

by Richard Rosenblatt, DDS

Dr. Richard Rosenblatt owns a practice in Lake Forest, Illinois, focusing on CAD/CAM and digital dentistry. In 2005, he founded the Northern Illinois Cerec Study Club, one of the largest of its kind worldwide. Rosenblatt moderates the Cerec forum on Dentaltown.com, and is on the faculty of Cerecdoctors.com and in the CAD/CAM division of Spear Education. He is a basic trainer for Patterson Dental, has been a software alpha and beta tester for Sirona Dental Systems, and has lectured internationally regarding CAD/CAM and digital dentistry.



Indirect vs. Direct Restorations

One option is easier, the other faster—
which makes the most sense for you?

In cases where the dentist has to make a judgment call between a direct resin restoration and an indirect Cerec restoration, there are a number of factors to weigh, including the demands that will be placed on the area, timing of the procedure, aesthetics of the available materials, and what will serve the patient best overall.

In many cases, an argument can still be made for either method even after taking these things into account. But if you're like me, you may find yourself leaning toward using CAD/CAM to create an indirect restoration.

This choice is made easier by the availability of milling materials that are resinlike in many respects. The case shared here will illustrate the use of a resin nanoceramic that performs much like a composite restorative. This makes it easy to adjust—something that might sway dentists in their choice between the two treatment options. While a direct restoration on an occlusal surface requires considerable time to sculpt and contour, using the Cerec system to design an easy-to-adjust indirect restoration is much simpler for many dentists. Furthermore, the use of an indirect material eliminates worries about polymerization shrinkage and ensures consistency throughout the restoration.

Marginal fit is another strong benefit of the material used here. While direct resins can often have inconsistent and rough contacts that can be felt while flossing, this milling material results in excellent-fitting margins and gives the dentist more control over the contacts. The resin component of the material makes it less brittle and enables excellent edge quality. I have found that it creates superior margins even in difficult areas, and the high translucency of the blocks allows the color from the tooth to radiate through and make margins virtually disappear. Final finishing and polishing can be time-consuming for some indirect restorations, but the material used here has a familiar, resinlike feel under the handpiece and polishes up very nicely.

Bonding is, of course, an important consideration for an indirect treatment, but with simple attention to detail and use of the right materials, dentists can alleviate many problems that come with this step. Fourth-generation bonding agents that use a separate etching step have always provided the strongest bonds, but can lead to postoperative sensitivity. The adhesive in this system helps reduce some of those worries with a moisture-tolerant feature that provides strong bonds and low sensitivity, even in total-etch and selective-etch procedures.

The case seen here demonstrates the use of 3M Lava Ultimate restorative and a proper bonding protocol to create aesthetic inlays with the Cerec system.

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Fig. 1: The patient had an existing amalgam restoration on #32 and a composite restoration on #31.



Fig. 2: View of the scanned preps in the Cerec software.

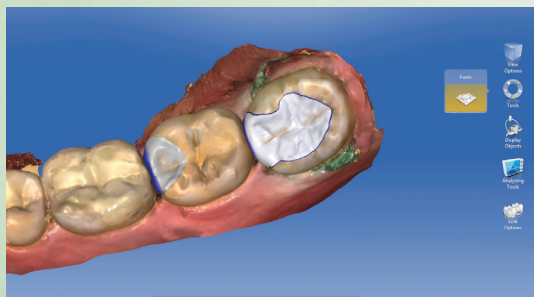


Fig. 3: The software's proposed restorations.

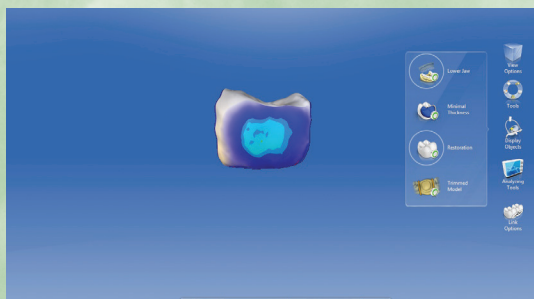


Fig. 4: Design of the contacts.



Fig. 5: The software allows excellent control of the contact size.

Case presentation

The patient had small direct restorations in need of replacement on #31 and #32 (Fig. 1). The wisdom tooth was in function, so the patient didn't want it removed. While treatment with another direct procedure would have been acceptable, it was determined that inlays milled from restorative would be a better choice because this type of restoration results in better margins and contacts.

