CONNECTING DENTAL TECHNOLOGY

Laboratory

FMC CONNECTING DENTISTRY

Spring 2025 / Volume 19 / No 2

LAYERED REALISM

Balancing aesthetics and durability with micro-layering *p.10*

Tackling the technician shortage *p.24*

Inspiring women to thrive in dental technology *p.33*

Marketing rules and regulations *p.37*

TWO HOURS' ENHANCED CPD INSIDE THIS ISSUE

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Turning up the heat

MATT EVERATT
Editor-in-chief

As the days get longer and the industry gears up for a busy season, it's always refreshing to see labs buzzing with activity. Spring often brings a renewed sense of energy; some labs will be in full swing, preparing for the months ahead, while others look forward to a well-earned summer holiday.

PUNISHMENT OVER PROGRESS

But while the seasons change, some industry challenges remain. On page 20, I discuss the General Dental Council (GDC) and its role as a regulator. For too long, the GDC has been overbearing, using punitive sanctions on dental technicians for what appear to be minor issues.

It seems a fitness to practise case intends for no other outcome but to remove a registrant and prevent them from continuing as a professional, when it would seem to be more beneficial to all, including patients, if there was a focus on training and education to prevent any further issues or complaints.

Recent comments from a High Court judge, Mr Justice Fordham, have only reinforced these concerns and criticisms, questioning the GDC's suitability and highlighting its failures as a regulatory body.

It's a conversation that needs to be had and one that the profession cannot afford to ignore.

THE SOUND OF SILENCE

Similarly, on page 28, we provide an update on illegal manufacturing, a topic that continues to raise significant concerns. We asked the GDC, the Dental Laboratories Association (DLA) and the Dental Technologists Association (DTA) a number of questions to help us build a statement of fact to provide a clear and transparent position on how regulators deal (or do not deal) with illegal manufacturers. We wrote to them in June 2024 and still have had no response, despite several further requests. Is regulation fair to technicians, and is it clear which dental devices come under MHRA regulations? Complete our survey on page 28 and your answers may help us make regulation clearer and fairer for dental technicians.

As always, I welcome your thoughts and feedback. Enjoy the issue, and here's to a productive and successful spring.

GET IN TOUCH
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Laboratory

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MISSION STATEMENT

Laboratory nurtures connection, passion and quality within the dental technician community by showcasing inspirational individuals, best practice and technical brilliance.

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Shifting ground

Welcome to the Spring issue of *Laboratory*! A lot has happened since we last met in January. For starters, the hugely successful North of England Dentistry Show, which took Manchester by storm in March. The Laboratory Zone had a particularly impressive turnout, and the variety of technical topics proved to be of great value to all in attendance.

Following these sessions, Matt Everatt hosted a thought-provoking panel discussion on the crucial topic of whether we're facing a future without dental technicians. The panel explored the factors driving the alarming workforce decline, potential solutions to reverse the trend, and whether we can save the future of dental technology. If you missed it, do not fret! On page 24 you will find a snippet from the discussion in which the panel considers whether we can attract new people to the field – check it out!

In other news over the last couple of months, the General Dental Council (GDC) announced updates to its CPD processes, including CPD certificate changes. According to the regulator, these changes will simplify the process of submitting CPD for registrants and provide clearer guidance on register restoration. To familiarise yourself with these updates ahead of the CPD deadline this summer, turn to page 8.

Another highlight in this issue comes from our recent Women in Dentistry campaign, in which Nina Frketin speaks out about the challenges that women in dental technology face, and how we can inspire the next generation of women to thrive in – and remain part of – the profession. You can find her honest and enlightening insights on this topic on page 33.

As usual, we have two standout technical articles in this issue – both of which are CPD verified. On page 10, Agata Bak shares a case that showcases her willingness to embrace a new method for a case with unique clinical needs. Her use of micro-layering results in a stunning, natural restoration. Then on page 14, dental technician Davide Accetto and dentist Robin Horton present a collaborative piece where cutting-edge technology streamlines the all-on-x workflow – delivering results in just one day. They describe the process as both remarkable and refreshing.

Lastly, we're keen to hear how you feel about the way you're regulated. On page 28, you will find the latest update on our ongoing quest for clarity around illegal manufacture and regulation, and how you can help us on this journey.

As always, if you'd like to write or share your thoughts, please get in touch. Until next time!

LUCY VEAL
Editor of *Laboratory*

ENHANCED CPD

Complete this issue's enhanced CPD online at cpd.dentistry.co.uk or scan the QR code. Email cpdsupport@fmc.co.uk if you're in need of guidance.

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Presenting ***Laboratory*'s** editorial board – the Lab Experts helping to nurture connection, passion and quality within dental technology

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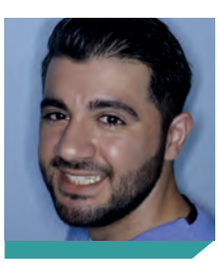

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GDC announces CPD changes

The General Dental Council (GDC) has announced updates to its CPD processes, including changes to CPD certificate requirements. This follows feedback from stakeholders and research findings from its 2024 review on enhancing accessibility.

The key changes include simplified documentation requirements, increasing registrant awareness of grace periods, and clearer guidance on register restoration. With these changes, the regulator intends to make it easier for dental professionals to record and submit their CPD, and for providers equipping professionals with valid certificates, allowing registrants to meet their CPD obligations more effectively.

The GDC notes that it would like to go further to amend CPD rules, but this would require legislation changes. Stefan Czerniawski is GDC executive director, strategy. He said: 'We recognise that dental professionals sometimes face practical challenges in documenting their learning. By simplifying administrative requirements where we can, these changes will help people focus on what matters most – their professional development.'

HOW HAVE CPD PROCESSES CHANGED?

Registration numbers on CPD certificates

- Registration numbers are helpful to have but are no longer required
- Dental professionals are welcome to write their registration number on CPD evidence if they'd like to
- The GDC's CPD guidance for both dental professionals and providers has been revised to reflect this and to make the policy around this clearer.

Signatures on certificates and CPD quality assurance

- The GDC no longer requires a signature on certificates to confirm the information provided is full and accurate
- The regulator will look for wording like 'we confirm that the information provided on this certificate is full and accurate and that this CPD has been subject to quality assurance'
- A CPD provider can also send an email to the dental professional to confirm the information provided is full and accurate, with either a signature or printed name
- The GDC has updated the sample CPD certificate to make this clear.

Mapping documents

- Mapping documents don't need a signature. Dental professionals can provide an email confirmation from their CPD provider instead
- The GDC has updated the mapping document template to reflect this
- If a dental professional is unable to complete a mapping document in full, they can submit alternative forms of evidence, like an email from the provider confirming that specified CPD criteria have been met.

Increasing awareness of grace periods

- Dental professionals need to complete their CPD activities before the end of each five-year cycle. If they will not be able to complete the requirements and they have good reason why they need more time, they can apply for a grace period, which can give them an additional 56 days
- Dental professionals can request a grace period via their eGDC, or via email, within the last six months of their CPD cycle
- The GDC doesn't have any powers to allow dental professionals to complete any CPD hours outside the relevant CPD cycle unless a grace period has been agreed.

Impact of AI in dentistry examined

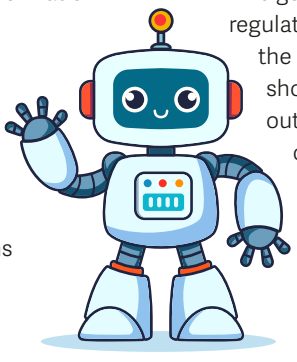
Artificial intelligence (AI) in dentistry and healthcare should provide clinicians with information, not recommendations, in order for teams to offer the most appropriate treatment. This is according to a new white paper looking at the impact and use of AI within healthcare, including dentistry.

A collaboration between York University, the MPS Foundation and the Improvement Academy, the paper says the greatest threat to AI uptake in healthcare is the 'off switch'.

If frontline clinicians see the technology as burdensome, unfit for purpose or are wary about its impact on decision-making, their patients and their licences, they may refuse to use it.

The paper makes a number of recommendations for healthcare providers, such as:

- AI tools should provide clinicians with information, not recommendations
- Revise product liability for AI tools before allowing them to make recommendations
- AI companies should provide clinicians with the training and information required to make them comfortable accepting responsibility for an AI tool's use
- AI tools should not be considered akin to senior colleagues in clinician-machine teams
- Disclosure should be a matter of well-informed discretion.



'With AI at the heart of many nations' healthcare policies, understanding its potential and risks is critical,' the authors say. 'To translate this understanding into meaningful policy and practice, it is time to move beyond an awareness of the general issues AI raises in healthcare toward much more targeted evaluations of its impact.'

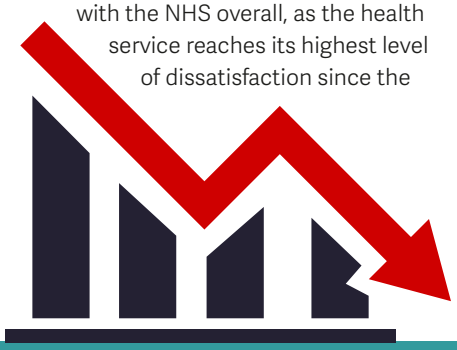
The government, AI developers and regulators are being urged to consider the recommendations: 'Clinicians should feel confident to reject an AI output that they believe to be wrong, or even suboptimal for the patient. They should resist any temptation to defer to an AI's output to avoid or reduce the likelihood of being held responsible for negative outcomes.'

NHS dentistry satisfaction reaches record low

Public dissatisfaction with dentistry is higher than with any other NHS service, with only one in five people satisfied with how it runs.

These are the latest results of the British Social Attitudes (BSA) survey, published by the Nuffield Trust and The King's Fund. The survey has revealed that NHS dentistry satisfaction levels have 'continued to collapse', falling by 40% since 2019.

In addition, the public is 'deeply unhappy' with the NHS overall, as the health service reaches its highest level of dissatisfaction since the survey began in 1983. Just 21% said they were satisfied with how the NHS runs – a 39% decrease from pre-pandemic levels. Six in 10 (59%) also said they were 'very' or 'quite' dissatisfied with the NHS. As recently as 2023, this was at 52%.



This survey is seen as 'a gold-standard measure of public attitudes in Britain'.

The British Dental Association (BDA) has said these survey findings must spur action from the government on its promised reform of the 'struggling service'.

BDA chair Eddie Crouch commented: 'Satisfaction in NHS dentistry is at an all-time low. What we need from government is a proportionate response.'

SOBERING RESULTS

Dan Wellings, a senior fellow at The King's Fund, said: 'The latest results lay bare the extent of the problems faced by the NHS and the size of the challenge for the government. While the results are sobering, they should not be surprising. For too many people, the NHS has become difficult to access: how can you be satisfied with a service you can't get into?

'In 2010, seven out of 10 people were satisfied with the NHS – it is now down to only one in five. The scale of the decline over the last few years has been dramatic.

'The results show that people do not want a different funding model, but they do want the NHS to start working for them again and they want it to have the staff and the money it needs to ensure that happens.

'The public are also clear that the NHS needs to get better at spending the money it does get more efficiently.

'These results will form the baseline from which the new Labour government's reform plans to "fix" the NHS will be judged.'

Gap of 5,500 professionals found in NHS dental workforce

Experts are calling for contract reform to maintain the dental workforce as a new report identified more than 5,500 unfilled NHS dental vacancies.

As of March 2024, the *Fixing NHS Dentistry* report, released by the Public Accounts Committee (PAC), found that there were more than 5,500 unfilled NHS positions including 2,700 dentist roles. Many of these postings had been vacant for at least 180 days.

The report suggests that the root of workforce issues is an NHS dental contract that is 'not fit for purpose'. It says there is 'no future for NHS dentistry without reform' due to 'fundamental issues around the affordability of NHS work'.

The PAC called for the government to 'rip the contract up and start again'. It added that 'fiddling around with the contract fails to address the real problem'.

The Labour government has committed to fundamentally reforming the NHS contract, though no timeline has been laid out.

The PAC report expresses concern over the lack of detail in these plans. It said clarity over the cost of reforming health service dentistry would be necessary to address the issue of affordability.

PREVIOUS REFORM IS 'A COMPLETE FAILURE'

The PAC dubbed the government's existing attempts to improve NHS dental access 'a complete failure'.

The report found that, at best, only half of the UK's population could see an NHS dentist within two years under the current funding and contractual arrangements.

It also found that the dental recovery plan proposed by the previous Conservative government had 'comprehensively failed' and was 'never actually ambitious enough'. The following statistics were cited:

- The new patient premium that pays practices for each eligible new patient actually resulted in 3% fewer new patients seeing a dentist since it was introduced
- Less than 20% of the expected 240 £20,000 'golden hellos' incentivising dentists to relocate had been appointed by February 2025
- The mobile dental unit proposal was dropped
- The uplift to the minimum value of contractually agreed dental activity to £28 failed to deliver any identifiable improvements.

'NHS DENTISTRY IS BROKEN'

Sir Geoffrey Clifton-Brown said: 'Almost unbelievably, the government's initiatives appear to have actually resulted in worsening the picture, with fewer new patients seen since the plan's introduction.

'NHS dentistry is broken. The government could hardly fail to agree on this point, and indeed I am glad that it is not in denial that the time for tinkering at the edges is over. It is time for big decisions.'

Restoring harmony with micro-layering

Agata Bak demonstrates how micro-layering can balance aesthetics and durability in a complex restoration

AGATA BAK
Master ceramist and owner,
Black Pearl Dental Lab

Micro-layering? Initially, I doubted this technique was right for me. I'd always believed that layered restorations were essential for achieving an aesthetic result. However, after applying micro-layering to this case, I am now convinced that this technique has immense potential. In this article, I aim to demonstrate why it worked so well for a patient with unique needs.

CASE OVERVIEW AND CHALLENGES

In anterior cases, success is highly dependent on getting the right combination of function, shape and shade. But what happens when you need to maintain the patient's original shape and function without altering it? This case presented precisely this challenge.

A lovely, middle-aged musician came to the clinic needing replacements for her two central crowns, which had become cracked and aesthetically unsatisfactory. Interestingly, these crowns had not been damaged due to a typical accident. The source of the trauma was her euphonium's mouthpiece.

CLAIM YOUR CPD

GDC anticipated outcome: C

CPD hours: One

Topic: Micro-layering

Educational aims and objectives: To demonstrate the micro-layering technique.

This article qualifies for one hour of enhanced CPD. Turn to page 50 to answer the questions.

