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Autumn 2025 / Volume 19 / No 4

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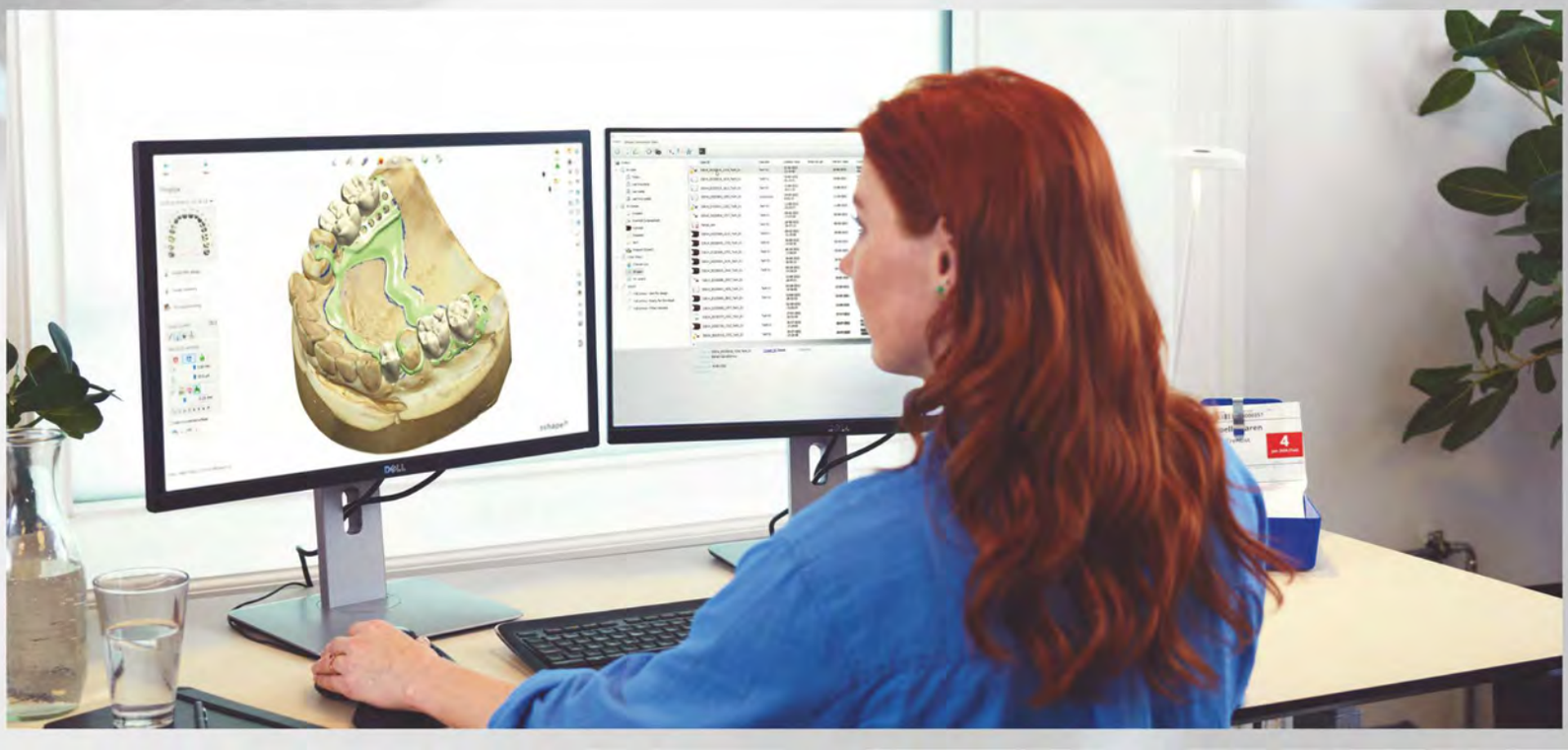

Moving forward together

MATT EVERATT
Editor-in-chief

Welcome to the Autumn edition of *Laboratory*, the time of year that always seems incredibly active in dentistry with a number of trade shows, conferences and CPD events on the horizon.

In this issue, we tackle some of the big questions facing our profession. On page 32, Carol Somerville Roberts bravely shares her personal journey through GDC fitness to practise proceedings, a reminder of the personal toll cases can take.

We also revisit the complex issue of dental technician regulation on page 28, and the ongoing discussions with the Professional Standards Authority and General Dental Council (GDC). Over on page 31, you will also find a guide to the recent UK skilled worker visa changes, and the impact of this on our workforce.

IT'S NOT ALL BAD NEWS

But it's not all challenging and tough subjects, as there is much to celebrate, too. The *Laboratory* Leading 20 continues to shine a spotlight on the talent and dedication within our community, and the Private Dentistry Awards offer another chance to showcase excellence. Find out more about both on pages 7 and 9.

I seem to say this a lot: I know they can be a bit 'marmite' to some, but recognition matters. Not for ego, but because it raises the profile of dental technology and demonstrates the skill, commitment and innovation we bring to dentistry every single day.

We can be invisible to the rest of the profession and public otherwise.

LET'S WORK TOGETHER

I also want to acknowledge those who have seen a decline in work levels recently. Some of this may be down to the wider mood across the UK, with political uncertainty and economic pressures affecting both practices and patients. Hopefully, we'll see demand pick up and our profession regain its usual momentum.

We hope this edition of *Laboratory* is about more than information, but community, support and pride in what we do. Let's keep celebrating success, addressing challenges head-on, and working together to build a profession we can all be proud of.

Enjoy the read and, as always, get in touch if you would like to contribute.

GET IN TOUCH
matt.everatt@fmc.co.uk

Laboratory

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Editor-in-chief Matt Everatt
matt.everatt@fmc.co.uk

Editor Lucy Veal
lucy.veal@fmc.co.uk +44 (0) 1923 851752

Chief commercial officer Tim Molony
tim.molony@fmc.co.uk
+44 (0) 7595 282650

Media partnerships manager Ivana Perkins
ivana.perkins@fmc.co.uk
+44 (0) 7760 887016

Designer Glenn Baxter

Production manager K-Marcelyne McCalla
k-marcelyne.mccalla@fmc.co.uk

Content director Guy Hiscott
guy.hiscott@fmc.co.uk

Content team Siobhan Hiscott, Rowan Thomas, Gaby Bissett, Heather Grimes

MISSION STATEMENT

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Finlayson Media Communications,
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Hertfordshire WD7 9AB

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FMC CONNECTING DENTISTRY

Finding calm amid the chaos

Autumn always feels like a season of change, with everything seeming to speed up just as the year winds down. It can all feel a bit manic, which is why it's so important to take a moment to slow down, look back and reflect.

It hasn't all been great news lately. Technician numbers are still falling (you can read more on page 9) and recent changes to the UK skilled worker visa have removed dental technicians from eligibility, worsening the situation. There's a detailed piece on page 31 exploring what these changes mean for the profession.

Still, amidst these challenges, there are plenty of reasons to stay positive. This issue brings some real highlights from across the profession worth celebrating.

I'm delighted to share this year's *Laboratory* Leading 20 for 2025 on page 8. Whatever your thoughts on the list, it gives us all a chance to celebrate the incredible work happening across UK dental technology.

In a profession facing constant change, it's more important than ever to come together and lift each other up. Dental technology often works behind the scenes, but it plays a vital role in the success of modern dentistry – and this initiative is our way of recognising that.

You may not agree with every name on the list, but I promise no decision was made lightly. It took days of discussion and deliberation from both FMC and the *Laboratory* editorial board. You can read more about how it came together on page 9. I hope you'll join us in celebrating these individuals and their achievements.

We're also excited to reveal the finalists for this year's Private Dentistry Awards on page 9. For the first time in its history, there are categories for dental technicians and clinical dental technicians – a fantastic step for the lab community.

This glamorous ceremony is one of my favourite events of the year, held at the iconic Grosvenor Hotel. It's always a brilliant evening that showcases the best in UK dentistry. Congratulations to everyone who made the shortlist, and best of luck on the night!

As this is our last issue of 2025, I want to say a huge thank you to all our readers, contributors and supporters. It's been a busy year full of change and discussion, and I'm grateful to everyone who's helped us share those stories.

We'll be back in 2026 with the Winter issue. Until then, I hope you have a wonderful end to the year – and fingers crossed for some good news in 2026!

L. Veal

LUCY VEAL
Editor of *Laboratory*

ENHANCED CPD

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

CRAIG MARK BROUGHTON

Clinical dental technician and managing director, CMB Dental Laboratory

ASHLEY BYRNE

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

MASSIMO CICATIELLO

Orthodontic dental technician and owner, Napoli Ortodonzia

MATT EVERATT

Editor-in-chief, *Laboratory* and director, S4S Dental Laboratory

NINA FRKETIN

Dental technician, Queensway Dental Laboratory

ANNA MUNRO

Dental technician, Southend University Hospital

ELEANOR PITTARD

Managing director and co-owner, Hive Dental Laboratory

EMILY PITTARD

Clinical dental technician, clinical director and co-owner, Hive Dental Laboratory

KASH QURESHI

Clinical dental technician and managing director, Bremadent Dental Laboratory

DANIEL SHAW

Maxillofacial prosthetist and laboratory manager, Chesterfield Royal Hospital

BRIANA SLACK

Dental technician, S4S Dental Laboratory

LOLA WELCH

Senior dental technician, Quoris 3D

Laboratory Leading 20 for 2025

Meet this year's ***Laboratory* Leading 20** – the individuals driving the future of dental technology

Now in its third year, *Laboratory* Leading 20 returns once again to celebrate the people shaping the future of UK dental technology. Each year, this initiative shines a spotlight on those whose influence, innovation and passion continue to elevate dental labs. These are the individuals driving progress – and inspiring others to do the same.

Curating this year's list was no easy task. Once again, the level of talent, innovation and generosity across UK dental technology made selection a challenge – and a joy. Every name featured has demonstrated exceptional skill, creativity or leadership that's making a difference right now.

Congratulations to all those who made this year's list, and thank you to everyone who submitted nominations. Meet the *Laboratory* Leading 20 for 2025...

JENNIFER ALEXANDER

Jennifer Alexander led the Orthodontic Technicians Association (OTA) for five years, advocating for improved education and opportunity. Her leadership has strengthened access to training and professional development for technicians in Scotland.

DEEPA BHARAKHDA

Award-winning dental technician Deepa Bharakhda is a mentor and international lecturer known for uplifting the lab community. As a co-founder of Nightshift and Den-Tech charity supporter, she combines leadership, education and advocacy for the profession.

BETH BROWN

Beth Brown is an educator and business leader committed to improving training and accessibility in dental technology. A lecturer and 3shape educator, she also runs 'Tech Talk', promoting discussion and learning among technicians worldwide.

CRAIG MARK BROUGHTON

Craig Mark Broughton is known for his artistry and precision in denture creation, combining craftsmanship with advanced digital techniques. His collaborative approach with clinicians and commitment to innovation make him a rising leader in dental technology.

ASHLEY BYRNE

Ashley Byrne is a pioneering laboratory owner and thought leader driving modernisation within the dental technology sector. His advocacy for innovation and progress has positioned him as a key voice for the industry's future.

ALINA CECLAN

A passionate educator and skilled technician, Alina Ceclan is dedicated to advancing the dental community through teaching and mentorship. Her work spans both the UK and USA, where she shares her expertise to inspire and elevate technicians across the profession.

NINA FRKETIN

Nina Frketin is an international speaker and the founder of Nightshift, a global initiative empowering women in dental technology. Her leadership, editorial influence and commitment to driving excellence and inclusivity continue to inspire progress across the profession.

CHRIS GOLZE

Chris Golze is a trailblazer in the field of mouthguards, known for raising standards in quality across the industry. His leadership and community engagement continues to make a lasting positive impact on the dental lab profession.

