

# CAD/CAM

international magazine of dental laboratories

## opinion

Dental technicians:  
The missing link

## case report

Full-mouth restoration  
with Zolid FX

## feature

The art of ultra-  
aesthetic dentistry



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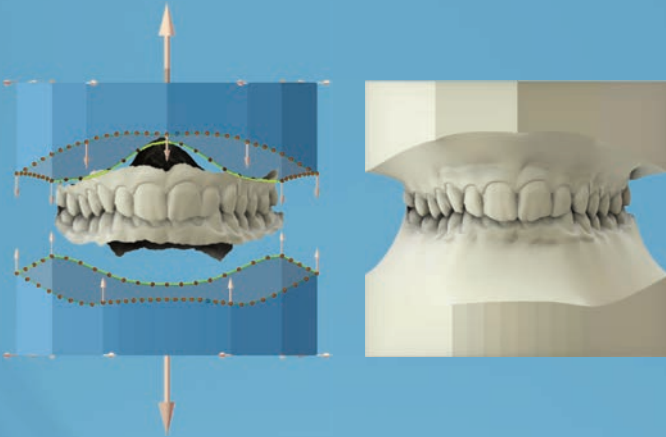
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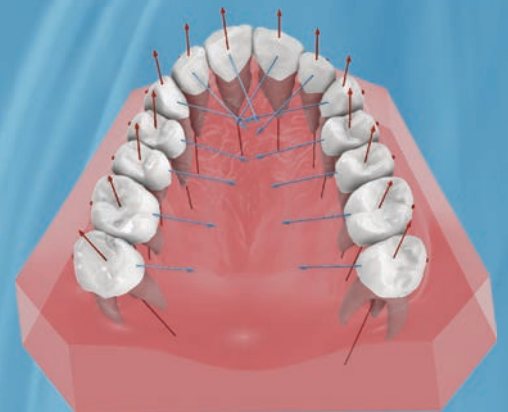
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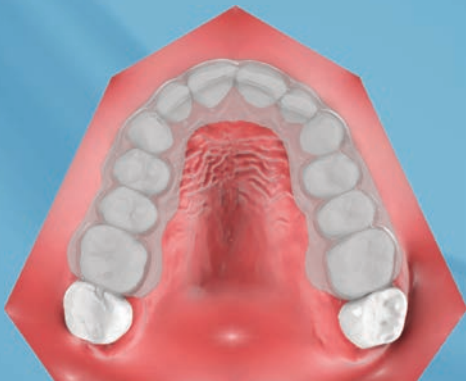
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Clear Aligner



Indirect Bonding



**Magda Wojtkiewicz**

Managing Editor



## Dear readers,

**It does not take much** to see how new technologies change the dental world. Intra-oral scanners, milling machines, chairside and in-laboratory CAD/CAM systems, 3D printers—all these products have been available on the market for some time. Whereas some innovations are not visible at first sight and are repeatable in nature, like software updates and minor improvements to speed up usability, many new solutions bring almost immediate change to the quality of work.

In an interview in this issue of **CAD/CAM** magazine, Dr Ryan C. Lewis, an experienced prosthodontist from the US, says that “Dental technology advances dentistry by increasing communication, efficiency and accuracy.” He adds that the most important technologies that he currently utilises are CAD/CAM milling, intra-oral scanning, digital implant planning, 3D printing and photography.

In another interview, Dr Alon Mozes, CEO and co-founder of Neocis, the first dental robotics company, states that “the world of dentistry is becoming more and more digitally focused” and that “there are obvious advantages to leveraging the skills of a robotic system”. Solutions that until recently seemed to be technologies of the future are now commonly available.

One of the interesting things about dental technology is how much it draws on other industries: CAD/CAM and 3D printing came from the manufacturing sector, and many regenerative materials used in dentistry were originally developed for use elsewhere in the body. Technologies invented without dental applications in mind have been used in and have changed dentistry and the dental laboratory forever. It is very likely that soon we will observe extended use of mobile phone applications to facilitate communication between dental professionals and patients. Many dental mobile applications are available today—some measure brushing time, and others register progress in orthodontic treatment—but so far they have not gained popularity among either dentists or patients.

The continued evolution of manufacturing processes, materials and technologies changes interactions between dentists, dental technicians and patients. Human teeth have not changed much in the last 100 years; dentistry, however, as a profession, has moved from basic tools to high-tech solutions and outstanding care.

