

# CAD/CAM

international magazine of dental laboratories

## technique

Surface texture: Using horizontal and vertical lines to simulate natural tooth appearance

## industry news

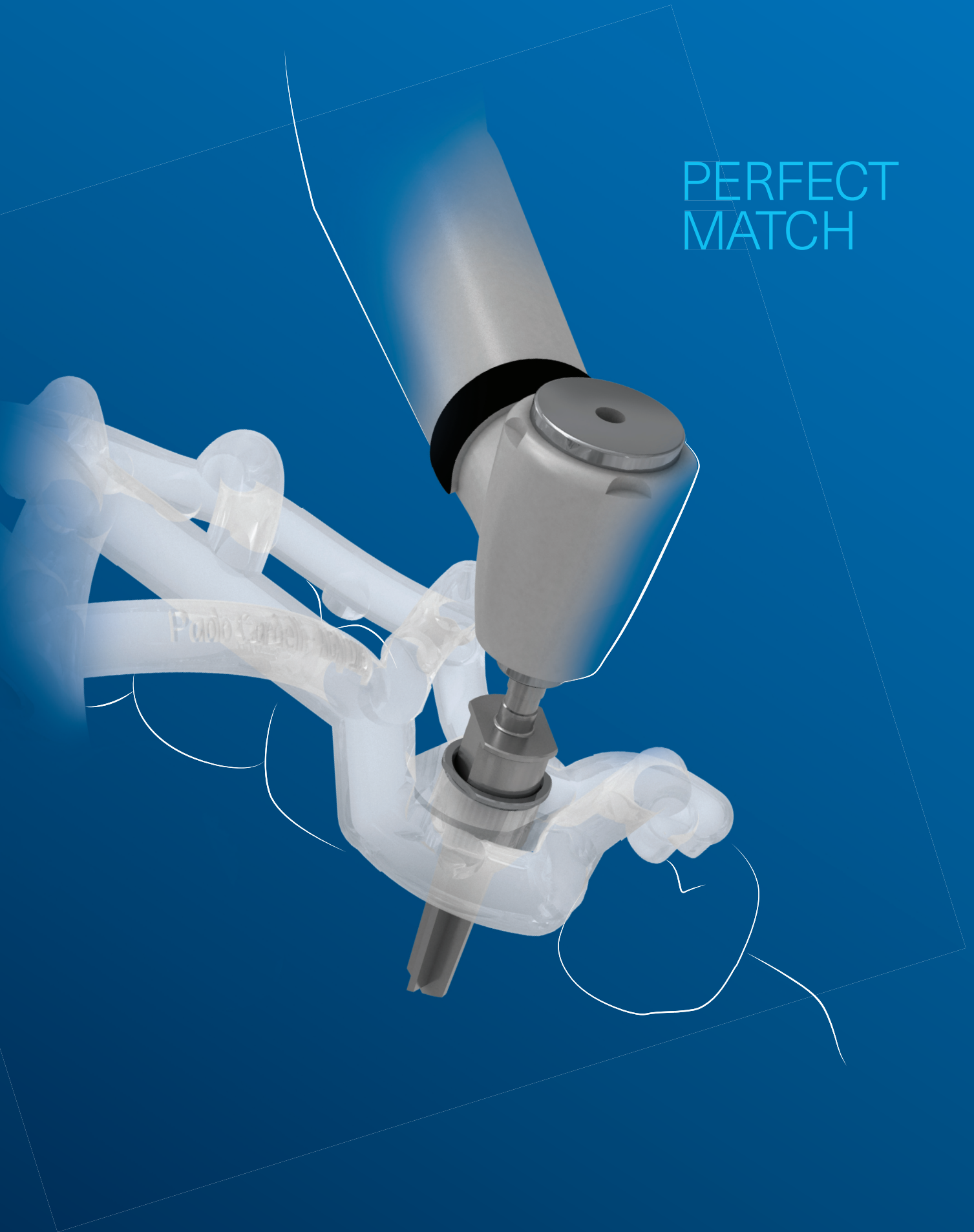
CEREC advances the restorative capabilities

## case report

Production of complete maxillary and mandibular dentures using CAD/CAM technology



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**Magda Wojtkiewicz**

Managing Editor



# Preparing for a challenge

**What do implementing new technologies** in your office, meetings, running marathons, difficult patients and mothers-in-law have in common? They are challenges. A challenge is a situation or circumstance that could potentially trigger a negative emotional reaction in you. Challenges can be large or small, and they can vary greatly. We all have challenges, but they are very different and what might be a challenge for one person is not for another. Even if it sounds trivial, understanding what the challenge means to you is essential in order to prepare for it and set yourself up for success.