Learning that the damage was related to her instrument, I felt an immediate connection – I had played the euphonium myself for 11 years. This personal experience helped me understand the challenges of the case on an even deeper level. Playing a brass instrument like the euphonium is no easy task; it requires controlled airflow from the diaphragm to the lips, strong facial muscles, and significant support from the teeth to withstand the pressure from the mouthpiece.

Initially, I believed it was best to preserve the existing shape of the crowns to prevent disrupting her airflow, resistance and muscle memory. Any drastic change could impact her tone, range or overall comfort while playing.

Here, the importance of a comprehensive dental interview became evident. Had I not learned about her musical background, I might have approached the case without realising how critical it was to respect the shape she was accustomed to.

Beyond shape, another key issue was the risk of cracks. Brass players, especially those who play high notes, often exert significant pressure on the mouthpiece, which can lead to stress fractures or chips over time. To mitigate this risk and improve the longevity of the restoration, I decided to use micro-layering.

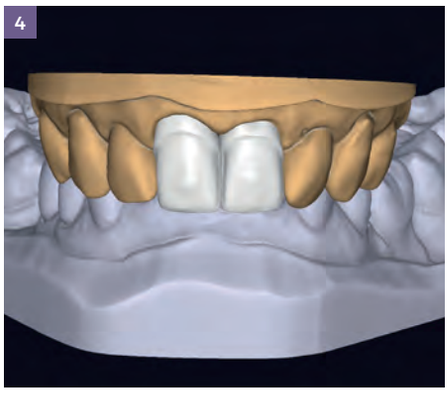
I had learned the technique in two GC Sqin courses, but this would be my first time putting it into practice on a real case.

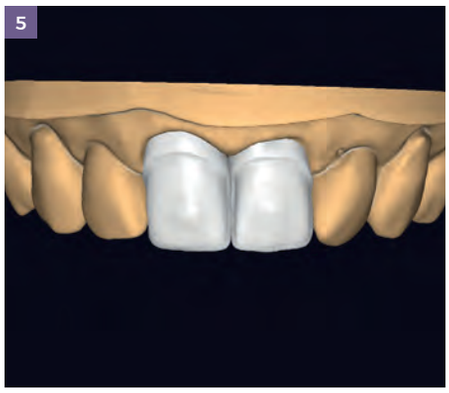
TECHNICAL WORK

The first consideration was the shade and material selection. I chose zirconia to provide the necessary strength, but matching the colour was more challenging.

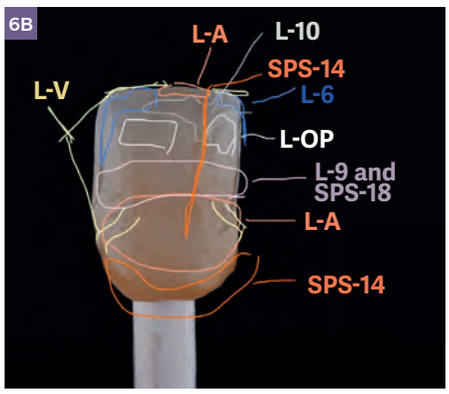
Her teeth had a bright, greyish tone with a milky, translucent outer layer (Figures 1 to 3). I selected Argen HT B1, a shade that offered both brightness and the grey tone I

FIGURES 1 to **3:** The patient's teeth had a bright, greyish tone with a milky, translucent outer layer. I selected a shade that offered both brightness and the grey tone I needed as a canvas

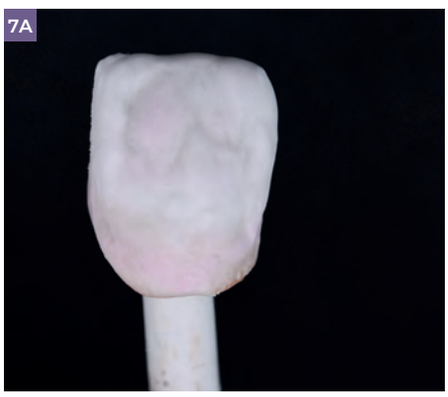


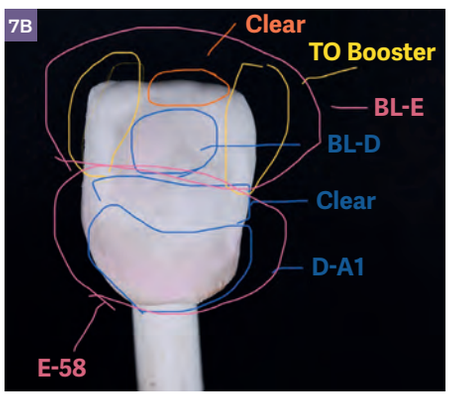


FIGURES 4 and **5:** Design-wise, the goal was to copy her original crowns while enhancing them

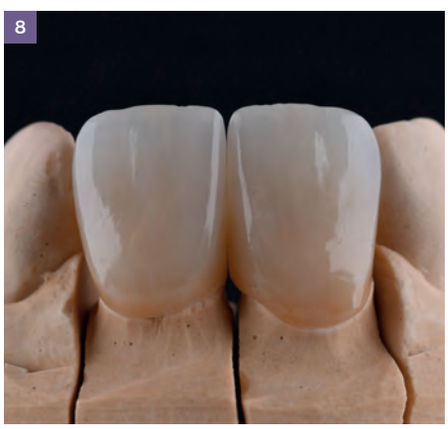


FIGURES 6A and **6B:** Each layer was carefully placed to ensure that, after baking, the crown would look vibrant and realistic





FIGURES 7A and **7B:** The completed micro-layering



FIGURES 8 and **9:** I used an air glaze rather than the full glaze, reducing the temperature to avoid over-glossing. This creates a natural, matte look rather than an artificial shine

needed as a canvas.

Design-wise, the goal was to copy her original crowns while enhancing them. I used a minimal cutback of 0.3mm to slightly reduce the overjet, maintained a robust collar for strength, matched the length to the final restoration, and corrected the midline to align better with her smile (Figures 4 and 5).

To prepare the frames, I checked the contacts, verified excursions, varnished the margins and polished out any marks left by the stone.

After a thorough steam cleaning, I was ready to start the internal staining process. I used GC Initial IQ Lustre Pastes One and Initial Spectrum Stains to add internal details.

My aim was to replicate natural tooth structures, including opaque mamelons, a warm neck, a translucent incisal edge and a subtle halo effect. Each layer was carefully placed to ensure that, after baking, the crown would look vibrant and realistic (Figures 6a and 6b).

For the micro-layering itself, I used GC Initial IQ One Sqin powders, which are semi-transparent and less chromatic than traditional layering porcelains. This allowed my internal staining to shine through, creating depth and realism.

The layering process required attention to detail. In the neck area, I applied Dentin A1 to create warmth with an orange tint.

In the middle, I layered a more intense chroma with a slight greyish cast, followed by a clear layer to add depth. For the incisal third, I used Bleach Dentin to bring brightness and clear for added translucency along the edges.

To boost opalescence in the transitional ridges, I applied TO Booster, which I find useful for enhancing the natural light refraction of the material. Finally, I used Bleach Enamel for the incisal half and Enamel 58 for the marginal half to complete the layering (Figures 7a and 7b).

Once baked, I made minor adjustments before moving on to the final glaze. The GC Initial IQ One Sqin material has self-glazing properties, so I used an air glaze rather than the full glaze, reducing the temperature to avoid over-glossing.

This approach preserved a natural, matte look rather than an artificial shine, which can sometimes make restorations appear overly polished and less lifelike (Figures 8 and 9).

FIGURES 10 to **13:** Both the patient and dentist were satisfied with the outcome. There was a clear aesthetic improvement, and the shade was well-matched to her surrounding teeth, creating a harmonious and natural appearance

FINAL PRODUCT

The fitting process went smoother than expected, with both the patient and dentist expressing satisfaction with the outcome (Figures 10 to 13). There was a clear aesthetic improvement, and the shade was well-matched to her surrounding teeth, creating a harmonious and natural appearance.

Two weeks later, the patient returned for a follow-up. She shared that while relearning her instrument was mostly going well, she struggled with hitting high notes. She explained that the change in buccal prominence, though slight, was affecting her lip position on the mouthpiece, requiring her to retrain her embouchure for certain notes.

REFLECTIONS

Reflecting on this case, I'm reminded of the importance of understanding how dental work impacts patient's lives beyond mere aesthetics.

This case highlights the need to approach each restoration with the patient's activities and lifestyle in mind. While the aesthetic results were gratifying, I learned that even small changes to shape can significantly impact a musician's performance.

Knowing now how dental work can impact someone's musical career, I see a need for more research on cases like this. Without my own experience with the euphonium, I might not have fully understood the reasoning behind certain design choices.

In the future, I would handle similar cases with even more caution, possibly conducting additional consultations with the patient to address any concerns about functionality during the initial design phase.

To my fellow dental technicians, I encourage you to keep an open mind toward emerging techniques like micro-layering. It may seem unconventional, but this approach successfully balanced aesthetics with durability in a challenging case. Sometimes, embracing new methods can make all the difference in achieving a successful outcome for patients with unique needs.

ACKNOWLEDGMENTS

This article would not have been possible without the invaluable support and collaboration of some truly remarkable individuals and teams:

- Stephen Taylor, a talented clinician from Bupa Harewood, whose expertise and close collaboration were instrumental in achieving the success of this case
- Iman Ansari, my partner at Black Pearl Dental Lab, and a true CAD/CAM magician, whose technical ingenuity brought this project to life
- The GC UK and GC Europe teams, whose generous support and deep knowledge of their micro-layering product were essential to this process
- Nina Frketin and Nightshift, champions of women in the dental industry, for their unwavering support and invaluable advice whenever it was needed.

To all of you, my heartfelt thanks – your contributions were crucial in making this journey and its results possible.

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All-on-four: a quick fix

Davide Accetto and **Robin Horton** present a case in which cutting-edge technology transformed a patient's smile in one day

DAVIDE ACCETTO
Founder and director, Nifty Dental Solutions Laboratory

ROBIN HORTON
Practice principal, Wayside Dental

CASE OVERVIEW

Robin Horton

A patient presented as a walk-in having seen our signs for some years while walking his dog. His lower teeth had lost their stability, meaning he could no longer bite (Figure 1). He wanted a fixed solution for his lower teeth and to be able to eat 'normal' food again. His medical history was unremarkable for his age (72).

We discussed all-on-four as a good solution for him. Fastmap had just become available too, as had a new material from Sprintray called Onx Tough 2. This meant we could print a strong provisional bridge screwed onto the multi-unit abutments on the same day.

I used DTX Studio to plan the implant positions (using CBCT and intraoral scans). I then sent this data to Davide to design a screw-retained bridge in Exocad (Figure 2).

I used X-guide to navigate the implants, and then we fitted the multi-unit abutments. After this, I used Fastmap photogrammetry to digitally map the implants. This uses special scan bodies that fit the multi-unit abutments and twin cameras from the X-guide to record the positions of the implants, which is more accurate than intraoral scanners. We sent this data to Davide, plus an intraoral scan of whitecaps on the multi-unit abutments. This helps him shape the soft tissue part of the bridge.

I used a Waterlase for the surgery and a diode laser for photobiomodulation (PBM) after the procedure. We sent the patient home for a few hours while Davide finessed the bridge design, which he printed using Sprintray and Onx Tough 2. He then painted it to make it look like teeth.

CHALLENGES

Davide Accetto

The biggest challenge we faced was with myself. I knew I was the first dental technician in the UK to implement this digital workflow for immediate load, and despite my advanced knowledge in dental technology, I couldn't shake the concern of potentially failing on surgery day. But isn't that what innovation is all about? To progress, we must take risks. After some hesitation, I stepped out of my comfort zone and embraced the opportunity for this exciting collaboration with Robin.

For those familiar with Exocad and the full-arch digital workflow, designing this type of restoration may not present many obstacles. However, the most challenging part is the implant conversion. It needs to be done quickly during surgery to allow enough time for printing and finishing the restoration.

Robin Horton

The challenges here were doing something new and finding a technician who I could communicate with well enough to get the desired result. I was given Davide's name by a friend, and we understood each other straight away. It was important for me to have him onsite for this first one as I have a tendency to stain up the ceramic.

FIGURE 1: Initial presentation – scan

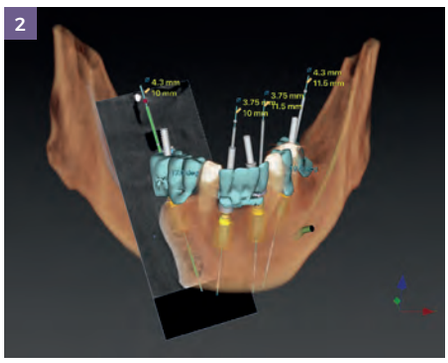

FIGURE 2: Implant planning

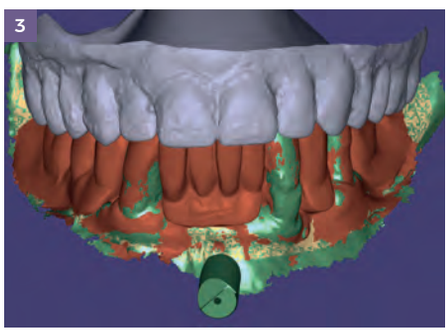

FIGURE 3: Old denture aligned with implant plan – lower and upper

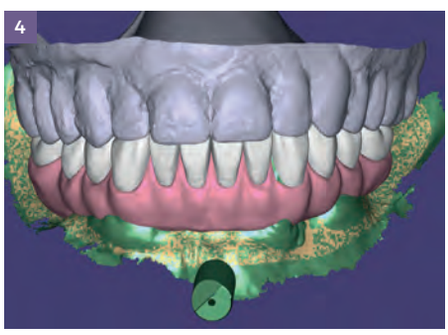

FIGURE 4: Final wax-up design

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GDC anticipated outcome: C

CPD hours: One

Topic: Implant dentistry

Educational aims and objectives: To present a implant case using a colloborative approach to restore function.

This article qualifies for one hour of enhanced CPD. Turn to page 50 to answer the questions.