ANDREA JOHNSON

Andrea Johnson, an NHS Foundation Trust orthodontic and maxillofacial laboratory manager, lends her voice to multiple advisory boards on the future of dental care. She also acts as chair and CEO of Den-Tech – a charity providing dental appliances to vulnerable people. For the past two years, Andrea has led volunteer trips to Uganda, transforming the lives of those with limited access to dental care.

JAMES NEILSON

President of the British Association of Clinical Dental Technology (BACDT), James Neilson promotes education and professional growth for clinical dental technicians (CDTs). His work with the College of General Dentistry (CGDent) on career pathways has been instrumental in shaping the profession's future.

CAROLINE PERSAUD

Caroline Persaud plays a leading role in developing career pathways for CDTs through CGDent. As a course leader and working panel member, she is instrumental in advancing professional standards and structured education.

ELEANOR PITTARD

Co-founder of Nightshift and co-owner of The Hive Dental Laboratory, Eleanor Pittard shares valuable marketing and business insights with the dental community. Through her writing, judging roles and charitable work, she champions professional growth and collaboration within the sector.

EMILY PITTARD

A CDT and co-founder of Nightshift, Emily Pittard is an advocate for education, inclusion and change within the dental community. As a GDC education associate and CGDent board member, she pushes boundaries in clinical and educational practice.

KASH QURESHI
Kash Qureshi is a leading advocate for CDTs, known for his innovation, mentorship and community leadership. Through education and outreach, he champions professionalism and inspires the next generation of dental technicians.

BILL SHARPLING
Bill is driving new pathways for professional education and development in dentistry, expanding access to high-quality training and support across the profession in his numerous roles. He is associate dean (CPD) and director of Londec at King's College London, and sits as chair of the faculty of clinical dental technology and dental technology at CGDent.

DAVID SMITH
David Smith has been a tireless advocate for the dental laboratory profession, securing funding for new college courses and shaping future education pathways. A past GDC council member and Dental Laboratories Association (DLA) chair, his leadership continues to safeguard the future of dental technology.

HUGO SOUSA
Hugo Sousa is a lecturer, researcher and international leader in dental education, known for merging traditional artistry with modern CAD/CAM methods. He serves as a DLA non-executive director and CGDent collaborator, advancing technician career pathways and inspiring students globally.

KRISTINA VAITELYTE
An international lecturer and CAD/CAM specialist, Kristina Vaitelyte makes complex technologies accessible to all technicians. Her global teaching and charitable involvement have advanced digital dentistry education and inclusion.

ANTONY WAINWRIGHT
Founder of Optadent Solutions, Antony Wainwright has grown his business from a garden shed into one of the UK's most recommended laboratories. His innovation, including pioneering titanium frameworks, has modernised production methods and set new standards in dental lab technology.

EBONI-ROSE WILLIAMS
A promising young maxillofacial technician, Eboni-Rose Williams stands out for her dedication to education and charitable work. She actively supports peers and contributes to the advancement of student learning within dental technology.

HOW IS THE LIST DECIDED?
Unlike awards with strict criteria, *Laboratory* Leading 20 is subjective. There's no public voting or ranking – instead, the final list reflects the panel's view of those driving dental technology forward over the past year. We received nominations from across the profession, after which FMC and the *Laboratory* editorial board carefully reviewed and selected the final 20. The process considers influence, visibility, success both within and beyond the lab, and contributions that benefit the wider profession – recognising individuals who use their platform to uplift, innovate and inspire others.

Calls for Scottish Government-backed national labs

The dental practice sales market is buoyant in Scotland, with transaction levels rising and more entrepreneurial dentists keen to create their own groups. This is according to the findings from a forum led by the National Association of Specialist Dental Accountants and Lawyers (NADSAL).

Delegates heard that for the first time in a number of years many new graduates are now leaving dental school with the ambition to own practices once again.

This renewed appetite for ownership – across both NHS and private sectors – marks 'a significant cultural shift', NASDAL says.

DENTAL RECRUITMENT PRESSURES
A consistent theme was the need to better prepare young dentists for ownership. While clinical training is strong, many leave dental school with little or no understanding of running a business.

'The deans don't see it as their responsibility,' one attendee noted. 'But if we don't bridge that gap, we're setting young dentists up to struggle.'

Recruitment pressures were also discussed, with dental technicians particularly impacted due to NHS lab work often losing out to private sector demand. Suggestions to overcome the challenge included Scottish Government-backed national labs to maintain quality and affordability across the NHS system.

The wider workforce is also shifting in patterns of work, the forum found. Associates were seen as less willing to commit to five-day weeks, preferring three or four days to support better work-life balance.

With a growing female workforce – many of whom will not return full-time after starting families – the trend is expected to continue.

Technician numbers continue to decline, GDC reports

Following the annual renewal period, more than 80,650 DCPs are now registered across the UK – marking a rise of 4,764 professionals (6.26%) compared to the equivalent figure for 2024.

Dental nurses remain by far the largest group, increasing from 59,238 in 2023 to 65,797 in 2025, a rise of more than 6,500 in just two years.

The number of registered dental therapists has also increased, rising by almost 2,000 since 2023 – a significant 52% increase.

Dental technicians are the only role where numbers have declined, dropping from 5,023 in 2023 to 4,895 in 2025. Clinical dental technicians, however, have seen modest growth from 404 in 2023 to 439 in 2025.

This year, 3,312 DCPs did not renew their registration, equivalent to 4.1% of those who had renewed their registration by 31 July. This compares to an average of 5.5% over the previous four years.

Statistics show that the total number of professional titles removed was slightly higher than last year at 3,455, compared to 3,381 in 2024.

The GDC report reads: 'While the register is constantly changing, what we invariably see (for both the dentist and DCP registers) is that over the course of the year, the number of registered professionals increases due to new registrations, and then reduces following the renewal period as professionals leave the register for a range of reasons.'

HOW MANY DCPS ARE REGISTERED IN 2025?

PROFESSIONAL TITLE	2023	2024	2025
CLINICAL DENTAL TECHNICIAN	404	423	439
DENTAL HYGIENIST	9,177	10,055	11,065
DENTAL NURSE	59,238	62,364	65,797
DENTAL TECHNICIAN	5,023	4,935	4,895
DENTAL THERAPIST	5,558	6,787	8,459
ORTHODONTIC THERAPIST	957	1,093	1,257

Private Dentistry Awards finalists revealed

FMC has announced the Private Dentistry Awards shortlist for 2025! For the first time, the awards include categories dedicated to dental technicians and clinical dental technicians.

The awards ceremony will take place on Friday 21 November at the Grosvenor House Hotel, London. As the private dental sector gears up to celebrate at the ceremony, our esteemed judges have been working hard to build the shortlist – congratulations to all of the finalists.

DENTAL TECHNICIAN OF THE YEAR

- Deepa Bharakhda
- Jenna Ellis
- Jinesh Patel
- Nicole Straw
- Anna Veil.

CLINICAL DENTAL TECHNICIAN OF THE YEAR

- Craig Mark Broughton
- Spencer Greening
- Richard Harrison
- Steve Morris.

Streamlining digital denture replication

Gosia Ciepiela demonstrates how a digital replica technique delivers predictability, durability and reduced bench time

GOSIA CIEPIELA
CDT, Falkirk Dental Care and Loanhead Dental Practice

The replication of existing prostheses is a common request in dental laboratories. Patients often desire a new denture that mirrors the aesthetics and function of a previous one, whether due to wear, fracture or the need for a spare. Traditionally, this is known as the 'Dundee technique', and it has been a meticulous and challenging analogue process.

The traditional method of copying a denture involves a significant amount of manual work, including taking silicone putty impressions and creating acrylic models, which can be clinically and technically challenging and lead to minor errors. The advent of digital technology has particularly revolutionised this process, offering a more precise, efficient and predictable method for denture duplication.

The digital replica technique bypasses the complexities of analogue methods. It utilises intraoral or lab scanners to capture the exact contours of the existing denture, creating a digital blueprint that can be easily manipulated and replicated with a high degree of precision.

The advantages are clear:

- Improved accuracy
- Reduced chair time
- Streamlined workflow for the lab.

This case presentation outlines a step-by-step digital copy protocol using Exocad software, from scanning the original denture to final manufacturing.

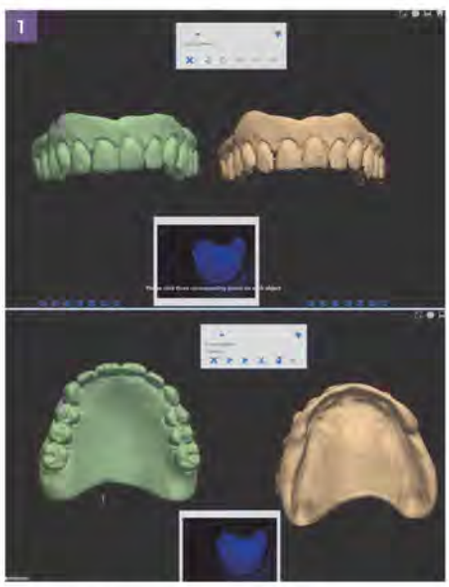

FIGURE 1: Double scan/merged scan

FIGURE 2: Merged scan designed

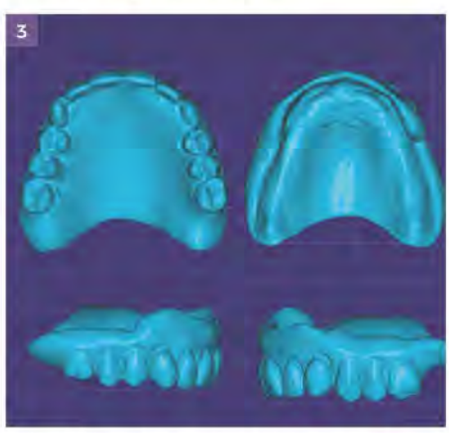

FIGURE 3: STL of the denture imported to design software

SCANNING PROTOCOL

The first and most critical step is accurately capturing the existing denture's anatomy. For this case, a DOF lab scanner was utilised to capture a high-quality scan.

To ensure optimal scan data and to eliminate any glare or shiny spots on the acrylic surface, a thin layer of scanning powder was applied to both the polished and fitting surfaces of the denture.

Both sides of the denture were scanned separately and then merged using the software's alignment tools, creating a single, comprehensive digital model of the entire prosthesis (Figures 1 and 2).

DESIGN STAGES IN EXOCAD SOFTWARE

Once the digital scans are acquired, the design process begins using CAD software. This is where the old denture's form is copied, refined and adapted for the new digital model. The main stages of the design process include:

- Project setup and alignment: the scan data is imported into the software, and the models are aligned to ensure correct

CLAIM YOUR CPD

GDC anticipated outcome: C

CPD hours: One

Topic: Digital dentures

Educational aims and objectives: To outline the digital workflow for replicating existing prostheses.

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

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file orientation (Figure 3)
- Denture margins detection: ensure to maintain the shape and thickness of the peripheral borders (Figure 4)
- Tooth placement: tooth segmentation based on the shape and size of the teeth on the current denture (not a digital library) (Figure 5)
- Base and gingiva design: shape and texture is replicated based on the original denture scan (Figure 6)
- Finalising the design: the design is reviewed for final details and fine-tuning before the file is prepared for fabrication (Figure 7).

COLLABORATIVE DESIGN AND PATIENT APPROVAL

A significant advantage of this digital workflow is the ease of communication with the clinician. The designed file, a precise 3D model, can be easily shared via a link. The clinician can review the proposed design on their own computer or mobile phone. This real-time collaboration ensures that any necessary changes are made before manufacturing begins, reducing the chance of remakes and improving the final outcome for the patient.

MILLING VERSUS 3D PRINTING

The finalised digital design offers two primary manufacturing options: milling or 3D printing. In this case, we opted for milling to achieve the highest level of strength and durability.

The denture base was milled from a high-quality pink PMMA disc. The denture teeth were fabricated from a separate, tooth coloured (Vita shade) multilayered PMMA disc. (Milling was carried out by Element Digital Milling Centre).

