A Tale of Two Dentures

by Thomas Giacobbi, DDS, FAGD, Editorial Director, Dentaltown Magazine

It was the best of ridges, it was the worst of ridges, it was the age of digital, it was the age of analog, it was the epoch of CAD/CAM, it was the epoch of I can't, it was the season of alginate, it was the season of rubber base… While you might recognize the nod to Charles Dickens’, A Tale of Two Cities, these are certainly not his words.

There are two brand-new companies in the dental marketplace that offer a new, improved method for fabricating complete dentures. The companies are Global Dental Science, LLC and DENTCA. Both companies can deliver a finished denture after only one appointment with the patient. I didn't believe it was possible either until I made a denture with each company.

In the interest of science and the fact that I don’t have too many edentulous patients in my practice, I made both dentures on the same patient. Additionally, I had the luxury of technical representatives from each company in the operatory with me, to guide me through the process. Please note however, that it is not fair for me to pick one technology over the other because both systems delivered a terrific product and I have only treated one patient.

Global Dental Science, LLC (AvaDent)

The AvaDent team is a brilliant group led by CEO Tim Thompson who previously served as CEO of HYTEC, a New Mexico technology company that focused on 3D scanning and was responsible for the technology that makes Invisalign possible. Following that success, Thompson was CEO of IMTEC. Additionally, there are engineers, lab technicians and dentists who are responsible for this high-tech process.

The AvaDent process starts the same as every denture, with impressions. The impressions are captured with specially designed trays that are customized to the patient in the operatory. Impression material is included in the kit to ensure consistent outcomes and convenience for the doctor. In addition to the upper and lower edentulous impressions, we took the bite registration with an AMD (anatomic measuring device). The AMD serves many purposes: vertical dimension, centric relation, lip support, midline and incisal edge position.

Once the impressions and AMD record are complete, the case is sent to the state-of-the-art facility in Scottsdale, Arizona, for processing. The impressions are scanned into the computer, and the denture base and occlusion are designed in a very advanced computer program. Once the design is complete, the denture base is milled from a highly compressed disk of denture acrylic. Some of the more obvious advantages include the elimination of dimensional change as well as a more hygienic surface. The milling unit is so precise that they can incorporate a copy of the patient’s rugae on the palatal aspect of the denture. The teeth are then bonded to the base and the case is ready for a final quality check before it is sent to your office for delivery.

DENTCA

Dr. Ron Nguyen is the inventor-dentist who founded Ultralight Optics while he was still a dental student at USC. His newest venture – DENTCA

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– includes a number of prosthodontists from his dental school faculty as well as a team of lab technicians and engineers.

The impression process for DENTCA includes specially developed impression trays that are manufactured in four sizes. Once you have selected the correct size for your patient, impressions and border molding are completed using the impression material you would normally use for a final denture impression. The impression trays have a section that is removed while you take the centric relation bite and vertical dimension. These steps are accomplished with the addition of a pin that is attached to the lower impression tray and it can be raised or lowered to the appropriate vertical dimension and then the pin can trace a path to register centric relation. Finally, bite registration material is placed between the upper and lower impression trays to record vertical dimension.

I have not visited the facility where the impressions are processed and the denture is manufactured, but I will share the details that I do know. The incoming impressions and records are scanned into a computer and the denture is designed. Once the design is finished, a “prototype” denture is printed using a 3D printer. That “prototype” is processed into a finished denture using a proprietary process. The teeth and denture base materials are the same that you would currently use for a denture. Once the final denture is trimmed and polished, it is sent to your office for delivery.

Closing Thoughts

I have provided the accompanying chart as a summary of basic information about both companies. Needless to say there are many unanswered questions, such as: try-in options, reducing the denture teeth and post-dam placement to name a few. Limited space does not allow me to address every concern; however, I can assure you that both companies have solved these challenges as well as many others. Both products have been in development for a number of years and the future will be very exciting. In the coming months and years we will see the option to fabricate single arches, immediate dentures, implant-supported dentures and more. Stay tuned.

If you complete a case using this new technology, please take the time to share it with our community on Dentaltown.com.