FIGURE 5: Photogrammetry Fastmap scan body

FIGURE 6: Intraoral scan of whitecaps immediately after surgery

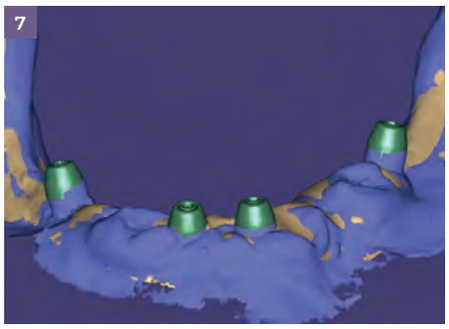

FIGURE 7: Pre-scan aligned to postoperative scan

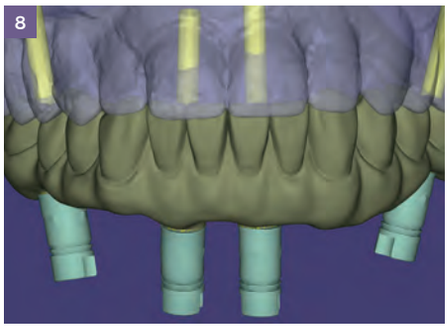

FIGURE 8: Wax-up converted on implants

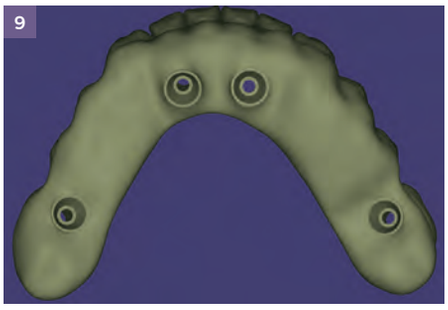

FIGURE 9: Bridge-fitted area adapted to postoperative gingiva intraoral scan

FIGURE 10: Initial fitting on surgery day

Patient selection is crucial too, and this gentleman was a perfect patient: friendly, local, enough bone to not need grafting and enough time to come in for the various stages, though with this new technique, we cut down the stages quite a bit.

X-guide is very flexible as there is no printed guide, you have good access to it, and you can change your plan if you need to and still be guided. I found that I had planned one implant too close to a tooth socket for stability, so I moved the implant on the X-guide, looked on the CBCT image to check for bone, and then carried on. My dental nurse never noticed, it was that quick. It is a great tool to have.

TECHNICAL WORK

Davide Accetto

Step one: bridge wax-up

I made sure that the implant's plan scan was properly aligned with the lower jaw, with the denture in place if available, and the antagonist in occlusion (Figure 3). This helps you visualise the ideal implant placement for planning the bridge.

It's essential to design the bridge wax-up to a finished state, as this will allow you to focus solely on the implant conversion during surgery, giving you more time and avoiding the need to revisit aesthetic adjustments later on (Figure 4).

Step two: digital implant conversion

Thanks to the 3D coordinates obtained from the Fastmap photogrammetry system, the multi-unit abutment coordinates automatically aligned with the preoperative scans (Figure 5). However, I would advise taking a postoperative scan as well to help the technician designing the converted bridge on the latest soft tissue information – this can be all aligned together with a preoperative gingiva scan by creating a dummy order on Exocad before moving to the final design (Figures 6 and 7).

Next, I created a new order in Exocad for the final temporary bridge, selected the Nobel temporary bridge libraries to align directly whitecap multi-unit abutments and converted the planned wax-up directly onto the implant connections. At this point, I could focus on refining the bridge fit area and shaping it for optimal functionality and aesthetics based on the most recent postoperative gingiva scan (Figures 8 and 9).

THE BRIDGE JUST DROPPED IN PLACE WITH NO OCCLUSAL ADJUSTMENT REQUIRED

Step three: printing and finishing

The print was carried out directly at Wayside. To avoid any potential issues, we decided to print two arches. After completing the post-process cleaning with isopropyl alcohol (IPA), the bridge was ready to be cured and stained.

This entire process was made possible through a strong collaboration between the clinician and technician. The advanced digital resources used also made this workflow intuitive and easy to follow.

FINAL PRODUCT

Davide Accetto

The bridge fitted passively like a glove on the implants, and Robin and I looked at each other quite surprised and relieved knowing we wouldn't need to resort to a back-up plan (Figure 10).

However, the aesthetics weren't up to my usual standards. The only Onx shade available was a bleach shade and transforming it into a darker tone proved to be quite challenging. This new material is difficult to stain, which meant I had some trouble with the GC Optiglaze colour as they are runnier than other brands (Figure 11).

Robin Horton

Usually with pick-up conversions, we chop loads off the temporary to get the occlusion

remotely close – with intraoral scans and lab-made temps, a passive fit is hard to attain. His bridge just dropped in place with no occlusal adjustment required (thanks to Davide's skill), and it fit so passively you could tighten each individual screw fully if you wanted to (Figure 12).

It was so amazing that I remarked on it to Davide. The patient heard me and said: 'Why are you surprised?' – and we all laughed!

REFLECTION

Davide Accetto

The entire workflow was truly remarkable. The ability to design, manufacture and load the bridge directly on implants, without relying on temp cylinders and traditional denture conversion methods, was incredibly refreshing. I don't believe there is a more accurate workflow or better material than the one we used for this case.

Using a 3D printer at the practice made a significant impact on the manufacturing process. Additionally, being able to print the same file twice gave us extra time to finish the second bridge at the lab with Vita Akzent LC colours, which made staining much easier.

Looking ahead, we can see that printing two bridges can enhance efficiency, allowing us to complete the workflow remotely without needing the technician onsite during surgery day.

Robin Horton

This technique really simplifies the all-on-x process. It is so accurate that you can feel confident in a lovely result for the patient (Figure 13). You need to supply the technician with the correct records to start with – that's where the communication comes in, and it was good to have Davide onsite for the procedure. But now we have done a case, Davide can design and finesse on the day remotely and send us the file to print. Printing two bridges is a must. We can fit one and post the other to Davide to paint for us, and we can swap them over later. Having watched him painting this one, I am not going to even attempt it!

The patient was walking his dog the day following surgery and since he had no pain or swelling, he decided to pop into a local café and have a cooked breakfast for the first time in a long while. He is delighted, and for my part it is a privilege to be able to improve someone's quality of life. Next stop is his uppers!

FIGURE 11: Stained bridge on surgery day

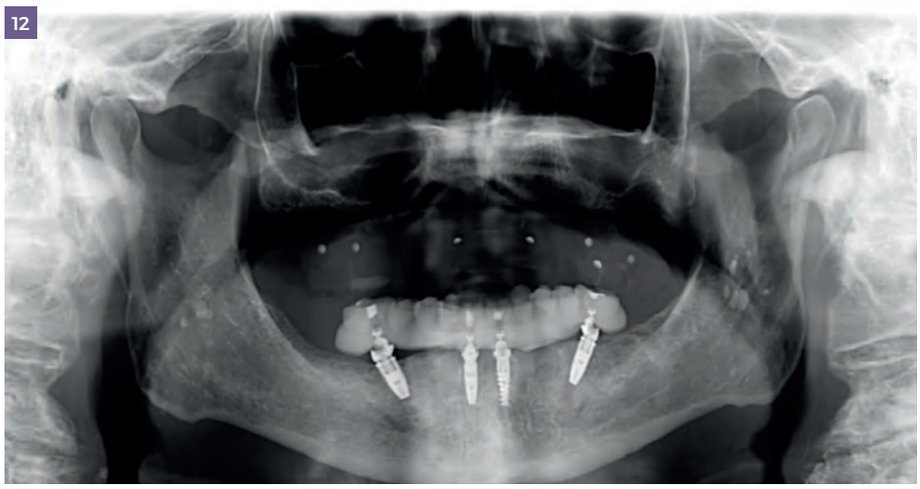

FIGURE 12: Postoperative X-ray

FIGURE 13: Final stained restoration

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IMAGES

Authors must also submit four to 15 images alongside the article. These should be clearly identified with a number or letter in the file name. Please provide captions with corresponding numbers/letters for all images and, if there is any doubt about which way up it goes, or from which side a picture should be viewed, please mark it accordingly.

Authors are also encouraged to make reference to the images within the article text, eg 'The casts were mounted on the articulator (Figure 3).'

The images should be supplied separately as jpegs at original size or at the highest available resolution (300dpi, at least 4cm x 4cm). Digital workflow screenshots are acceptable, but images of the physical/final restoration are important.

STRUCTURE

Address the following key points when putting together your article. The headings do not have to be replicated or followed precisely/in order:

- **Case overview:** what were the patient's problems at presentation? What treatment was needed/agreed upon? What solution did the technician need to supply?
- **Challenges:** outline briefly the key difficulties specific to this case – high aesthetic need, difficult shade matching, remote communication etc
- **Technical work:** describe the solution in more detail, mentioning why this decision was made. Detail the steps taken and the process of the case. Discuss how patient/dentist communication was prioritised
- **Final product:** briefly outline the final restoration and describe the patient/technician/dentist reaction to it. Ideally, include pictures of it before fit and in situ
- **Reflections:** a short review of the case from the technician's perspective – explain what went well, what could be changed and what lessons have been learned for the future.

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Please send the article and images over via email, or you can contact us to arrange using services such as Wetransfer. You should also include a short biography and headshot for all authors.

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A sledgehammer to crack a nut

The GDC is 'heavy-handed' and 'overly punitive' in its regulation of dental technicians, says **Matt Everatt**

MATT EVERATT
Editor-in-chief, *Laboratory*

The General Dental Council (GDC) plays an important role in safeguarding patients and maintaining trust in dental services. However, when it comes to its approach to regulating dental technicians, the GDC often uses a 'sledgehammer to crack a nut' – applying heavy-handed and overly punitive measures for issues that may not warrant such severity.

Dental technicians, working behind the scenes of the dental profession, are a vital part of the team. Our work directly impacts the comfort, function and aesthetics of patients' oral health, even though we have limited interaction with them.

While regulation is necessary to ensure the quality and safety of these devices, the GDC's methods of regulation do not take into account the nature of our work or the nuanced differences between technicians and other dental professionals like dentists and hygienists.

To be clear, there are cases in which the GDC should act if dental technicians have flagrantly gone beyond their scope of practice and provided direct patient services with total disregard for patient safety.

Equally, there are services supplied by beauticians and other high street outlets in which non-dental professionals blatantly provide the likes of tooth whitening or, like the US company Smile Direct Club, direct-to-consumer orthodontics – yet these are unchallenged by the GDC.

GUILTY UNTIL PROVEN INNOCENT

A current fitness to practise (FtP) case I have been following is a terrifying example of how the GDC has gone in 'all guns blazing'.

Following two complaints, it is alleged that the dental technician in question had been asked by the dentist to adjust a bite on a dental appliance and to make adjustments on articulated models as a diagnostic process so the dentist could make the adjustment in the mouth.

The technician, with more than 30 years of experience, had been trained in taking impressions and bite registrations, but now faces sanctions for allegedly working beyond his scope of practice (SOP), despite achieving a positive outcome for the patient, who experienced relief from previous discomfort. The two complaints from 2014 and 2019 have been consolidated against him, and he is still awaiting a full FtP hearing,

Meanwhile, he has been prevented from working as a dental technician due to the interim sanctions applied. Most dentists would admit that a dental technician has

a much better knowledge of the materials used in dental appliances and can adjust them far more effectively than dentists can. Yet, despite the positive outcome, the technician has had interim sanctions applied and awaits the full FtP hearing because he worked beyond his SOP.

The very strict interim sanctions placed on him prevent him from practising as a dental technician until the cases have been heard, meaning he cannot run his lab or sign off on any cases – ultimately, he is guilty until proven innocent. The case has been drawn out over months, and the hearing is not due to be heard until October 2025.

THIS 'ONE-SIZE-FITS-ALL' APPROACH IGNORES THE UNIQUE ROLE DENTAL TECHNICIANS PLAY

Let's put this into context: the registrant was asked by the dentist to adjust a dental splint by trimming a dental appliance. He didn't trim the appliance, but instead took a bite record using the appliance to be used for the articulation of plaster models.

The patient was not harmed by this procedure. In fact, it is quoted in the body of the complaint that the appliance actually felt much better at the time.

Did the dental technician work beyond his SOP? He suggests he was appropriately trained and experienced. Even if he did work beyond his SOP, there should be corrective actions – a learning process, an opportunity to improve and, in the long-term, improved patient care. It could be argued that the SOP is too restrictive, and that there is an opportunity to extend the scope and introduce further learning opportunities for professionals...

SKILLED TECHNICIANS ARE LEAVING THE PROFESSION ENTIRELY

HEAVY-HANDED TACTICS

Another example of these heavy-handed tactics used by the GDC starts when a dental technician rang the dentist to explain that the design of the bridge was flawed and 'bound to fail'. The practice manager (a non-registered professional) told him that the dentist wanted him to proceed.

The technician failed to document this on the prescription and proceeded with the construction of the bridge, supplying it to the treating dentist with an invoice containing the following medical devices directive (MDD) statement: 'This device conforms to the relevant essential requirements as set

out within annex 1 of the Medical Devices Directive (93/42/EEC). Any relevant essential requirements not met and reasons why are listed overleaf.'

No defect or other issue with the bridge was listed. The bridge subsequently failed, and following a complaint by the patient and lengthy discussion with the dentist, the technician faced a FtP because of the administrative error. He had essentially deemed the bridge fit for purpose by not recording his recommendation or conversation.

DISPROPORTIONATE DISCIPLINARY ACTIONS

As we have experienced, the GDC's FtP hearings, which are designed to protect the public from unsafe professionals, can be triggered for relatively minor infractions involving dental technicians. Even minor errors or administrative oversights can lead to investigations and potential sanctions.

In many cases, these infractions could be dealt with more appropriately through retraining or professional guidance rather than resorting to full disciplinary proceedings.

These proceedings often take months, sometimes years, impose restrictive interim sanctions that severely affect livelihoods and, in many cases, harm the mental health and wellbeing of those being investigated, occasionally leading to tragic outcomes like suicide.

OVER-REGULATION FOR LOW-RISK WORK

Dental technicians primarily have very limited patient contact. In my opinion, there is a lack of tailored oversight, with more of a 'one-size-fits-all' approach. The GDC's regulatory framework does not differentiate adequately between the different professionals under its umbrella.

This 'one-size-fits-all' approach ignores the unique role dental technicians play, treating as though they pose the same level of risk to patients as dentists who perform more invasive procedures.

The heavy-handed nature of GDC regulation is having several negative consequences for the dental technician profession. The perception that the GDC is over-regulating has led to frustration among dental technicians, who feel they are unfairly targeted and undervalued, which is eroding morale and pushing some skilled technicians out of the profession entirely.

Some have claimed to have left the profession to attract similar salaries working in unskilled roles without worries of imperious regulation.

The GDC's broad and often unnecessary investigations into dental technicians strain both the resources of the regulator and the professionals themselves. Instead of focusing on truly harmful or negligent practices, the GDC can become bogged down with minor issues that do not pose a significant threat to patient safety.

NEW APPROACH NEEDED

To address these issues, the GDC must rethink its approach to regulating dental technicians. A more proportionate regulatory system should be developed, recognising the lower risks posed by dental technicians in comparison to other dental professionals.

This is not to say we should ignore those individuals who flagrantly disregard the rules; they, of course, should be dealt with appropriately.