The teeth were milled as a single joined unit, ensuring that the alignment was preserved exactly as designed in dental design software (Figure 8).

BONDING AND FINISHING

The milled denture base and tooth unit were then bonded together using Xplex Cold Acrylic by Candulor (Figure 9).
The surface was primed by sandblasting with 50-micron aluminium oxide under two-bar pressure and applying bonding primer Palabond by Kulzer.

After bonding, the denture was finished and polished in the same manner as a conventional acrylic denture.

FIGURE 4: Denture margin selection and scan orientation

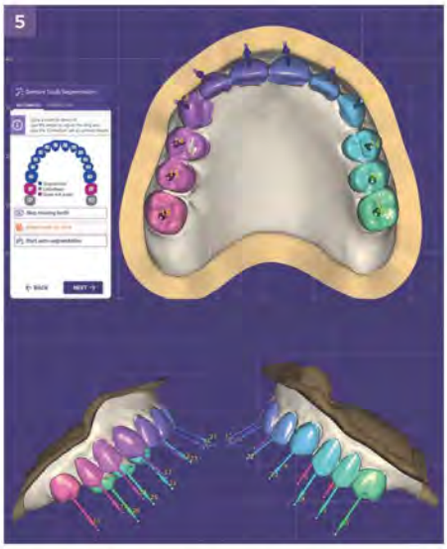

FIGURE 5: Denture tooth segmentation

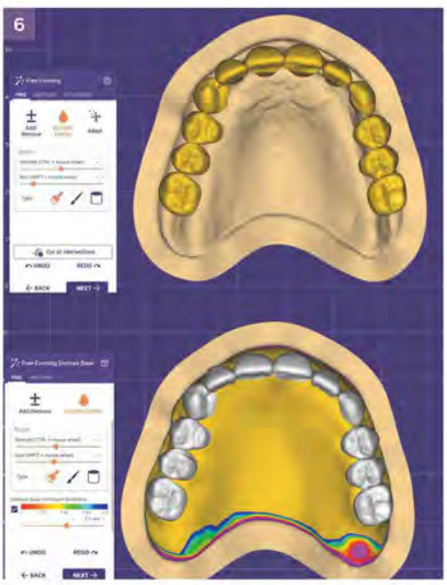

FIGURE 6: Tooth and denture base free forming

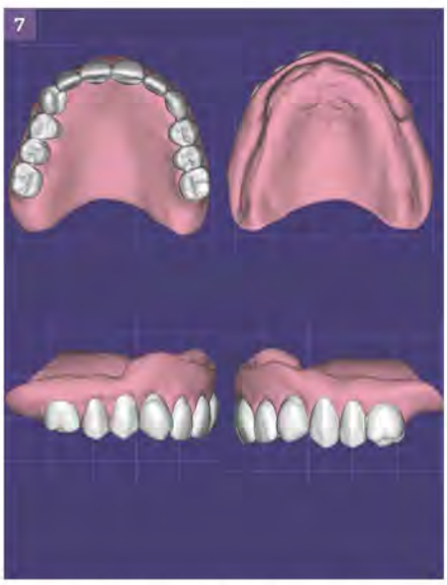

FIGURE 7: Denture design ready for export

FIGURE 8: Milled base and teeth received from milling centre (Element Digital)

FIGURE 9: Denture base and teeth fused together

FIGURE 10: Comparison of the original denture and the digital replica

AESTHETICS, STRENGTH AND LONG-TERM MANAGEMENT

While the aesthetics of a milled denture are excellent, a minor difference in tooth shade can be expected compared to conventional denture teeth. Aesthetic challenges can be addressed by enhancing the denture with composite and light-cure stains to improve colour depth and translucency.

The primary advantage of the milled denture lies in its strength and long-term durability. Milled PMMA is significantly denser and more homogenous than conventional heat-cured or cold-cured acrylic. The milling process utilises industrially pre-polymerised PMMA discs, fabricated under high heat and pressure, resulting in a material with superior mechanical properties. Systematic reviews have shown that milled PMMA exhibits significantly higher flexural strength, impact strength and fracture resistance compared to conventionally processed acrylics. This enhanced strength translates to a more reliable and longer-lasting restoration for the patient.

The high density also means the denture is less likely to absorb odours and bacteria over time, improving long-term hygiene and patient comfort.

From a long-term management perspective, the digital file of the denture is a permanent record. If the patient ever loses or breaks their denture, a new one can be quickly and easily manufactured from the original file, eliminating the need for new impressions or repeating the entire design process. This digital archive provides a level of security and convenience that is not possible with analogue methods.

SUMMARY

The digital copy technique represents a significant advancement in dental technology. It provides a precise, efficient and predictable method for replicating dentures. From the initial scanning and design to the final milling and finishing, the digital workflow offers superior control and consistency.

The resulting milled PMMA denture provides not only excellent aesthetics (Figure 10), but also a level of strength and durability that far surpasses traditional acrylic, ensuring a long-lasting and reliable solution for the patient.

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Perfecting cementation

Agata Bak outlines how to achieve a precise, long-lasting bond between a zirconia crown and a titanium base

AGATA BAK
Master ceramist and owner, Black Pearl Dental Lab

Cementing a screw-retained zirconia crown to a titanium base is a meticulous process that demands precision to ensure the longevity and success of the restoration. This article outlines the cementation procedure, emphasises the importance of a high polish finish on zirconia surfaces in contact with soft tissue, and identifies unacceptable outcomes and their implications.

CEMENTING PROCEDURE

Achieving a durable and precise bond between a zirconia crown and a titanium base requires attention to detail. The following steps ensure that successful cementation is accomplished.

Pre-cementation checks

Ensure the restoration is fully seated by checking contacts after glazing (Figure 1). Confirm correct gum compression and polish zirconia where it contacts the gum, using appropriate rubber wheels and polishing pastes. Avoid over-polishing, as shade differences can become visible at the margins. If scratch marks are visible, repeat the process.

CLAIM YOUR CPD

GDC anticipated outcome: C

CPD hours: One

Topic: Cementation

Educational aims and objectives: To discuss cementing zirconia crowns to titanium bases for long-term implant success.

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

FIGURE 1: Ensure the restoration is fully seated by checking contacts after glazing

FIGURE 2: Sandblast the inside of the zirconia to enhance mechanical retention

Surface preparation

Sandblast the inside of the zirconia crown with 50µm aluminium oxide particles to increase surface roughness, enhancing mechanical retention (Figure 2).

The coronal part of the titanium base should also be sandblasted; however, the connection must remain untouched. If oxide appears on the fitting surface due to de-cementing, use glass beads instead of aluminium oxide.

Cleaning and priming

Blow air over the restoration to remove debris but avoid leaving oil residues. Never steam clean immediately before cementation, as moisture and oil can lead to decementation. Apply an MDP-containing primer to both the zirconia and titanium surfaces to enhance chemical bonding. Blow off excess liquid without introducing moisture or oils. Avoid touching the polished surface to prevent contamination (work in gloves).

Cement application

Apply a thin layer of resin cement to the abutment. Excess cement can hinder crown fit and make cleaning difficult. Place the crown onto the abutment, ensuring a firm squeeze to seat it properly (working time two to three minutes) (Figure 3). Clean any cement from the screw access using a microbrush. Cementing on a model is preferred to ensure correct positioning (Figure 4) .

If self-curing cement is used, allow at least 10 minutes for setting. If light-curing cement is used, follow manufacturer's instructions for optimal bond strength.

Final adjustments

Remove excess cement from margins to prevent peri-implant tissue irritation. Carefully unscrew the restoration using the appropriate screwdriver to avoid damaging the screw head.

If possible, use the lab screws to keep the final screw untouched. Flick off any overlapping cement, polish the surface around the margins (potential for bacteria build up), and ensure the screw hole is adequately open.

Always polish the restoration while it is screwed onto an analogue to prevent damage to the fitting surface. Once finalised (Figure 5), steam clean the restoration and pack it with the final screw. If an angled screw is used, note the angle for the dentist to ensure the correct screwdriver is used.

FIGURE 3: Place the crown onto the abutment, ensuring a firm squeeze to seat it properly

FIGURE 4: Cementing on a model is preferred to ensure correct positioning

FIGURE 5: The finished restoration

IMPORTANCE OF HIGHLY POLISHED ZIRCONIA

Ensuring that zirconia components are highly polished when in contact with soft tissue is critical for long-term implant health and success.

Reduced bacterial adhesion

A high-polish finish minimises surface roughness, making it more difficult for bacteria to adhere and colonise (Figure 6). This reduction in bacterial accumulation lowers the risk of peri-implant diseases and supports the maintenance of healthy peri-implant tissues.

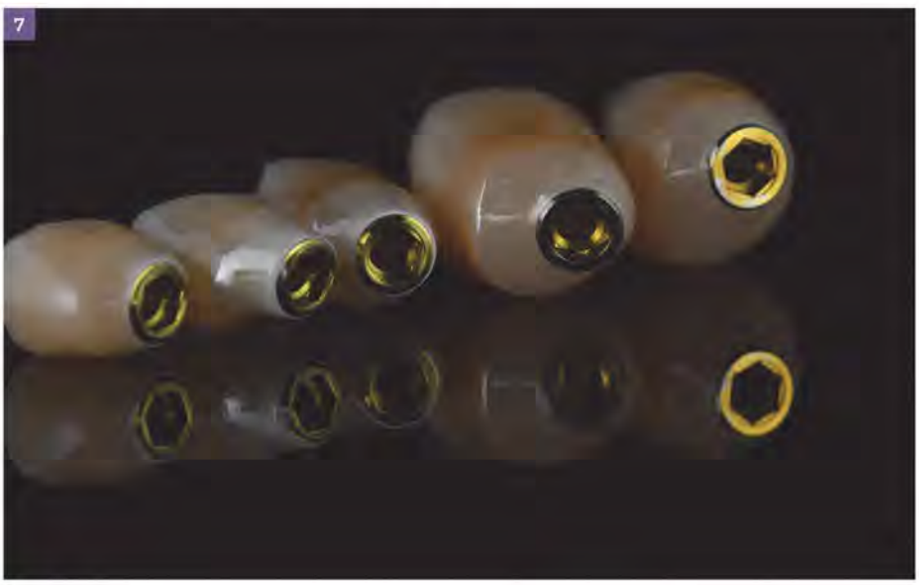
Enhanced soft tissue health

A smooth, polished zirconia surface facilitates better adhesion of soft tissues, leading to a tighter seal around the implant. This seal acts as a barrier against bacterial infiltration, decreasing plaque accumulation and reducing the risk of peri-implant inflammation and marginal bone loss.

Improved soft tissue integration

Polished zirconia surfaces encourage the perpendicular orientation of collagen fibres relative to the implant surface (Figures 7 and 8). This arrangement mirrors the natural attachment found around teeth, enhancing the mechanical stability of the soft tissue seal.

FIGURE 6: A high-polish finish minimises surface roughness



FIGURES 7 and 8: Polished zirconia surfaces encourage the perpendicular orientation of collagen fibres relative to the implant surface

WHAT IS NOT ACCEPTABLE?

The following conditions must be avoided to ensure the longevity of implant restorations:

- Gaps between zirconia and metal require recementation. To decement, remove the screw from the restoration, place the crown in the ceramic furnace, and slowly close the chamber. Keep it closed for 15 minutes at 400-450°C. Open the furnace slowly and allow it to cool down. When the restoration is cool enough to touch, insert the screw and push the abutment out of the crown with a screwdriver. Then, restart the entire procedure
- Visible excess cement must be cleaned with a sharp scalpel, rubber wheels, or brushes to prevent tissue irritation
- Black dots after polishing indicate improper cleaning
- Chipped margins should be repaired before cementing, or crown replacement could be required
- Steps between zirconia and metal must be polished to prevent bacterial accumulation
- Tight screw channels may require opening to fit the final screw properly
- Cement in screw access must be removed by trimming or sandblasting.