Sincerely,

Magda Wojtkiewicz  
Managing Editor



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# Dental technicians: The missing link

Dr Ali Nankali, UK



**Fig. 1:** Dr Ali Nankali believes that dental technicians have received insufficient support during the pandemic, from both the government and the members of the dental team. (Image: © Ali Nankali)

If you ask a dental patient to which member of the dental team we should give our thanks, many of them would say to dentists and dental nurses. What do you think is the correct answer? I assume we all agree that dentists cannot provide an appropriate health care service without their team. Members of the dental team who are registered with the General Dental Council (GDC) are clinical

dental technicians, dental hygienists, dental nurses, dental technicians, dental therapists, dentists and orthodontic therapists. Unfortunately, it seems to me that some members of this team have not been treated equally during the COVID-19 pandemic. In this article, I want to talk about dental technicians as an integral part of the dental team.



**Fig. 2:** Chad Cluff. (Image: © Queen Mary University of London) **Fig. 3:** Adel Houmani. (Image: © Ali Nankali)

I am a prosthodontist, and a large part of the health care services that I provide depend on dental technicians. We are in constant contact, as they help me during patient treatment and sometimes provide training for new learners while observing various issues that need to be addressed, such as delays in receiving work or a slight decrease in the quality of work.

Chad Cluff, tutor dental technologist at Barts and the London School of Medicine and Dentistry at Queen Mary University of London in the UK, told me that many dental laboratory spaces are relatively inadequate for adopting required social distancing measures. Thus, not everyone can be present at work at the same time, and the absence of some employees can cause a delay in the delivery of the service and affect work performance. Cluff noted that the situation is currently beyond remedy.

Adel Houmani, lead technical skills manager at the university, said that the delays in work could have been caused by other reasons. He noted that all dental impressions have to be properly disinfected and that the process requires additional time. He also mentioned that it is unknown whether the virus can survive in dental impressions, and therefore dental technicians should do their best to avoid any contamination.

Houmani also added that some dental laboratories are a great deal quieter than usual. According to him, this quietness could be explained by patients not visiting the dentist regularly since the onset of the pandemic. There has been a decrease in workload, and this is directly affecting dental laboratory finances and thus putting the owners and partners under pressure. So how can we help dental technicians?

According to Houmani, dental laboratory fees are always a topic of discussion. However, since many dentists are looking to save money, increasing the fees would result in losing orders. It seems that this issue is gradually worsening, and a few organisations, such as the Dental Technologists Association in the UK, have warned that patients will soon be experiencing long delays in receiving their custom-made dental appliances.<sup>1</sup>

It has upset me to learn that, whereas dentists are being supported via the National Health Service, the country is likely to lose many qualified dental technicians for the lack of government support.<sup>2</sup> Some sources suggest that over 1,000 dental technicians are currently out of work and that many of them are unable to maintain their registration with the GDC.<sup>3</sup>

According to dental technicians, dental technology has for too long been considered external to the dental team.<sup>4</sup> However, I want to emphasise that we are a team, and we have continued to provide health care services to everyone



**Fig. 4:** Dr Ali Nankali. (Image: © Ali Nankali)

who has needed our help during the pandemic. We need to realise that, during this pandemic, dental technicians have faced great difficulty in accessing any form of support, not just that from the government. Therefore, they do not only need financial help from health authorities; they also need support from the members of the dental team.

We, as members of the dental team, should appreciate what dental technicians are doing for us and our patients, and this appreciation should be passed on to other members of our society. To achieve that, I am starting with myself. As stated recently, dental technicians have to maintain their registration with the GDC and keep their continuing professional development (CPD) up to date to remain employable.<sup>5</sup> As president of UKDentalCourses, an active educational organisation in the UK, I am happy to tailor non-profitable CPD courses to their needs. Therefore, I ask our respected dental technicians to send their requests to [enquiry@ukdentalcourses](mailto:enquiry@ukdentalcourses), and we will do our best to address your needs.

In addition, UKDentalCourses would like to invite every member of the dental team to attend The Restored Link online event. The event is aimed at showing dental technicians our appreciation and respect and listening to their enquiries. Please join us and express your needs and concerns.

