restoration should be bonded with the thinnest possible amount of resin cement. This maximizes the ultimate strength of the overlying ceramic. Research done with anterior veneer preparations show that the ceramic must be at least three times the thickness of the underlying resin cement to ensure success (Reference 1). Based on these values for anterior veneers this equates to as much as 4mm of reduction of tooth structure for each millimeter of overmilling.

A third problem which is relevant for anterior restorations is the creation of an unesthetic "headlight effect". If the resin cement is thicker in some areas on the labial surface of an anterior restoration the resin cement will show through the

thin area of ceramic. This ultimately creates an unesthetic result even if all other parameters of esthetic design have been meticulously followed.

Many CEREC doctors, in an attempt to have more flexibility in preparation design, used the optional 1.2mm cylindrical diamond. Although this permitted a somewhat more conservative preparation it was fraught with difficulty. The 1.2mm diamond broke easily allowing approximately only five restorations per milling diamond. Another major difficulty was that the 1.2mm diamond flexed while milling, thereby creating unwanted overmills (Figure 4).

Another creative solution to the problem of overmilling is to mill out the restoration in Endomode. Unfortunately, all restorations milled in Endomode have some degree of "undermilling". In some situations, the amount of undermilling is insignificant and therefore clinically irrelevant. Unfortunately in most situations, the amount of undermilling makes complete seating of the restoration impossible (Figures 5 - 7). The clinician must then identify and reduce the internal aspect of the restoration or alternatively mark and adjust the tooth preparation. Either system is fraught with wasted time and inaccuracy.

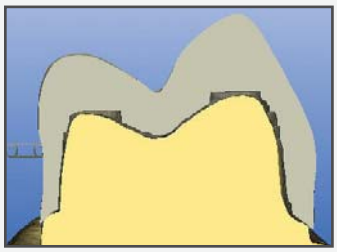

Figure 4: Smaller, although still significant overmills at internal aspect of proposed restoration milled with 1.2mm diamond tool as compared to restoration milled with 1.6mm milling diamond.

Figure 5: Single-sided, flat veneer preparation.

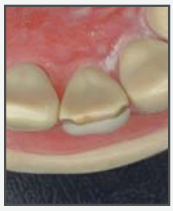

Figure 6: Veneer milled in Endomode seated at the cervical margin. Note that incisal margin does not fit.

Figure 7: Same veneer as in Fig. 6 seated at incisal margin. Note that cervical margin does not fit. Restoration binds upon seating due to undermilling pattern caused by Endomode milling.

A Brilliant Change

Recently, the CEREC system saw a change that freed the clinician from a specific tooth preparation defined by the size of milling diamond and the capabilities of the software. The introduction of the step diamond tool and matching milling software redefined the preparation criteria for the CEREC system making them similar to, and as conservative as, any commercial laboratory-fabricated, all-ceramic restoration.

The step diamond tool incrementally decreases in size so that its cutting end is 0.9mm in diameter. The incremental size of the step diamond tool prevents flexing while milling (Figure 8). The recently released version 3.0x software directs this step diamond tool to cut in 0.9mm increments. Clinically this translates to a tooth preparation design similar to that required for a commercial laboratory-fabricated, all-ceramic restoration (Figure 9).

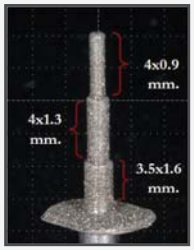

Figure 8: Dimensions of the step milling diamond.

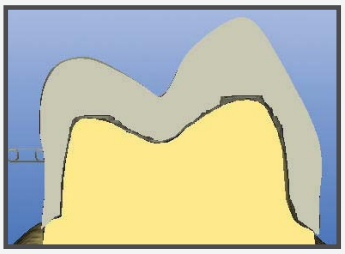

Figure 9: A restoration milled with 0.9mm step diamond and v3.0x software. Occlusal element of preparation design follows occlusal anatomy. Amount of overmilling is, in general, clinically insignificant.

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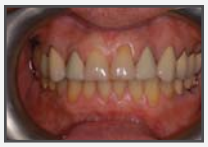
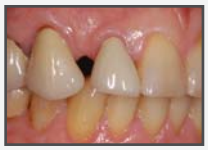
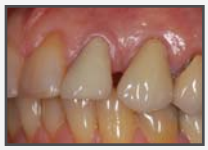
The Clinical Relevance

In the posterior segment these changes allow the clinician to perform truly conservative, bonded all-ceramic inlays, onlays and crowns. Indeed, the concept of "defect-oriented" dentistry prevails here. The final preparation of any posterior tooth would include all defects (fractured, worn tooth structure, caries and old restorations). Remaining sound tooth structure of adequate volume would be retained and the preparation is finalized with selective reduction to allow for proper thickness of ceramic, as defined by any all-ceramic restoration. Refinement of margins completes the preparation.

In the anterior segment, the above changes afford the clinician the freedom to prepare minimal thickness veneers and perform crown preparations similar to any commercial laboratory-fabricated, all-ceramic crown.

A Case Report

Brian M. presented to the dental office requesting an improvement in the esthetics of his smile. He specifically did not like the mismatch of colors of his maxillary six anterior teeth and wanted the spaces between the laterals and cuspids closed. PFM crowns for the maxillary lateral incisors and cuspids were originally done in 1980. The central incisors had been previously restored with composite resin. The final accepted treatment plan was to fabricate all-ceramic crowns for the six anterior maxillary teeth. Due to the low smile line, no treatment was accepted for an improvement to the soft tissue contour (Figures 10 - 12).

Figures 10, 11 and 12: Pre-operative photos #'s 6, 7, 10 and 11 were restored with PRM crowns 27 years ago. Composite resin was used to restore worn incisal edges and palatal surfaces of teeth #'s 8 and 9.

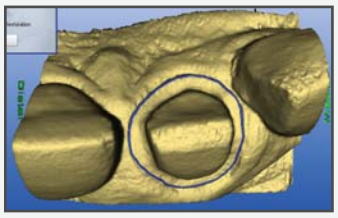


Figure 13: Incisal view of tooth #8 preparation.

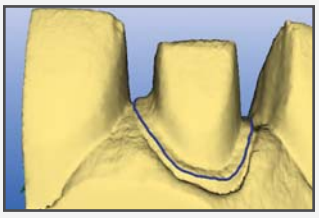


Figure 14: Labial view of tooth #8 preparation.

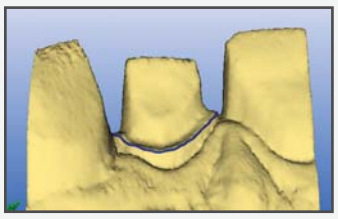


Fig. 15: Palatal view of tooth #8 preparation. Preparation for this CEREC case is as conservative as a commercial laboratory-fabricated all-ceramic crown because of the reduction of overmilling using step milling diamond and v3.0x software.

The preparation of teeth #'s 6, 7, 10 and 11 were pre-defined by the original PFM preparations. Due to the recent changes to the CEREC system, teeth #'s 8 and 9 could be prepared ideally and as conservatively as any commercial laboratory-fabricated, all-ceramic crown (Figures 13 - 15). This preparation design allows for minimal overmilling using the step bur and v3.0x software (Figure 16a). This same preparation exhibits moderate overmilling using the 1.2mm milling diamond (Figure 16b) and severe overmilling using the 1.6mm diamond (Figure 16c).

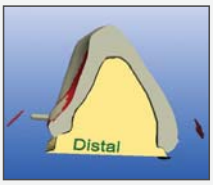


Figure 16a: Cross-section through preparation and proposed restration showing untimate fit of internal aspect of proposed restoration to preparation (minimal, clinically insignificant, overmilling pattern).

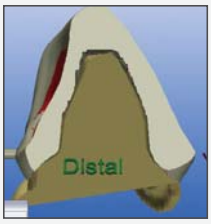


Figure 16b: Moderate, clinically significant overmilling of proposed restoration using 1.2mm diamond.

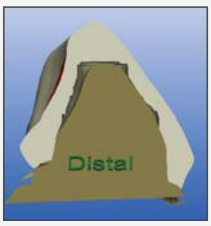
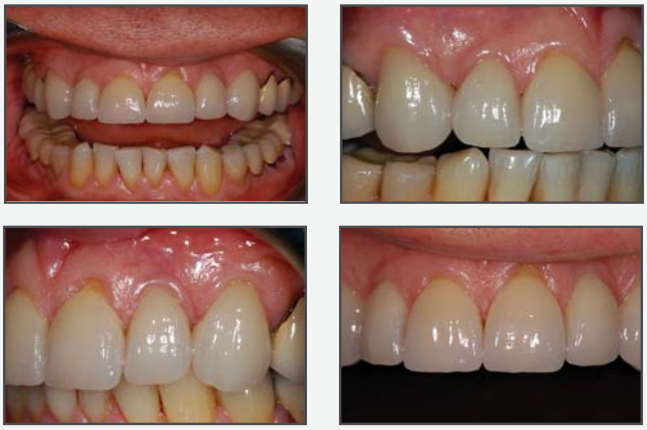


Figure 16c: Severe, clinically significant overmilling of proposed restoration using 1.6mm diamond.

The restorations were completed in a single appointment. Vita Mark II TriLuxe ceramic blocks, the only polychromatic blocks available at the time of treatment, were used (Figures 17 - 20). TriLuxe was the first block created for the CEREC system that was not monochromatic. This block not only has a gradation of chroma through the block, but a change in opacity. The cervical area is therefore deeper in chroma with less translucency while the incisal third has less chroma and more translucency. Recently, Vita introduced TriLuxe Forte blocks with a much more



Figures 17, 18, 19, 20: Post-operative photos of six maxillary anterior Vita Mark II TriLuxe CEREC crowns. Margins of crowns were kept supra-gingival where possible since patient only shows incisal half of teeth in full smile. Crowns were lightly customized with Vita Akzent stain & glaze kit.

subtle transition from one level of chroma/opacity to the next. Also, the TriLuxe Forte block has increased fluorescence, an ideal quality for life-like esthetics. Ivoclar/Vivadent has also introduced the very esthetic Multi Block. The Multi Block composition is similar to empress with a very natural, almost infinite, gradation in chroma and opacity throughout the block.

Excellent esthetics may be expected using the Ivoclar/Vivadent Multi Block. 3M/ESPE has also introduced their Paradigm C block. This block with its low leucite, high glass composition and its high translucency and fluorescence also allows the clinician to create extremely life-like anterior restorations. All polychromatic blocks on the market today give the CEREC clinician incredible opportunity for true, life-like esthetics. Interestingly, a tremendous amount of research and money is being invested by major dental companies to produce the ultimate esthetic ceramic block for CEREC technology. This in itself is a strong indicator that the market direction in dentistry today is indeed CAD/CAM.

Conclusions

Today, dentists and their patients demand esthetic dental restorations. All-ceramic restorations afford us the best opportunity to achieve this goal. Significant changes to the milling software and the size of the milling diamonds of the CEREC system coupled with the introduction of highly esthetic polychromatic ceramic blocks permit the dentist to satisfy patient demand for esthetics while preparing the tooth as conservatively as possible for all-ceramic restorations. These restorations, backed by over twenty years of clinical documentation (References 2, 3, 4, 5), will also satisfy the most discerning cosmetic dentist.

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Spear's Thoughts on CEREC

An in depth interview with Dr. Frank Spear on his journey to success

Sameer Puri, DDS

It is with great pleasure that we present our distinguished speakers interview series with one of the true leaders in our profession, Frank Spear, DDS, MSD. With his success as head of the Spear Institute, Dr. Spear has recently joined with the Scottsdale Center for Dentistry to deliver the majority of his courses there. Here is some insight on what Dr. Spear hopes to achieve with this move.