The GDC's current approach to regulating dental technicians is overly punitive and disproportionate to the risks involved in their work. The use of heavy-handed regulation not only demoralises the workforce but also undermines the efficiency of the regulatory system itself.

It is time for the GDC to recalibrate its regulatory practices, taking a more nuanced and measured approach that ensures patient safety without unnecessarily burdening the professionals who help keep the UK's dental services running smoothly.

> MINOR ERRORS OR ADMINISTRATIVE OVERSIGHTS CAN LEAD TO INVESTIGATIONS AND POTENTIAL SANCTIONS

THE GDC'S RESPONSE:

As the UK regulator of all members of the dental team, our primary purpose is to protect patient safety and maintain public confidence in the dental professions. We acknowledge the concerns raised regarding our regulatory approach to dental technicians.

The GDC is not able to comment on ongoing cases; this is to preserve the integrity of matters yet to be determined by the Dental Professionals Hearings Service. The hearings service administers cases that are decided upon by panels, which include at least one registrant member, and make independent decisions.

As a general point, the GDC does not adopt a "one-size-fits-all" approach to cases. Each case is considered carefully at each stage of the process, based on its own facts.

We are working to improve the speed at which cases are dealt with, particularly through the fitness to practise investigation stage, without compromising the quality of outcomes. For example, in the last 18 months, adopting a new and streamlined approach to certain cases through "initial inquiries", we have halved the average time taken to deal with single patient clinical cases, from an average of 30 weeks to 15 weeks.

We recognise the challenges of regulating direct-to-consumer orthodontics, but the GDC's powers are limited to regulating regulated professionals, rather than businesses. Only people who are registered with us can legally practise dentistry in the UK. If people who are not registered dental professionals are practising dentistry, they are breaking the law. There is a separate and distinct process that we follow when we receive a referral for alleged illegal practice, and we do take action as necessary and appropriate.

We know fitness to practise investigations can be intrusive and we recognise that stress can be caused not just by the experience but also by the information publicly available. We announced a change last year to what will be published following decisions by the Interim Orders Committee after a review of our policy. The change is part of our ongoing commitment to reduce the negative impacts of the fitness to practise process on dental professionals' health and wellbeing. All previously published Interim Orders Committee determinations have been removed from the Dental Professionals Hearings Service website and replaced with the outcome of any hearing or review.

We value the essential contribution dental technicians make to oral healthcare and are committed to engaging with the profession to ensure our regulatory approach supports high-quality care while being proportionate and fair.

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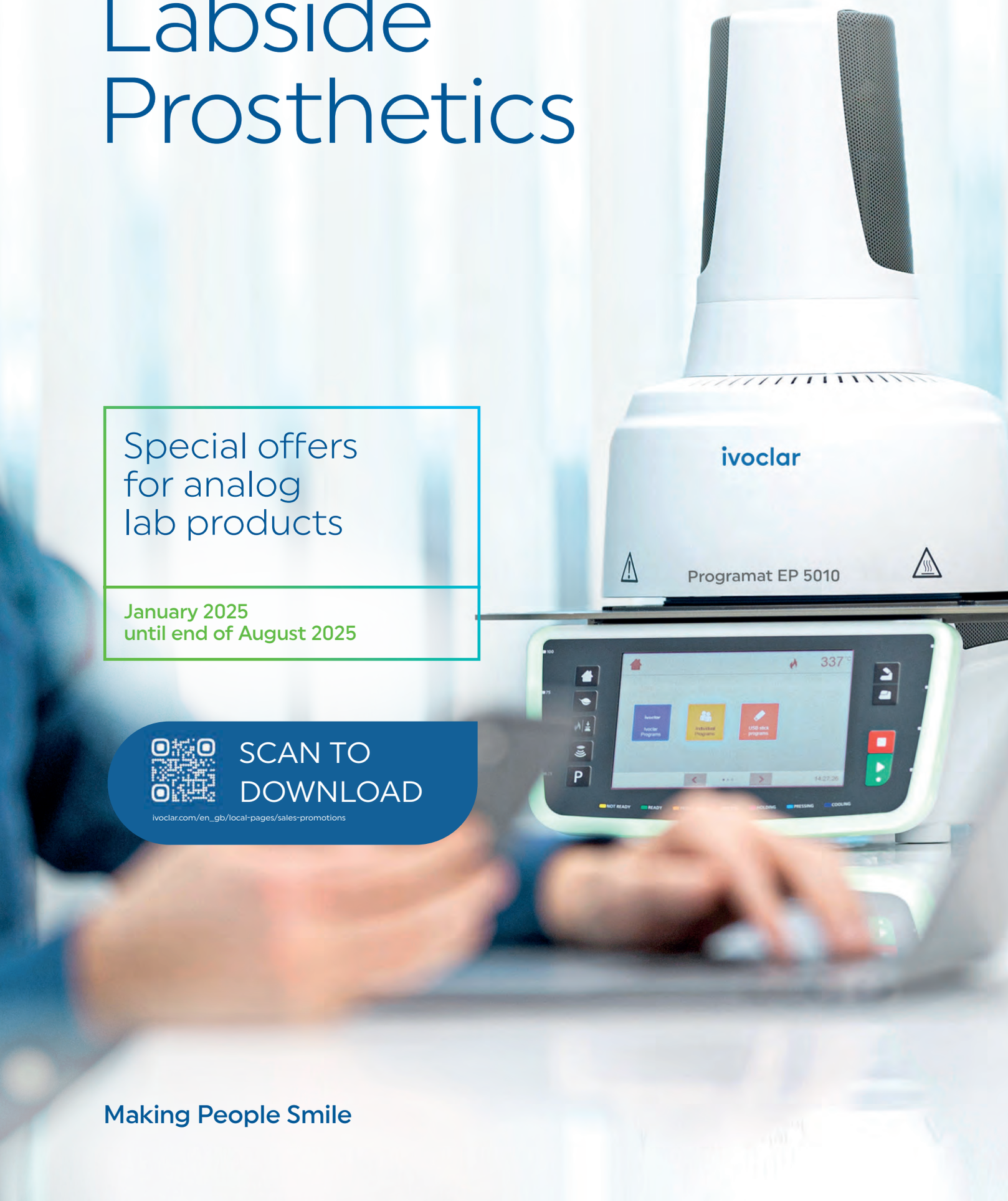

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Making People Smile

Tackling the technician shortage

Matt Everatt asks a panel of experts if attracting people to dental technology is achievable

MATT EVERATT
Editor-in-chief, *Laboratory*

ANDREA JOHNSON
Chair, CEO and co-founder, Den-tech

ASHLEY BYRNE
Associate director, Byrnes Dental Laboratory, part of the Corus group

JENNY DUNNETT
Owner, JD Denta Care

At this year's North of England Dentistry Show, a panel discussion addressed the alarming decline in the number of dental technicians entering and remaining in the profession. Hosted by Matt Everatt, the discussion brought together lab experts Andrea Johnson, Ashley Byrne and Jennifer Dunnett to delve into what's driving the shortage, the challenges facing the profession, and whether dental technology can be saved.

In this excerpt from their discussion, the panel shares insights – and potential solutions – for attracting, training and retaining the next generation of dental technicians.

HOW DO WE ATTRACT PEOPLE TO DENTAL TECHNOLOGY? IS IT DOABLE?

Ashley Byrne: My lab's success rate of taking young people on, putting them through college, funding them and retaining them is over 90% if you take, say, a four-to-five-year period. I don't mean to frame education in terms of returning investment, but if you're going to invest in people, you've got to make sure they stay.

If they leave, that's not that person's fault – that's your fault because you have not looked after that person well enough for them to want to stay. If I put them in the model room, they are not going to stay. Nobody wants to do that. We have to make sure that, very rapidly, they progress.

I love hearing my friends say that all their kids do is game – 'they've got no future, they just want to game.' That pricks my ears up, because that's what I'm looking for – gamers. Good gamers are often actually quite artistic, so you want to put them into an environment of playing with CAD and 3D printers.

When I show them the laboratory, I don't show them the model room – you don't want to do that. You want to show modern, forward-thinking digital techniques. When they come in for a day, we get them to play around with CAD. They'll take a design, they'll 3D print it, and they'll take it home with them. That is so powerful, so engaging, and they're like: 'And I'll get paid for this?'

We also never do minimum wage. We

> IF YOU'RE GOING TO INVEST IN PEOPLE, YOU'VE GOT TO MAKE SURE THEY STAY

will start everyone at living wage, and we escalate that as fast as we can. So, they're on a three-month cycle initially, then they're on six month cycles. We want to make sure that we look after our team well, and that they do well, but you do have to really look after them. Generation Z has a very different way of thinking, and money doesn't always motivate them. It's about work-life balance, it's about holidays, it's about time off.

You've got to change your mindset about employing the younger generation – it is a challenge, but it can be done.

Andrea Johnson: We have work experience people coming into our hospital every now and then, and they are pretty much always the ones who want to be a dentist. They spend at least an afternoon with me in the lab and they get drilled on the dental team and how dental technicians are part of it, however small the cog in this massive dental business. They are not the be all and end all of it, but they get lectured on the need to utilise and respect the technician and how they need to interact with us.

But, most importantly, they get to engage with the digital technology. We've got nowhere near what Ash has got, but one of the first things we do now is get them doing things – they don't just sit and watch, hands-off in the lab. I've always had them making stuff, so they go away with this special prize and they are just pleased as punch once they've done it. So I'll get a scan of them, I'll sit them on the computer and show them how to base it, print it out, and then they go away with a set of their own teeth. They think it's amazing and it gives them an insight into the lab.

> WE'RE NEVER GOING TO BE ABLE TO PAY THE WORLD'S BEST WAGES, BUT WE SHOULD BE ABLE TO PAY THEM A GOOD STANDARD OF A LIVING WAGE

But, also, we need to make sure that we retain that once we have them. We're never going to be able to pay the world's best wages, but we should be able to pay them a good standard of a living wage, so they can comfortably pay their bills, afford a holiday and have a good standard of life. If you think about jobs in the council, traditionally, or certainly big businesses like Rolls Royce, getting a job there is like winning the lottery. You only get a job there if somebody dies or you're in the know and you've got a connection to the company, because they are such good employers – they give you a decent pension, they give you a good working environment, they value you, they look after you. So, it's a whole package – it's not just about wages.

I also think more and more people want to work remotely now, so having that work-life balance, allowing them to work digitally, sometimes remotely, is something our industry could offer.

Jenny Dunnett: It's about accessing courses within colleges. In Scotland, we only have Aberdeen University, and the training and qualifications you need to get into it as a minimum are three Highers at grade C or higher.

Obviously the educational system in Scotland is different from England, we have National 5 (N5) qualifications, which is equivalent to GCSEs, and then we have Scottish Highers, which are equivalent to A-levels.

So, in Scotland, you need to have a minimum of three Highers at grade C level or above, including one in science or maths, and then you need to have at least two N5s, including English, to actually access the course within Scotland. So, I think we need to come back in on the foundation degree course, something that interacts with our school leavers who aren't as academic, but people who are hands-on, who have computer or digital skills.

If we can attract people coming out school, that's what we need to do – open up a new career pathway.

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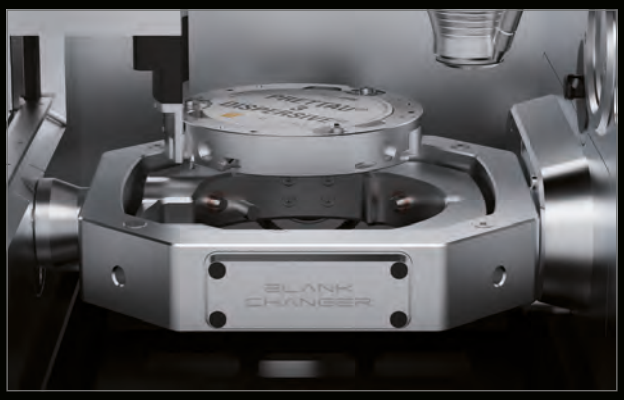

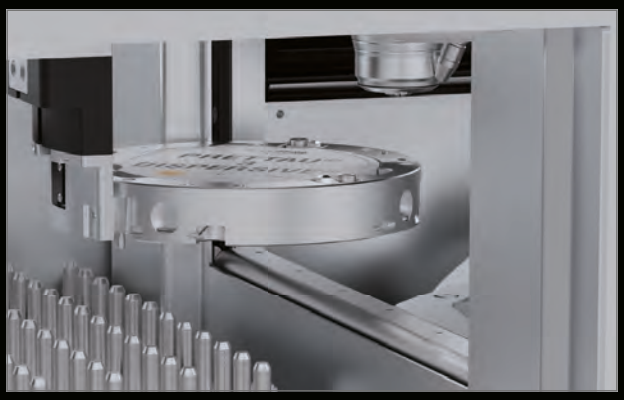

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How are we regulated?

Laboratory provides an update on its quest for clarity on illegal manufacture and regulation

Over seven months ago, *Laboratory* gave the General Dental Council (GDC), the Dental Technologists Association (DTA) and the Dental Laboratories Association (DLA) an outline of how it is believed that technicians and dental labs are regulated, and the consequences of that regulation. We asked these bodies to give their understanding and correct the information to form a statement of fact.

It seems this process has temporarily stalled while the GDC's policy unit considers what the GDC's policy is despite several attempts being made to garner a response. Readers may wonder why an organisation that is run on agreed, audited policy, is taking so long to write it down. After all, we should expect nothing less than clear and transparent policy, if professional registrants are expected to adhere to such policy.

HOW ARE WE REGULATED?

So how exactly are technicians and labs regulated? It is difficult to say unless GDC policy is clear and open. Continuing confusion on social media on how dental technicians are regulated shows that there is a problem that needs addressing.

After all, we should expect nothing less than clear and transparent policy, if professional registrants are expected to adhere to such policy

Manufacturing dental devices under the GDC has to be some of the most highly regulated manufacturing in the world. But does it set a high standard? Is it possible to supply dentists with dental devices without GDC and MHRA regulation? Is the whole dental team being taught how to comply with the law? What is illegal dental manufacture? How is it dealt with? What data is being collected? All of these questions have been asked of our regulators and associations.

We do know that dental technicians are asked to gain a recognised qualification such as a degree, have indemnity insurance, fulfil CPD requirements, follow strict standards and, as many have found out, possibly face very stressful fitness to practise investigations. In return, are technicians entitled to ask how this fits in with the dental market, and for details on how they are regulated?

TRANSPARENCY NEEDED

The GDC is audited by the Professional Standards Authority (PSA) and, sensibly, the way the GDC regulates must be transparent and consistent.