Going digital by implementing technologies like CAD/CAM in the dental office and laboratory is definitely a challenge. Transformation is always a challenge, often a major one, but it can be predictable, and you can prepare yourself and your team for this change.

Most modern dental laboratories started as conventional dental laboratories and had operated with traditional workflows for many years before they started to use all the newest technologies, adopting these step by step. That might be your path too; you just need to be prepared for it.

Preparation is a key to success, and some common stress management techniques can be very helpful here. Start by envisioning the challenge and developing a plan for how you might meet it. Then put the challenge into perspective and assess the risk. Ask yourself how you would feel about the challenge in an ideal world. Maybe you want to feel confident, content, engaged or

some other positive emotion. No one wants to feel uncertain, angry or upset. Then practise feeling positively about the challenge. It might sound unnecessary but feeling positive is a skill that must be practised. Every time you begin to feel anxious about the challenge or start having doubts, you should stop and go back to the positive emotions you identified first. Negative feelings can ruin even the best prepared plan. As soon as you feel confident about the challenge, you can start the transformation.

Digital technology is the signature of a brand-new approach and often brings new opportunities. Digitalisation may also involve surprises and U-turns, but even if you can't predict these entirely, you can be prepared for them. Therefore, don't under-estimate the power of preparation. Preparing for a challenge will save you a great deal of energy, might also save you money and more likely will turn the challenge into a success.

What is your challenge? Are you going to respond reactively, or are you going to meet it proactively by preparation to shape its outcome?

Enjoy this issue of **CAD/CAM**, which contains many well-documented and clearly illustrated clinical articles, as well as a great deal of useful information about the latest developments in the field of digital dentistry.

Sincerely,

Magda Wojtkiewicz  
Managing Editor



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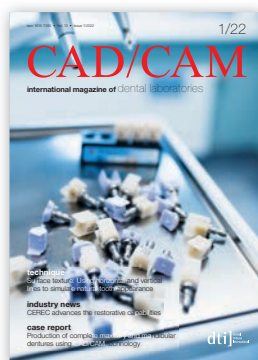


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# What will the future of dentistry look like

## An interview with Dr Victoria Sampson

By Brendan Day, Dental Tribune International

**For Dr Victoria Sampson**, the connection between oral and systemic health is of central concern when dealing with her dental patients. She employs biomarkers and inflammatory markers to diagnose and monitor patients throughout the course of treatment and collaborates with specialists from other fields to create a more holistic form of treatment. She spoke with Dental Tribune International about her approach to dentistry and how she sees the field evolving in the coming years.

**Your approach to dentistry is preventative and minimally invasive in its nature. Do you regard these as areas that will become increasingly important for dental practitioners in the future?**

Definitely. We are now living in a society where our patients have more knowledge of their own health and of what

treatments are available. They want to have the most preventative and least invasive treatment possible to ensure optimal health.

As an industry, we have modernised in such a way that we are able to catch disease earlier and provide more minimally invasive treatments. We have all lived through a pandemic, which has taught us how important health is and reinforced the idea that prevention is always better than cure. I always try to teach my patients that oral health is a very important part of general health and that in order to be at optimal health, they must also take care of their mouths. We now know that poor oral health can contribute to numerous other systemic diseases and conditions, such as diabetes, heart disease and infertility. Dental professionals are slowly starting to understand that the work they do has



huge consequences for the rest of the body. It is our duty to arrest disease and prevent problems from happening.

**What other aspects of dentistry do you think will change or evolve in the future?**

I think that we are going to see a huge digitalisation of dentistry in the next ten years, similar to the rest of health-care. Many dentists already follow a digital workflow to allow for seamless communication with laboratory technicians through intra-oral scanning and CAD/CAM restorations. I think this is just the beginning. There is already so much research going into incorporating artificial intelligence and image recognition to help us diagnose and monitor dental and systemic diseases. I think this soon won't be a thing of the future, but very much something we use to help us every day.

I also think, and hope, that dental professionals will become more aware of how important saliva is and how much information it can give us not only of a patient's dental health but also of their systemic health. I envisage that patients will start going to their dentist for saliva tests in the same way that they go to their doctor now for blood tests. We are already quite used to using the mouth as a site for testing, thanks to COVID-19, and I think this will become more common in the dental practice. We are now starting to understand that saliva can give a snapshot of the oral microbiome, be used for genetic testing and indicate enzyme levels, collagen breakdown, inflammatory markers and even cancer markers. By diagnosing and monitoring dental diseases in a quantitative way, we will hopefully start to achieve better long-term outcomes for our patients. Unfortunately, we usually diagnose dental disease when it is too late and destruction has already occurred—be it periodontal disease or dental caries. If we were able to screen patients for early signs of inflammation, microbiome dysbiosis, high levels of certain enzyme activity or collagen breakdown, we would hopefully be able to prevent the disease from happening.



