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Editorial

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To Mill or Not to Mill: The Pluses and Minuses of CEREC in the Office

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With digital dentistry making huge strides and becoming an everyday part of our field, it is very tempting to try out the new technology to improve and hone our current clinical skills. Every office has something digital, weather an apex locator for every endodontic root canal procedure or digital radiography and being able to blow up an intraoral image to the size of a monitor screen for diagnostic reasons, dentistry of the past is just something that would hinder our practice today.

It is due to this logic and the introduction of the Zirconium CEREC milling that our office took the plunge and purchased the new CEREC 4-motor unit and Omicam that is capable of milling Zirconium crowns and the Speed fire oven that is able to Sinter these milled crowns and give them the strength of up to 900 mPAs after heating them to almost 3000 °F. The other material that the Speed fire is able to use is the Duo blocks by Dens plies, a Zirconium reinforced lithium dislocates.

The digital impressions are truly amazing. The omnicam shoots a video so nothing is missed, and you instantly know if anything was not fully captured. It is great not to have to use impression material, or "Guue," as my patients call it and have to wait for 5 min for it to set, watching the patient fight back gagging. It is also an incredible help to be able to check the impression with the patient chair side and rescan any areas you would want more detail of at huge magnification.

Another amazing component is the ability to magnify the impression on the CEREC omnicam captureunit screen to 300 times the size of the anatomical tooth to read the impression margin. As much as I love my lab, they just can't magnify the impression pour to anywhere near the same size that I can digitally. This type of detailed work all done chairside really lets the dentist come incredibly close to the actual margin and sealing the tooth and crown junction on every level. The depth of field of the omnicam is 14 mm so it is able to get every part of the topography that a prep may have, The digital impression alone from any manufacturer is very detailed and incredibly accurate, but there are definitely the possibility of some of the same pitfalls if the lab has to mill out a model and then work on it rather than a chairside crown milling. This again re-introduces the human error aspect to the crown making process as opposed to the machine taking it from start to finish.

However the CEREC Omnicam also comes with a milling unit. For the measly price of $165,000 what else would one expect. The mill is able to generate a crown right there and in the same appointment. You can glaze the final product and deliver it to the patient all in the same 2-hour period and there is no need to temporize the tooth.

The advantages to not having a temporary are staggering. Sure the fact that there are no interim recementing appointments if a patient chooses to violate their dietary restrictions is a big plus, but what actually happens to a tooth in a temporary is something some never consider. The temps by nature start to leak immediately and irritation of the periodontia is quite severe. After the 2 weeks of post-op time the gum is usually irritated and requires extra precautions when the final permanent cementing is seated and cemented. There is more irritation to the

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nerve and the weak dentin is exposed to much more bacteria then it was before the crown was prepped, since temporary cements such as TempBond leak profusely.

The mill is able to avoid all these pitfalls by fabricating a final permanent crown chair side. The crowns margins are perfect, or as perfect as the provider selected them to be, and the ability to set these margins exactly takes the ultimate control of the restoration and puts it in the dentist's hands. The patient may also be numb from the initial crown preparation itself so we are able to deliver the crowns using the amazing enamel and dentin bonding techniques on the market today and the patient will have no sensitivity as they are still usually profoundly numb on the mandible, and may require just a light touch up of anesthesia on the maxilla. The crowns also rarely need adjustment from all aspects including the occlusion, which is almost always perfect and same on the interproximal contacts.

So why would we all not be rushing out to get a CEREC in our office today? What is keeping the rest of dentistry away from the Zirconium product released by Sirona CEREC this past spring of 2016? It couldn't just be the learning curve!

For me there are still a few concerns that I can't leave at the door in exchange for the perfect marginal fit, and they are certainly ones each and every dentist should know about and consider. First, even with as much time as the CEREC machine saves, it still requires 2-hour appointments where the dental chair is in use for the entire duration. I am not too keen on sending a toothless patient into the waiting room. The usual crowns with the temporary in place would normally take half that time amount. At this point some would obviously recognize that there is no need for the following 2-week insert appointment, and that is certainly true. However, the insert usually takes about 30 min, so time is still lost in this average equation (However as we all know, there are times and patients that require more adjustment than most, and in those times, the CEREC machine is a dream). And to be honest, if time was the only factor, I can easily look past it, if I was delivering a better service to the patient.

The other and more serious issue I currently have with the CEREC Zirconium milling system is that the colors are just not as good as ones made in conventional dental labs. Zirconium blocks look very monochromatic and way too light when the crowns are milled and sintered. The durability and strengths are there in the Zirconium product, but the tooth shades are just not to par. This is somewhat remedied with the Duo product but only at a fracture of the strength. Duo blocks allow for 180 mPas right out of the mill and after glazing in the Speedfire oven the strength does increase but to about 380 mPAs which is far short of the 900 mPas granted by the Zirconium product. But when I say somewhat, that's exactly what I mean, The colors are nowhere near as dynamic as the ones on the Vita Shade Guide, and the 3-D shade Guide shades are just not possible using the CEREC system. If you contact Sirona, they will inform you that you can always use the Vita and Emax blocks that have been around for ages now, and that they are much prettier then the Zirconium strengthened products. But that drops your strength to 120-150 mPas maximum and that is not a corner I would want to cut when it comes to teeth. After all, tooth strength is something that is maybe even more important then shades to a large facetted of the population.

This truly leaves me at a loss. I do not have the answer to this dilemma I am currently in, so I figured I'd share it with you. I value the strength and beauty of my dentistry since I am in an esthetically driven cosmetic office, but that's not to say that my patients do not value long-term function, so I want my $165,000 mill to be able to give me both. My hopes are that this is just the beginning of the Zirconium revolution in the world of crown milling and that Sirona, the makers or CEREC will have more options for the cosmetic dentist who is concerned with strength as well. My trail 4 month period is almost over and I have milled over 150 crowns using the CEREC machine, but my lab is still very much an everyday part of my office for all anterior crowns and same is true for some premolars and molars. Dentistry is an art and a science, and I need both mastered from whomever is making my crowns.