Many technicians and laboratories pay associations to provide them with information and represent them, but this begs several questions: have the associations asked regulators exactly what the law is, what regulator policy is, and how any laws are enforced? What is the GDC telling these associations, and what are the associations telling regulators on their members' behalf? Have the answers been given to members? Is association policy based on what their members think?

The DTA has told its members that only dental technicians can sign the statement of manufacture. If this is correct, will the GDC confirm it in the statement of fact? The DTA has also said that, under GDC standards, registrants must report illegal manufacture to the GDC. The statement of fact will show what happens if they do.

The DLA has told its members to individually ask the GDC for its policy on key questions. If we get the answers, this will save you (and the GDC) time, and we can publish the answers in the statement of fact. L

LET YOUR VOICE BE HEARD

Laboratory is interested in finding out how you feel about the way you're regulated. Given the question marks around illegal manufacture, we want to understand your feelings and perspective on where things currently stand.

To take part in this anonymous survey, scan the QR code.

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Five things I can't work without

Jenna Ellis shares the five essential items she needs to create exceptional restorations

JENNA ELLIS
Dental technician and head ceramist, Go Digital Dental

For as long as I can remember, I've always said that, in life, I want to make people smile. Never did I expect that to be quite so literal and within dentistry, but here I am as the head ceramist at Go Digital Dental laboratory based in Nottingham. I was lucky to be able to start my career as an apprentice within an award-winning lab and work alongside some of the best technicians within the field who have taught me so much and continue to do so.

Three years ago, an opportunity came along for some of us to start up a fully digital dental lab and we hit the ground running. I have been working in dentistry for 10 years now and really enjoy passing on knowledge, as well as continuing to develop my own skills and expertise within other areas whenever I can. With that said, here are my top five things I cannot work without.

1. SCALPEL

In my opinion, there is something incredibly satisfying about a scalpel with a new sharp blade. It's an indispensable tool for precision and detail work that I find I use quite often. It can be used for many things, from wax patterns to impression trimming. I tend to find I use it for removal of excess cement when bonding implants, trimming putty keys, removing excess from marginal areas on models, easing off crowns that have been layered, and much more. I find it's one of the better tools for accuracy and fine detail – if not the best – as its sharp blade allows controlled, precise cuts, and it's not bulky either. It definitely earns its place within the dental lab.

2. STEAM CLEANER

If you work in a lab without the use of a steam cleaner, I genuinely do not know how you do it! This piece of incredible equipment is a God send for me. As we are a fully digital lab, most will learn that not all digital models are easy to clean. However, even for analogue labs, this is a handy thing to have as cleaning off wax, polishing compounds and other residues is super easy and quick when using a good steam cleaner. We currently use one from Renfert, which is a powerful and durable machine. As big and bulky as it looks, it is surprisingly lightweight.

3. MAGNIFYING LENS

On my bench I have two magnifiers – one is a large x3 lens and the other is a smaller x10. They have movable and extendable arms, making it easy to push and pull in and out of my way as and when they are needed. I always use these as they help reduce eye strain while enhancing visibility. For consistency and continuous high standards, magnifiers are essential. Being able to get all those fine details in when contouring, staining or layering is important for accuracy and flawless finishes, as well as ensuring exact margins and proper occlusion. Without my magnifiers, it would be more difficult to detect any sort of microdefects.

4. MIYO PASTE STAINS

When I was first introduced to Miyo some years ago now, I was a little sceptical as it was a new system, and ceramic paste stains – although not a stain – were a new thing. At the time, I was using another system which was also a paste stain, but I decided to give the Miyo a try and instantly fell in love with it. Now years later, I have never looked back! I no longer use any other staining system, as the micro ceramic system within Miyo ticks all the boxes and is exceptional. Restorations are brought to life, cementing a whole new meaning to full contour. Amazingly, it is also super easy to use.

5. AIRPODS

Life in the lab can be a noisy place to be, especially when there are extractors and handpieces on the go. On top of that, in a big open room, there are conversations, the radio, phones ringing, the doorbell, delivery people in and out, as well as a nursery directly below us with excitable children. I sometimes just need to zone out in my own world so I can focus on getting my tasks done without other distractions.

Don't get me wrong, I enjoy the conversations and laughs with my colleagues, but sometimes there is a need to switch off from all of that, especially when I have intricate cases to complete.

CONNECT WITH JENNA @jennaellisdentaltech

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Inspiring women to thrive in dental technology

Nina Frketin asks how we can motivate the next generation of women to consider a career in dental technology and thrive throughout it

NINA FRKETIN
Dental technician,
Queensway Dental Laboratory

For more than 20 years, dental technology was my passion, my purpose, and an extension of who I was. But recently, for the first time, I found myself struggling to stay inspired.

I know I'm not alone in this. The industry feels different now – online platforms are filled with negativity and sometimes it feels like we, the technicians, care more about patients than the clinicians themselves.

And so, I ask myself: how do we inspire women? How do we inspire anyone, in fact, to get into dental technology when many of us feel disillusioned?

The truth is, it's not rocket science. Most of us come to work, do our job and go home. At its most basic level, a job should offer good wages, security and flexibility.

But that's just scratching the surface. If we truly want to bring in and retain talent, we need to go deeper.

HOW CAN WE SUPPORT AMBITION IN DENTAL TECHNOLOGY?

We need an environment where we feel safe expressing ourselves, where we can challenge outdated egos without fear of repercussions. We need workplaces that support ambition rather than suppress it out of fear that we might outgrow them. For the mothers in this industry, flexibility isn't a perk – it's a necessity. Yet, too often, they are forced to choose between career growth and family life.

Equally important is finding the people who support and guide you. There are some amazing groups out there – like Nightshift – that offer invaluable advice not only to women but to anyone seeking guidance in our field. These communities provide a space to discuss not just technical challenges at work but also broader workplace issues and personal struggles.

I can't tell you the number of times I've relied on the brilliant techs in this industry to help me navigate both professional obstacles and personal dilemmas. Their support is a testament to the power of community and the strength we find when we lift each other up.

A NEW GENERATION

To those who say: 'Well, in my time...' – we are not in your time anymore. We're not even in my time anymore. The industry is changing, and that should be something to celebrate.

The new generation values work-life balance. They refuse to tolerate 12-hour shifts as the norm. They are rewriting the rules, and instead of resisting, we need to adapt alongside them. That doesn't mean abandoning our core values; it means evolving while holding onto what makes this profession great.

But then, there is a special breed of woman in this industry. The ones who are not just here for the paycheque. The ones who are driven by purpose. The empaths, the healers, the ones who want to help people.

These are the women we must fight to keep. They don't stay for the money alone; they stay for the challenge, the recognition, and the inspiration they get from working alongside other brilliant technicians.I know this because I am one of those women.

So, if we want to bring more women into this industry – if we want to keep them here – we need to create workplaces where they can thrive. Where they can be heard. Where they can grow. That is how we build a future for dental technology that is not just sustainable but truly inspiring.

CONNECT WITH NIGHTSHIFT

Follow Nightshift on Facebook (Nightshift), Instagram (@nightshift.tech) and Linkedin (Nightshift Dentaltech).

First impressions from a dental technician

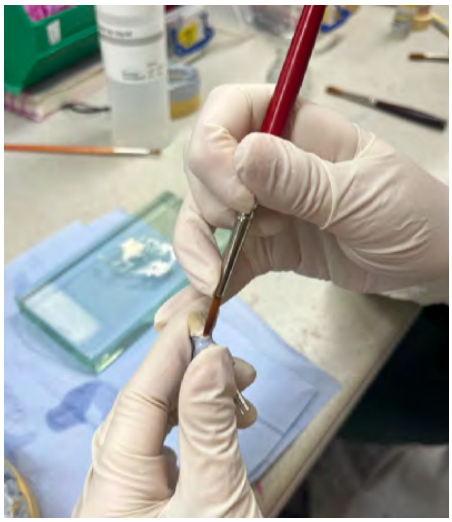
Claudia D'Angiolo shares how a blend of clinical and technical experience has developed her passion for dental technology

CLAUDIA D'ANGIOLO
Dental technology student,
Cardiff Metropolitan University

My name is Claudia D'Angiolo and I am a 21-year-old second-year dental technology student at Cardiff Metropolitan University. I'm originally from West Sussex, and my journey into the dental field began in 2021 when I started working as a dental nurse. Initially, I planned to progress into dental hygiene, but I soon became drawn to the technical and creative aspects of lab work, particularly in fixed prosthodontics. This interest led me to apply for dental technology, and I began my studies at Cardiff Metropolitan in September 2023.

Alongside my studies, I continue to work as a dental nurse at a dental practice in Cardiff that specialises in cosmetic dentistry, including treatments like composite bonding, veneers, crowns and short-term orthodontics.

This experience has given me valuable insight into both the clinical and technical sides of dentistry. Seeing the process from initial impressions or digital scans to the final restorations has deepened my understanding of the crucial relationship between dentists and technicians. I have also come to appreciate the importance of patient involvement, whether it's shade-taking or discussing expectations, to ensure the final result is as natural and precise as possible.



WHY DENTAL TECHNOLOGY?

I've always been drawn to healthcare, but dentistry stood out to me because it combines science and art – two things I've always loved. I enjoy painting and drawing, and dental technology allows me to apply my creativity while also working in the scientific and technical side of the field. One of my favourite things about my course is how hands on it is, with practical sessions throughout the week that make learning both engaging and rewarding.

EXPERIENCE SO FAR

Studying dental technology has been an exciting and eye-opening experience. So far, the limited real-life experience with patient cases in a dental lab during the early years of the course has been a challenge. However, I'm looking forward to my third year, when I'll be spending much more time in the dental hospital gaining hands-on experience. In the meantime, I'm actively seeking work shadowing opportunities in dental laboratories in Cardiff to enhance my skills and prepare for my career.

Like any technical field, dental technology has been a steep learning curve. It can be frustrating when things don't go as planned,

and developing the right techniques takes time and practice. However, the teaching team at Cardiff Met, with their years of expertise, has been incredibly supportive in helping me overcome these challenges.

FUTURE PREDICTIONS

Dental technology is evolving quickly, and I believe it will continue to become increasingly digital. CAD/CAM systems and digital workflows are already widely used, with many dental practices replacing traditional impressions with intraoral scanners. As technology advances, these digital processes will only improve, making treatments more efficient and precise while reducing turnaround times.

While these developments are exciting, they also mean that technicians need to continuously develop their skills to keep up. As digital dentistry expands, I believe training in CAD/CAM and 3D printing will become essential for future dental technicians.

FUTURE GOALS AND ASPIRATIONS

Looking ahead, my main goal is to gain experience in a dental laboratory, particularly in fixed prosthodontics and ceramics. This is where my passion lies, and I hope to refine my skills in creating high-quality restorations. I'm also considering further studies to become a clinical dental technician, which would allow me to work more closely with patients. However, I'm keeping my options open as I continue exploring different areas of the field.

Outside of my studies and career, I think maintaining a good work-life balance is important. I love to travel whenever I can, as exploring new places keeps me inspired and refreshed. With Italian roots, I especially enjoy visiting Italy to immerse myself in the culture and improve my language skills. Having personal interests outside of work helps keep me motivated and excited for the future.

FINAL THOUGHTS

My experience in dental technology so far has been incredibly rewarding. It has allowed me to blend creativity with science, develop technical skills, and gain valuable insight into both the clinical and technical sides of dentistry. While there have been challenges, they have only strengthened my passion for the field. I'm excited to continue learning, growing and finding my place in this ever-evolving industry. L

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Marketing rules and regulations

Eleanor Pittard shares how to promote your business effectively while staying compliant

ELEANOR PITTARD
Co-director and owner of Hive Dental Laboratory

If you're running a dental lab or a clinical dental technician (CDT) clinic in the UK, there are some important rules to keep in mind when it comes to marketing. The General Dental Council (GDC), the Advertising Standards Authority (ASA) and social media platforms like Facebook and Instagram all have guidelines you need to follow. Knowing these rules will help you stay compliant while still promoting your business effectively.

GDC GUIDELINES

In case you weren't aware, the GDC has clear rules for marketing and advertising dental laboratory services and CDT clinics. It's not necessarily something that you would think about when putting together an ad, but it is important to bear in mind the following:

- All claims must be truthful, clear and evidence-based
- Avoid misleading information or exaggerated claims about restorations, dentures or other prosthetics
- CDT clinics must ensure that patient testimonials are not used in marketing
- Any qualifications, experience or specialist titles must be accurate and not misleading
- Pricing must be transparent and include all relevant costs
- Before-and-after images must be genuine and not digitally altered.

ASA GUIDELINES

The purpose of the ASA is to ensure that marketing remains ethical across industries, including the dental industry. Their key rules include:

- No misleading claims – statements must be backed by scientific evidence
- No pressure selling – marketing must not exploit fear or urgency
- Use a sensitive approach to aesthetic treatments – avoid language that undermines confidence
- Use transparent terms on discounts and offers – ensure no hidden conditions.

META ADVERTISING RULES

On top of the GDC and the ASA, you also have to pay attention to what social media platforms like and don't like. Otherwise, you end up spending all that time putting together an ad and then suddenly find that Meta doesn't allow it to be published – and it isn't always that obvious as to why. I've outlined a general rule of thumb to live by to make it more likely that your ads will be approved first time.

What does Facebook allow and prohibit?

Allowed:

- Educational content about dental prosthetics, dentures and restorative solutions
- Promotions for general services (eg denture repairs, implant-supported prosthetics, laboratory partnerships)
- Informative ads that do not pressure users or make exaggerated claims
- Laboratory branding, including behind-the-scenes videos and craftsmanship highlights.

Prohibited:

- Ads that create negative self-perception (eg 'Are your dentures making you look old?')
- Before-and-after photos (Facebook does not allow these in health-related ads)
- Any claims guaranteeing specific results from dentures or restorations.

What does Instagram allow and prohibit?

Since Instagram is owned by Meta (Facebook's parent company), its rules are largely the same.

Allowed:

- Lifestyle images showcasing confident denture wearers (with permission)
- Short educational videos about how dental prosthetics are made
- Offers and promotions for dental professionals and patients.

Prohibited:

- Before-and-after transformation images
- Misleading captions about the longevity or effectiveness of treatments
- Language that implies someone is 'less attractive' without treatment.

Stay tuned for part two in the Summer issue of *Laboratory*.

CONNECT WITH ELEANOR @eleanor.pittard

When is the right time to invest in new equipment?

Ray Cox explains why planned investment in equipment is so important and how that investment can best be funded

RAY COX
Managing director,
Medifinance

Every type of equipment you purchase for your laboratory is an investment, and the better the investment, the more revenue it will generate.