Dr. Puri: ***Dr. Spear, you have been involved in education for a very long time, how did you get started with educating dentists?***

Dr. Spear: I grew up in a very small farming community, about 1,500 people. My mother was a second grade school teacher and my father was a mechanic who owned a garage and gas station. Both my parents believed that education was critically important to anyone's success in life. My mother was an incredibly nurturing person and she made me see the value of uplifting and empowering young people so they could believe in themselves. This is a message that I have tried to carry in my education throughout my time is dentistry. I think all of us have experienced, in dental school, at one time or another, the feeling of an educational system that wasn't always the most nurturing and uplifting and in fact, quite the contrary. As a result, one of my roles in dental education has always been to empower people to see in themselves what they are not aware exists. Several people have played this role in my life.

"One of the gifts I bring to dentistry is to take subjects that are very complex and break them down into a way that is understandable."

My father happened to be a brilliant person and he used to take me to work with him at the garage. When I was four and five years old he would sit me down on a stool next to him and when he would get ready to work on a car, maybe a brake job on an old Buick or Chevrolet, he'd say "now I'm going to explain to you what I'm doing and then I'm going to explain why I'm doing it the way I'm doing it and the order I'm doing it." He did that for me my whole life. He had a shop at our house, which he used as an example to give me a logical way of thinking that made complex things seem very simple to me. That would be one of the things that I've carried into my dental education. One of the gifts I bring to dentistry is to take subjects that are very complex and break them down into a way that is understandable.

As for how I got into education in dentistry, it just came natural to me. I had been a photographer before becoming a dentist, so as a dental student I used to photograph everything I did. I have still slides of my very first denture patient my sophomore year in dental school, to gold foils and amalgams I did on dentoforms. I used to put together presentations as a dental student, for fellow students or under classmen, of what I was doing. As a dental student, I was involved with study clubs that were run by instructors who were teaching at the school. I actually took some patients to those study clubs and did some procedures under the instructors' tutelage and photographed the patients to go back and present to them.

After dental school, I went into a Periodontics and fixed Prosthodontics residency program where it was mandatory that we do presentations. We did treatment planning seminars as well as therapy seminars on patients we treated. In addition, we had a wonderful class taught by two Prosthodontists on faculty, Chuck Bolinder and Dale Smith, which taught us how to organize a presentation in dentistry, how to create effective title slides, and the use of appropriate images. All of us in the graduate program found this very helpful in refining

the style in which we taught. It just so happened that in 1982, one of the faculty members in the graduate program had seen me present a few things and asked if I would do a presentation at the Midwinter meeting to the American Academy of Crown and Bridge Prosthodontics in Chicago, now known as the Academy of Fixed Prosthodontics. On February 29, 1982, that is where I actually did my first national lecture.

That is really how I started lecturing. There were people in the audience who had seen me and the next thing I knew people were asking me to come by and present for a day and even consider presenting two days in the next year. So in February of 1983, it started to snowball to where I was doing almost a hundred days a year in lectures in 1990. At the same time, when I had gone into practice after my residency in 1979 and 1980, I was very interested in esthetics. In my graduate program I had worked on esthetics and became very interested in ceramics, and composite materials.
In the community I practiced, a group of dentists approached me and asked if I would mentor a study club for them as they were interested in learning more about esthetics. In 1982 I started mentoring a study club of 8 dentists, initially focused on esthetics. I would bring in a patient and demonstrate treatment and subsequently the dentists would bring in patients and do the same procedure. The study club which began in 1982 led to two more study clubs beginning in 1983. By the time 1985 rolled around, I think I had seven study clubs that I was mentoring with a primary focus on esthetics.

There has been a natural out growth from the requests to lecture. Having done live patient courses back in the early 1980's and mentored local study clubs, I think that at our peak, my former partner and I had eleven or thirteen study clubs by 1987. Eventually you learn that there is simply a point at which there is no way you can run more study clubs on your own. This is ultimately how we grew into what is now the Spear Institute for Advanced Education, formerly the Seattle Institute. I would have to say that I became an educator because of my parents and the lessons they taught me. They placed a great deal of importance on education and the style in which they educated me when I was growing up.

Dr. Puri: ***Recently you joined Imtiaz Manji at the Scottsdale Center - how did this relationship come about?***

Dr. Spear: Interestingly enough, up until a year ago I had not met Imtiaz. I was familiar with what he had accomplished with Experdent and heard people who had worked with him and Mercer, speak very positively about their experiences with him. They talked about how he helped them in their practice with his consulting skills. Somehow our paths never crossed.

A year ago Imtiaz and Glen had created the Scottsdale Center for Dentistry and began conducting programs such as the CEREC program along with Dr. Cliff Ruddle and Dr. Gordon Christensen programs. Imtiaz and Glen called to see if I would be interested in potentially doing some of my programs in Scottsdale. Timing was impeccable as one of the challenges that I had at the Seattle Institute was that we simply could not fit people into our classes. We were presenting our hotel seminars and workshops here in Seattle. The facility was such that we could only accommodate twelve students at a time and the demand was much greater than what I could deliver in the existing facility. We were literally booked 18 to 24 months in advance, so dentists would come to one of our seminars and get excited about beginning the workshop programs only to be told they could not get in for another 18 to 24 months. This is the equivalent of a new patient calling a dental office and saying they wanted to come in for an exam and being told "we can see you in a year and half". It may sound like a good problem to have but trust me, it's not a good problem to have when you're trying to grow a business.

I had already made up my mind and decided that I had to alter things to make it possible for students to get on board without such a long waiting period. I was considering enlarging the facility in Seattle when I realized that such a change would require me to alter faculty support because it was not possible for me to do everything alone, although I was determined to stay intimately involved. It just happened to be at that time that I met Imtiaz for the first time and we discussed our ideas. Over the course of the next nine to ten months we looked at the possibilities of working part of my curriculum into the

facility in Scottsdale. I realized that I could do the majority of my seminars in the auditorium, a spectacular facility, and it would mean I wouldn't have to be working out of hotel ballrooms were I would be constantly setting up and breaking down AV. Working out of the Center would also keep me from worrying whether or not someone had a good view of the screen since the auditorium at the Center is designed as a theatre where each person has their own desk and microphone. From my point of view as a speaker, it was like heaven to know that there could be one place I could go where everything would always be set up.

In addition, the laboratory facilities and operatory support are second to none. When I really took the time to look at the facility, it became clear that what I needed to do was move many of my seminars there and, in fact, the first two workshops of my series there as well. We began talking about the situation and because I really wanted to get back into live patient education, the operatory support at the Scottsdale Center gave me the ability to do that.

It was a natural growth for the two of us in looking at my needs and what the facility had to offer in return. We talked about what was available and how things would work. Imtiaz and I had great synergy due to the fact that we are both creative and energetic individuals. Our energies and creativeness seemed to go hand-in-hand, making for an awesome collaboration to develop what we are about to launch.

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Dr. Puri: ***It is my understanding that you will now be conducting all of your courses exclusively at the Scottsdale Center. Can you give us more details for those that may be interested in attending?***

Dr. Spear: In reality I am doing the majority of my courses there, though we are still going to present some of our hotel courses on the East coast. In 2009, we'll be doing courses in both Boston and Orlando.

Our hotel seminars have always been an opportunity for students to learn what we're about, get a taste for who I am and my philosophy about dental education. These same programs will be presented in the Scottsdale Center's auditorium. Based on the last ten years, we have tailored the courses to include what people have asked for in their evaluations. Next year, instead of having five seminars like we've had in the past, we are merging them into three. *Creating Natural Beauty* will be the esthetics seminar that will cover everything one needs to know about diagnosis and treatment planning esthetics, both around teeth and implants, as well as dental materials and preparation and temporization techniques. One of our most popular seminars has always been *Occlusion* which we will continue to do. Because we are able to utilize the Scottsdale facility, it has allowed me to hire two full time faculty, which I couldn't have possibly done in Seattle. I was fortunate that Dr. Gary DeWood, who had been the clinical director at Pankey for five years, came on board in June and Dr. Lee A. Brady, who was one of the other full time faculty at Pankey for the last five years, also joined us in August.

Now our occlusion programs have the support of not just my background, but also the background that Gary and Lee bring. Our *Occlusion 2009* seminar next year is going to add quite a bit of information on appliance issues and TMD issues. Having worked with electronic instrumentation before, Gary brings that knowledge to the seminar which is a great asset for those who are interested in its place in occlusion. Next year's *Occlusion 2009* seminar should be a very exciting thing. The third seminar next year is probably the one I'm most excited about since it is the one that people have asked about. *Restoration of the Worn Dentition* will cover everything from the etiology of tooth wear to treatment planning tooth wear esthetically and occlusally, to dental materials and appliance therapy. Essentially the seminar will cover everything you would think about when you're asking yourself "what am I going to do with the patient with significant dental wear?"

Those are the three seminars for next year. The majority will be done at the Scottsdale Center but they will also be in Boston and Orlando.

Other courses being taught in Scottsdale are the first two hands-on workshops in my series. *Facially Generated Treatment Planning* has always been the first workshop in our series due to my own bias that what most dentists tend to lack is confidence in diagnosis and treatment planning. This program is a three day hands-on program which is really about giving a practitioner knowledge and confidence in how to approach any patient that walks into the office. You will be able to determine the sequence, the flow if you will, of how to develop a treatment plan for that patient, whether they have missing teeth, severe tooth wear or whatever it may be. The hands-on workshop really gives them an understanding of a systematical approach to the process so they feel comfortable in knowing what to look at first, second and third. This workshop is being moved completely to Scottsdale after 2009 and won't exist in Seattle anymore. The *Occlusion in Clinical Practice* workshop, which has always been our second workshop, is being moved to Scottsdale as well. This workshop is really about learning the skills necessary to feel comfortable in analyzing and developing a treatment plan for patients with occlusal issues. It covers the necessary examination procedures, the bite record techniques one could use, mounting and evaluating the models, creating appliances, equilibration, and when those things are necessary and how are they accomplished. You acquire the hands-on skills then you actually apply them through appliances on each other and equilibration of certain sets of models, including your own. Formerly taught in Seattle, the two workshops *Facially Generated Treatment Planning and Occlusion in Clinical Practice* will now be taught in Scottsdale.

The really exciting thing for me is the ability to keep participants coming back for live patient courses. That was how I started all my education back with those study clubs in the early 1980's. I couldn't do them in Seattle simply because I did not have the facility support, operatories or faculty, but the Scottsdale Center has all of those resources. We are able to do an anterior live patient program in which dentists will bring patients for anterior esthetic restorations and all of the patient records will be presented. Treatment plans, material selection and tooth preparation consideration will be discussed and while half of the group is treating the patients, the other half will have the chance to observe and roam the room to see how different dentist prepare teeth and make temporaries. We will have one faculty member per two students, an exciting ratio of faculty to student. Some people say to me, "I already know how to do anterior esthetic restorations", for those people the strength of the live patient course is really all about treatment planning knowledge and different techniques they get to see. Then there are dentists who simply haven't done many anterior esthetic restorations. For them the strength of the live patient courses is to have experienced practitioners with them as they go through and perform the procedures. The instructor can demonstrate for you and help you out if you run into any problems. Following the preparation, impression and temporization, all of which will be documented, everyone's patients will be reviewed again. The following session will be to insert all of the restorations, so it will be possible to evaluate all of the laboratory procedures. You will have the opportunity talk about the different cases, how things went in terms of the first stage and how things will go now with the laboratory support. One group will insert the restorations as the other group observes, and then they will reverse. Finally, everything is documented for review. The live patient anterior courses will start in Scottsdale next March and additionally, we will be doing live patient posterior courses so that dentists can get the same kind of experience doing posterior restorations, either direct composite or indirect restorations. We'll also have laboratory support on site which is something I could not have done in Seattle. The laboratories will fabricate the restorations on site at the Scottsdale Center and they will be present for both the anterior and posterior course in case any modifications are necessary. One other thing that we are very excited about is that we will have laboratory accreditation programs for technicians, not for the laboratory itself. Technicians from different laboratories can come and go through our occlusal and ceramic training so they are up to speed on the philosophies and techniques which we are all teaching. This should be very helpful for practitioners who are looking to get a laboratory that understands where they are coming from.