Dr Victoria Sampson

**In your opinion, what can dental teams do to make sure they are prepared to adapt to changes in dentistry?**

They need to be open to change. Dentistry can be extremely habitual and dental professionals often stick to what they are used to. When we have the health of our patients in our hands, it can be very daunting to try new things out, particularly when you think your own method already works. Whereas I don't think we should be experimenting on our patients, we should, however, be open to trying new things to enhance our patient's journeys and improve their treatment outcomes. For example, we use bleeding on probing as a diagnostic tool to diagnose inflammation of the gums. This can be subjective and also inconclusive. If we were able to quantitatively diagnose inflammation through looking at inflammatory markers or looking for pathogenic bacteria in the mouth, our patients' treatment outcomes would be improved since we would have a number to work with and a cause of the inflammation to eradicate. We aren't trying to reinvent the wheel, just make it better and more accurate!

I also strongly recommend that dental professionals update their knowledge through regular reading of research papers and attending conferences. Our industry can be quite lonely, and it is important to keep your finger on the pulse by staying updated.

**What are you looking forward the most about the round-table discussion of GBT Summit—Virtual Edition?**

I am truly excited about having the opportunity to speak to like-minded professionals of such a high calibre on the future of dentistry. We are all practising dental professionals from different countries who will be able to share how we do things and what we expect the future to be like. We also all do very different things in practice but share a similar mindset. I am excited about being able to learn more about what they do and where they see dentistry going in the next five years. I usually lecture alone so I am also looking forward to having fun and interactive discussions!

*Editorial note: At this year's GBT Summit—Virtual Edition, Dr Sampson participated in a round-table conversation with Dr Steffen Rieger and dental hygienist Thuy Vu on the future of dentistry. The webinars of the GBT Summit are still available on demand at: <https://www.swissdentalacademyonline.com/webinar/gbt-live-treatment-learn-the-technique-in-detail>*

“Many dentists already follow a digital workflow to allow for seamless communication with laboratory technicians through intra-oral scanning and CAD/CAM restorations.”

# FDA approval marks major step for Second Opinion AI software

By Jeremy Booth, Dental Tribune International

**Second Opinion**, an artificial intelligence (AI) diagnostic tool that assists in dental radiography, has been cleared by the U.S. Food and Drug Administration (FDA) for use by dental professionals in the country. This milestone follows the recent approval of the software by health regulators in Australia and New Zealand and the granting of the European CE mark. The software was developed by Pearl, and the company's founder and CEO, Ophir Tanz, said that the clearance was a major step for dentists, who are now free to shift into the AI paradigm in their everyday clinical practice.



Pearl is a leader in developing AI solutions for use in dentistry, and its Second Opinion tool is a real-time pathology solution that assists dentists in accurately detecting and diagnosing common dental conditions using dental radiographs. A computer vision platform that can identify and measure an array of pathologies, the software highlights potential areas of interest and provides dentists with a second set of eyes.

The FDA cleared the software in early March, and a press release from Pearl explained that the agency's strict efficacy requirements had been exceeded by the clinical studies that formed the basis of the company's application for market approval.

In total, Pearl submitted four clinical studies to the health-care regulator, and each of the studies featured a dataset of more than 2,000 images that were interpreted by dozens

of expert dentists and radiologists. Pearl said that the studies showed clear advantages for the experts using Second Opinion software. Those who had used the AI software had identified 36% more lesions than those who had worked without AI assistance.

The company said that the FDA clearance marked an important step in the adoption of technology-assisted dental care. Tanz commented in the press release: "This clearance is a major milestone not only for our team and for the many dentists, advisors and partners who have contributed to Second Opinion's development, but also for dentistry itself." He explained that AI-assisted technology brought with it a paradigm-shift in dental technology that he said would add value across the entire healthcare sector. "Because X-rays are a regular part of every dental patient's experience, the first place most people will encounter the power of medical AI technology will be in their dentist's chair. Second Opinion's FDA clearance has made that possible," he added.

Prof. Markus Blatz, a key opinion leader in restorative dentistry and digital innovation, said in the press release: "The benefit that Pearl's AI brings to patient communication in the dental operator—and the trust that follows—cannot be overstated, and it is in that area that Second Opinion's impact will be most immediately felt."