So, when is the right time to invest in new equipment? In truth, there is never a right time. Do you wait until something breaks before replacing it, or do you recognise the signs of wear and tear and ever-increasing service bills and get ahead of the curve? That new piece of technology your competitors have... do you wait until the price comes down or do you invest now and reap the rewards of a better and faster turnaround?

There are many reasons for delaying investment, and the most common is probably the financial one. But while you wait for interest rates to improve, the price of equipment just keeps on rising like a rainbow with no end. One answer is to speak to us and find out the actual cost of financing your investment. You may be pleasantly surprised.

CONSIDERATIONS

While the funding options for purchasing equipment are relatively straightforward, there are a few key points I would suggest you take into account:

- Inflation can be used to your advantage if you purchase your equipment on HP (hire purchase) and/or leasing because you are getting today's equipment at today's prices using tomorrow's devalued money
- Discuss the pros and cons of leasing versus HP with your financial team so that you fully understand at what stage you can claim the 100% tax allowance available, and over how many years you should spread the agreement
- Think very carefully if you are considering making cash purchases. Often this requires saving, and by the time you've saved, the price has gone up. It is advisable to keep some liquidity in your cashflow to handle unexpected demands
- When sourcing the finance provider, ensure all the terms and conditions are explained and understood. We believe that by using an independent financial broker you not only get competitive interest rates, but also funding that relates to your specific requirements. Brokers understand the small print!

IT'S ALL IN THE PLAN

In general, sourcing equipment finance for our clients is straightforward. However, I recently spoke with a highly successful lab owner who was seeking financing for both equipment and business expansion. His business was profitable and had always secured funding without issue. Essentially, he considered himself and his company to be 'a good risk' and that his relationship with his bank would stand him in good stead.

Much to his amazement he was turned down flat. Why? Because as successful as his business was (and is!), he did not present an evidence-based case for funding. He assumed a detailed, costed and realistic business plan was unnecessary.

He was wrong.

Let's take a look at what will reassure the bank/lender and ensure that you not only secure the funding you need, but also obtain the most favourable terms. Here's how to prepare a plan that will give you every chance of sourcing the necessary capital:

1. Above all, monthly management accounts will demonstrate you keep your finger on the pulse. It will immediately convince the lender that you have the level of commitment required to run a business responsibly
2. It always pays to have a good team of advisers that understand their roles and can lend authenticity and credibility to your business plan. An accountant and a broker with relevant experience are, in my view, essential
3. Indicate your ability to delegate and put in place the reporting procedures that allow you to assess and implement the information provided
4. Be absolutely honest about the costs involved and the resources required to implement your plan. Do your research diligently and demonstrate you have done it
5. As appropriate, support your application with evidence of your financial track record and management eg:

- Loan repayments
- Credit rating
- Credit control
- Management and control of overheads
- Cashflow
- Salaries, bonuses and pensions policy
- Assets.

HELP WITH PLANNING

If your business plan meets the above criteria, your application for funding will, without doubt, result in a positive outcome. It may require a little extra effort, but the longer-term rewards will more than justify the time.

We have put together business planning templates that we make available free of charge and without obligation. Whatever stage you are at with your business, you will find the templates an invaluable tool – contact me to have them sent through to you. You will find the templates will not only help you prioritise and plan, but often consider and address issues you may have overlooked.

GET IN TOUCH

Contact Ray at **rcox@medifinance.co.uk** or **07785 757782**.

COMPANY HIGHLIGHT

Why a digital lab set-up works for me

Digital by design: **Stephen Lusty** shares the materials and equipment he uses and the advantages of a digital workflow

STEPHEN LUSTY
Dental technician and owner,
Stephen Lusty Dental Laboratory

Stephen Lusty is the owner of Stephen Lusty Dental Laboratory, a bespoke crown and bridge dental laboratory in Newquay, Cornwall

CAN YOU TELL US ABOUT YOUR DIGITAL LABORATORY SET-UP?

My small dental lab is totally digital and every case that goes through the lab is digitised in one way or another. Like most digital labs we use a lab scanner, a range of 3D printers and a milling machine for zirconia and PMMA.

Alongside this, we have two CAD PCs and one CAM PC with associated software. We run a separate station for accepting intraoral scans and use a NAS drive to centralise all information.

The main advantage of digital is the repeatability. When we work on a case, we always know that, if necessary, we can tweak a design or remake something without starting again. A digital workflow also allows us to communicate our vision with clients in a more demonstrative way so we can achieve better outcomes for patients in fewer visits.

Designing digitally means that the best manufacturing processes for our prostheses involve using specific materials that can be digitally processed. The majority of our final restorations are zirconia, but we also produce prostheses in milled Initial LiSi lithium disilicate glass ceramic, titanium, printed alloys and printed resin which are either pressed or cast.

HOW DO YOU GO ABOUT CHOOSING YOUR MATERIALS?

I work with products from different manufacturers that I believe to be the best and that work best in my hands. I use GC's Initial Ceramics system which has a broad range of aesthetic solutions for metal and all-ceramics in digital workflows. I also use GC's Initial LiSi, a lithium disilicate for producing aesthetic frameworks, single crowns, onlays and veneers, as well as a selection of materials from GC's Gradia Plus composite system.

YOU HAVE BEEN INVOLVED IN THE PRE-MARKET TESTING OF GC'S NEW MULTI-LAYERED ZIRCONIA DISKS – INITIAL ZIRCONIA DISK MULTILAYER ELITE. WHAT IS YOUR ASSESSMENT OF THEM SO FAR?

The most important factors to consider when assessing multi-layered zirconia is that the transition should blend, the shade should be accurate, the translucency level should appear natural and it should be soft to process, putting less strain on the milling equipment.

GC's new multi-layered zirconia disks deliver a high level of stability, strength and aesthetics, they are easy to process and give predictable, accurate shades. They do their job really well.

YOU HAVE AN ALS2 LAB SCANNER FROM GC AND YOU HAVE ALSO BEEN TESTING THE NEW ALS3. WHAT IS YOUR OPINION OF THESE TWO SCANNERS?

The ALS2 is an extremely accurate scanner. Since all our clients have intraoral cameras, we hardly ever scan entire cases, but we do need the capability to verify scans and to handle bigger jobs that intraoral scanners cannot handle. The openness of the ALS2 means we can simply scan bites in and add them to intraoral scans, or just scan sections of cases to add to the scan data already received from the clinic.

A high-end scanner is more important than ever for accuracy, rather than several cheaper scanners used purely for volume.

The ALS3 is another great scanner with additional benefits including a second camera, which means that data is captured more quickly. The scanner captures more on each pass to build a more complete model with one scan, rather than having to add additional scans to an initial scan.

WHAT WOULD YOU SAY TO FELLOW TECHNICIANS WHO ARE CONSIDERING THESE LATEST DIGITAL ADVANCEMENTS FROM GC?

For those who require a stable, strong and aesthetic system, GC's new multi-layered zirconia disks would be an excellent option.

The ALS scanners are also excellent pieces of equipment and if I didn't already own an ALS2, I would be seriously considering an ALS3.

There's one more important point to add: when choosing any new piece of digital equipment or new materials, the key must-have is direct access to support. You will always get great customer support from both GC and the KOLs (key opinion leaders) they work with.

FOR MORE INFORMATION

about GC's Initial Zirconia Disk Multilayer Elite range and the ALS3 scanner, visit **gc.dental.**

COMPANY HIGHLIGHT

Cost-effective laboratory problem solvers

Trycare shares its wide range of laboratory solutions for every technician

Trycare offers a wide range of cost-effective laboratory problem solvers which should be of interest to every technician, including Kerator overdenture attachments, Tokuyama reliner and universal silicone removal materials.

KERATOR – INTERCHANGEABLE WITH LOCATOR FROM £86!

Designed to fit all the most popular brands of implants and exclusively available from Trycare, Kerator overdenture attachments are fully interchangeable with Zest Locators and cost from just £86 plus VAT! Contact Trycare on 01274 885544 for more details.

Supplied with a choice of straight or 15° angulation, Kerator abutments have the lowest profile of any overdenture attachment (just 1.48mm) which means they are easier to place where space is at a premium. Available with soft tissue cuff heights from 1-6 mm in a choice of retention levels, Kerator overdenture attachments provide excellent retention.

Other advantages include:

- A plastic carrier that provides safer handling and easier placement, plus easier visual checking of the implant's alignment
- Dual-retention which enables increased retention as well as easier pivoting in any direction
- Self-alignment which automatically centres the male on the housing attachment, allowing patients to easily seat their overdenture
- An extended range of male attachments which allows for insertion with up to 40° of implant divergence
- A 15° angled abutment which can be used to further extend the allowable divergence
- A dual undercut metal housing design that provides sturdier retention within the denture acrylic.

Interchangeable with Zest Locators, including the tooling, Kerator is compatible with all the most popular implant ranges including Adin, Straumann, Nobel, Astra and Ankylos. It is supplied in an all-in-one package that contains everything you need at an extremely competitive price! Individual components are also available separately too.

SOFRELINER TOUGH SOFT AND MEDIUM FOR LASTING COMFORT

Exclusively available from Trycare, Sofreliner Tough Soft (S) and Medium (M) are indicated for temporary denture relining for tissue conditioning or long-term use to relieve the pain caused by sharp ridges and to improve denture retention. When utilised for long-term use, you can expect the patient's dentures to remain soft, smooth and with less discoloration and odour.

The Shore A hardness of Sofreliner Tough S is almost the same as an acrylic tissue conditioner, allowing it to alleviate pain caused by sharp ridges of alveolar bone and mucosal atrophy, but with minimal degradation over time. Other materials may start slightly softer, but rapidly harden and go rough in a matter of days, requiring repeated relining.

Applying Sofreliner Tough S Primer ensures high adhesion strength, enabling long-lasting adhesion and reduced peeling at the denture border. Tensile bonding tests (5mm/min), after repeated loads of 300,000 maintained at 37°C water solution, proved it performs well for the equivalent of two years of oral use. It also has a high wear resistance when compared to other silicone relining materials. This reduces the risk of tearing during daily use.

Supplied in an auto-mix cartridge with extra-small size mixing tips, it is easy to dispense in a perfect mix and with minimal waste in the mixing tip.

REBASE II – HARD RELINER FOR CHAIRSIDE OR LABORATORY USE

Exclusively available from Trycare, Tokuyama Rebase II is Tokuyama's tried and tested hard denture reline material, which is suitable for both chairside and laboratory use. Curing in four minutes and 30 seconds intraorally, Tokuyama Rebase II is indicated for hard denture relining and partial denture repairs.

The key benefits of Tokuyama Rebase II are its low chemical irritation, low heat generation, durability, easy polishability, one-appointment procedure and accurate adaptation of the denture.

UNIVERSAL SILICONE REMOVER

Suitable for use with both Sofreliner and Rebase II, whenever required they can be easily removed from the denture's fitting surface using Tokuyama Silicone Remover.

Tokuyama Silicone Remover is an auxiliary agent used to remove silicone-based resilient denture liners from acrylic dentures and silicone impression materials from impression trays.

Supplied in a 7ml bottle, it is quick and easy to use, which saves time and leaves no mess.

FOR MORE INFORMATION

visit the Trycare website **www.trycare.co.uk**, contact your local Trycare representative or call **01274 885544.**

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Achieving occlusal freedom

Marc Wagenseil presents an upper denture case in which the prosthetic tooth designs were key to a comfortable, functional fit

MARC WAGENSEIL
Owner, Heritage Denture Centre and Dental Lab

I had the opportunity to challenge myself with digital technology. An implant-supported full denture in the upper jaw was to be manufactured using the most recent 3shape software and the polychromatic composite disk Vita Vionic Dent Disc Multicolor for the subtractive manufacturing of denture teeth in neutral occlusion. The interaction of traditional experience with new technology inspired me to once again break new ground, and to challenge the status quo and my own professional complacency when treating complex implant cases.

CASE STUDY

The patient came to the practice because he needed a new restoration in the edentulous upper jaw. Since the patient did not like the fit, the foreign body sensation or the functionality of a conventional denture, implant insertion had been suggested in advance, to which the patient consented. The new full denture was to be stabilised on top of four implants with Novaloc abutments from Straumann (Figure 1). In the treatment plan, we decided to manufacture the full denture using the digital workflow. The goal was to show whether the digital denture could be manufactured more easily, and whether a similar or even better fit could be achieved after integration, compared with conventional full dentures. Of particular interest here was the integration itself, as well as whether the abutments had to be integrated into the denture base in the treatment chair or in the laboratory.

FIGURE 1: The upper jaw after the insertion of the four implants

THE TREATMENT PLAN

The treatment phase included the following steps:

1. The palate portion was to be freely designed
2. The base from the Vita Vionic Base Disc Hi should not be additionally reinforced
3. The angulation of the implants should not be corrected. This decision was made because of the flexible angulation compensation with the different Novaloc locators. They make it possible to compensate for the leverage provided by the extended free end. At the same time, the load on the implants was reduced despite the unfavorable positioning while chewing. A prosthetic correction of the angulation would only increase and strengthen the leverage effect. Trouble-free occlusal freedom in centric was also essential in order to provide even more compensation for the load stress
4. The focus was on making the occlusal morphology of the teeth functional within the patient's chewing cycles, while at the same time transferring the freedom of movement concept of the Vitapan Lingoform posterior teeth. The Vita Vionic Digital Vigo denture tooth library, available in the 3shape software, is based on the design of the Vita Vionic Vigo prefabricated teeth, which are in turn based on the design of the Vitapan Excell anterior teeth and the Vitapan Lingoform posterior teeth. Their basic functional principle was automatically transferred to the patient's occlusion
5. Treatment continued with intraoral scans of the lower dental arch and the alveolar ridge in the upper jaw. Once the scans and recorded jaw relation were uploaded, the design of the denture began (Figures 2 and 3). Vita Vionic Vigo O45 and 22L were selected. The posterior contacts were adjusted and confirmed in order to implement freedom in centric (Figure 4)
6. The dental arch and denture base were manufactured subtractively and fixed using Vita Vionic Bond (Figure 5)
7. Due to the virtual integration of the Novaloc locators in the software and the high milling precision, the matrices clicked into the denture base after subtractive manufacturing. To ensure a secure bond, the matrices were also integrated into the denture base using the DTK-adhesive from Bredent.