Dr. Puri: ***You are an expert on materials and techniques with regards to CEREC. What is your favorite method of bonding posterior all ceramic restorations when they are indicated?***

Dr. Spear: I think for myself, the most significant stride in posterior all ceramic restorations is the fact that we can now mill them and produce them out of products that are significantly stronger than the feldspathic porcelains or even some of the pressed ceramics. Products like lithium disilicate come to mind, but because of the increased strength of those restorations due to their fabrication process, the bond itself becomes less significant for strength and more significant for retention. Back in the mid 1980's when I started doing posterior ceramic restorations and they were all feldspathic porcelain produced on refractory dies, our dentin adhesives were marginal to say the least. From 1990-1991 when All-Bond came out, I used those products for all of my posterior bonded restorations, specifically Optibond FL and Scotchbond Multi-Purpose Plus. That would be sort of a classic, if you will, 4th generation total etch three-step system consisting of an etch, primer and a bonding agent used with a dual cured cement. I went from the powder and liquid ceramic restorations to pressed ceramic posteriors, while on molars I used pressed ceramic to metal. These days with the advent of the ability to mill higher strength product, I actually favor some of the self-etching, self-priming and self-bonding cements such as 3M's Unicem which has worked out very well for me. In fact, I can't remember a single bonded all ceramic posterior that I've had any retentive problems or failures with. I especially like the simplicity of it and the lack of sensitivity. Now if you said to me that I was going back and using restorations that were more susceptible to fracture and I needed the highest bond strength possible, then I would probably go back to what I was using before; the total etch three-step system where there is a separate etch, a separate prime and a separate adhesive with a dual cured cement.

Dr. Puri: ***I have met many dentists who have thoroughly enjoyed your courses and own a CEREC. What would your suggestion be for them to get the most out of their machine?***

Dr. Spear: This is an interesting time for me because as a person who has primarily done fixed prosthodontics for 25 years, most of the restorations I've done have been multiple unit restorations while machines like CEREC weren't as much an interest to me as they are now. As the technology and software has improved along with the ability to do multiple units at a time, in fact we are getting our CEREC delivered as we speak. Everyone I have talked to has basically said the same thing…the way you get the most out of a CEREC machine is to do training and practice and practice and do more training and you practice and practice. I guess that is true for every procedure in dentistry, not just CEREC. I would advise dentists who have the technology to realize that the technology alone isn't going to solve any practice problems for them. The problem will be solved through training in the use of the technology and then of course how to implement the technology into your practice so it's both efficient and profitable for you while producing the kind of results you are looking for. So, my overall answer for any dentist concerning almost any procedure in dentistry is that if you want to get proficient and better at it, find people who know how to do it well and get training from them.

Dr. Puri: ***What future developments would you like to see in the world of CAD/ CAM, specifically chairside CAD/CAM?***

Dr. Spear: Like I've said before, as a fixed prosthodontist who is used to doing two, three or four units at a time in the posterior, the ability to scan multiple preparations and design multiple unit restorations, then have the machine mill them sequentially so the entire process of doing a quadrant can be streamlined, is probably one of the most exciting things I would be looking for. I know in the past, it was necessary to do single units at a time and now I am aware that it is possible to do multiple restorations. So, for me, that was the big limitation that I had been waiting to see improve. In terms of any other variations, I think my one complaint was that years ago any milled restoration wasn't something that could esthetically be produced by a technician. I know these days materials are changing, the gradations of shades within the blocks are changing and for me, the ability to do surface alterations and surface characterization in the posterior is the most important thing I am looking for as a final result. I would say the biggest single change is simply the ability to scan multiple preparations and design the restorations in multiple units at a time.

Dr. Puri: ***Currently there are approximately 9000 CEREC owners in the US, where do you see this number in 5 years? 10 years?***

Dr. Spear: I don't know that I can necessarily give you a number in terms of how I see it increasing. All I can tell you is that I think there is going to be a fairly dramatic increase which will occur for a variety of reasons. One is the technology is definitely getting better and better and what I think a lot of people may not realize is CEREC has been around for a long time. I think people think of CEREC as a particular type of restoration when in fact CEREC is a fabrication process. My good friend, Harold Heymann, was working with CEREC 15 years ago using the original CEREC unit milling Dicor MGC. He was getting phenomenal success rates on inlays and onlays with that particular material and yet the machine at that time wasn't terribly sophisticated in terms of occlusal control and marginal fit. I think one of the reasons we are going to see more and more doctors with CEREC technology is that the technology itself has improved so dramatically in terms of what the restorations are able to be turned out like as far as controlling the occlusion, controlling the marginal fit and having materials that are incredibly durable.

The second reason I think we are going to see such an increase in numbers is because we have a new generation of dentists who are used to the keyboard. What I mean by that is young dentists understand technology; they are not afraid of technology. It is part of who they've been since they were in college and dental school – the computer is second nature to them. Working with those kinds of technologies is very comfortable. I think you are going to see those people adopt chair side CAD/CAM as a routine part of their practice.

Finally, what I think that in addition to CEREC, we are probably going to see a significant decrease in the number of traditional impressions made. As chair side scanning technology improves to the point where, instead of using traditional impression materials, even if the restoration isn't produced chair side the preparations will be scanned and the model created with CAD/CAM technology. As the technology invades the laboratory based procedures, it is only logical there will be a significant increase in the number of people who decide if they are going to be scanning anyway. Why not have the restoration made on site if it suits the needs of the practitioner?

"I think you are going to see those people adopt chair side CAD/CAM as a routine part of their practice."

***Dr. Puri:** How has CAD/CAM impacted and how will it continue to impact the world of dentistry?*

Dr. Spear: As I said a moment ago, I think initially people of my generation perhaps viewed it as something of a unique and interesting technology, but not something we were going to dip our feet into. As it has become especially predictable because of the materials that are now available to be milled and as the esthetics of it have improved, I think practitioners are realizing that it is a very viable option for creating posterior restorations especially. Perhaps for people who have been in dentistry for 20 to 30 years and initially thought this was something they would never look at, it has simply proven to be far too successful to ignore. I think due to the success rate of it and the improvements in the technology, it's absolutely had a huge impact and I think it will continue to ramp up simply because people are aware of how successful it is in actually creating a predictable tooth colored posterior restoration.

***Dr. Puri:** CEREC is now entering its 24th year of service very soon. What have you been impressed by the most with the technology? What has impressed you the least?*

Dr. Spear: In its infancy, the weakness in CEREC was that the fabrication itself was somewhat crude and the marginal fits weren't as good as you could get with other techniques. Certainly the occlusal anatomy wasn't refined completely and required a tremendous amount of chair side adjustment to create restorations that had an acceptable occlusal appearance. Having said that, the products themselves were an incredibly successful material because of their strength seeing as the Dicor MGC was used when CEREC was released. You heard of very few failures of that material even in an era when bonding was not predictable at all and yet the material itself was so strong that it was very fracture resistant. What it speaks to is the ability milling machines have to create a restoration out of a material that otherwise would be extremely difficult to create. Today, what I think

impresses me the most is that those weaknesses have pretty much been eliminated. This includes issues concerning marginal fit, managing the occlusal anatomy and managing the occlusal contacts. Today, there is a whole new generation of extremely strong materials to mill. What has happened is that the weaknesses that existed 24 years ago have pretty much been addressed. If anything, I would say the one area I hear people speak about the most is, again, the learning curve for becoming proficient and the esthetics given that it is a homogenous material. Having said that, I have seen some rather esthetically attractive CEREC restorations. There certainly are techniques to produce both an excellent fit and excellent esthetic result.

Dr. Puri: ***For the average practitioner considering a CAD/CAM device for their office, what would your recommendation be to them?***

Dr. Spear: I would say that if you are considering purchasing a CAD/CAM device, the day you purchase it you should also sign up for the first class on it. I truly believe with these technologies, it should be mandatory to receive hands-on continuing education from someone who is very proficient in utilizing the device.

I think to purchase one and attempt to learn it on your own in practice is a huge mistake. In fact, the people I know who have tried it have basically become frustrated and ended up selling their machines. It's interesting, I've heard dentists say you can get these CAD/CAM machines on EBay and then I have other dentists who say well, "I absolutely love mine." If you asked them what the difference is, the ones who love them are usually the people who spent the most time in training, practicing and becoming proficient.

"I truly believe with these technologies, it should be mandatory to receive hands-on continuing education from someone who is very proficient in utilizing the device."

Dr. Puri: ***What developments would you like to see on the material side of CAD/CAM Dentistry?***

Dr. Spear: I think many of the strength issues have been addressed. Products like Emax in particular, which is similar to the old dicorium GC, have strength numbers that are exceptional. I still think the biggest limitation is in areas where esthetics is extremely critical (i.e. managing translucency, managing shading.) I think it's important that the dentists who want to use these technologies in esthetic areas become proficient at managing surface colorization. For those dentists who are more adventurous, they may want to use the technology for management of some minor cutbacks and firing of surface ceramic. I think in terms of strength, we are in a pretty good position. I think esthetics is probably an area we are continually going to try to refine and improve the process.

Dr. Puri: ***How do you feel that a high level clinician such as yourself can benefit from CAD/CAM Dentistry?***

Dr. Spear: I think if you are asking me, concerning a full mouth reconstruction or an esthetic case of 8, 10 or 12 veneers or all ceramic units, I will still personally continue to do them with a lab based process simply because I think the esthetics of a laboratory fabricated restoration is almost impossible to match chair side in an efficient manner. Having said that, I've already lined up a number of people that I plan on doing CEREC restorations for on their posterior simply because they are one and two unit posterior restorations. I think that when you have posterior restorations, in particular where the patient wants an all ceramic restoration, the ability to prepare it, scan it and deliver it all in one appointment is difficult to beat. You are not worrying about temporaries coming loose or wash out on the temporary cement and there is the convenience for the patient and office for not having to have two appointments. I personally look at it as something that I will be doing more often after initially getting my feet wet using it on posterior restorations. Who knows, there may be a time that I venture forth and even try it on some anteriors along with some surface colorations or cutting them back and doing some firing of surface ceramics.

Dr. Puri: ***What do you feel is the number one hurdle that clinicians face when trying to implement new techniques and technology into their offices?***

Dr. Spear: For me that is actually somewhat of an easy question because it is always the same problem - it's time. I think any time a dentist attends continuing

education classes and learns something new, they go back to their practice and try to determine how they are going to implement this in their existing practice. That is a barrier. I believe that it is always necessary for the clinical side to be combined with management and finances, to some extent. This way, the clinician will have an understanding of "how do I go back and take the time to learn this process while keeping my practice up and running, with production numbers where they need to be, while seeing the number of patients I need to see." What I have found in the 25 years of dental education is that I don't care if it is teaching someone about temporization or tooth preparation or an exam, the barrier develops when you go back to the day-to-day life of your practice. How are you going to manage the time to integrate those procedures into it?

***Dr. Puri:** You have lectured extensively about fiscal responsibility as a clinician, can you expand on this with regards to integrating technology that may have a high price tag but also a high ROI. What precautions would you give to dentists on this subject?*

Dr. Spear: I would say that regardless of what technology a dentist is considering, whether it is CAD/CAM, Lasers or Cone Beam, my advice is to look at your practice and its economic situation. Look at the monthly economics of what you are considering in terms of purchase cost and plan, in advance, how you will get the return on investment that is necessary. I think what happens with young practitioners, in particular, is that they get caught up in technology because it is exciting. They purchased it without having considered, "how is this going to impact my bottom line, and what am I going to do in practice so that this technology in fact will make me a more profitable dentist?" I can assure you that having had so many students come through my workshops that have many of the technologies I just mentioned including Cone Beams, CEREC and high end lasers that run well, with the proper training a practice can make all of those technologies a profitable investment. I think my advice would be to consider the economics of it prior to making the purchase, not after making the purchase.