The patient requested the teeth be treated with Cerec restorations, because she had experienced the procedure before and preferred the results to direct restorations. I would have recommended indirect treatment in this case regardless, but the patient's preference was a nice vote of confidence in the procedure.

The existing restorations were removed and small preparations were created to allow for 1.5mm of material thickness through the fissure line. A tapered diamond bur was used to create an 8-degree taper at the margins.

The Cerec scanner was then used on the quadrant (Fig. 2). In this case, the opposing arch and a bite scan were not taken. This was possible for several reasons. First, there were no cusps being replaced. In situations like this, the Cerec software is capable of mimicking the anatomy of the teeth closely enough to create a restoration that fits within the contours of the prep. Additionally, the restorative is easy to adjust using articulating paper, just as is done with direct composite. In cases where it is appropriate, forgoing these extra scanning steps can help the process move more quickly, but in cases with bigger areas of decay or when cusps that are in function with the opposing arch become involved, more thorough scanning should be done.

Once the scan was completed, the software was used to design the restorations (Fig. 3). The software offers broad control of the contact size (Figs. 4 and 5) and also enables the creation of very natural marginal ridges (Fig. 6, see p. 94), which would not have been possible in a direct procedure. The restorations were then milled from a high-translucency block.

Once milling was complete, the restorations were tried in the preps to confirm fits (Figs. 7–8, see p. 94). Both restorations demonstrated very good marginal integrity straight out of the milling chamber, displaying precise fits all the way around the most intricate parts of the preparations.

A selective etch was then performed on the enamel of the preparations (Fig. 9, see p. 94). I scrubbed 3M Scotchbond Universal Adhesive into the preparations and on the intaglio surfaces of the

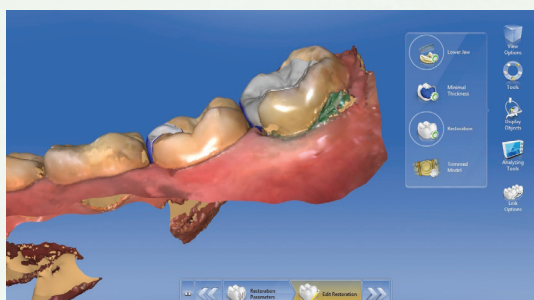


Fig. 6: Lingual view shows the anatomical form of the marginal ridges.



Fig. 7: The restorations displayed very good marginal integrity straight out of the milling chamber.



Fig. 8: Try-in on #31.



Fig. 9: Selective etch of enamel.



Fig. 10: Final results. Note the disappearing margins versus the obvious appearance of the old restoration on #30.

restorations for 20 seconds. The adhesive was then air-thinned and light-cured. I then applied 3M RelyX Ultimate Adhesive Resin Cement to the restorations and they were seated. Excess cement was tack-cured and removed, and final light curing was then performed.

The patient was instructed to bite down on articulating paper and minor adjustments were made to the occlusion. Final polishing of the restorations was then completed.

The final results were restorations with excellent marginal ridges and contours, which blended beautifully into the existing tooth structure. From start to finish, this case was completed in just under an hour (Fig. 10).

Discussion

I am sometimes asked by other dentists why I would opt for an indirect procedure in a case such as this, given that it probably takes 10 to 15 minutes longer than a direct procedure would. My answer is that the process of creating these restorations is more tolerable, and even *enjoyable*, when compared to a direct procedure. The labor intensiveness of working with rings, bands and wedges, placing and light-curing incremental layers of composite, then sculpting and contouring can be a lengthy and involved process. This is even setting aside the possibility of discovering a bad contact at the end of the procedure and having to reopen the prep and pack material again. Those procedures can be mentally taxing.

However, while an indirect restoration is being milled, I can spend the extra 10 minutes doing a hygiene check or beginning another appointment, so my time is not wasted. With the tedious work outsourced to the mill, a morning full of appointments to treat interproximal decay becomes much more enjoyable.

Another clear benefit is patients' response to the procedure, as evidenced very well here. CAD/CAM procedures are the one thing I do in my practice where I find that patients are consistently blown away. They become much more interested in the procedure when they can see their scan being done and watch restorations being designed and milled.

The availability of a milling material that is easy to adjust, requires no firing, and that delivers great aesthetics and ideal marginal fits makes the dentist's choice between direct and indirect treatment in situations like this much easier. With the proper technique and bonding protocol, the Cerec system can be used to efficiently deliver restorations that will stay in place and looking great for years to come. ■