Residual cement left at the margins can cause complications, including:

- Bacterial plaque retention: residual cement promotes plaque retention due to its rough surface, leading to peri-implant tissue inflammation
- Peri-implant mucositis: residual subgingival cement is strongly associated with peri-implant mucositis, an inflammatory condition of the soft tissues surrounding the implant
- Peri-implantitis: if not addressed, peri-implant mucositis can progress to peri-implantitis, characterised by inflammation and crestal bone loss around the implant
- Crestal bone loss: the presence of residual cement has been linked to increased probing depths and crestal bone loss, compromising implant stability.

To mitigate these risks, thorough cement removal is essential.

Using radiopaque cements can also aid in detecting residual material. By following best practices, dental professionals can optimise zirconia-to-titanium-base cementation, ensuring long-lasting and biologically compatible restorations.

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I met my **younger self** for coffee...

Kash Qureshi looks back at 18, acknowledging the mistakes and grit that defined his journey

KASH QURESHI
CDT and managing director, Bremadent Dental Laboratory

If I could sit down with my younger self in a café, I think I'd choose the version of me at 18. That was the point when the teachers and even my parents thought I was on a one-way ticket to prison or worse. Instead, I ended up with a lab coat, a wax knife, and a love for dental technology. Life has a funny way of rerouting you, doesn't it?

I imagine my younger self sitting there, probably looking sceptical, arms folded, wondering why we're not somewhere cooler than a café. He'd be surprised to see that the kid from Walthamstow, who was more familiar with chaos than careers, now runs one of London's longest-standing dental labs and even a denture clinic. He would not believe that I've stood on stages, spoken to dentists, trained technicians, and even trademarked brands. He'd think I was winding him up.

THE DECISION THAT CHANGED EVERYTHING

The first thing I'd say is: thank you. Thank you for walking into that dental lab as an apprentice, even if it was just meant to be a job to keep you out of trouble. That decision changed everything. It gave me purpose, a craft, and eventually the chance to own Bremadent through a management buyout. Without that choice, none of this would exist today.

I'd also apologise. Sorry for the long hours you didn't know were coming. Sorry for the stress of running a business, the sleepless nights over payroll, and the constant challenge of managing people and their personalities. But I'd also reassure him that it's worth it. Every patient smile, every restoration that fits first time, every technician who grows under your wing makes the grind worthwhile.

I'd admire his resilience. Back then I didn't realise how tough I was, how much grit it took to break the pattern that was laid out for me. That stubbornness I had at 18 was annoying at times, but it's the same stubbornness that pushed me to become the youngest clinical dental technician in the UK and to keep building even when people doubted me.

TRUST THE PROCESS

What would surprise him most? Probably that dental technology isn't just a job, it's a whole world. Digital workflows, 3D printers, CAD/CAM systems... I'd explain how we've gone from wax and alginate roots in ancient Egypt to scanners and cloud-based CRMs in modern labs. He'd think I was describing a sci-fi film.

And what would he think of me now? Hopefully he'd laugh and say: 'You actually did it.' He'd probably be proud, but also shocked that I now talk about cash flow, KPIs, and standard operating procedures as much as I talk about occlusion and wax bites.

If I could give him one piece of advice, it would be this: stay curious and trust the process. The hard days shape you as much as the easy ones. And one day, you'll look back, sipping a coffee, smiling at the thought that the path nobody expected you to take turned out to be exactly the right one.

Fighting focus

Amateur boxer **Mia Hull** shares show she balances life between the ring and the dental lab

MIA HULL
Dental technician,
Advanced Dental Laboratories

Boxing runs in my blood. My dad had 148 fights, and watching his old videos ignited something in me. I knew I wanted to continue his legacy and carve my own path in the sport. After seeing him boxing a national champion in Mexico 2009, I also realised that you can travel with boxing, and that's what I'm eager to do.

My early memories of watching my dad box are from seeing clips of him on Youtube and noticing his confidence. I remember all my uncles going to his fights, the pictures and trophies around the house, and taking pictures with his belts. I also remember my dad doing interviews and speaking in front of thousands of people about developing new skills and using his network for his net worth. When I was younger, my dad used to take us to gyms, and I fell in love with it – I enjoyed being in that environment.

Sparring with my dad made me want to step into the ring as my technique developed and my mindset grew stronger. I loved letting my hands go – I felt free.

BALANCING BOXING AND DENTISTRY

In September 2022, I started working at a dental lab – not something I planned, but it turned out to be a blessing. I was just looking for a job, but it opened doors to a real career. I started by scanning models, and now I'm a technician on the bench, crafting scalloped whitening trays, retainers, soft guards, and custom gum shields. It's a skill that complements my boxing journey – being able to make my own mouthguards whenever I need them is a huge advantage.

When I started in the lab, I found it challenging working with people with different personalities and backgrounds.

> SPARRING WITH MY DAD MADE ME WANT TO STEP INTO THE RING AS MY TECHNIQUE DEVELOPED AND MY MINDSET GREW STRONGER

But I also found it enjoyable when learning about the technical side of teeth, eg how composite bonding is made, how veneers are made from start to finish, how to make retainers, and understanding the reason why people may need them.

My schedule is full-on: I work 7am to 3pm, then head straight to the gym until 8pm, Monday to Friday. Weekends are my time to regenerate – unless I've got sparring with champions.

Balancing training and work has become easier as I'm used to the schedule I follow, even though it's quite strict.

I have the best team at the gym to help me if I'm struggling, and the best dad to go to for advice too!

THE JOURNEY SO FAR

If I had to describe my journey so far in one word, it would be 'rollercoaster'. My days are never the same – there are so many ups and downs, and that's why I go by the name 'careless' because, regardless of whether I'm in pain, I'll still put in the work in and out of the gym!

One of my most unforgettable moments was winning my first fight. I'll never forget that feeling of joy.

CAREER GOALS

My ultimate goal is to go pro in 2026, win belts, and become a world champion. But I also want to build a brand – one that supports and uplifts women through boxing and fitness. I understand that it takes time.

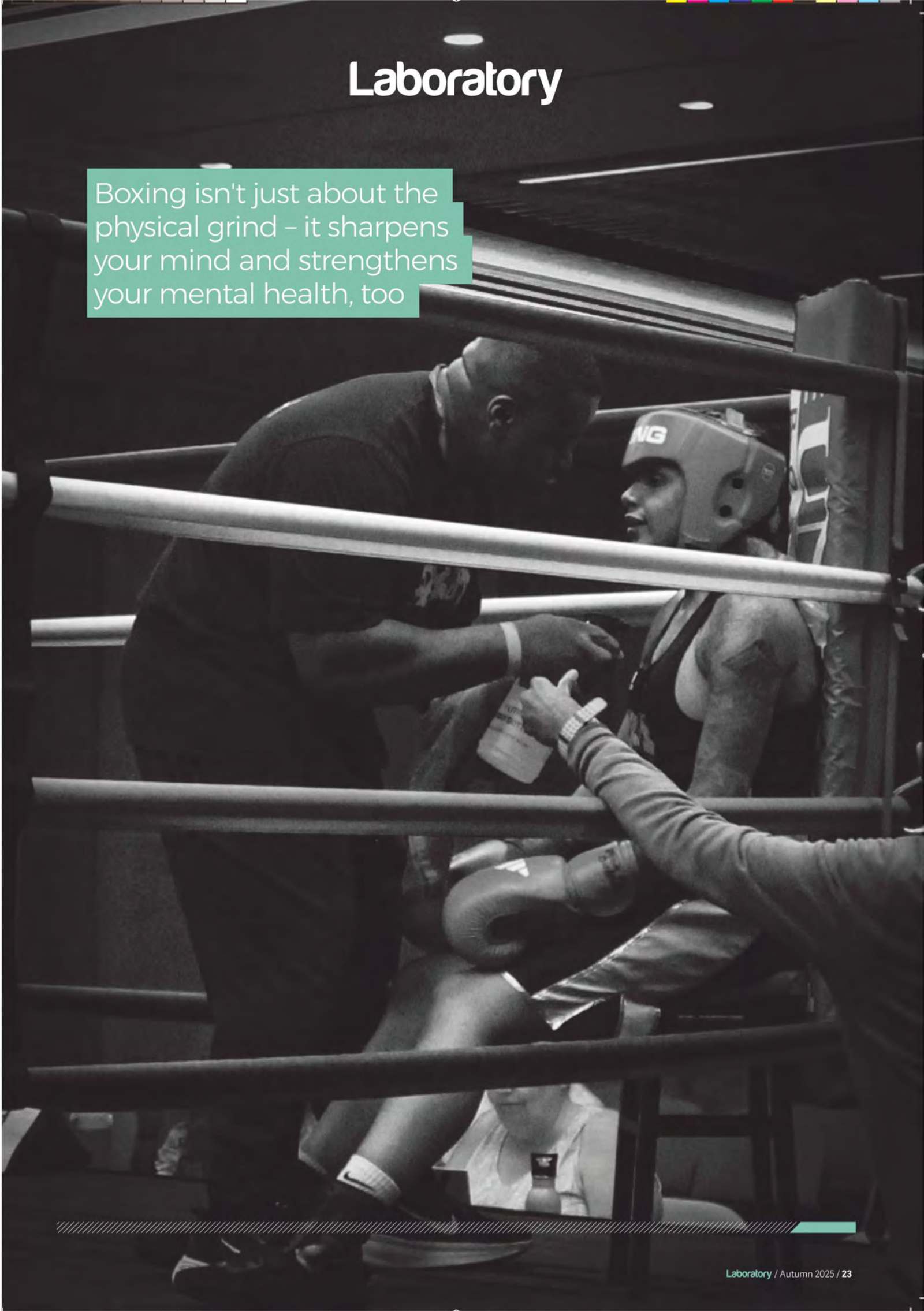
I'm also realistic and not delusional – with no risks there's no reward!

In my dental career, I'd love the chance to custom-make a mouthguard for boxer Claressa Shields one day. I look up to her – her style, her mindset, her dominance. I've watched her countless times and learned so much from her fights.

To anyone thinking of getting into boxing: go for it. Boxing isn't just about the physical grind – it sharpens your mind and strengthens your mental health, too. And that's just as important.

Laboratory

Boxing isn't just about the physical grind – it sharpens your mind and strengthens your mental health, too



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Winning CDT of the Year

This year's Clinical Dental Technician of the Year, **Matthew Varley**, shares his journey into dentistry and the advice he would tell his younger self

MATTHEW VARLEY
Clinical dental technician,
Dynasty Denture Solutions

PLEASE INTRODUCE YOURSELF

I'm Matthew, a clinical dental technician (CDT) working across Yorkshire.

I've dedicated my career to restoring not just smiles, but also confidence – through precision-crafted dentures and patient-centred care. I'm proud to be part of a profession that blends technical mastery with human empathy.

HOW AND WHY DID YOU BECOME A CLINICAL DENTAL TECHNICIAN?

It started with a fascination for detail and design. I was drawn to the idea of creating something that could genuinely change someone's life. Dentures aren't just prosthetics – they're personal. They affect how people eat, speak and smile. That responsibility inspired me to pursue this path and continually refine my craft.

IF YOU WERE NOT A CDT, WHAT WOULD YOU BE DOING?

Probably something equally hands-on and meticulous – perhaps engineering or product design. I've always been drawn to roles where precision meets purpose. But I'd miss the human connection that comes with clinical work.

WHAT PUSHED YOU TO ENTER THE DENTISTRY AWARDS?

I wanted to shine a light on the impact clinical dental technicians have – not just behind the scenes, but at the heart of patient care. The Dentistry Awards offered a platform to share our approach to treatment, innovation and documentation. It was also a chance to celebrate the incredible team I work with.

HOW DID IT FEEL TO WIN?

It was surreal. I felt proud, humbled and deeply grateful. The award isn't just a personal milestone – it's a recognition of the standards we uphold and the trust our patients place in us. It's also a reminder that excellence is a daily commitment, not a one-off achievement.

DO YOU HAVE A STANDOUT MOMENT FROM YOUR CAREER?

