

Dentistry goes digital, makes a better impression High-tech scan lets patient avoid biting into a tray of goop

The Boston Globe

By Jennifer Batog, Globe Correspondent | April 14, 2008

It looks like something out of the opening credits of the "Six Million Dollar Man."

Three dimensional, real-time images of teeth rapidly appear one by one on a computer screen as a dentist waves a wand about the size of an electric toothbrush in a patient's mouth.

The whole process takes a minute or two, and the dentist has captured an image of the patient's teeth which can be sent to a lab to create a crown. It's a long way from the uncomfortable process of taking an impression using liquid and an impression tray.

The device, called the Lava Chairside Oral Scanner, is a creation of Lexington-based Brontes Technologies. The firm, part of [3M](#) Co., of St. Paul, Minn., began marketing it to Boston-area dentists at the end of 2007.

"Being able to do this digitally has many positive effects," said Dr. Steven Spitz, who began using a prototype of the scanner about 18 months ago and now uses it for most of the impressions he takes. "I love the instant feedback," he said. "It's cut out a lot of time."

Although the device currently is marketed only for making impressions for crowns, Spitz has also used it to gather data for creating bridges and entire arches, or one row of teeth.

For Spitz's patient Matthew Pukel, the system resulted in a much more comfortable crown and a virtually touch-free procedure, versus having to hold his mouth shut over a tray filled with goop. "I really hate biting into that gummy paste," he said. "It was a much better experience overall than it was with the old-fashioned technique."

Digital scanning rather than actual impressions can cut down on turnaround time for crowns; create more accurate models of teeth, resulting in a better fit; improve patient education; and give patients and dentists a more comfortable, less invasive way to get the data necessary for crowns.

"It really makes a big impact in the quality of care," said Eric Paley, Brontes Technologies' general manager and cofounder. "It's a much better patient experience."

The scanner consists of high-speed image-processing algorithms, real-time modeling software, and an optical system containing multiple lenses and blue LED cells.

The technology is the first of its kind, according to its creators. Although there are products that create images of a patient's mouth, they use point and click methods - similar to taking pictures with a camera to create an image - while the Lava C.O.S. captures data in a video sequence in real time. It can capture 20 3D data sets per second. The device costs \$24,000 and there is a \$16 to \$20 charge for processing each case.

Once the scan is complete and the dentist is satisfied with the images, they are sent to Brontes Technologies, which in turn sends the images to a dental lab. All that can happen within an hour, compared with a lag time of several days to ship traditional impressions to a lab.

Turnaround time for crowns using digital impressions has been halved from two weeks to a week at Advance Dental Technologies in Stoneham. The LAVA device allows dentist and labs to connect the digital data directly from a patient's mouth to a digital program and CAD software, eliminating steps in the crown-creation process and potential errors.

"Every once in a while in dentistry a revolutionary product comes out, and I really think this is one of them," said Advance Dental's president, Bob Cohen. "There really is a 'wow' factor." ■