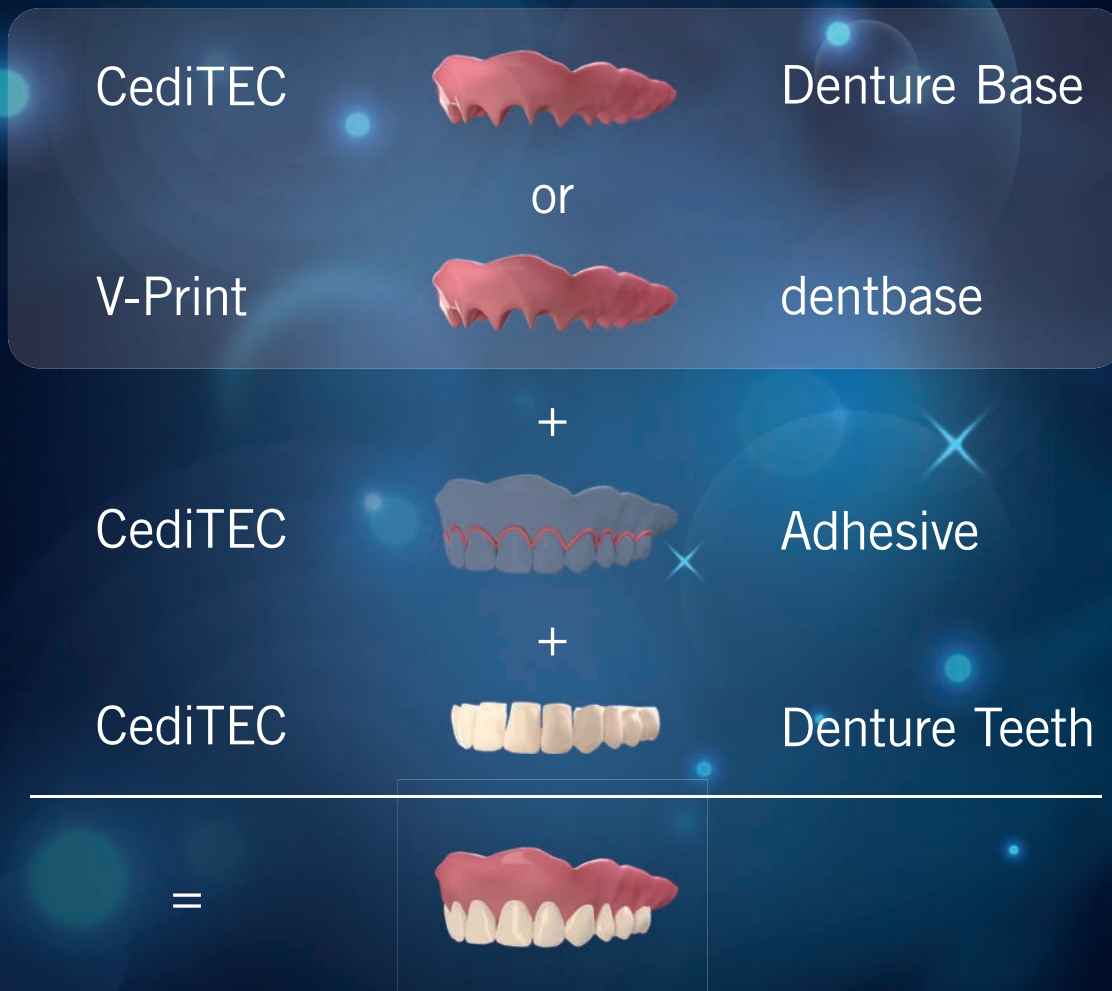
Pearl's co-founder and chief technology officer, Cambron Carter, added: "State of the art algorithms that currently assist in the detection of cancerous lesions can now be applied to detect many more frequently occurring dental diseases. The standard of care in dentistry is about to level up."

Speaking to Dental Tribune International, Tanz predicted that, as dental patients reap the benefits of AI-assisted technology, dentistry itself would become a model for the rapid adoption of AI in other medical fields. "So, at the same time as today we welcome the future of AI-powered dentistry, we also welcome an AI-powered future for all of healthcare," he said.

In October last year, Second Opinion was provided with market authorisation by Australia's Therapeutic Goods Administration and New Zealand's Medicines and Medical Devices Safety Authority. Earlier in 2021, it received the European CE marking, and it is already being used daily by dentists in North America, Europe, Australasia, South America and the Middle East.



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