One that stays with me is helping a patient who hadn't smiled in public for over a decade. After fitting her new dentures, she looked in the mirror and cried. That moment reminded me why I do this – it's not just about teeth, it's about dignity, confidence and quality of life.

WHAT'S YOUR TOP PIECE OF ADVICE FOR OTHER CDTS?

Never lose sight of the person behind the prosthetic. Technical skill is vital, but empathy, communication and documentation are just as important. Treat every case as if it were your own family member – and make your records audit-proof while you're at it.

WHAT ADVICE WOULD YOU GIVE YOUR YOUNGER SELF?

Trust the process, but document everything. Learn from every patient, every mistake, and every success. And don't be afraid to challenge the status quo – innovation often starts with asking 'why not?'

IS THERE ANYTHING ELSE YOU WOULD LIKE TO ADD?

I'd like to thank the patients who've trusted me with their care, and the colleagues who've supported me along the way.

This profession is evolving, and I'm excited to be part of shaping its future – especially in how we combine clinical excellence with legal defensibility and patient empowerment.

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Is dental technology regulation clear?

Laboratory asked the profession how it feels about dental technology regulation and the uncertainty around illegal manufacture – here are the results

Laboratory's recent survey on the regulation of dental devices and manufacturing has now closed, and the response has been strong. Thank you to all 81 people who took the time to share their views – the volume and consistency of responses reflect just how important these issues are to dental technicians, clinical dental technicians (CDTs), and laboratory owners.

The survey gathered input from technicians, lab managers, CDTs and others working across the sector.

WHO CAN SIGN THE STATEMENT OF MANUFACTURE?

One of the key areas of confusion is around who is permitted to sign the statement of manufacture for a custom-made dental device:

- Some 80% of respondents said the General Dental Council (GDC) and MHRA do not make this clear
- Over 23% believe any GDC registrant can sign the statement of manufacture
- Nearly 8% believe anyone can.

So, who can legally sign? The Dental Technologists Association (DTA) has stated to its members that only a registered dental technician can do so – but is this supported by published GDC or MHRA policy? If this rule exists, what is it based on, and where can it be found? These are not minor technicalities, this is core regulatory information that professionals need in order to comply with the law.

INFORMATION SHARING AND ILLEGAL MANUFACTURE

Another key concern is the handling of illegally manufactured custom-made dental devices.

Some 94% of respondents believe the GDC and MHRA should have a formal policy in place to share information and take appropriate action. Yet only 6% believe such a policy exists, and 42% are not sure.

The result is a lack of clarity around how – or even whether – issues of illegal manufacturing are dealt with. For a profession that is expected to meet strict regulatory standards, this lack of transparency is a significant concern.

FITNESS TO PRACTISE AND ACCOUNTABILITY

The question of liability in fitness to practise (FtP) cases was also addressed. Technicians appear to be clear on where responsibility lies:

- Nearly 96% believe the dentist should be held to account if a device fails and it was made by a non-registrant
- More than 77% said that if a registered technician warns a dentist about an issue with a device and is told to proceed anyway, the dentist should be held liable.

These responses suggest strong consensus among technicians about where accountability should sit – but is that what happens in practice?

DATA COLLECTION AND ENFORCEMENT

Around 96% of respondents believe the GDC should collect data on illegal manufacture and the use of non-registrants in patient complaints.

Data collection is a fundamental part of modern regulation, but technicians are unsure whether this is actually happening. If it is, where is that data going, and is it informing enforcement?

WHICH DEVICES FALL UNDER REGULATION?

Respondents also highlighted confusion about which dental devices are subject to MHRA regulation:

- Over 79% believe dentists using CAD/CAM must register with the MHRA
- Nearly 84% believe the same applies to

nurses making splints or retainers
- Some 58% believe this includes bleaching trays
- More than 43% included sports mouthguards.

At the same time, 94% of respondents said there should be a clear list of regulated devices. The absence of such a list leaves room for inconsistency and misunderstanding, and it makes compliance more difficult than it needs to be.

EDUCATION AND COMPLIANCE

More than 98% of respondents believe dentists should be taught how to comply with the Medical Devices Regulations (MDR). In addition, 89% believe dental nurses should be taught this too, while 95% said that dental hospitals should also be required to comply.

If these groups aren't being trained – or if the regulations aren't being consistently followed – it raises the question of how well the wider profession understands the regulatory responsibilities involved in dental device manufacture.

SEEKING ANSWERS

Laboratory has put these questions – and others – to the GDC, DTA and Dental Laboratories Association (DLA). The GDC initially said it would respond, then asked for more time, and now over a year later, has stopped replying.

The GDC is required by its own regulator, the Professional Standards Authority (PSA), to ensure its policies are transparent. Yet at present, there is no technician on the GDC Council, meaning no direct representation or route to clarity on these issues.

Meanwhile, GDC-registered technicians have faced FtP cases for errors relating to statements of manufacture – but what would happen if a statement of manufacture was signed by a non-registrant? That question remains unanswered.

NEXT STEPS

This survey shows a clear need for greater transparency and consistency in how regulation is communicated and enforced. Technicians are not asking for special treatment – they are asking for clarity, fairness and representation. They want to understand the rules they are being asked to follow. Trade associations such as the DTA and DLA exist to represent their members. That includes helping to interpret regulation, seeking clarification when needed, and making sure their members are supported in meeting their legal obligations. If the current system leaves their members exposed, these bodies are well placed to raise the issue – and help drive change. Will the PSA require the GDC to bring clarity to these unresolved questions? The profession is waiting. L

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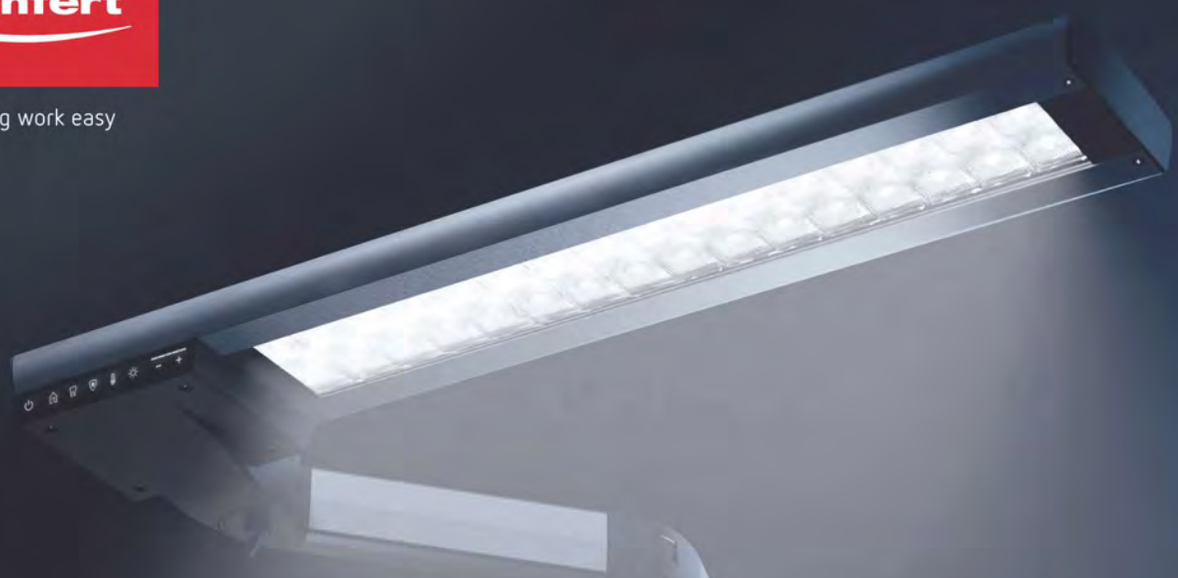

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The latest skilled worker visa changes explained

We look at how recent changes to the **UK skilled worker visa** have impacted dentistry

WHAT ARE THE CHANGES TO THE UK SKILLED WORKER VISA?

As of 22 July 2025, certain roles are no longer eligible to qualify for skilled worker sponsorship in the UK, according to the updated Appendix Skilled Occupations of the Statement of Changes in Immigrations Rules.

The changes include:

- **New minimum skill level:** jobs must now meet RQF Level 6 (equivalent to a bachelor's degree) to qualify for skilled worker sponsorship. This will have a significant impact on the dental team and dental nurses will no longer qualify. It should be noted that if you already sponsor an employee before 22 July 2025, they can continue in their roles and you can extend their visas. However, new applicants must meet the updated criteria
- **Increased salary requirements:** the general salary requirements are changing from £38,700 to £41,700 per year, or £17.13 per hour. All new certificates of sponsorship issued after 22 July must meet the new salary levels – even for extensions
- **Restrictions on dependants:** workers in roles below RQF Level 6 (even if on shortage lists) cannot bring dependants to the UK. This does not apply for existing team members on visas, just for new applicants.

The changes to immigration rules were laid out in parliament and published on 1 July 2025. The document covers wide ranging changes to other visas, including skills and salary threshold increases, the end of overseas recruitment for care workers and more than 100 occupations no longer having access to the immigration system.

> THIS SUDDEN POLICY CHANGE CAME WITHOUT ADEQUATE NOTICE, LEAVING US FACING A FUTURE FILLED WITH UNCERTAINTY

HOW IS DENTISTRY IMPACTED?

A number of roles that were eligible under the health and care visa have been removed due to not meeting the skills threshold, and are not on either on the immigration salary list (ISL) or temporary shortage list (TSL).

These include dental hygienists, dental technicians and dental nurses – meaning that no new individuals applying under these roles can access the skilled worker visa route after 22 July 2025.

Only those already granted skilled worker status before 22 July 2025 and have continuous permission under the same code will be eligible. Dentists are not affected by the changes.

Are dental therapists affected by skilled worker changes?

The changes may affect dental therapists under SOC code 3213, the classification recommended by the Home Office for dental hygienists and therapists. However, some dental therapists may be eligible for sponsorship under SOC code 2259 which will continue beyond 22 July.

HOW HAS THE DENTAL PROFESSION REACTED?

A new group called Support DCPs UK was formed in response to the changes. With more than 600 members across all dental fields, it brings together affected dental therapists, dental hygienists, dental nurses and dental technicians, serving as a space to share information, offer emotional support and speak with one collective voice.

WE SPOKE TO AKHIL ANIL, PART OF SUPPORT DCPS UK, WHO EXPLAINS WHAT IT HOPES TO ACHIEVE:

On 22 July 2025, the Home Office removed the ability for employers to provide skilled worker sponsorship for dental therapists, dental hygienists, dental nurses, dental technicians, and several other professions. For our community, these four professions are at the heart of the issue.

Many of us have already been living and working in the UK, fully integrated into the dental system, contributing to patient care, and working alongside local colleagues and for the local community.

We have invested significant amounts of money, time and energy to register with the GDC, maintain our professional status, and remain in the country, all while paying taxes, following the rules and laws of the country and actively participating in society.

This sudden policy change came without adequate notice, leaving us facing a future filled with uncertainty. The emotional toll has been immense, including sleepless nights, increased anxiety, and the constant worry of losing the lives and careers we have worked so hard to build here.

We understand the government's need to implement immigration controls and we are in no way criticising the ruling body. However, we are asking that our circumstances be reconsidered and that we be given a fair chance to secure our future in the UK.

Beyond its impact on our own lives, this change will worsen the existing shortage of dental care professionals across the UK. Many practices already struggle to recruit and retain skilled staff, and the removal of sponsorship for these roles will make it harder to meet patient demand.

Ultimately, this risks longer waiting times, reduced access to care, and further strain on an already pressured NHS and private dental sector. Although at the moment we represent over 600 members, it also stands true that there are many others out there who are outside of the circle and unaware of the existence of this group.

If all these dental clinicians were to leave en masse, this would leave a huge gap that would be impossible to fill immediately, thereby needing to rearrange all the appointments to the dentists and essentially thereby increasing wait times even further.

