

Confessions of a Former CEREC Skeptic

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Just three short years ago, I counted myself among the skeptics and critics of CEREC. Having now been a CEREC owner for two years, I am soaring to new heights of personal and professional satisfaction not thought possible after 21 years in practice. Though I smile about it now, when I think back to my days as a skeptic, I am sobered by the thought that I almost missed out on the greatest transition of my professional career simply because I was clinging to a myth of the past. So how did this major paradigm shift come about?

Growing Pains

Every new technology struggles during its early development. For instance, think about adhesive dentistry. In just a decade and a half, adhesion has grown to the placement of the majority of restorations in many practices. This is what made it possible to establish primarily aesthetic practices based on desire-driven cosmetic dentistry. But it did take some serious determination to get through the early days. I remember post-operative sensitivity and replacing a quad of composites because the sensitivity would not go away. Many colleagues with similar experiences shied away and went back to the old ways of doing things. But persistence through the hard times has taught me that dedicated effort pays off.

I have found this to be the case with CAD/CAM dentistry. Having already established a highly successful aesthetic practice, I thought I was at the top of my professional satisfaction. I had been doing metal-free restorations since the late 1980s, and I had reached a high level of confidence in knowing what works and how to make it happen. In the early years of CEREC I saw some CEREC teeth come through my practice and I thought they were second-rate aesthetic restorations.

The earlier CEREC ceramics were opaque with limited color selection. I felt that even my temporaries looked better. I held this opinion for many years, which kept me away from taking another look at the emerging CAD/CAM technology. It wasn't until I ran into a colleague at the AACD convention in Vancouver that I began to relax my prejudice. My friend had just written an article on the new release of CEREC® 3D and the advances in software design. He said it

was now the real thing. Plus, with the computer-generated lab zirconium crowns and bridges appearing at that time, I decided it was time to take a second look at this technology.

Coming of Age

To my surprise, the level of precision that CEREC had obtained with its upgrades in hardware and software was mind-boggling. Unlike the prior CEREC generations that required the clinician to use creative imagination to make a two-dimensional design into a three-dimensional restoration, the advanced CEREC® 3D made this design process a breeze. It basically comes down to what you see on the screen is what you get with the milled restoration.

The software had also become so simple. It takes the operator through a systematic sequence of simple steps that make designing a beautiful restoration a snap. The design process starts by taking an optical impression (a 15-second process), bite registration or pre-scanned image of the tooth or study model. The computer then walks you through the entire design process in sequence, step by step – and it will not allow you to override any steps or cut any corners. There are tooth design templates available for rapid tooth design and, once chosen, the computer intuitively designs the restoration. Any changes can be accomplished with design tools that let you tweak the restoration to your specifications on the computer screen before milling.

The primary evidence that turned me into a CEREC convert was the realization that the fit of the restorations is equal to lab results, aesthetic options have advanced to meet my clinical demands, occlusal design is under my control, and believe it or not, the system is incredibly affordable.

A True Convert

As you can see with the clinical illustration included in this article, precise fit, aesthetic design and occlusal control are now achievable with CEREC® 3D technology. In just two years I have taken it from single-tooth restorations to quadrants, smile design and full-mouth applications. With proper management of occlusion, preparation design and adhesive techniques, CEREC can be enlisted to address a wide variety of restorations. It's changed my practice, and it can change yours too – if, like me, you're willing to overcome past impressions and take an honest look at the latest advancements.

Fit: CEREC will give you what you give it. When paying attention to preparation detail and soft tissue management, you will get restorations fitting like

fine gold work. The milling process is so refined that it will produce exactly what is designed on the screen.



Figure 1. Patient desired to have amalgams replaced on teeth #2 through #5 to improve buccal corridor alignment.



Figure 2. Conservative preparations and removal of caries and amalgam on cervical buccal of #2 and #4. Tissue/retraction with diode laser.



Figure 3. Try-in of TrILuxe ceramics prior to bonding. Note the accuracy of dry restoration fit.



Figure 4. Occlusal view of metal-free restorations at one week demonstrates the precision and blend of CAD/CAM technologies.

Aesthetics: The sky is the limit. Most CEREC restorations placed today are polished. With the latest blocks available, color blend is easy. Given the high fluoresces and varying translucencies, these ceramics behave as chameleons when bonded. To reach my true expectations, however, I prefer staining and glazing.

With the preprogrammed ovens, the process can be efficiently accomplished and applying the characteristics is not a mystery. A class or two will place an artistic operator in good position to achieve excellent results right from the start.



Figure 1. Composite on pegged lateral had discolored and patient desired a long-term aesthetic solution.



Figure 2. Following laser recontouring and tooth whitening procedures, a ProCAD restoration was designed, milled and characterized for aesthetic completion.



Figure 1. Client desired to even color and alignment of teeth in smile zone. Treatment plan was for 10 conservative veneers.



Figure 2. Smile enhancement with 10 ProCAD characterized veneers.

Occlusion Control: With CEREC® 3D, occlusal control is as refined as any lab application I have seen. Occlusion can be designed by correlation mode and/or taking a bite registration. Correlation is accomplished by taking a preoperative optical impression with the camera. The computer will store this image and reproduce the geometric parameters when the restoration is designed. Pre-adjusting the occlusion before the restorative procedure makes this process very effective for partial coverage restoration designs. For full crowns, I prefer a bite registration, which is captured in tandem with the optical preparation image. The computer stitches the bite and preparation optical impression together to deliver a very accurate virtual articulator system within the computer-designed model.

It's very interesting to watch the computer set the occlusal contacts in the design process. With accurate records, this operator has found very precise occlusal design with minimal occlusal adjusting following bonding of the restoration.

Affordability: CEREC is a significant ticket item, yet it's the most affordable equipment I have purchased in my practice. Though my lab savings paid for the investment in the first year, Patterson also offers very affordable financing options. I saw a significant cash flow increase in my practice within a very short period of time. In hindsight, CEREC is one of the best decisions I've made in my career.



Figure 1. Patient desired full replacement of amalgams with metal-free conservative restorations.



Figure 2. Final ProCAD onlays. Occlusion design with Correlation feature of CEREC software.



Figure 1. With evolving technology, fractured teeth such as these can be restored with conservative CAD/CAM restorations that are aesthetic and strong. Could it be there is a new "gold standard"?



Figure 2. Restored quadrant with conservative ProCAD onlays. Note the precision occlusal contact placement. This process was controlled by design features in the CEREC software.

Dr. James Klim graduated summa cum laude, valedictorian, from *Loma Linda University* in 1984. He has been awarded high academic recognition by the *Alpha Omega Fraternity* and the *Omicron Kappa Upsilon Society* and has received the *Prince Award* by *Loma Linda University School of Dentistry*. He has been awarded a fellowship from the *Academy of General Dentistry*, *Academy of Dental-Facial Esthetics*, and *Accredited with the American Academy of Cosmetic Dentistry* and selected as one of *America's Top Dentists* by the *Consumers' Research Council of America*. He has an avocation as a speaker, author and teacher of current dental technology, practice development and aesthetic dentistry around the country. In addition, he has taught at several postgraduate institutes in practice development and aesthetic dentistry.