*Editorial note: A list of references is available from the author upon request.*

## about



**Dr Ali Nankali** is a clinical senior lecturer at Barts and the London School of Medicine and Dentistry at Queen Mary University of London and the president of UKDentalCourses, an online education platform that offers continuing professional development opportunities to dentists worldwide.



# “Dental technology advances dentistry”

By Iveta Ramonaite, Dental Tribune International



Dr Ryan C. Lewis, a prosthodontist and owner of Longmont Prosthodontics.

**With its transformative power,** digital dentistry is slowly taking over dental practices and laboratories all around the world. In this interview, prosthodontist Dr Ryan C. Lewis talks about how digital dentistry can help improve workflow efficiency and highlights some of the latest advancements in digital dentistry.

**Dr Lewis, digital technologies are being taken up in dental practices worldwide. In your opinion, is it still possible to imagine dentistry without them?**

Dental technology advances dentistry by increasing communication, efficiency and accuracy. The most important technologies that I currently utilise are CAD/CAM milling, intra-oral scanning, digital implant planning, 3D printing and photography.

We initially integrate digital technology with CAD/CAM milling abutments and digitally design restorations. If we compare this to UCLA casting abutments and hand waxing porcelain-fused-to-metal restorations, we do not only

save significantly on our gold costs, but we are also able to increase the efficiency of fabricating the restorations. If we then consider intra-oral scanning and the ability to digitally submit cases to the laboratory, plus the savings in impression material, shipping costs, time to ship, and cases getting lost or delayed in shipping, it is easy to appreciate the benefits that digital dentistry offers.

All of my implant cases are now digitally planned. After using digital planning and fully guided surgery, my surgeon no longer wants to place implants the traditional way. It provides peace of mind knowing that the implant will be positioned ideally, the referring doctor will be happy with the work and the patient will have the desired outcome.

3D printing has changed the way that we produce surgical guides. 3D printers have become so accurate and inexpensive that any dentist can now afford to have them in his or her office and print surgical guides as well as casts for diagnostic purposes or aligners at a relatively low cost.

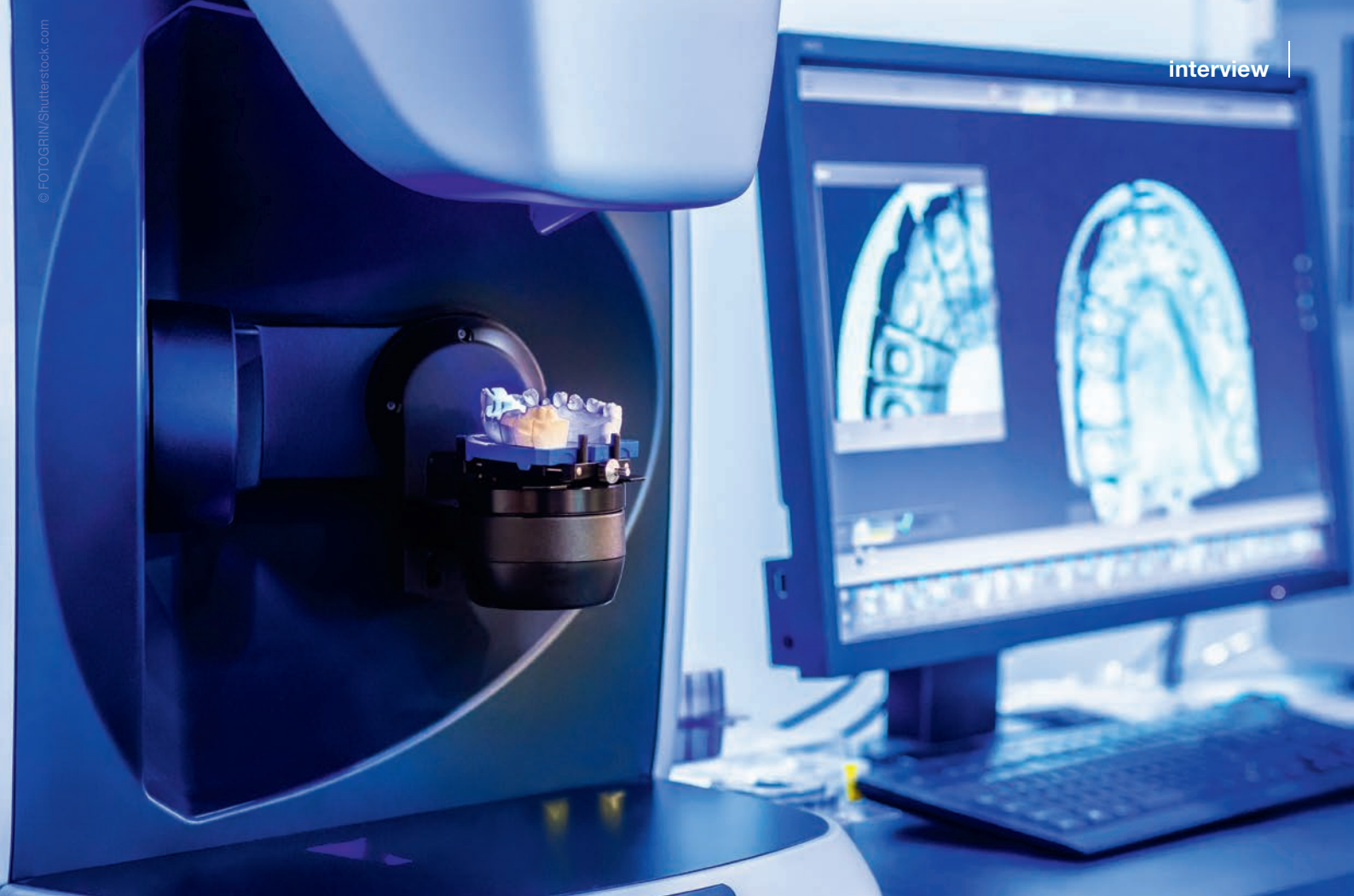
Additionally, photography has become essential when communicating with my dental technicians. The accuracy and quality of my restorations would suffer significantly without it.