Navigating fitness to practise

Carol Somerville Roberts shares her personal experience of fitness to practise proceedings and advice for other dental professionals on how to cope

CAROL SOMERVILLE ROBERTS
Founder and clinical director, Evolve Dentistry

It was a beautiful spring day when I opened the letter that would flip my world upside down. The letter no dentist ever wants to receive: notification from the General Dental Council (GDC) that a complaint had been made against me and a fitness to practise (FtP) investigation was underway. In that instant, everything changed.

Until then, I naively assumed that only 'bad' dentists were investigated. So, what did that make me? As the panic set in, I had to compose myself and carry on with my day. I was, after all, a practice owner and a busy clinician. Patients were waiting.

But internally, I was screaming, disoriented by disbelief. The hardest part was putting on my game face every time I stepped into my treatment room. For a long time, none of my team knew what I was going through. I felt like I was living two lives.

The complaint wasn't even from a patient. It came from a charity who took issue with some wording on my website. They hadn't ever contacted me directly, nor had the GDC.

'THE EXPERIENCE SHOOK ME PROFOUNDLY'

The investigation began without warning. Fifteen months later, it concluded with a bit of advice about website wording.

When the panel read their decision, the room fell silent, I was shaking. In my case, they began by stating there was no case to answer. Relief washed over me – followed by a full reading of their considerations. Then, it was simply over.

After months of fear, uncertainty and emotional exhaustion, I heard the words: 'Miss Somerville Roberts, you can leave.' And that was that: the room cleared, life moved on, my legal team and the GDC were all focused on the next case. Despite this, the experience shook me profoundly.

I walked to a Champagne bar with my sisters while I called my husband, who was at home with our children. There were tears.

If you ever receive that dreaded notification, here are six ways to prepare yourself mentally and emotionally.

1. DON'T PANIC

It sounds obvious, but your mind will likely spiral. Stop, breathe and slow everything down. Call your indemnity provider straight away.

I wrongly assumed that because the complaint wasn't patient-related, I wouldn't be covered, but I was. These organisations handle FtP cases regularly and can guide you through the process.

2. YOU ARE NOT A BAD PERSON

The GDC is legally obligated to investigate complaints. It doesn't mean you're guilty of anything. A caseworker will be assigned to assess the evidence both for and against you. Many cases are dropped after initial

I FELT LIKE I WAS LIVING TWO LIVES

review. But the waiting game can be mentally exhausting. Every email or update can reignite anxiety. In those moments, remember: your job does not define your entire worth. If you're overwhelmed, reach out. Services like Confidental offer peer support from trained professionals.

3. CHOOSE YOUR ATTITUDE

It's natural to feel angry, scared or helpless. But one thing remains within your control: your attitude. You can't dictate the outcome, but you can choose how you show up each day. This process doesn't have to dominate your life. It can exist alongside your relationships, your passions, and your purpose. Your family, your team, and your patients still need you.

4. UNDERSTAND THE PROCESS

The FtP process begins when the GDC receives a complaint. After initial triage, a case examiner gathers evidence, and you're invited to respond.

If there's an immediate risk to patient safety, the case may go to the Interim Orders Committee, which can impose temporary conditions or suspension. Otherwise, the matter might proceed to a formal hearing before a Professional Conduct, Health, or Performance Committee. There, evidence is presented, and your fitness to practise is evaluated. Outcomes range from no action to erasure from the register. You may also appeal decisions to the High Court.

If the case progresses to a hearing, your indemnity provider will assign a solicitor, who may in turn instruct a barrister. I never imagined I'd be in chambers at the Inner Temple, but there I was (that part of London is actually quite beautiful!).

5. MANAGE THE NARRATIVE

One of my biggest mistakes was staying silent. Aside from a few close friends and family, no one knew what I was going through. The night before my hearing, I discovered the case had been made public. The GDC lists upcoming hearings online,

> THEIR ROLE IS NECESSARY, BUT WE MUST ALSO REMEMBER THE HUMAN IMPACT OF THE PROCESS

and mine had made its way onto social media. I was horrified, but then something unexpected happened: people reached out with messages of support. I realised I wasn't alone, and others had walked this path.

Talk to people you trust. Don't let rumours shape your story. You don't have to announce it on social media but being proactive and open with your circle can bring comfort, perspective and solidarity.

6. UNDERSTAND WHAT ACTUALLY HAPPENS AT A HEARING

FtP hearings are legal proceedings, but they don't take place in grand courtrooms. Any appropriately sized room can serve as the venue. The panel usually includes three people, there is also a legal adviser, a court recorder, and representatives from both sides.

Witnesses are called and cross-examined. You are most likely to be called to give evidence and be cross-examined by the GDC's barrister.

The hearing usually unfolds in stages: first, determining whether there is a case to answer; second, assessing whether your fitness to practise is impaired; and finally, deciding on appropriate sanctions if needed.

> YOUR JOB DOES NOT DEFINE YOUR ENTIRE WORTH

There's a lot of waiting involved, and it's helpful to bring distractions – books, podcasts or mindfulness tools. You're not kept isolated, as friends and family can accompany you, and their presence is grounding.

That first day was terrifying. But it's the GDC's job to prove their case, not your job to prove innocence. Be honest, be clear, you are human.

LEARNINGS

So, what can you take from my experience?

- You are probably more resilient than you think
- You will never please everyone
- You will discover who your true friends and allies are
- You do not have to suffer in silence
- Some things are out of your control – and that's okay.

Finally, while my story is unique to me, I continue to support the role of the GDC in upholding professional standards and ensuring patient safety.

Its role is necessary, but we must also remember the human impact of the process. If you're ever in that position, take heart, you are not alone and you will get through it.

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Strategy for survival

With rising costs, fewer technicians and fiercer competition, **Eleanor Pittard** outlines how to future-proof your dental laboratory

ELEANOR PITTARD
Co-director and owner of Hive Dental Laboratory

For years, many dental laboratories have grown by reputation alone. A dentist tries your work, likes it, tells a colleague, and the phone rings again. But in 2025, that 'wait for the call' approach is risky.

Costs are up, staff are scarce, and competition is tightening.

UK dental laboratory revenue is about £900 million and still growing at around 6% a year, but growth isn't shared equally.

The number of registered dental technicians has fallen from roughly 7,500 in 2008 to under 5,000 today, with only 168 new technicians joining in 2024.

Consolidation is increasing, with larger groups buying up independent labs. There is plenty of opportunity, but only for labs that treat business development with the same structure they give to production.

KNOW WHERE YOUR WORK COMES FROM

Start by looking at your client list. If one practice provides more than about 15% of your monthly revenue, you're vulnerable. A sudden move, retirement or change of ownership at that practice could leave a big hole.

A simple monthly report of your top clients and their share of your income is enough to spot risks early. If you are heavily reliant on one or two dentists, set a goal to bring in a handful of trial accounts over the next three months to spread the load.

MAKE YOUR DIGITAL STRENGTH A SELLING POINT

Many labs have invested in scanners, design software and 3D printers, but few talk about it well. Dentists care about predictable results and fewer remakes, not the technical jargon. Show them what matters: quicker turnaround, fewer adjustments and consistent quality. A short 'digital welcome pack' for new dentists – with clear turnaround times and a direct contact for urgent cases – can set you apart without overwhelming anyone with specs.

CREATE A SIMPLE OUTREACH HABIT

Business development doesn't have to mean cold calling hundreds of practices. Try this: each week identify a small number of local surgeries you'd like to work with and send a short, friendly email or drop off a one-page leaflet.

Lead with something useful, perhaps a tip for better scans or a fast-track denture service, and invite them to send one trial case. Even a steady rhythm of five or six genuine contacts a week can add up to a strong pipeline by the end of the year.

MARKET WHERE DENTISTS ACTUALLY LOOK

Most dentists check social media and professional forums daily. Share short, helpful posts: a shade-taking tip, a before and after photo (with consent), or a quick video of how you prevent remakes. This type of content builds trust and keeps your lab in mind when they need a new partner.

MATCH PROMISES TO CAPACITY

With fewer technicians entering the profession, your team's time is your most valuable asset. Be honest about turnaround times and price urgent work to reflect the extra effort. A clear service agreement with your main clients protects everyone and prevents burnout.

THE NEXT 90 DAYS

Set one practical goal for the next quarter:

- Reduce any single client's share of your revenue
- Send a trial-case invitation to at least 20 new practices
- Post one genuinely helpful social update each week.

Small, steady steps build a lab that can thrive no matter how the market shifts.

THE BOTTOM LINE

Growth today is not about shouting the loudest, it's about being visible, reliable and proactive.

A lab that tracks its client mix, tells a simple digital story, and reaches out consistently won't just survive the changes ahead, it will set the standard for the next generation of dental laboratories.

CONNECT WITH ELEANOR @eleanorpittard

How 3D printing is reshaping the industry

Jamie Stover explores how 3D printing is streamlining lab operations, reducing costs and opening access to care – and why now is a pivotal time for labs to embrace 3D technology

JAMIE STOVER
CDT and senior manager of application strategy and integration, Carbon

THE LAB REVOLUTION

3D printing and digital dentistry are no longer new buzzwords within our industry – they're everyday realities. The same digital transformation that has redefined countless industries is reshaping dental production too, fundamentally changing how labs work. Scanners, CAD software and automated workflows are now as common as plaster and wax once were.

And just as consumers everywhere demand faster, on-demand solutions in other parts of life, dentistry too is moving toward quicker, more predictable results – a shift that digital workflows make possible.

Yet one area where the full potential is only just beginning to emerge is digital dentures. In certain countries like the United States, adoption is already accelerating rapidly, with transformative implications for labs and patients alike, and the ripple effects are set to reach far beyond American borders.

THE OPPORTUNITY GAP

If we took the US alone as an illustration, tooth loss is far more common than many realise: around 120 million people are missing at least one. Within this group, about 36 million have no teeth at all, and that number is expected to rise. Yet only 13 million wear dentures regularly, leaving 23 million completely edentulous without any prosthetic care.

The picture isn't much brighter for those with partial tooth loss. Of the 84 million people missing some teeth, just 27 million have received treatment, meaning nearly 57 million are living without any restorative solution.

For a field as advanced as dentistry, it's striking that so many people still go without essential care. But these numbers also serve as a clear call to action for our entire industry. Closing this gap means finding ways to deliver prosthetic care that is faster, more affordable and more accessible to the people who need it most. This is a mission that companies like Carbon are working to make a reality, by addressing adoption barriers, advancing the use of 3D printing and helping usher in the next era of digital dentistry.

FROM BARRIERS TO BREAKTHROUGHS

The reasons behind this care gap are many, but cost and access remain the most significant. Traditional denture production is a slow, complex process: impressions, models, wax try-ins, processing and finishing – often stretching across four or five patient visits. It consumes time for both dentists and patients, and it is costly.

3D printing changes the equation. Labs can now produce dentures with greater speed and precision, compressing weeks into hours. Clinics can cut the number of patient visits to two or three, saving time for providers and making treatment feasible for people who cannot return multiple times.

Affordability is another game-changer. Traditional dentures and partials require hours of hands-on labour from highly skilled technicians – a factor that can drive up the cost of production.

Compounding the issue, the workforce itself is shrinking: National Association of Dental Laboratories (NADL) data shows that 60% of technicians are now 55 or over, with only a small fraction considered highly experienced in removable prosthetics.

For labs, this presents a significant challenge: how to keep pace with rising demand while the pool of skilled labour continues to shrink.

3D printing helps bridge that gap. By automating many of the manual, time-intensive and repetitive processes, digital workflows reduce production costs, open up possibilities for more affordable care, and free staff to focus on higher-value work such as design, innovation and training. Some labs adopting this technology have doubled production in a single year, and today hundreds of thousands of digital dentures are produced annually – with the number continuing to grow.

INNOVATION IN MOTION

There are undoubtedly still challenges ahead in driving the adoption of 3D printing across the industry – from education and shifting mindsets to ensuring design processes evolve in step with new technologies. Yet, for companies like ours working with labs across the globe, we are now seeing the industry transforming in front of our eyes.