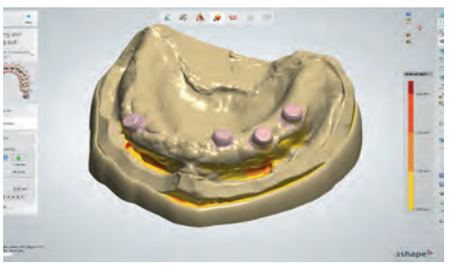

FIGURE 2: The virtual model during the analysis and block out phase

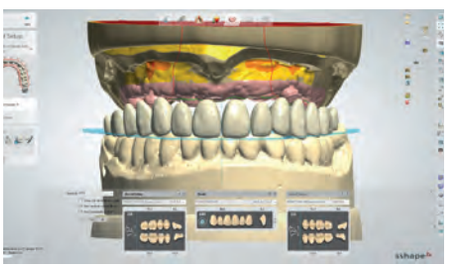

FIGURE 3: The virtual setup with the selection of tooth shapes

FIGURE 4: Checking the occlusal contacts and the freedom in centric

FREEDOM IN CENTRIC

Freedom in centric is defined as a 'flat area' in the central fossa in which the antagonist cusps have 0.5 to 1 mm of eccentric freedom of movement upon contact, unaffected by

tooth inclination. All natural teeth work according to this concept, but very few denture teeth have it integrated.

Why is freedom in centric important? This concept is important because denture teeth are not innervated. This means that a patient cannot feel when the teeth are in occlusion or if they are almost in occlusion. It is important to note that, if there is food between the teeth during chewing, it is not possible to create perfect centric contact with each individual chewing cycle as it is in the articulator during the manufacture of dentures. And then there is also the fact that full dentures are supported by mucous membranes. When considering these two aspects, it is inconceivable that a patient with full dentures could always return precisely to centricity. For the same reason, the natural dentition – even if we can feel our teeth during the chewing process – cannot achieve precise centricity after each chewing cycle. This is also the main cause of instability and tension within the denture.

FIGURE 5: The STL file of the denture base

FIGURE 6: The completed digital denture with milled teeth from VITA MRP composite

FIGURE 7: Basal view of the denture with the integrated matrices

FIGURE 8: The upper denture in situ

FIGURE 9: Vita Vionic Base Disc HI and Vita Vionic Dent Disc Multicolor

Why was freedom in centric important for the success of this treatment? Due to the distribution of the implant abutments, a free occlusal concept without interference was important for preventing a leverage effect. A prefabricated tooth with a locked centric would not allow this compensation to achieve a good denture fit and the desired function. This is the same in the present case, especially regarding the pronounced free end distal from the area of the implant support. For this reason, the patient needs a flexible and adjustable occlusal design.

MATRIX

As already described, special attention was paid to the locators because the matrices were integrated into the denture base in the laboratory and not at the patient's chair. As a result, we had to check whether the dimensional transfer of the implant position into the software, in conjunction with the precise subtractive manufacturing, would make it unnecessary to integrate the matrices on the patient chairside. Bonding in the laboratory can reduce chair time by 1.5 to two hours. This is much more comfortable for the patient because less work needs to be performed inside the mouth. However, the matrices can also be fixed in the laboratory with an accurate model and a careful, precise conventional procedure. Subtractive manufacturing of the base and bonding of the matrices in the laboratory was effective and accurate in this case. Due to the complex implant distribution, a precise relationship between implant head and matrix was a must, especially in this clinical situation.

In this case, the matrices fit into the patrices of the implant abutments without any complications and demonstrated reliable retention. During the occlusion check, no adjustments were necessary at all. The patient has been wearing the CAD/CAM-supported fabricated denture to date without any discomfort. He is satisfied with its appearance and trouble-free function (Figures 6 to 8).

SUMMARY

- Analogue or digitally manufactured denture teeth that are designed with occlusal freedom provide stability, flexibility and adaptability to the patient's chewing cycle. The occlusal design can be modified in the production of tooth material with the Vita Vionic Dent Disc Multicolor to obtain the desired reliability and function (Figure 9)
- Hitting and sliding on the main cusps is the main cause of well-known denture problems
- This treatment plan demonstrates the challenges of dealing with one's own professional complacency, and the digital workflow for the production of implant-supported dentures
- The Vita Vionic Dent Disc Multicolor enabled an easy-to-implement and time-saving workflow that created a high-quality denture.

As denture professionals, we have to tailor care for each patient and not expect them to simply adapt to their new dentures. In order to achieve this, denture teeth that are adaptable must be used. On the other hand, self-reflection is important to prevent complacency and to allow an adaptation of the skills needed for the specific requirements of the patient case.

Freedom in centric is the possibility of moving within the centric contact and therefore should not be blocked in a bite. This concept allows for flexible occlusal adjustment to the patient's needs, but it has only been integrated into a few prosthetic tooth designs available to us. In this case, the successful treatment can be attributed to precisely this freedom, which is contained in the Vita tooth library and in the subtractively manufactured dental arch from the Vita Vionic Dent Disc Multicolor composite blank.

If we want to be superheroes for our patients, we need to think outside the box when it comes to complete dentures. Digital workflow manufacturing is another viable tool in your arsenal to provide your patients with consistent, high-quality removable dentures. The type of teeth you use matters for traditional or digital manufacturing. Find out about the freedom in centric of the Vitapan Lingoform posterior tooth set and the Vita Vionic Digital Vigo denture tooth library with the Vita Vionic Dent Disc Multicolor. Freedom is great! L

Metal bars for any case

Zirkonzahn presents eight designs for highly stable restorations using a well-coordinated workflow – including the processing of hard metals from a solid blank

Especially when creating long-span restorations, metal bars are a valuable alternative to titanium bases to fix prosthesis firmly in the patient's mouth. Compared to titanium bases, bars provide several advantages depending on the case:

- They are more stable
- They improve the overall aesthetics of the restoration, allowing the dentist and dental technician to opt for zirconia typologies that show less flexural strength in favour of higher aesthetics – for example, the new generations of pre-shaded zirconia, such as Zirkonzahn's Prettau Dispersive materials, which are already provided with natural colour gradient or incrporate Gradual-Triplex-Technology
- In the case of fractures of the zirconia superstructure, the bar remains untouched and only the zirconia part requires replacement
- They permit the creation of removable prosthetics, yet keep the stability provided by the metal understructure, eg by fixing the superstructure on attachments or with friction. In this way, hygiene is also enhanced, since the patient can remove the restoration and clean it underneath
- If there is too much distance between implants, bars can reduce the risk of fractures.

MATERIAL SELECTION

Depending on the clinical case, the dentist's preferred choice and the dental laboratory's hardware equipment, dental technicians can design several types of metal bars using different materials. Zirkonzahn produces various types of metals in its own manufacturing sites in South Tyrol, Italy:

- Titanit is the material of choice when creating metal bars. Titanium is lightweight and provides great flexibility. However, its processing requires machines suitable for hard metals. To control and reduce the grey value of the restoration, the material can be anodised in a golden or lighter colour
- Sinternit, Zirkonzahn's sinter metal, is 100% deformation resistant, showing no distortions or stresses in the metal structure. Being a soft material, it permits the production of metal structures even if the laboratory is not equipped with machines conceived for processing metals. In addition, its use has a significant effect on tool costs. Structures made of Sinternit can also be electroplated in several colours to improve the restoration's aesthetics, preventing the metal shining through the zirconia superstructure
- Cocronit Superior, Zirkonzahn's cobalt-chromium alloy, is ideal for the fabrication of metal structures that will be veneered with ceramics.

DESIGN PHASE – A VARIETY OF BAR DESIGNS

Zirkonzahn.Modellier provides the user with smart functions for the creation of different bar designs (Figure 1). In the software, five bar shapes are available and good command of the software permits many possibilities. The software is user-friendly and designed to facilitate the dental technician's job, eg by saving time (friction bars can be created in approximately 15 minutes). A particularly special feature of Zirkonzahn.Modellier is the ability to place all screws and attachments needed virtually on the bar (eg for Locator bars or Double Screw Metal bars) and to create the related threaded channels. The 3D rendering provides the optimal position of the screw channel in the primary structure, as well as the ideal fit of the screw head in the superstructure.

Standard bar

The standard bar is easy to design and produce. It provides good stability and its general shape can be used as a basis for all cases (Figure 2).

Double Screw Metal bar

This type of bar is the ideal fixed solution for full-arch prosthetics, with a strong divergence of the implants towards the vestibular area (Figure 3). During the design process, additional screws are integrated into the bar

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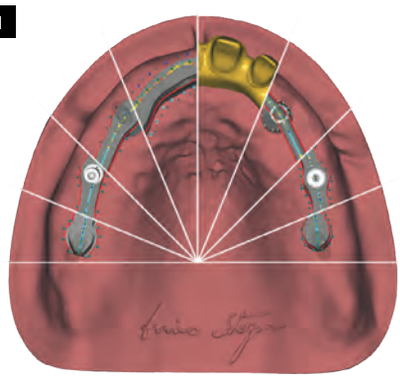

FIGURE 1: Zirkonzahn.Modellier allows the user to create a variety of bar designs

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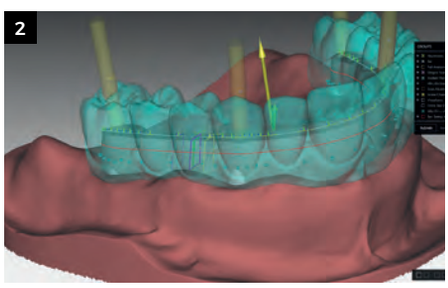


FIGURE 2: The standard bar is easy to design and produce, provides good stability, and can be used as a basis for all cases

to screw the superstructure to it. The titanium bar is then screwed to the implants and the secondary structure to the bar through the additional threads. This avoids unaesthetic vestibular channels and produces highly stable, bar-supported rehabilitations without compromising the full-arch aesthetics, even in complex cases.

Bartplatte

This bar design is suitable for producing aesthetic, fixed, full-arch restorations in cases with palatal-inclined implants (Figure 4). Utilising an advanced function of the bars module in the Zirkonzahn.Modellier software, the primary structure is geometrically adapted to the palatal surface of the wax-up and individualised using the free-forming function. Further bar retentions are then generated, and after milling the digitisation of the bar can provide the basis for designing the final superstructure.

Locator
The attachment that is incorporated into the bar during design is called the Zirkonzahn LOC-Connector. It is a snap attachment system produced by Zirkonzahn used to connect complete and partial overdentures to dental implants. Zirkonzahn LOC-Connector is available both as a virtual and physical component. Locator bars combine the advantages of removable and fixed prostheses, and their snap-on mechanism allows both patients and dentists to insert and remove the restoration easily, enhancing hygiene (Figure 5).

Keyhole
Similarly to Locator bars, Keyhole bars have a snap-on mechanism, combining the stability of fixed prostheses to the hygiene advantages of removable ones. This type of bar comes with a thinner shape on the bottom and a round shape on the top, where the superstructure attachment is fixed. Due to the thinner shape, these bars are suitable for treating cases with little space available in the anterior or posterior areas, or cases with small occlusion (Figure 6).

Dolder
Dolder bars also fall into the category of removable restorations with zirconia or resin superstructures. The difference between Locator and Keyhole bars resides in the type of attachment used and where this solution is used in clinical cases. As a smaller bar, this design is preferably used in situations with extremely little space available or when small bridges are required (Figure 7).

Bar-T
The only difference that marks a Bar-T from a standard friction bar is that the Bar-T includes a little step on the outside on which the friction coping and the resin or zirconia restoration is seated. This step provides support to the superstructure if it tends to bend or move a little, avoiding the risk of cracks or breaks (Figure 8).

Thimble
Thimble bars are beneficial in cases of fixed solutions which require a particularly high stability (Figure 9). The production process for restorations using Thimble bars is quite long, since manual technique is also required. The bar design incorporates tooth dies, and single crowns have to be designed, milled, characterised and cemented on it. Gingiva characterisation is also necessary. This means the most suitable materials are Cocronit and Titanit, which can be layered with ceramics (Titanit can also be anodised to obtain a higher level of aesthetics). A key advantage of Thimble bars is that, if part of the superstructure breaks, that single unit can be replaced.

FIGURE 3: The Double Screw Metal bar is the ideal fixed solution for full-arch prosthetics with a strong divergence of the implants towards the vestibular area

FIGURE 4: The Bartplatte design is suitable for producing aesthetic, fixed full-arch restorations in cases with palatal-inclined implants

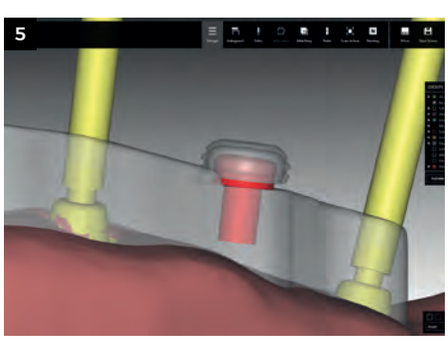


FIGURE 5: Locator bars combine the advantages of removable and fixed prostheses, and their snap-on mechanism allows both patients and dentists to insert and remove the restoration easily

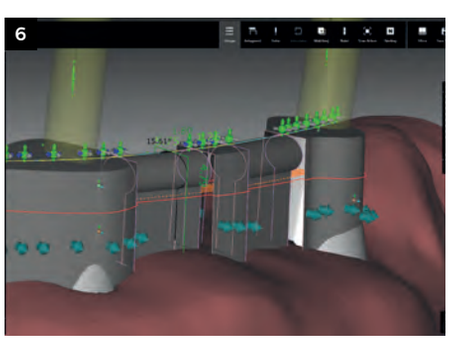


FIGURE 6: Due to the thinner shape, these bars are suitable for treating cases with little space available in the anterior or posterior areas

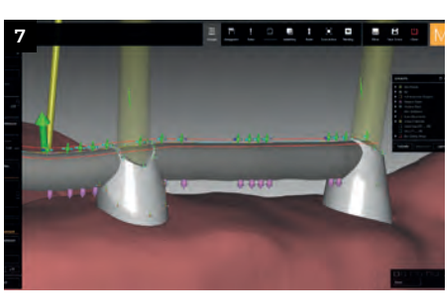


FIGURE 7: As a smaller bar, this design is preferably used in situations with extremely little space available or when small bridges are required

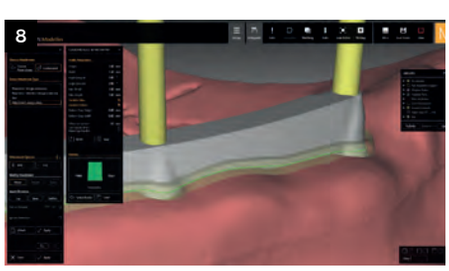


FIGURE 8: The Bar-T has a little step on the outside on which the friction coping and the resin or zirconia restoration is seated. This provides support to the superstructure if it tends to bend or move a little

NESTING AND MILLING OF HARD METALS FROM SOLID BLANK

Once finsihed, the design is imported into Zirkonzahn.Nesting to calculate milling paths. High-quality bars require a very smooth surface and extreme precision in the milling of implant connections and geometries to guarantee that the bar sits correctly on the implants (Figures 10 and 11). Zirkonzahn. Nesting – with its advanced milling strategies, Zirkonzahn's milling units, burs and threading tools – are capable of achieving both goals with a high level of detail.