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The CEREC Advantage in the New Landscape of Dentistry & the Myth of Client Loyalty

Imtiaz Manji

Are your clients loyal to you? I think most dentists would contend that they enjoy the loyalty of most of the people who sit in their chairs. After all, it's a pretty simple thing to recognize, isn't it? You see the same faces coming back year after year. You've watched families grow up in your practice, and you know their histories. Ask any of these clients who their dentist is, and they'll name you.

At one time, that may have been an accurate enough measurement of client loyalty. But the world has changed—we don't do business deals on just handshakes anymore, the mom and pop operation has to compete with global franchises, and the long-time devoted trusting customer has given way to the empowered, savvy consumer. To really understand just how loyal our clients are in this world, we need a more precise, more realistic definition—one that takes into account the realities of today's changing landscape in dentistry. Beyond that, we have to recognize that as dental professionals we have a powerful tool in the fight for client loyalty, and its name is CEREC.

It's a new landscape out there. Just as the widespread introduction of insurance in 1967 changed the landscape of dentistry by making regular dental care accessible to most Americans, new developments in the world around us are creating another seismic shift in our profession. Once again, client perceptions are changing, and once again there are new opportunities for dentists to deliver better care to greater numbers—opportunities that go well beyond what was envisioned in the early insurance era. The difference this time is that those opportunities will only be captured by the dentists who adapt to the changing landscape, and those who do what it takes to capture the imagination and commitment of today's new breed of client.

In fact, in this new landscape it is often the clients leading the way with expectations of smile renewal often outpacing the average dentist's "business-as-usual, recare-and-repair" mindset. When these clients think of dentistry now, they're not thinking about fillings and hygiene checks, they're thinking in terms of lifestyle-enhancing makeovers. They look at the high-profile people in the media-saturated world around them—actors and singers, newscasters and politicians, athletes and pop icons (not to mention the trendsetters in their peer groups)—and they see flawlessly-engineered smiles. Perfect has become the new standard, and they want it. To be a successful dentist today means positioning yourself as a provider who is in tune with the "new dentistry."

For instance, think about the growing market of aging baby boomers and seniors. Not only do they have a mouthful of vintage dental work that's due for replacement, they also have an unprecedented opportunity for personal renewal through dentistry. Nothing rejuvenates appearance more than a great smile, and you have the ability to provide this generation that refuses to grow old with teeth that are the color, shape and length of those of people twenty years younger. And for those people who are twenty years younger the ones who are captivated by makeover shows and who compare smiles the way they critique hairstyles you can correct deficiencies and deliver the results they dream about. Dentistry has become sexy, in a way that was unimaginable just a generation ago, making this a great time to be a dentist. But there's a catch.

The same person to value modern dentistry and is motivated by media influences, is also likely to go online to investigate further. What they're finding there is changing their perceptions and influencing their behaviors in ways

that challenge our age-old paradigm of client loyalty. It takes only a couple of mouse clicks to find out that today's dental technology can provide a high-quality, almost instant smile makeover. But it only takes a couple more clicks to find out that you can get that makeover in Tijuana for a fraction of what your family dentist charges. If you're basing your decisions on what you see on a website, all dentists look pretty much the same, so price becomes an overriding factor. This is the new reality we live in. The media has glamorized dentistry, while the Internet has commoditized dental services.

That brings us back to our definition of loyalty. Most clients are loyal when it comes to hygiene and routine treatment. But how loyal are they when the stakes get higher and they're presented with treatment options beyond their insurance parameters? (For that matter, the loyalty of many clients is entirely dependent on their insurance—as any dentist who has stopped accepting a particular plan finds out). How loyal are they when there is a worldwide web of cheaper options at their fingertips? The only true measure of loyalty, when you get right down to it, is where people spend their time and money—and today's client has more forces clamoring for their attention and their wallet than ever before. They may have said "I'll think about it" while they were in the chair, but once clients are out the door, they're thinking of other things—a world beyond dentistry—and wherever their mind goes, their time and money will surely follow.

Comprehensive dentistry is a significant economic investment, so when you are competing at this level it's not just other dentists you're competing with, it's vacations, and cars, and iPhones and all the other latest "must-haves". You're competing against huge commercial interests, backed by massive marketing budgets, and armies of salespeople promoting enticing, specially-crafted financing offers and promotional deals.

That's not to say that you need to have the marketing power of Apple or the high-pressure techniques of a car salesperson to compete, but you do have to recognize that there are certain rules for playing at this level—and the first rule is: it's about today. The car salesman doesn't care whether your client gets the right dental care. All he knows is that he has a prospect in front of him, and if that prospect walks off the lot today without buying, he probably won't be seeing them tomorrow. The same rule applies to you—and because your motives are pure, it's a rule you can apply with the highest integrity, without feeling like a car salesman. In today's hyper-competitive business world, the face-time you get with clients takes on a new urgency. You have to do everything you can to get the client to commit to a decision today—before the lures of commoditized dentistry or the travel agent's mailer get to them. It's called capturing "mindshare," and if you have CEREC in your office, you have the most powerful tool for leveraging mindshare that is available to the modern dentist.

> "...if you have CEREC in your office, you have the most powerful tool for leveraging mindshare that is available to the modern dentist."

The CEREC advantage

Anyone who has been around CEREC knows its advantages: its clinical quality, its economic benefits, its efficiency. But the real value of CEREC goes beyond the sum of its benefits. In the new landscape of dentistry, it's important to recognize that CEREC is not just a technology add-on, it's a game-changer. We know what CEREC can do as a clinical tool. Now it's time to see what it can do as a relationship builder, one that can open up (and close) new opportunities with clients.

First of all, there is the simple fact that offering CEREC restorations sets you apart in marketplace—a critical factor in capturing mindshare. The consumers who know about CEREC are naturally drawn to you over others, but only if they know you have it. The biggest mistake many dentists make with CEREC is being quiet about it. CEREC is not just a back-room technology, it is (or should be) a neon signpost for savvy dental consumers. Make sure

your light is turned on and that you drive home the fact that you're not a dentist, you're a CEREC dentist.

Then there is the power of CEREC to drive results today. People who live in a fast-paced, instant gratification world of fast food, 1-hour dry-cleaning and "glasses in an hour" don't want to hear about coming back for a second appointment to seat a crown. Part of the allure of the makeover idea that captures a client's imagination is the idea that the transformation will be not just stunning but swift ("we can do this in one visit!"). And remember, in this new landscape we can't afford to give clients the chance to walk away to "think about" their options. Our focus with every client has to be about now—and CEREC is the ultimate "now" machine.

> "... success is discretionary, it's something you choose, not something that happens."

Most importantly, CEREC is a powerful tool for initiating the right conversations. When you are describing to clients what CEREC can do (something you should be doing with everyone you treat), you are opening the door to high-value discussions about what comprehensive dentistry is, and how it fits in with the client's particular long-term and short-term goals. You're giving those aging boomers and young, smile-conscious clients a chance to ask questions and get excited about their possibilities. Of course not everyone is going to say yes to a full-mouth reconstruction, but it gives you an opportunity to raise the level of discourse with your clients, and that can have far-reaching implications.

It's about your level of engagement. Here is the opportunity: if you have CEREC technology in your office today, you are armed with a critically important tool at a critically important time in the evolution of dentistry. Here is the reality: how much you get out of it depends on what you put into it.

You can use a gym membership to drop in from time to time for a light workout. Or you can use it for focused training for a triathlon. The results you get depend entirely on your level of engagement. Similarly, many dentists who have CEREC in the practice are doing fine with it, but they are not truly optimizing it for what it's worth. If they were fully engaged, their lives would utterly be transformed.

Being fully engaged means raising your clinical mastery by getting the advanced education you need in posterior and anterior techniques, in quadrant dentistry and in high-end esthetics.This allows you to perform at the level the new breed of client expects. It means getting the right education and training for your team so they are aligned around you and amplifying the value of what you do. It means creating the right environment where CEREC is showcased and integrated in a way that optimizes the way you use it. It means taking every opportunity—on your website, through your telephone greetings, on your office tour, in your treatment presentations—to promote yourself as a leading edge provider of CEREC dentistry. That's how to make the biggest impact, not just with new clients, but with that vast market of recare and long-time "loyal" clients, too—the people with whom you probably haven't discussed ideal goals in a long time. That's how to make the biggest impact on optimizing your life in dentistry, in and out of the practice.

This kind of success is there for anyone who has the will to do it. We know that's true, because we see evidence all around us of people who have done it. We are seeing more and more dentists who have recognized the true potential of CEREC, who have embraced the possibilities with enthusiasm and taken their practice to great new levels, even in economically uncertain times. It's a matter of getting engaged enough to see the possibilities and then staying engaged, breaking through one barrier after another on the way to mastery. Eventually, the incremental improvements give way to exponential results. And when that happens, you'll wonder how you ever practiced dentistry differently.

I've always said that success is discretionary, it's something you choose, not something that "happens." By having CEREC in the practice, you have already chosen to be a player in the new landscape of dentistry. Now it's time to choose whether you're in it to win it.

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per unit
5 days in lab

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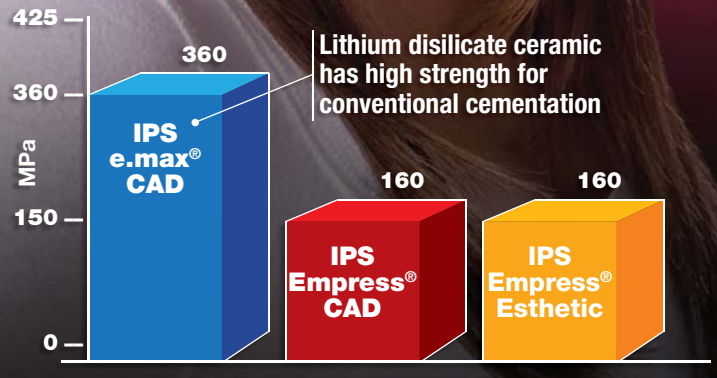
*"Of all the restorations available in our laboratory, my favorite crown is **IPS e.max CAD** because of its precise fit and its uncanny ability to blend in with natural dentition. Cementable all-ceramic crowns have never looked so good or fit so well."*

-Dr. Michael C. DiTolla
Director, Clinical Education & Research



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Dr. Dean C.Vafiadis

Chief Complaint

A patient had full coverage crowns and implants that were treated 4 years before. (Figures 1-3). The patient presented with a fractured left central due to an accident where the lip was cut and the left central, all-ceramic crown fractured at the mid-portion of the tooth. (Figure 4). The patient was leaving for the holidays with his family the next day, so having the tooth repaired in a timely manner was of major importance.

Figure 1

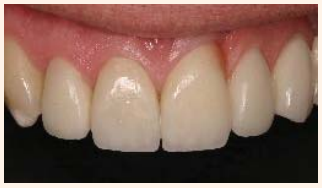


Figure 2

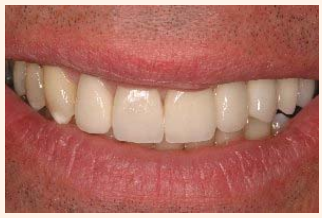


Figure 3

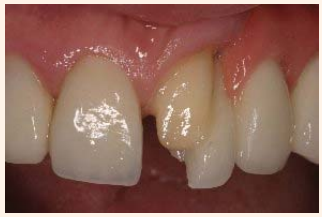


Figure 4

Standard Protocol

For patients in need of a front tooth, we would usually make a provisional crown and cement with a strong cement, make the impression and get back the final crown bisque-bake when the patient returned from the holiday. Usually we would have a second visit try-in for color and shape and maybe on the third visit the central would look acceptable. Many times though, the color is not acceptable and a fourth or fifth visit is necessary for the patient and the doctor. This happens to all clinicians because this is the most difficult restoration to get the color and shape to an acceptable aesthetic result. Because of the difficulty of shades and contours, the technician, the clinician and the patient may waste hours of time and effort trying to get the restoration to an acceptable level.

CEREC Protocol

Because of the severity of aesthetics and time, it makes more sense to have the capability of fabricating a one-visit CEREC crown or veneer to better treat our patients. In addition, the technician and the clinician can also save hours of chair time and frustration trying to match colors and contours by following CEREC protocol.