It's an incredibly exciting moment: from new materials development to the way in which automation is transforming the production process, digital dentistry is poised to reshape labs, clinics and patient care on a scale we haven't seen before. For labs, embracing these technologies means faster, more efficient production, the ability to offer new services, and more time to focus on design, innovation and strategic priorities.

For dentists, it means replacing tedious, time-consuming tasks with faster processes through automated production, including advanced applications such as digital dentures and surgical guides.

Critically, for patients, the benefits are equally significant: fewer appointments, dentures with improved accuracy, strength, and durability, and the reassurance of a digital record that makes replacement simple in the event of a lost or broken prosthetic.

Together, these advancements mean faster, more reliable care and a better overall treatment experience.

Digital dentistry is no longer just a promise for the future; it's actively reshaping labs and patient care today – and for labs at the forefront, ready to take the leap into this new era, can also be ready to reap the rewards.

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Phillip Townend discusses why ergonomics is essential to microscopy in the dental lab

PHILLIP TOWNEND
Group marketing communications manager, Vision Engineering

Dental laboratory technicians perform highly detailed work for long periods, often leaning into microscopes to refine margins, inspect frameworks and layer ceramics. Poor posture, repetitive fine-motor tasks and prolonged static positions create a high risk of musculoskeletal disorders, reduced visual comfort and fatigue that directly affect precision, productivity and career longevity.

OCCUPATIONAL RISKS FOR TECHNICIANS

Musculoskeletal pain in the neck, shoulders, upper back and wrists is common among dental clinicians and technicians who sustain awkward postures and repetitive micro-movements. These conditions increase with cumulative working time and age and lead to reduced productivity, higher error rates, and premature exit from the profession.

Eye strain and visual fatigue also compromise accuracy, especially when technicians move between magnification tools and unaided vision repeatedly during the working day.

HOW AN ERGONOMIC MICROSCOPE REDUCES RISK

An ergonomically designed microscope enables a neutral, upright posture that offloads strain from the neck and back and reduces shoulder elevation and forward head posture. Improved posture lowers the likelihood of chronic pain and allows technicians to sustain attention and steadiness during fine work, which increases consistency and lowers the rate of remakes.

Ergonomic optics also reduce eye fatigue by providing clearer, high-contrast imagery and a comfortable viewing geometry, allowing technicians to maintain focus for longer periods without visual discomfort.

OPTA STEREO MICROSCOPE

The OPTA stereo microscope from Vision Engineering integrates features specifically aimed at laboratory workflows to deliver ergonomic and productivity gains. Its eyepiece-less, patented optical viewing head produces a 3D stereo image that preserves depth perception while supporting technicians to adopt a comfortable head and neck position, reducing the need to lean forward into traditional eyepieces.

OPTA's long working distance gives ample space for tools and hands, enabling natural manual techniques and minimising awkward arm extension that increases muscular load.

Its design lowers visual and physical fatigue through crystal-clear optics across practical magnifications commonly used in dental labs, such as 4x, 6x and 8x, allowing technicians to choose the right balance of field of view and detail without compromising posture. The optical system's high contrast and depth of field help technicians keep multiple restoration layers in sharp focus, which reduces the need for constant refocusing and head repositioning, both contributors to cumulative strain.

The microscope's ergonomic stand and adjustable head simplify set-up and enable quick user transitions without extensive readjustment, which supports shared workstations and training scenarios while preserving individual comfort. Stable construction and low-vibration performance protect fine motor control during delicate manipulations, translating ergonomic stability into measurable quality improvements and fewer remakes.

PRACTICAL LAB CHANGES THAT MULTIPLY ERGONOMIC GAINS

- Adjust seating so hips are slightly higher than knees and use lumbar support to maintain a neutral spine while working with a microscope
- Position the microscope and workpiece so wrists stay neutral and elbows remain close to the body at approximately 90 degrees to reduce shoulder and forearm load
- Use OPTA's long working distance to keep tools and hands in a comfortable zone, avoiding extended reaches that increase error risk and fatigue
- Rotate tasks and take frequent short micro-breaks to reduce static loading and preserve fine motor steadiness for longer shifts.

CONCLUSION

Ergonomics is not a luxury for dental laboratory technicians; it is a practical investment in quality, throughput and career health. Microscopes designed with operator physiology in mind unlock sustained precision, reduce the physical toll of microscopic work, and improve visual comfort. The OPTA stereo microscope combines eyepiece-less 3D viewing, long working distance, durable stability, and easy adjustability to deliver tangible ergonomic benefits that raise both technician wellbeing and the standard of dental restorations.

OPTA Stereo Microscope is available to order now. Prices start at £900.

FOR MORE INFORMATION

on detailed specifications, pricing or to place an order, contact Dr Tony Lang at **dental@visioneng.co.uk** or **01483 248300**. Alternatively, visit **www.visioneng.com/products/opta**

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- Enhances workflows by spotting minor flaws in digital or physical models.

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COMPANY HIGHLIGHT

Premolaris, the place where Zirkonzahn's equipment is assembled

Zirkonzahn discusses the manufacturing site where the M6 Teleskoper Blank Changer milling unit and the Zirkonofen 600/V4 sintering furnace are assembled, tested and customised

In line with the company's 'in-house' core value, Zirkonzahn has built five manufacturing sites over the years, 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 Zirkonzahn, and is dedicated to the assembly, testing and customisation of all company's milling units, furnaces and scanners, as well as to the surface treatment of its own-produced implant prosthetics components. This site also hosts the company's chemistry labs where, for instance, colours and resins are developed or burs are diamond-coated.

The premises of Premolaris is also where the company's new M6 Teleskoper Blank Changer milling unit and the Zirkonofen 600/V4 sintering furnace are assembled, calibrated and fine-tuned at individual stations, according to standardised production processes.

A new machine 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. For example, this is the place where spindles and orbits are assembled into the milling units with all hardware and software components: precision tests and measurements are carried out on each spindle before they are mounted in the machines, and all data obtained is recorded and registered. Machine assembly is a very complex procedure, and employees have to comply with strict checklists, which serve to coordinate the different working steps and ensure safety.

ONLY AFTER THE EXECUTION OF THE FINAL CHECKS AND TESTS IS THE EQUIPMENT READY TO LEAVE THE PRODUCTION SITE

An area of Premolaris is also dedicated to casting resin production and laser marking. Here, machines are marked with their names, and products that can be customised – such as Zirkonzahn Shade Guides – are laser-marked with the name of the laboratory or the clinic. A selection of glass cases, which clients can choose from to personalise their equipment, is also available in this area.

In addition, Premolaris is the place where the first milling, scanning or sintering processes are performed on the new machines: 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.

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FOR MORE INFORMATION

about the company's work philosophy, arrange a company tour or get more information, visit **www.zirkonzahn.com**. Alternatively, contact Carmen Ausserhofer at **+39 0474 06 6662** or email **carmen.ausserhofer@zirkonzahn.com**

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One-to-one finance surgeries... back to personal banking

Whether you're buying a lab, investing in an existing lab or simply feel it would be sensible to review your current financial arrangements, **Nigel Crossman** explains how Medifinance's new service will save you valuable time and ensure you'll be getting the best deal

NIGEL CROSSMAN
Healthcare finance specialist, Medifinance

In the ever-evolving world of dental technology, the need to achieve and maintain excellence is an ongoing battle. Behind every successful laboratory has to lie a robust financial strategy – one that supports growth, innovation and long-term sustainability.

Recognising this, Medifinance, one of the UK's leading financial brokers for healthcare professionals, has launched a unique initiative: local finance surgeries – visits tailored to help lab owners navigate the financial landscape with confidence.

A PERSONAL TOUCH TO PROFESSIONAL FINANCE

Medifinance has long been known for its specialist knowledge in healthcare finance, offering everything from practice acquisition loans to equipment leasing and working capital solutions.

Now, the company is expanding its service by offering in-person consultations in locations across the UK – from Lincoln to Lyme Regis, Margate to Manchester, Evesham to Edinburgh – letting you choose where it goes next. In short, Medifinance is making financial advice more accessible, personal and relevant than ever before.

These visits are designed to be more than just number-crunching sessions. You will sit down with a seasoned financial consultant – who was a former bank manager and start-up expert – to discuss the challenges you face. Whether it's expanding a lab, upgrading technology or managing cash flow, Medifinance provides tailored solutions that reflect the true realities of running a laboratory.

LOCAL SUPPORT, NATIONAL EXPERTISE

The beauty of this initiative lies in making it local and relaxed. You no longer need to rush a meeting into a lunch hour, travel to distant offices or rely on virtual meetings. Medifinance brings its expertise directly to the local area, fostering a more collaborative and comfortable environment. This is especially valuable for lab owners in smaller towns, where access to specialist financial services can be limited.

These face-to-face meetings allow for deeper conversations about business goals, operational hurdles and long-term planning – conversations that are often difficult to have over email and phone.

ADDRESSING THE REAL ISSUES LABS FACE

In today's economic climate you have to grapple with a range of financial concerns. Rising operational costs, staff recruitment, regulatory compliance, and the need for continual investment in new technologies all place pressure on margins. Medifinance's local visits are structured to address these issues head-on.

Consultants review a lab's finances, propose improvements and recommend funding options to align with your goals. They also offer impartial advice on interest rates, repayment structures and lender negotiations – ensuring that you get the best possible deal without the red tape.

BUILDING TRUST, ONE LAB AT A TIME

What sets Medifinance apart is its commitment to long-term relationships. These local visits will reinforce that trust, offering continuity and reassurance in an industry where financial decisions can make or break a laboratory.

As personal service becomes less common, Medifinance's initiative highlights that personalised, community-focused support continues to play a role. By meeting you locally, Medifinance is not just offering financial services, it's investing in your future.

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Streamlining workflows and saving labour

Cameron Kelly explains how investing in printer technology has transformed case acceptance, reduced turnaround times and strengthened clinical partnerships

CAMERON KELLY
Dental technician,
Ambridge Ceramics

After running traditional digital light processing (DLP) printers for several years, investing in the Stratasys J5 Dentajet has fundamentally transformed our approach to complex prosthetic and surgical cases at Ambridge Ceramics. Of course, the accuracy is phenomenal, but the real breakthrough for us has been the dramatic reduction in labour hours.

Parts come out of the printer fully cured and dimensionally precise, eliminating manual post-processing and adjustment tasks that eat up technician time. When we print stackable surgical guides, for example, the components literally snap together as soon as the support material is washed off. That level of precision simply wasn't achievable before, and it's allowed us to take on cases we might have outsourced in the past.

REPLICATING COMPLEX SURGERIES IN-HOUSE

Being able to recreate surgery in the lab has made a real difference in how we work with dentists. We recently had a case requiring tooth extractions and bone reduction in the mandible, where we needed to be very aware of the nerve.

I used third-party software and Grab CAD to separate out the different elements – the teeth that come out, the bone sections and the nerve pathway. Then I printed a model using Truedent resin. I used clear resin for the soft tissue and different colours for the teeth, bone and nerve, so you could actually see all the anatomy.

We could remove and review the different elements with the dentist, which made the whole conversation much clearer. Instead of just looking at scans on screen, we had the actual guide in our hands to walk through the procedure. Our previous equipment couldn't do anything like this, and it's definitely strengthened our relationships with the practices we work with.

> INSTEAD OF JUST LOOKING AT SCANS ON SCREEN, WE HAD THE ACTUAL GUIDE IN OUR HANDS TO WALK THROUGH THE PROCEDURE

FROM DESIGN TO DELIVERY

I won't pretend the CAD work is quick – it still takes time to design these cases carefully. But once that's done, the manufacturing side is straightforward. The unattended overnight print takes around four to five hours, and when I come in the next morning, I simply wash the support material off with water, and the parts are perfect and ready to go.

What that means practically is we can give realistic turnaround times without worrying about having to reprint things or spend hours adjusting the fit. It makes planning our workload much easier.

For any lab doing surgical guides or complex work, the time you save and the extra cases you can handle make a real difference.