“3D printing has changed the way that we produce surgical guides.”

**What are some of the latest, most notable advances in digital dentistry?**

Digital implant treatment planning, intra-oral scanning and 3D printing. With digital implant treatment planning, we can significantly improve the accuracy of our implant position. We now can integrate facial scans and intra-oral scans without full-arch digital wax-ups. This ensures that we are accurately planning our new tooth positions. Because our digital diagnostic wax-ups are so accurate, we can also plan our full-arch implant positions with confidence. This allows us to place implants immediately at the time of extraction in cases where we would have previously recommended extraction of teeth and healing first.





For Dr Ryan C. Lewis, going back to traditional dentistry would significantly impact his costs, efficiency, quality of work, and ability to communicate with surgeons and dental technicians.

3D printing is now very predictable and accurate. It allows us to print the surgical guides in the office without worry or concern about the accuracy of the guide. My full-arch immediate load provisionals are printed on the same printer as my surgical guides.

**Dental laboratories seem more ready and willing to adopt digital solutions compared with dental clinics. How do you think this could be explained?**

Digital technology greatly increases the efficiency of the technician. This decreases overhead expenses and treatment costs. It also increases the accuracy of the restorations. Many laboratories now report that digitally designed and milled crowns provide the lowest number of remakes by percentage out of any product they offer. Typically, these are modelless crowns that are manufactured without a printed or stone cast. From the laboratory perspective, it is a great tool to utilize.

For many dentists, the new technology changes their workflow significantly and takes time to integrate into their traditional workflow. Because of this and the startup costs, it is difficult to switch to digital dentistry when using a traditional pathway has brought success in the past. However, as in my practice, once the digital pathways have been integrated, going back to a traditional one would increase overhead and decrease efficiency significantly.

**How has the SARS-CoV-2 pandemic changed your view, or that of your colleagues, on the relevance of digital dentistry and the importance of adopting digital solutions?**

The pandemic has highlighted the potential contamination risks associated with transferring impressions or other components from the patient to the laboratory. Intra-oral scanning offers the safest solution, the one with the least risk of cross-contamination. Unfortunately, this is a problem that is likely not going to go away any time soon, so this is great not only now, but also as we move forward into the future.

**“Intra-oral scanning offers the safest solution, the one with the least risk of cross-contamination.”**

*Editorial note: The webinar, titled “Advancements in contemporary digital dentistry,” is available on demand at Straumann Campus (<https://campuslive.straumann.com>). The registration is free of charge.*