Step 1- Prepare ideal dimension for all ceramic crown.

Step 2- Fabricate provisional with Luxa-Temp provisional material for ideal contours, incisal edge position and occlusion (Figure 5).

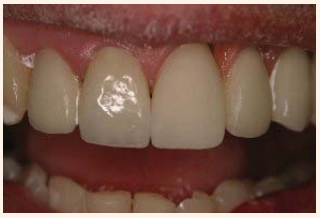


Figure 5

Step 3- Use putty matrix material on the lingual area with indexing holes to add to the scanning depth of area and better stitching of the scan.

Step 4- Scan in Master mode, Correlation mode "occlusion mode" with 5 images and confirm scan correlation (Figure 6).

Figure 6

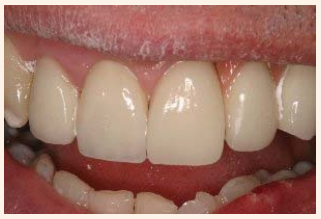
Step 5- Remove provisional and scan preparation with the same matrix in place. This will correlate more easily. We scanned in 7 images to insure stitching.

Step 6- Design crown and confirm contacts

Step 7- Mill crown with Empress Multi-block

Step 8 – Adjust contacts, incisal edges and confirm contours

Step 9 – Glaze for overall color, Empress glazing program baked to 825° (Figures 7-8).



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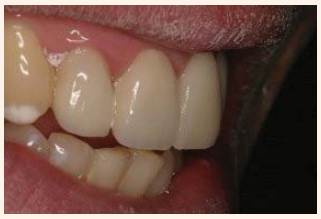
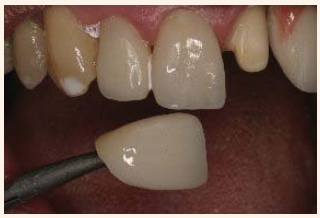


Figure 8

Step 10 – Stain and glaze with Empress Stain Kit to add characterization to match adjacent tooth (Figures 9-11).



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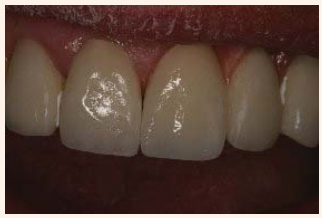
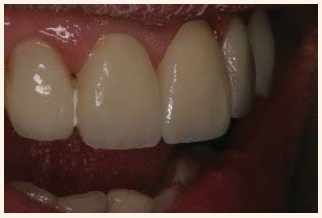


Figure 10



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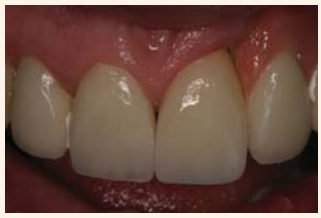
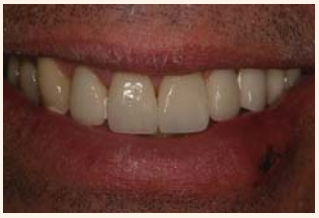


Figure 12

Figure 13



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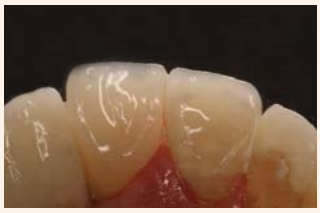


Figure 15

Figure 16

Cementation

The tooth was prepared with pumice and cleaned with chlorhexidine rinse and etched with 35 % phosphoric acid for 15 seconds. Excite™ (Ivolclar) dentin bonding agent was then applied for 15 seconds and then cured. Opti-bond (Kerr) Solo-plus bonding agent was placed and cured as well. Opti-bond 2FL was used on the internal of the crown and Luxa-core dual cure Cement was used as a luting agent. The crown was polished and finished intra-orally (Figures 12-16).

Discussion

Over the past 20 years of clinical experience and clinical research, we have seen many difficult situations. Colors and shapes of anterior teeth will always give us the biggest challenge. The lab tech and the dentist continue to struggle with trying to match colors and shades that are just too difficult to communicate with a lab script or even with photos and computers. We have all wasted countless hours to treat anterior teeth and we all wished we had the technician right there to view the colors as they were in our operatory.

With CEREC anterior crowns, this is not only a reality but it is a weekly occurrence. To be able to deliver these kinds of restorations in a one-visit protocol, saves everyone multiple visits and time. The most important factor is that we as clinicians finally have control over these difficult situations and can better deliver an anterior tooth that we can assure our patients that the color and shape will be to their high aesthetic demands.

Conclusion

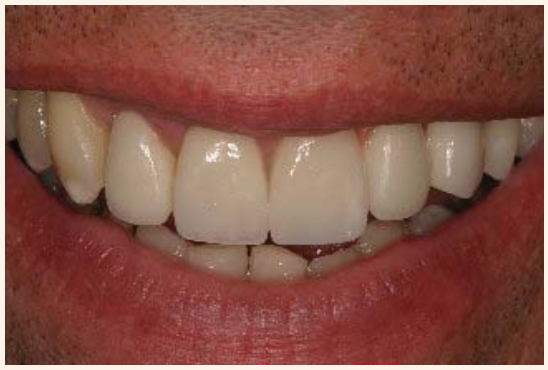
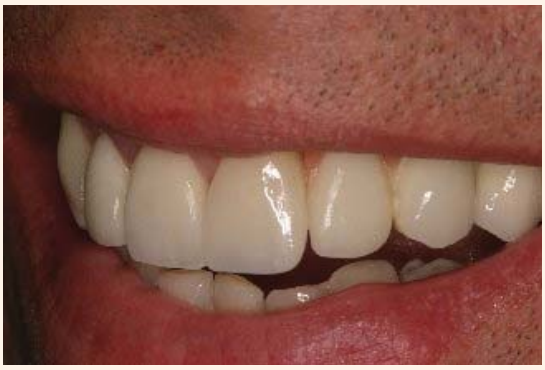
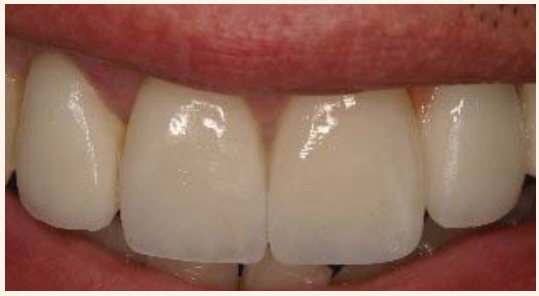
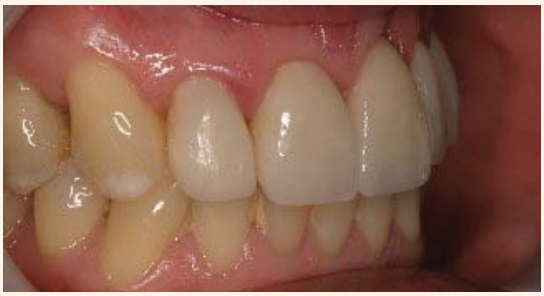
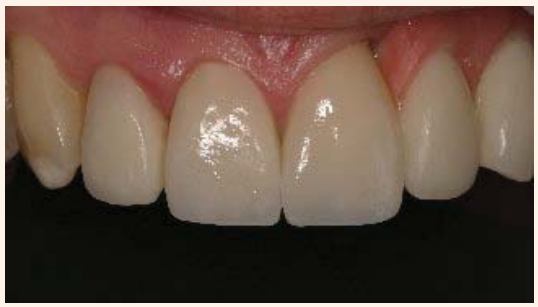
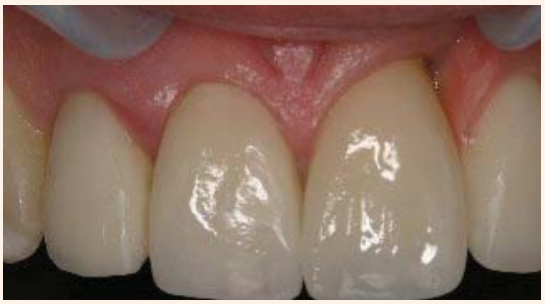
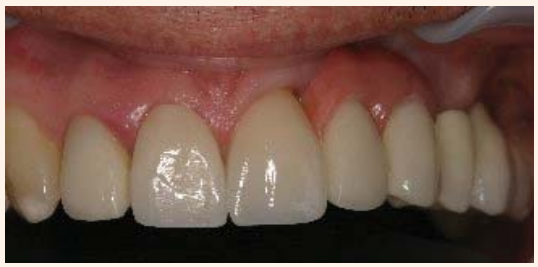
The timely manner of one-visit CEREC crowns and the ideal predictability of the color and shades is highly favorable and recommended. This benefits the patient, the lab tech and the clinician. After 24 anterior restorations fabricated with this technique we have realized the following: the amount of time that is saved compared to the normal protocol is a ratio of 1:8. It takes an average of 16 hours for all parties to fabricate an all-ceramic crown that is aesthetically acceptable. It takes an average of 2 hours to fabricate the same crown with the CEREC one-visit protocol.

Please see the following page for final case photos

Ackowledgements

After taking the anterior proficiency course at the Scottsdale Center for Dentistry, we were able to fabricate 24 crowns and veneers and continue to treatment plan cases with the CEREC one-visit protocol.

Thank you to Dr. Armen Mirzayan, Dr. Sameer Puri, Dr. Mark Fleming and Dr. Darren Greenhalgh and the staff at the Scottsdale Center for Dentistry for their exceptional instruction during the anterior CEREC proficiency course.


FINAL CASE PHOTOS

ADVERTISING YOUR NEW CEREC®

Fred Joyal, CEO 1-800-DENTIST

If you've recently added a CEREC machine to your technological repertoire, you're probably wondering how to use it to attract patients to your office. Let me start by saying that very seldom does technology itself attract patients. They don't care about a laser, for example, so much as they care about what the laser can do to change their dental experience. You could go on and on about the brilliance of the CAD/CAM technology, the computerized lathe, or the quality of the porcelain blocks — but those are features of CEREC. In advertising you want to talk about benefits.

So what's the most appealing benefit of CEREC to dental consumers? Simple; It eliminates the second visit to the office. Saving time is a definite benefit in today's busy world. There's something else that is very important about not having a second appointment — they don't need to get anesthetized again while you remove the temporary and put the crown in. Many times there is unpleasant drilling, or at least prying, required to get a temporary out and the two things that people hate most about dental visits are drilling and shots. Eliminating any of this is a clear benefit in the patient's mind.

There are also more subtle, but appreciable qualities of CEREC. First, the longevity of the restorations. Temporaries are unpleasant and often come loose, people who've had them know this. Another benefit is that you can do onlays and inlays instead of composites. They last longer and match the teeth better. Looking better — a clear benefit. And the fact that these restorations last longer also means less time in the dental chair in the future, another nice benefit.

Once you've identified all these benefits, you naturally want to promote them in your advertising. The first step is to put CEREC in your Yellow Page ad. Use the brand name, CEREC, just in case a consumer happened to see some kind of news program about it. The next step is to display it prominently on your web site and thoroughly explain the benefits and how CEREC works.

In both of these formats, and really in all your advertising and marketing, you should be simple and clear about what CEREC is. "Same-day restorations" is a clunky and confusing phrase. After all, what is a restoration? The average consumer has no idea. I would say something more like "Crowns in a day — no more temporaries, with CEREC," or "Beautiful porcelain crowns in a single visit — no temporaries or second appointment with CEREC." You should be constantly explaining how CEREC technology positively affects their dental experience in simple, easy-to-understand language.