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Building smarter labs

David Caulfield shares how he balances artistry, technology and precision while meeting the growing demands of large-scale production

DAVID CAULFIELD
Associate director,
Teethforeverlab

Please introduce yourself
After more than 20 years in the dental industry, I've seen first-hand how much the landscape has changed – and how rapidly labs have had to adapt. As the associate director of a large-scale dental laboratory, I've learned that success today depends on far more than technical skill. It's about building the right team, investing in smart technology and staying focused on quality while handling increasing production demands.

How do you balance high-volume production with the need for personalised, high-quality restorations?
It all comes down to smart workflow design, the right technology and a deep commitment to patient outcomes. We've invested in digital workflows – such as CAD/CAM design with Zirkonzahn.Modellier, and five-axis milling machines (M1 line, M2 Dual Wet Heavy Metal and M6 Teleskoper Blank Changer) along with cutting edge multicolour polyjet 3D printing (Stratasys' J5 Dentajet) – which allow us to maintain consistency and precision at scale. But technology is only part of the solution. Each case is still treated individually, with custom design and technician oversight to ensure every restoration is functionally precise and aesthetically natural. We also segment our production processes so that technicians with advanced skills focus on the finishing and characterisation stages where artistry truly matters. This hybrid model lets us deliver both efficiency and individualised results without compromise.

What trends in patient or clinician demands are influencing your investment decisions?
The clinics we cater for mainly focus on full-arch all-on-X restorations. This has focused our investments in this area, as we believe in giving only the best solutions to our patients, using what we consider the best product on the market: Prettau zirconia.

How have you evolved in terms of production volume and complexity, and how has this shaped how you choose new technology?
Our lab has grown significantly in both production volume and case complexity over the years. We started as a smaller operation focused on all-on-X restorations but in an analogue way. This growth has pushed us to be very strategic in how we evaluate and adopt new technology. We're no longer just looking for speed – we need solutions that improve precision, workflow integration and repeatability across diverse cases.

Every investment we make now has to support scalability without sacrificing quality. That means we rigorously test new systems – from photogrammetry to 3D printing to milling units – to ensure they meet both clinical and aesthetic demands. Ultimately, our growth has taught us to choose technology not just for what it can do today, but how well it can adapt and evolve with us.

How has the M6 Teleskoper Blank Changer and multiple milling units changed your workflow and turnaround times?
The introduction of the M6 Teleskoper Blank Changer and multiple milling units has been a game-changer for our workflow and turnaround times.

With the M6, we can automate the milling of multiple cases without constant technician intervention, which means we're running production efficiently even overnight. This level of automation has dramatically increased our throughput and consistency, especially for full-arch and complex restorations.

How is the advancement of dental materials impacting your lab's workflows and outcomes?
The advancement of new dental materials has had a major impact on our lab's workflows, as well as outcomes for both patients and technicians. Materials like high-translucency zirconia, zirconia discs with colour transition, and improved PMMA have allowed us to deliver more aesthetic, durable and lifelike restorations with less manual characterisation. From a workflow perspective, the fact of choosing digital systems and materials from the same manufacturer ensures seamless integration, reducing the need for remakes and adjustments.

For our technicians, it means less time spent compensating for material limitations and more time focusing on the artistry and fine details. For patients, it translates into stronger, more natural-looking restorations with faster turnaround and long-term reliability. Overall, these innovations are pushing us toward more efficient, predictable and high-quality outcomes across the board.

How important are education and technical support in running a large dental lab?
Education and technical support are absolutely critical to running a large dental lab effectively. As technology and materials evolve rapidly, ongoing education ensures our team stays ahead of the curve – whether it's mastering new CAD/CAM systems, understanding updated material protocols, or refining design and finishing techniques. It's not just about staying current; it's about maintaining consistency, quality and confidence across every department. Technical support, both internal and from our suppliers, is equally vital.

When issues arise or new systems are implemented, responsive support helps minimise downtime and keep production flowing smoothly. In a high-volume lab, even small delays can impact dozens of cases, so having strong educational resources and a reliable support network is key to long-term success and growth.

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With ICE Plus, Zirkonzahn has launched a new zirconia developed specifically for high-performance, metal-free primary structures.

This new material is ideal for reduced frameworks and is characterised by an exceptionally high flexural strength of approximately 1,650MPa (without HIP) or up to 1,900MPa (with HIP). This makes ICE Plus a safe choice even for complex and heavily-loaded restorations such as implant-supported restorations or large-span bridges.

Thanks to the outstanding mechanical strength, the material ensures maximum load-bearing capacity while allowing for an elegant, delicate design of restorations.

ICE Plus also stands out for its versatility: using Zirkonzahn's Fusion Powder, a secondary structure made of zirconia can be bonded directly onto a primary structure made of ICE Plus. This represents a significant advancement in the fabrication of aesthetically demanding, fully ceramic hybrid restorations without any metal components.

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Zirconia for every occasion

Vita presents how new zirconia developments are bridging the gap between strength and aesthetics

The ideal overlay material for wide-span, implant-supported restorations would have to fulfill several requirements: high flexural strength is, for example, essential in the abutment area to withstand the unbuffered masticatory forces of the rigidly anchored implants.

At the same time, the metal abutments also need to be masked. Monolithic fabrication offers the advantage of maximum stability, thereby minimising the risk of fractures and chipping. However, aesthetics should not be neglected in favour of strength. This is especially true with monolithic restorations, where the fundamental shade accuracy of the material is essential in combination with an integrated shade and translucency gradient from cervical to incisal or occlusal. It's time to face these challenges appropriately – it's hard to imagine it's even possible. And one thing is clear: anyone who can do this can do anything!

TWO FORMULAS, ONE MATERIAL

The latest generation of zirconia, Vita YZ Multi Translucent, combines the best of two proven material formulas: the more opaque and rigid 4 mol% (cervical) and the more translucent and less rigid 5 mol% (incisal) yttrium oxide-stabilised tetragonal zirconia. These two material formulas blend seamlessly into one another, providing not only a natural, continuous translucency gradient from the neck to the incisal area, but also a flexural strength that satisfies the region-specific prosthetic requirements.

In other words: in the dentine and cervical areas, where the forces acting on crowns and bridges are the highest, Vita YZ Multi Translucent offers flexural strength values of up to 1200MPa and a higher opacity to mask discoloured dentine or metallic abutments. Towards the incisal edge, a natural translucency gradually takes over. The result is a true multifunctional material created from two material formulas.

FIGURE 1: The situation after the eight implants in the upper jaw had healed

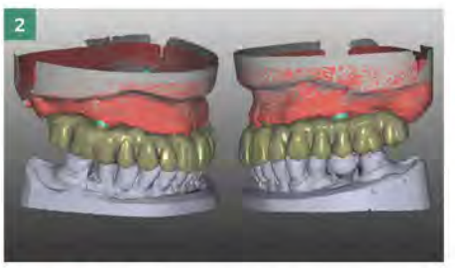

FIGURE 2: The final overall design in articulation in the Exocad software

FIGURE 3: In the Blenderfordental software, the bar and overlay were split

FIGURE 4: The result in the chalk stage before sintering

FIGURE 5: The tooth morphology of the overlay was completed immediately after sintering

FIGURE 6: The monolithic tooth material looked lifelike

FIGURE 7: The lip line and dental arch of the upper jaw were in harmony

PATIENT CASE WITH IMPLANT-SUPPORTED RESTORATION

A 67-year-old female patient visited the practice because she wanted to have a fixed rehabilitation on the edentulous maxilla. After placement of eight implants in the upper jaw and immediate-loading with a fixed long-term temporary restoration, the definitive restoration was to be made after a healing period of four months (Figure 1). The situation was scanned and the dentures were designed completely in one unit in the Exocad software (Figure 2). The Highfield.Design tooth database served as template here.

The data set was then transferred to the B4D Ibar module of the Blenderfordental software and split into a bar construction and overlay there (Figure 3).

BAR CONSTRUCTION AND TEMPORARY RESTORATION

The final titanium bar construction could then be subtractively milled from the Starbond Ti5 disc blank using the Imes-Icore Coritec 350i Pro milling unit. At the same time, an implant-supported mock-up made of GR-21 try-in resin in shade A2 was additively manufactured with the Elegoo Saturn 2 printer. Both fit together according to the key-lock principle.

MILLING AND SINTERING

After three clinically successful days with the mock-up, the milling order for the CAD/CAM-supported fabrication of the definitive overlay made of Vita YZ Multi Translucent A2 could be placed. The final details of the micromorphology and the texture were then incorporated during the chalk stage (Figure 4). After sintering, the mucogingival areas were reproduced with the universal veneering Ceramic Vita Lumex AC, with only three different gingiva materials required to visually simulate the patient's anatomy (Figure 5).

IMPLEMENTED DENTAL AESTHETICS

Since all the basic aesthetic requirements for simulating natural tooth substance had already been implemented in the zirconia blank, only minimal characterisations and glazing were carried out in the dental areas with the staining system Vita Akzent Plus. Finally, after appropriate conditioning, the bar and overlay were connected to each other using the composite cement Vita Adiva F-Cem A2 Universal.

After the work was screwed in and the screw channels were sealed with Teflon tape and composite, the result was a highly aesthetic rehabilitation that immediately put a natural smile on the patient's face (Figures 6 and 7).

SUMMARY

It had not yet been possible to achieve such a multifunctionally optimised combination of opaque flexural strength and natural translucency. Two completely contradictory properties have been integrated with maximum benefits through the harmonious interplay of the two zirconia formulas. Vita YZ Multi Translucent achieves an innovative balancing act that makes the desire for a single material for all indications a reality. L

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The dental technicians who worked on this case were Lukas Wichnalek, Norbert Wichnalek, Arbnor Saraci and Patricia Strimb. The dentist was Georg Bayer.

Enhanced CPD

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1. What is the primary advantage of using the digital replica technique over traditional analogue methods for denture duplication?

- ☐ a. It eliminates the need for any scanning or design stages
- ☐ b. It allows dentures to be made without clinician input
- ☐ c. It offers a more precise, efficient and predictable method
- ☐ d. It removes the need for material finishing and polishing

2. What was applied to the denture surface before scanning to eliminate glare and ensure optimal scan data?

- ☐ a. A layer of Vaseline
- ☐ b. A thin layer of scanning powder
- ☐ c. A coating of silicone putty
- ☐ d. A light-cure resin

3. What material was the denture base milled from in the described digital workflow?

- ☐ a. Cold-cured acrylic
- ☐ b. Heat-cured resin
- ☐ c. High-quality pink PMMA disc
- ☐ d. Composite resin block

4. According to the text, what is one key advantage of milled PMMA compared to conventionally processed acrylics?

- ☐ a. It is more porous and easier to repair
- ☐ b. It exhibits higher flexural strength and fracture resistance
- ☐ c. It allows for easier manual polishing
- ☐ d. It is less dense, making it lighter but weaker

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1. Why should steam cleaning always be avoided immediately before cementation of a zirconia crown to a titanium base?

- ☐ a. It can leave abrasive particles on the surface
- ☐ b. It can cause discolouration of the zirconia
- ☐ c. Moisture and oil can lead to decementation
- ☐ d. It removes the primer layer from the surface

2. What size aluminium oxide particles are recommended for sandblasting the inside of the zirconia crown to increase surface roughness?

- ☐ a. 25µm
- ☐ b. 50µm
- ☐ c. 75µm
- ☐ d. 100µm

3. What is the key biological benefit of a highly polished zirconia surface in contact with soft tissue?

- ☐ a. It increases shade stability
- ☐ b. It improves mechanical retention of the cement
- ☐ c. It minimises bacterial adhesion and supports peri-implant health
- ☐ d. It enhances screw torque stability

4. What complication is most directly associated with residual subgingival cement if not removed properly?

- ☐ a. Gingival recession
- ☐ b. Peri-implant mucositis
- ☐ c. Over-polishing of zirconia
- ☐ d. Screw loosening

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