Zirkonzahn's range of milling units includes the Wet Heavy Metal machines, developed with a specific mission: to guarantee high-precision milling of hard metals. The M1, M4, M2 and M2 Dual Wet Heavy Metal milling units can process all kind of common soft dental materials. Due to the integrated wet processing function, they can mill hard metals such as titanium and prefabricated blanks for individual titanium abutments (Raw-Abutment) with very high precision. Glass-ceramics and disilicates can also be processed in these machines via both wet and dry milling. The highly compact M1 Wet Heavy Metal milling unit features high stability when milling metals thanks to its four-bearing orbit and high-torque spindle. The proven stability

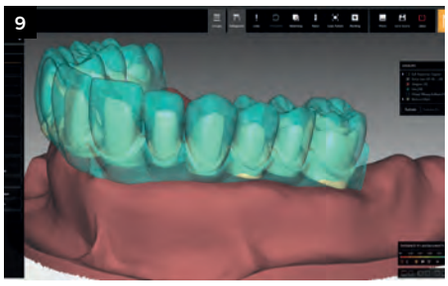
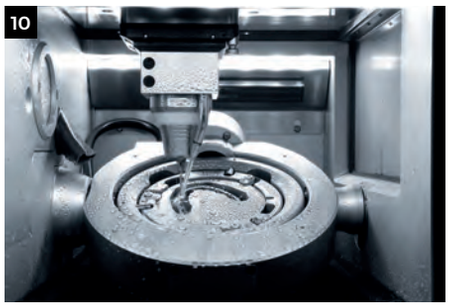
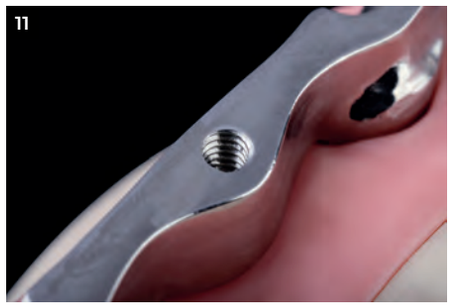


FIGURE 9: Thimble bars are beneficial in cases of fixed solutions which require a particularly high stability





FIGURES 10 and **11:** High-quality bars require a smooth surface and extreme precision in the milling of implant connections and geometries

FIGURE 12: Metal structures can be anodised, electroplated or veneered with ceramics depending on the primary structure produced and on the aesthetics requested. Structures made of Sinternit can be electroplated, for example in a golden colour as shown in the picture

of the M1 machine has been further optimised in the M2 line and in the latest M6 Teleskoper Blank Changer milling unit. These machines show a very stable double bearing suspension and a more compact, powerful spindle, which lends them a high resistance to vibrations – important aspects to mill remarkably smooth surfaces, especially for telescopic works and metal bars.

In particular, the new M6 milling unit is equipped by default with the new Performance Spindle. Thanks to a specially developed Permanent Magnet Synchronous Motor (PMSM) that is optimally adapted to the milling unit, this spindle can reach a maximum torque of 200 N·cm at speeds of 6.000 to 40.000 rpm with a peak power of 2.5 kW. The coolant supply integrated into the milling spindle helps to keep the milling chamber clean and to optimally cool tools and materials like titanium and glass-ceramics during elaboration. With the M4 milling unit, the M2 line and the M6 Teleskoper Blank Changer, it is possible to mill up to four bars in a single blank of Sinternit and Titanit. These two materials are also available in blanks with a diameter of 106 mm, which can be processed sequentially using the extra-large Teleskoper Orbit (in comparison to the ø 98 blanks, which contain one bar only).

METALS AND AESTHETICS

After milling, manual refining, sintering, polishing and high gloss polishing, metal structures can be anodised, electroplated or veneered with ceramics depending on the primary structure produced and on the aesthetics requested. Structures made of Sinternit can be electroplated, for example in a golden colour, and Cocronit Superior and Titanit can be veneered with metal ceramics (Figure 12). Titanit can also be anodised in a golden or brighter shade using Zirkonzahn's Titanium spectral-colouring Anodizer.

A WELL-COORDINATED WORKFLOW

All Zirkonzahn's workflow components for producing restorations supported by metal bars are developed and fabricated in-house. This choice allows the firm to have full control over the entire manufacturing process, with the respect of the highest standards of quality. Being the sole process owners allows Zirkonzahn to have a complete understanding of the manufactured products, ensuring that they form an optimum match in the complete and well-coordinated workflow.

The in-house research and development team constantly works to improve and fine-tune solutions to create a reliable planning and working environment with pre-configured parameters, where hardware, software, tools and materials fit together according to perfect technical logic. The close collaboration between the research and development team and the production department permits identification and problem solving at an early stage on the basis of test results, enhancing the products constantly. Full control over the testing and production procedures allows the company to react very quickly to customer's needs, not only through constant product optimisation, but also by offering a wide range of training courses ('Die Zirkonzahn Schule' – The Zirkonzahn School), where participants are educated on the use of equipment and materials with no knowledge gaps.

FOR MORE INFORMATION

on the workflow for bar production or available training courses, visit **www.zirkonzahn.com.**

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*Comparison between Standard and Ultraspeed program for Prettau® 2 Dispersive® zirconia

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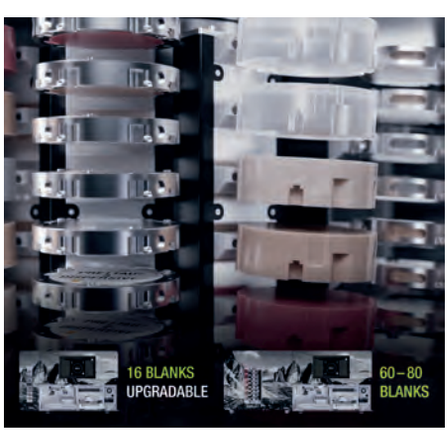
COMPANY HIGHLIGHT

M6 Teleskoper Blank Changer milling unit

Learn more about **Zirkonzahn's** advanced milling unit on display at the ADI Team Congress and Dental Technology Showcase 2025

Zirkonzahn's newest milling unit, the M6 Teleskoper Blank Changer, is the company's answer to the increasing need for more automation, as well as greater speed and performances. The company's research and development team constantly works to react very quickly to customers' needs, fine-tuning solutions to create a reliable planning and working environment where hardware, software, tools and materials form an optimum match in the complete workflow. This is possible because, at Zirkonzahn, everything is studied, developed and manufactured in-house, with full control over the entire production process.

In line with the company's 'in-house' core value, over the years Zirkonzahn has built five manufacturing sites hosting the different phases of the production chains, all located within the vicinity of the firm's headquarters in South Tyrol, Italy. Built in 2021, Premolaris is the fourth of the five production sites owned by the company, and is dedicated to the assembly, testing and customisation of all the company's milling units, furnaces and scanners, as well as the surface treatment of its own-produced implant prosthetic components. It also hosts the company's chemistry labs where, for instance, colours and resins are developed or burs are diamond coated.



PRECISION ASSEMBLY IN PREMOLARIS

It is in the premises of Premolaris that the different parts of the new M6 Teleskoper Blank Changer milling unit, eg spindle and orbit, are assembled, with all hardware and software components. All parts, such as ball screws, linear rails, motors and milling spindles, are tested for precision before they are installed, and the obtained data is recorded and registered. Then the machine is calibrated and fine-tuned at individual stations according to standardised production processes. The new milling unit must pass through numerous quality stations before it reaches the final inspection and each employee is responsible for a specific assembly step, becoming an expert in what he or she does. The first milling process is also performed in this location: only after the execution of the final checks and tests is the equipment ready to leave the production site, moving on to the on-site logistic department. A selection of glass cases, which the clients can choose from to personalise their equipment, is also available.

What makes the M6 Teleskoper Blank Changer special is its upgradable storage for 16 or 80 blanks as well as the built-in Teleskoper Orbit Selflock, which enables the self-clamping and processing of blanks with a diameter of 95 mm, 98 mm, 106 mm and 125 mm. Using special holders – and glass-ceramic blanks – Raw-Abutments and mini zirconia blanks can be milled. In addition, the innovative Teleskoper functions (friction adjustment, Double Milling, Stop and Go) can be used. All M6 machines are equipped by default with the newly developed performance spindle with a permanent magnet synchronous motor (PMSM), permitting a maximum torque of 200 N·cm at speeds of 6.000 to 40.000 rpm with a peak power of 2.5 kW.

FIND OUT MORE

In May, Zirkonzahn will be exhibiting and lecturing at the ADI Team Congress in Brighton and at the Dental Technology Showcase in Birmingham. Visit the Zirkonzahn booth to experience firsthand the advanced M6 Teleskoper Blank Changer milling unit. The team will be on hand to demonstrate its features, providing an in-depth understanding of how it can meet your laboratory's specific needs.

Zirkonzahn®
Human Zirconium Technology

FOR MORE INFORMATION

Scan the QR code to watch videos of the M6 Teleskoper Blank Changer milling unit. For more information, contact Zirkonzahn's team for the UK and Ireland: Carmen Ausserhofer, T: **+39 0474 06 6662**, **carmen.ausserhofer@zirkonzahn.com.**

Speed beyond any expectations Zirkonzahn

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Thanks to the proven firing technology and heating rates of up to 150°C/min, sintering with the Zirkonofen Turbo is both time and energy saving.

Smaller zirconia structures can now be sintered starting from 75 minutes. Compared to the standard program, the Ultraspeed program cuts the sintering time by 84% and reduces electric consumption by 81%.

In addition to the pre-installed Zirkonzahn sintering programs, the user can easily and quickly create individual sintering programs directly on the touch display of the furnace.

Furthermore, via the Zirkonzahn.app, it is possible to monitor the Zirkonofen Turbo remotely. Via the internet connection, the user can download and install the updates directly at the furnace to keep it up-to-date with the latest functions and sintering programs.

The round shape of the sintering chamber ensures optimum heat distribution and a uniform sintering of all zirconia elements. Due to its large volume of 0.9l, up to 120 zirconia elements or up to three full-arch bridges can be sintered simultaneously.

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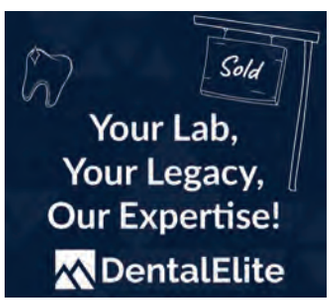

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Enhanced CPD

LAB/SPRING/BAK/PAGE 10

1. What was the source of trauma to the patient's central crowns in this case?
- ☐ a. Rugby ball
- ☐ b. Golf ball
- ☐ c. Euphonium mouthpiece
- ☐ d. Red apple

2. According to the author, what does playing a brass instrument require?
- ☐ a. Controlled airflow from the diaphragm to the lips
- ☐ b. Strong facial muscles
- ☐ c. Support from the teeth to withstand the pressure from the mouthpiece
- ☐ d. All of the above

3. Why did the author choose micro-layering for this case?
- ☐ a. To reduce the risk of stress fractures
- ☐ b. To improve the longevity of the restoration
- ☐ c. To reduce the risk of chips
- ☐ d. All of the above

4. For the micro-layering, what did the author use for the incisal third to bring brightness and clear for added translucency along the edges?
- ☐ a. Bleach Dentin
- ☐ b. Bleach Enamel
- ☐ c. Dentin A1
- ☐ d. Enamel 58

LAB/SPRING/ACCETTO/PAGE 14

1. How old was the patient when he presented as a walk-in at the practice?
- ☐ a. 70 years old
- ☐ b. 71 years old
- ☐ c. 72 years old
- ☐ d. 73 years old

2. What was the patient's main complaint at presentation?
- ☐ a. He could no longer bite
- ☐ b. He had chipped teeth
- ☐ c. His teeth were discoloured
- ☐ d. He had a broken implant

3. For the technical work, what was the first step to undertake?
- ☐ a. Bridge wax-up
- ☐ b. Digital implant conversion
- ☐ c. Printing and finishing
- ☐ d. Fitting and review

4. According to Robin, printing how many bridges is a must?
- ☐ a. One
- ☐ b. Two
- ☐ c. Three
- ☐ d. Four

NEXT STEP

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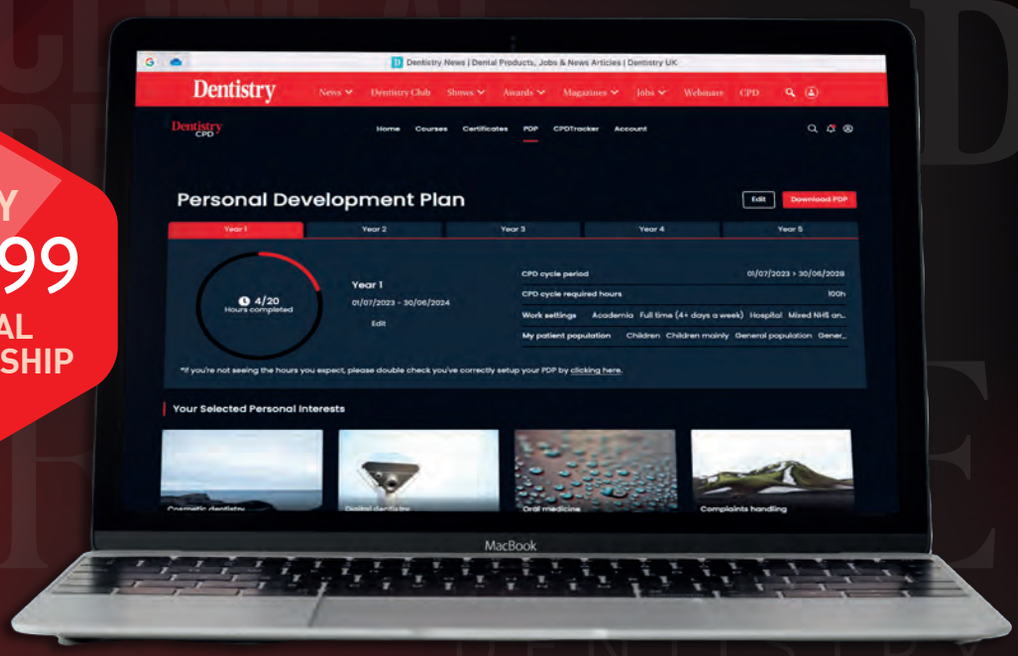

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