Of course, as with any new technology, CEREC has some limitations from an advertising standpoint. Namely, a patient needs to understand what a temporary is before he can appreciate not having to get one. In my experience, this somewhat restricts your ability to use CEREC to attract new patients — because if they don't understand the problem, they won't appreciate your solution. Unfortunately, that means CEREC alone won't draw enough patients to justify the ad spending. Not yet, at least. So instead, integrate it into your overall advertising message and emphasize it as part of your unique dental experience. Your message should be about all the modern

technology in your office — being that your facility has everything to make their visit as fast as possible while offering the best possible results. CEREC is a big part of the equation, but it isn't the only factor. Right now you may be thinking, "If CEREC isn't my main focus for new-patient advertising, how else do I use it in my marketing?" Well, there are plenty of opportunities right there in your office, they're called existing patients. One of the biggest mistakes dentists make is assuming that their patient base knows everything the practice does — perhaps because they told them once or had a brochure up front or CAESY® playing while they sat in the chair. People don't store this information, it's human nature not to pay attention unless we're already interested. You have to tell them over and over all the things you can do for them and why these things are so great and can improve their lives and their health.

This means use newsletters. Tell them in each issue about CEREC. Dentists lose patients all the time because they don't keep up with the latest technology, but as a CEREC owner, you are way ahead of the curve. Patients can't just get it anywhere — so make sure they know why it's so beneficial. Use e-mail (which you should be gathering for every single patient) to send them a little explanation of this great new technology. Tell them on your appointment reminders. Look into Patient ActivatorSM, our internal marketing program, which has a version tailored to CEREC owners. When patients are comfortable with the level of care your office provides, they're much more reluctant to leave your practice — even if their insurance changes.

"Another great opportunity is when you have a new potential patient on the phone. Tell them about CEREC!"

There are also ways you can promote CEREC to potential new patients, outside of your actual advertising. When you give a tour of the office to a new patient, for example, they should hear about CEREC and why it's so great for crowns and for inlays and onlays. Your whole staff should be well-versed in the benefits, and expound on them whenever possible with the patients. I know a few dentists who actually put the lathe in the reception area so that it stimulates questions.

Another great opportunity is when you have a new potential patient on the phone. Tell them about CEREC! This is the time when they'll ask exactly what CEREC is, and you can tell them why it benefits them and how few offices have this amazing technology. I can't stress enough how few practices take this golden opportunity to make a great impression and make the practice appealing and unique. Do this well and you'll get more new patients in, I guarantee it. People want to save time; they want one visit instead of two and they certainly want fewer shots. That's exciting stuff. That's a reason to choose your office if they're shopping around.

One last marketing idea: Guarantee all your CEREC work. That's very appealing to patients, especially with new technology. How can you do that? Simply say the guarantee is good as long as they are consistent on their recall. Odds are they won't be (and it will be at your discretion if you restore the work or not), but it could even tighten your recall. You can remind people of the guarantee when you send appointment reminders as well. Simple and effective.

So, these are the points to drive home: CEREC saves time, adds comfort, eliminates shots and extra visits, and can give them a more natural-looking and longer-lasting restoration than composites. Convey this message to your new and existing patients. Make it part of your ads, get it on your web site, and promote it on the phone and in tours, and you'll see a much more rapid increase in awareness and acceptance of CEREC. And that means more production!

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Rubber Dam Isolation and CEREC

Dr. Andrew Hoe

There are two steps in the CEREC technique where good isolation of the working field is a must for clinical success. The first step is the powdering / optical impression step where the dentist must accurately capture the prepped teeth, and either the pre-operative teeth or an antagonist bite record. The second step is cementation where the prepped teeth must be isolated from blood, saliva, and crevicular fluid for successful bonding to take place. A properly applied rubber dam can help make your CEREC cases "slam-dunks".

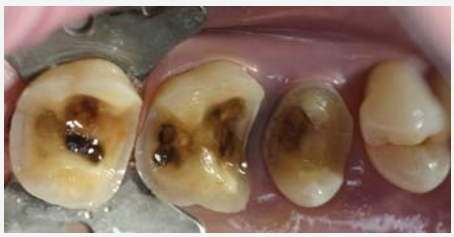


Figure 1

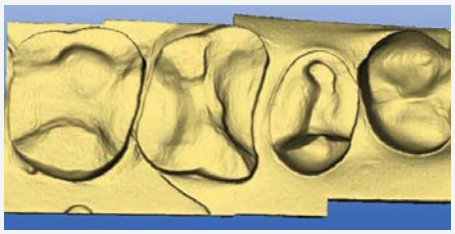


Figure 2

The rubber dam helped make this 3 unit case relatively easy. (Figures 1 - 2)

When properly applied, the rubber dam can be extremely helpful for most CEREC procedures. A well designed rubber dam can provide isolation and retraction of the working area for the critical powdering, imaging, and bonding steps of any CEREC procedure.

1. THE BASICS:

A. Clamps

Any successful rubber dam starts with a stable rubber dam clamp. Whenever possible, a molar should be clamped as molar clamps are large enough to withstand the pressure of the stretched rubber dam without dislodging. These are the ONLY clamps that I use for all of my CEREC / operative / pedodontic procedures: #26, #24, #12A/ #13A (they are mirror images of each other), #27 (I will use these for small molars and e's), and the #27N (which has an extended distal bow). My philosophy is that the patient should feel nothing after the local anaesthesia is administered. If you are clamping an upper molar, either give the patient a PSA with Septocaine, or use a posterior palatal block – the palatal gingival must be numb. After the clamp is applied, test its stability by pushing on it with your fingers – nothing will startle you (and your patient) more than a rubber dam clamp flying across the room halfway through the procedure.

B. The Rubber Dam

I will use non-latex rubber dam only if the patient has a known latex allergy. The non-latex dam is not nearly as tear-resistant, and it has an annoying habit of melting wherever things like adhesive primers or endodontic irrigants spill onto it. You can use heavy (thicker) rubber dam if you wish, but medium is usually sufficient. Most latex dams now come in lightly scented varieties – they actually smell nice and will make your pedodontic patients hate you a little less when you put the "raincoat" on their tooth. Speaking of pedodontic operative, a #27 clamp will work 99% of the time when you are clamping a primary second molar.

C. The Hole Punch

I still use the rubber dam punch that I received in dental school 22 years ago. Clean out the holes on the rotating table with an explorer once in a while, and replace the rotating table when your punch starts making jagged holes. Use the large hole for molar teeth and the smaller

holes for bicuspids/anteriors. Punch the clamp hole about ½ an inch from the center of the rubber dam sheet. Keep the holes 3-4 mm apart so that there is adequate rubber to retract the interproximal gingiva. I design my rubber dams to extend at least one tooth distal and 3 teeth mesial to the prepped tooth.

2. BASIC TECHNIQUE

Clamp a molar tooth distal to the tooth you are working on. The distal clamp is holding the entire dam, and if you clamp a small bicuspid, the clamp may hit you in the face when you stretch the dam against the frame. Apply a small amount of soap to the holes and slip the distal hole over the clamp with your fingers. Pull the rubber dam out of the patient's mouth and apply the frame. Have your assistant pull the rubber dam over the teeth while you floss the interproximal rubber through the contacts. While your assistant blows air on the teeth, use an explorer to invert the dam around the teeth. You're done!

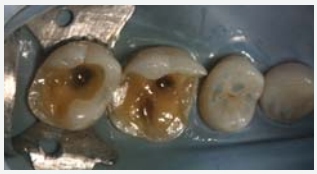
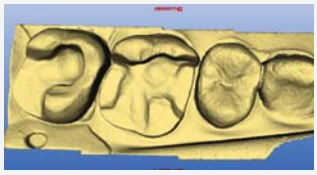


Figure 3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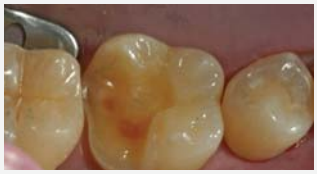
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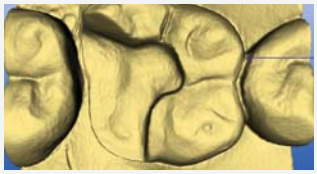


Figure 6

Both of these cases were done using a basic rubber dam technique. The preps were accurately processed into the computer, and the bonding / cementation step was easy. (Figure 3 - 6)

3. ADAPT / IMPROVISE / OVERCOME

The basic rubber dam technique works for me about 40% of the time. The other 60% of the time I use the following techniques to help overcome special situations.

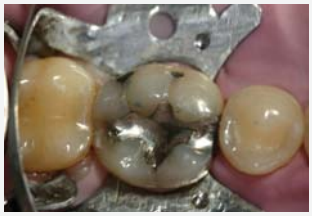


Figure 7

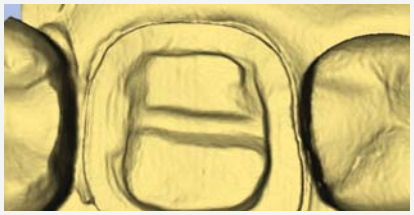

Figure 8

A. 24N Clamp for distal teeth or preps with buccal/ lingual equigingival margins (Figures 7 - 8)

This first molar had buccal cracks which extended right to the gingival – the extended bow clamp pushed the rubber dam apically while still allowing visualization of the distal adjacent tooth surface.

B. Retraction Cord (Figures 9 - 11)


Figure 9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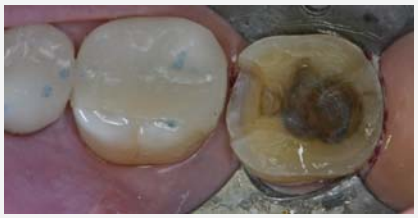


Figure 11

Sometimes, the rubber dam will not adequately retract the gingival away from the prep margins. Take a dry retraction cord and gently tuck it into the sulcus with a cord packer. The cord will pull the rubber dam apically and usually provide enough retraction. Here is a case where a 24N clamp and a small piece of retraction cord allowed visualization of the distal margin.

C. Diode Laser (Figure 12)

If the margin is too deep for retraction cord, you can use the fine tip of a diode laser to "trough" the rubber dam. The mesial margin of this prep was too far subgingival for retraction cord, so I used a diode laser to trough this area. My assistant will replace the rubber dam while the restoration is being milled.

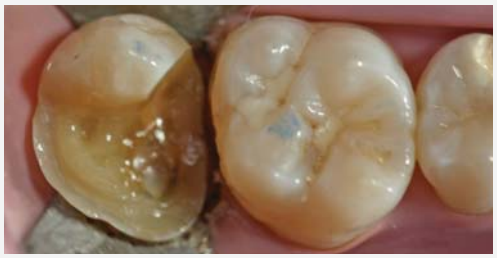


Figure 12

D. Wedget Retraction (Figures 13 - 14)

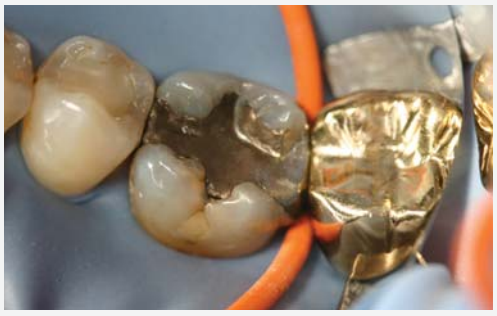


Figure 13

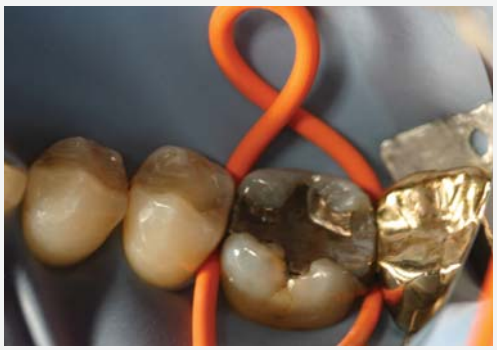
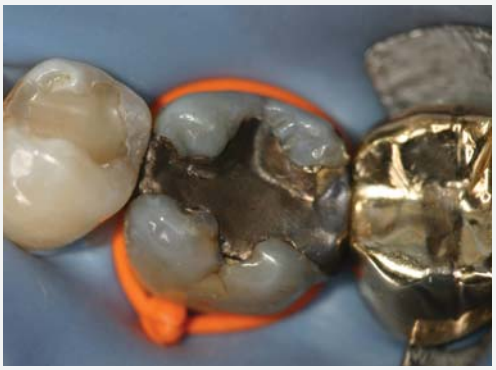


Figure 14

If you want a little more retraction than a basic rubber dam provides, you can use a piece of Wedget. Use a piece about 3-4 inches long and make sure you apply the wedget before you prep the tooth. Stretch the Wedget with your fingers and "floss" it down through the contacts. Loop the Wedget around the lingual surface, pull it tight, and tie a knot on the buccal side. Gently push the Wedget apically with a cord packer. (Figures 15 - 16)



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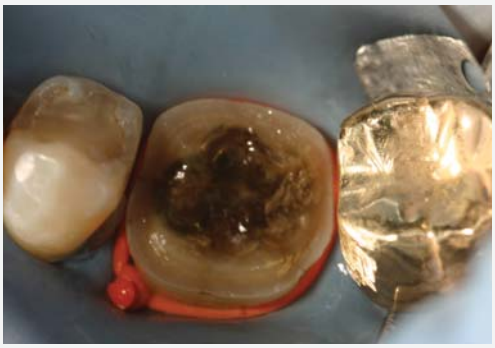

Figure 16

If the Wedget works, you're home free, but if it doesn't, you may have to remove it and use a cord or a laser to get the needed retraction. (Figures 17 - 18)

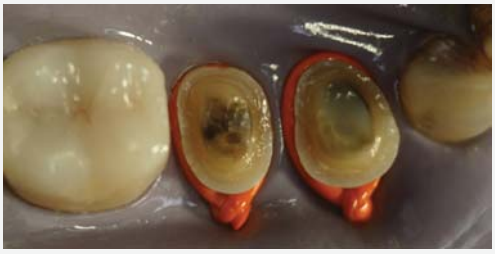

Figure 17

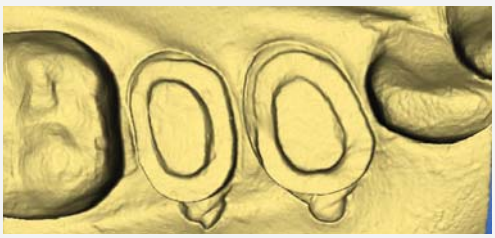

Figure 18

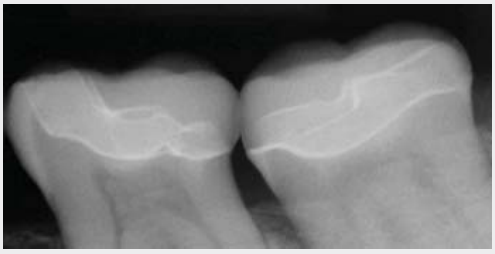

Figure 19

Here is a two unit “Wedget” case. (Figure 19)

Another benefit of the rubber dam is the ability to aggressively remove excess cement from the embrasures without gingival bleeding contaminating the marginal areas. I prefer to remove excess resin cement before it gels with floss and Superfloss (while my assistant holds the restoration in place with an instrument), and the rubber dam makes this step very easy.

4. SUMMARY

I use a rubber dam whenever possible to expedite CEREC cases and make my life less stressful. Like everything else in dentistry, the rubber dam will not work 100% of the time, and sometimes you will have to improvise or simply use another approach. The Isolite is a great tool, and I will not hesitate to use it if I can’t get a rubber dam to work. However, it has been my experience that patients who cannot tolerate a rubber dam because of a strong gag reflex will not be able to tolerate an Isolite either. The rubber dam is not good for preps with severely subgingival 360 degree margins. In these cases, unless you want the rubber dam in place simply to retract the cheeks and tongue, a rubber dam may be more trouble than its worth.

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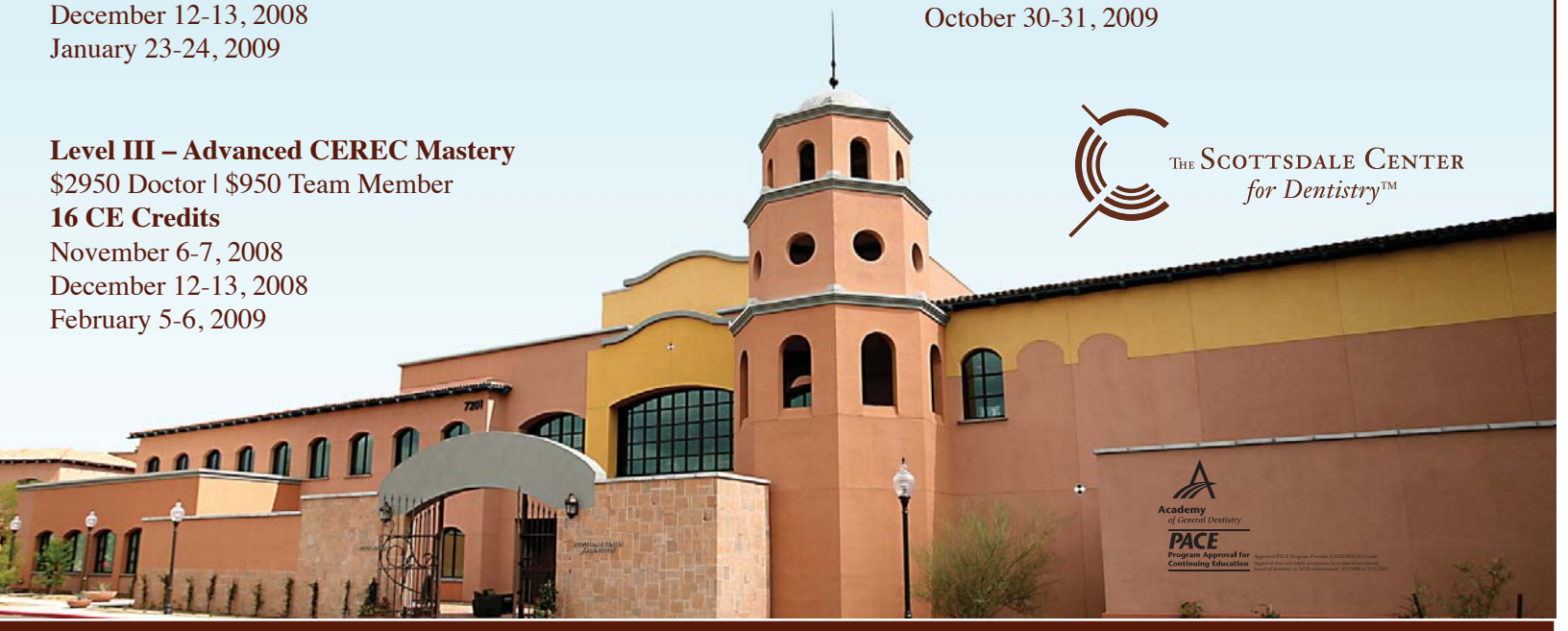

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Doctor Showcase

Dr. John Eaton

Q: How long have you been in practice?

A: I moved up to Wisconsin in 1994 after a one year General Practice Residency at Cook County Hospital in Chicago. I was an associate at a very progressive practice in Madison, Wisconsin. I was very lucky to have the chance to observe and learn from Dr. Larry Wildes. He was an excellent dentist and an even better businessman. He showed me what was possible and helped me develop into a goal driven individual.

I struck out on my own in the fall of 1997. I purchased a 3 day a week, 4 chair practice with the goal of creating something state-of-the-art. I gradually incorporated computers in the operatories, digital radiography, Periolase Laser, Diagnodent, Invisalign, intra-oral cameras and digital photography. The list has continued to grow with items like one of the mother of them all, the CEREC.

Q: What is the size of your practice?

A: In June of 2006 I moved into a new 5000 sq. ft. office to accommodate our 2600 active patients and 10 staff.

Q: How many operatories do you have?

A: There are a total of 7 operatories and we can expand into 4 more once I have the need to add an associate. I work out of 3 operatories while my hygiene team uses 3. We also have an overflow room that is rarely scheduled. It helps give us some flexibility in handling longer appointments with CEREC.

Q: What type of dentistry do you perform?

A: I would describe what we are doing as bread and butter dentistry. It's obviously hi-tech but we are doing at least the basics in all the disciplines of dentistry. We do our fair share of anterior cosmetics as well. I seem to have done quite a bit of elective anterior crown and veneer work in 2008. That is one area I have yet to expand into with the CEREC. Just give me time though, I'll get there.

Q: Why did you choose CEREC as your CAD/CAM choice?

A: I looked long and hard at the CEREC and eventually the E4D as well. I was very comfortable with CEREC's track record. I have gotten to know a few of the folks at Sirona and it is a great company. Their commitment to future technologies and their support of CEREC is phenomenal. Finally, I had a candid conversation with Gordon Christensen at a CEREC Discovery Event about my immediate goals for utilizing CAD/CAM technology. I was convinced that my most predictable results were

going to be achieved with the CEREC because it has a history and a huge network of support. Frankly, it became a no brainer.

Q: How does this technology fit into your office philosophy?

A: Well at this point we are merely beginners. But CEREC is shaping up to be a perfect fit. It fits my goal for restoring teeth as closely as possible to their original condition. It fits my requirement for honoring a patient's time. And it aligns with my vision for being state of the art.

One of my initial stumbling blocks with getting the CEREC was not knowing how it would fit into our scheduling process. My practice is modeled after the scheduling style I learned from Dr. Wildes in my early years. The goal is maximum efficiency. We must have excellent one-on-one time with patients and yet high production through controlled, choreographed scheduling out of multiple rooms. It is a busy schedule and yet I rarely feel rushed.

My 3 treatment assistants have been included in most of the CEREC training since the beginning. They have been trained to powder, scan, and design. I see them eventually doing most of the designing so that will free me up in the middle of the appointment. That will help us to continue being efficient and highly productive.

Q: How has CEREC impacted your practice?

A: I'm probably preaching to the choir but CEREC has a powerful wow factor. Not just for patients but the staff as well. Most patients choose to watch the fabrication process and are amazed. Next thing you know they are telling their friends and family. You have to appreciate a technology that creates raving fans.

Secondly, CEREC is such a great service for patients! They don't want to be away from work unless necessary. We have some large local employers who are getting very restrictive about letting their employees leave for appointments so CEREC helps address that. I will certainly use the time savings in my marketing.

Further, I love patients not having to have temporary crowns and everything that goes with them. Having a CEREC really opens up your appointment book because your not having those issues, plus, no crown seat appointment!

We are still learning the ins and outs of scheduling with CEREC, but we are coming around. I think we are getting close to getting our times down with an efficient sequence.

Q: What is your favorite CEREC procedure?

A:My favorite procedure is becoming the onlay. I am becoming more confident with my preps so I am thankful for the opportunity to preserve tooth structure.

Q: What is your most unique CEREC procedure?

A: Wow! We are way too early for that question. We are newbies! We've done some pretty cool artwork on some practice crowns.

But seriously, I would have to say crowns with consistently undectable margins is pretty unique. I thought what I was doing before was great but these are fantastic.

Q: If someone was to take your CEREC away today, what would you do?

A: While I am not typically a violent man, somehow the phrase "can of whoop-ass" comes to mind.

Q: Anything else you would like to add?

A: I am confident that if we can incorporate a CEREC into a practice like ours, virtually anyone can. As Lovie Smith, the coach of the Chicago Bears, likes to say, "we get off the bus running". Like the Bears, we are running. We are making the CEREC work in a highly efficient manor in the midst of an often complex and busy schedule. The best thing of all is it's a blast to work with!

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Emily, Kansas City, MO Age 23

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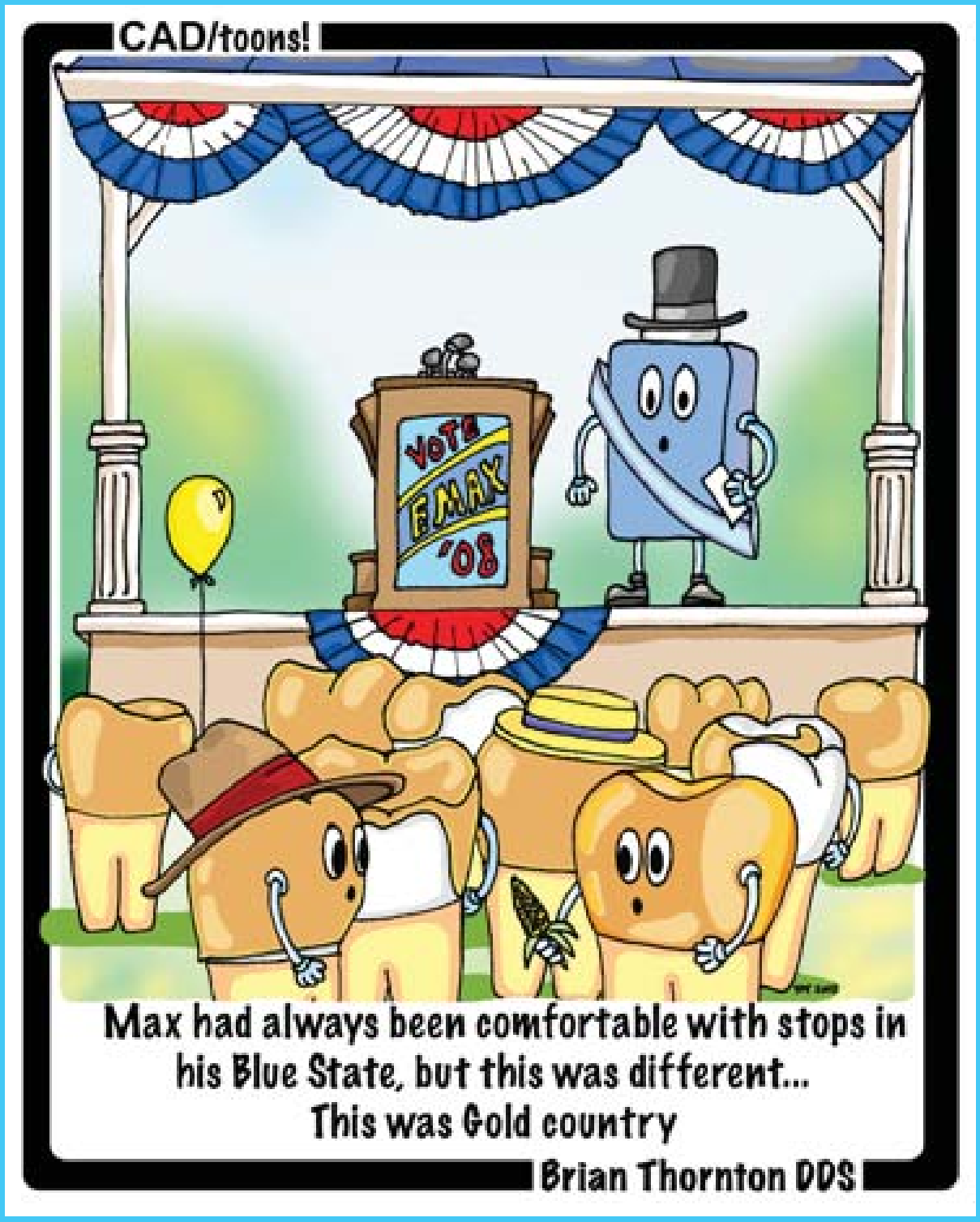

HAPPENINGS IN THE CAD/CAM WORLD

Increasing the use of CEREC in Tough Economic Times

Sameer Puri, DDS

Through the 2nd issue of CEREC Doctors.com The Magazine and the cerecdoctors.com website, not only do we have the opportunity to share valuable information with CEREC users, but I personally get to interview some of the great leaders in our field. To spend time with the likes of Dr. Frank Spear, Dr. Gordon Christensen and Dr. Cliff Ruddle, it's difficult not to get excited about our profession. Their enthusiasm and knowledge is critical to succeed in our current economic environment.

Enduring the economic situation has forced us to adapt our practice and it is now that I truly appreciate our investment in the CEREC technology. When we first purchased the CEREC, my thought was that we would use it for a limited number of cases such as premolar crowns and some molar crowns. Pushing the limits of the materials by restoring second molars was not something that I was excited about. The fear of fracture led me to continue utilizing my laboratory for PFM's and gold crowns, which in turn led to a lab bill. Then I thought, wasn't my CEREC supposed to replace that lab bill?

With increased training and experience, our indications expanded. Ultimately, my goal was to utilize the CEREC whenever possible so as to minimize my overhead while at the same time provide an improved restoration for the patient.
At the recent CEREC Doctors meeting at the Scottsdale Center, Dr. Rella Christensen provided some very encouraging information about the success of milled materials, which in turn bolstered my confidence. As you know from the last issue, Dr. Christensen has been involved in CEREC research for a number of years and her presentation was top notch.

Research is one thing, however what counts is the real world and there is no better real world test than the remake rate of a large commercial laboratory. The blue block (Emax from Ivoclar) is a lithium disilicate material that is about 2.5x stronger than our traditional empress or vita blocks. According to the manufacturer, its strength allows it to be traditionally cemented instead of having to be bonded. While bonding will increase the strength of the material, it is not always possible to bond due to isolation issues.

What manufacturers say about a material and how it actually performs in the field are often two totally separate things. But in this case, the claims may be true for once. Glidewell Laboratory, one of the world's largest commercial laboratories, is fabricating about 1300 units/week of the blue block restorations and their remake rate is only matched by cast gold. Most of their doctors cement their blue blocks so you can imagine that bonding will increase this further.

In our office, all individual units are now done with the CEREC no matter where in the mouth. While steadily increasing the use of CEREC, we can now do it with confidence in areas of high occlusal stress such as 2nd molars. If Glidewell can do 1300 units and have the same remake rate as gold, then there should be no reason that we cannot do the same thing in-house with our CEREC.

Because the blue block requires a 30-minute crystallization cycle, we may not always finish in one visit as we do most other CEREC restorations. However, by taking an optical scan instead of a traditional impression and sending the patient home in a temp, I can have the patient back in 2 days instead of two weeks. We save on impression material and we save the lab fee. This philosophy has allowed me to treat areas I would not have otherwise treated due to fear of fracture or breakage and it allows me to maximize my use of the CEREC technology.

I encourage you to utilize your CEREC to the fullest extent while lowering your overhead. If you need training or support, get it. With 23,000 CEREC owners worldwide, chances are there is a CEREC user nearby that can help you. There is always the support of the CEREC Doctors website if you need it. We have some rough times ahead in this economy and while your practice growth may be limited, your net income certainly should not be.

Visit www.scottsdalecenter.com or call Shayna Phipps at 866.781.0072 to register for a course.

1st Annual CEREC Owners Symposium at the Scottsdale Center for Dentistry

We are proud to announce that the 1st Annual CEREC Owners Symposium at the Scottsdale Center for Dentistry on October 3-4, 2008, was a great success! Doctors traveled from many different places to participate in this once a year opportunity, where they had the opportunity to meet fellow CEREC owners and discuss all things CEREC. The event featured world renowned speakers presenting topics such as the business of CEREC, the history and longevity of CEREC, bridging the gap between CEREC dentists and laboratories and future innovations of CEREC. The successful event not only provided a chance for doctors to learn more about the technology, but gave them the chance to socialize at the exciting welcome reception. The reception was sponsored by Ivoclar and was held at the trendy Stone Rose. Check out the photos to see for yourself the wonderful opportunity and good time this event has to offer!

We anticipate an even more successful 2nd Annual CEREC Owners Symposium to be held at the Scottsdale Center for Dentistry on October 30-31, 2009. If you are interested in attending, we are now taking registrations as there is limited seating. We will be featuring a dedicated staff program as well as a dedicated lab technician program. Please contact Shayna Phipps at 866.781.0072 or visit www.scottsdalecenter.com or www.cerecdoctors.com for more details on the event.

2008

1st ANNUAL CEREC OWNERS SYMPOSIUM

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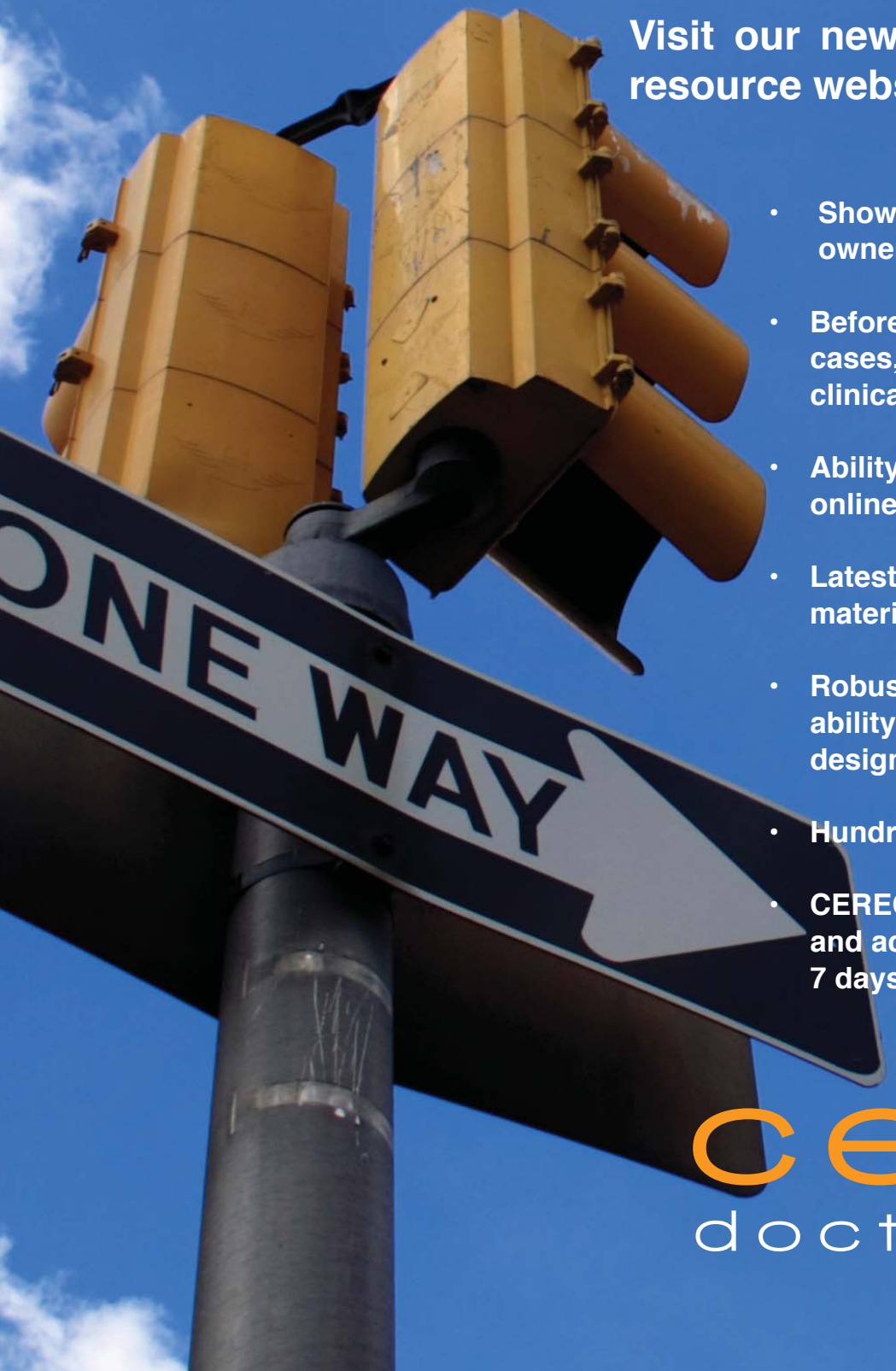

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- **Ability to earn AGD CE credits online**
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