

CONNECTING DENTAL TECHNOLOGY

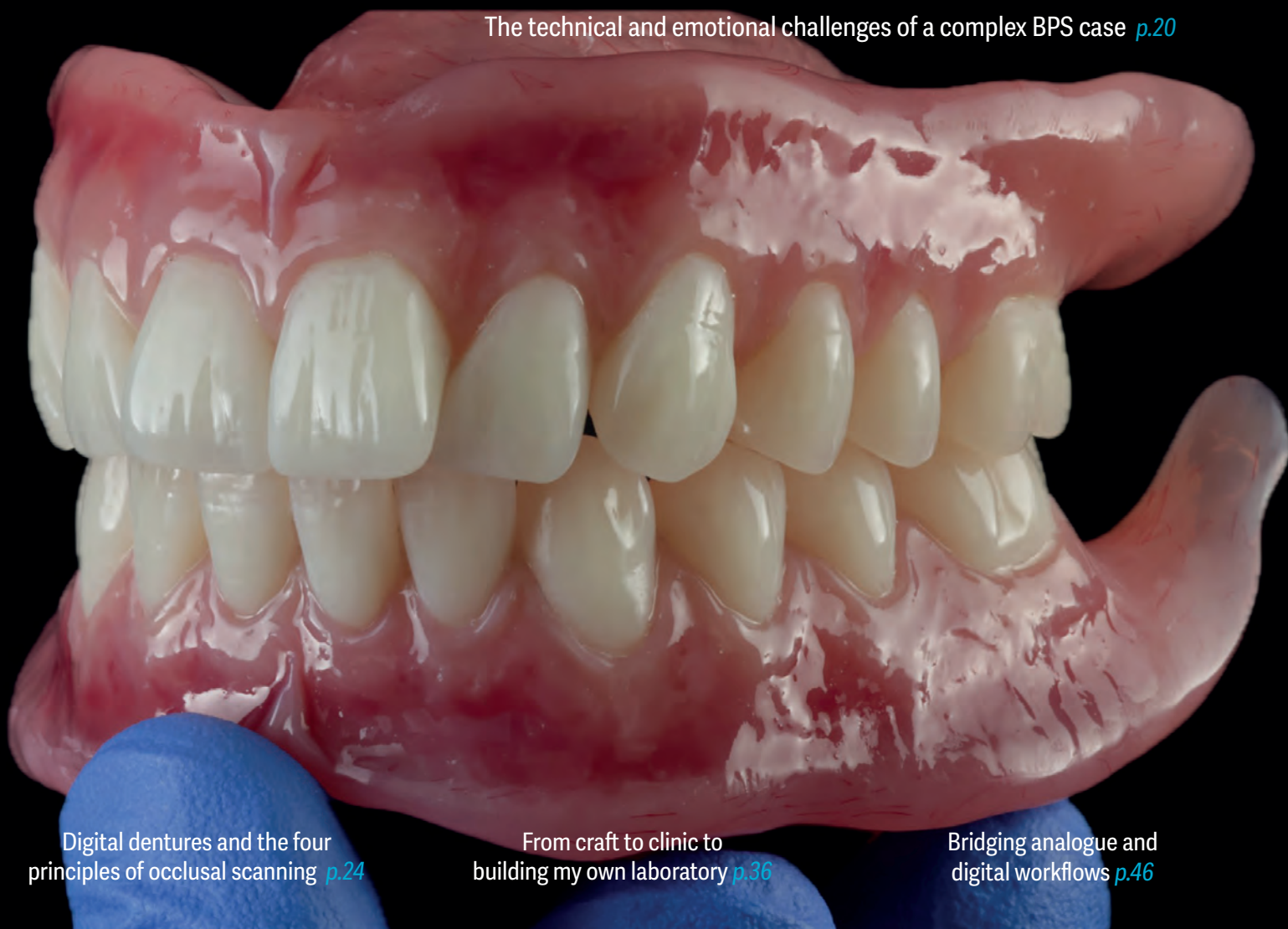
Laboratory

FMC CONNECTING
DENTISTRY

Summer 2026 / Volume 20 / No 3

PRECISION DENTURE FABRICATION

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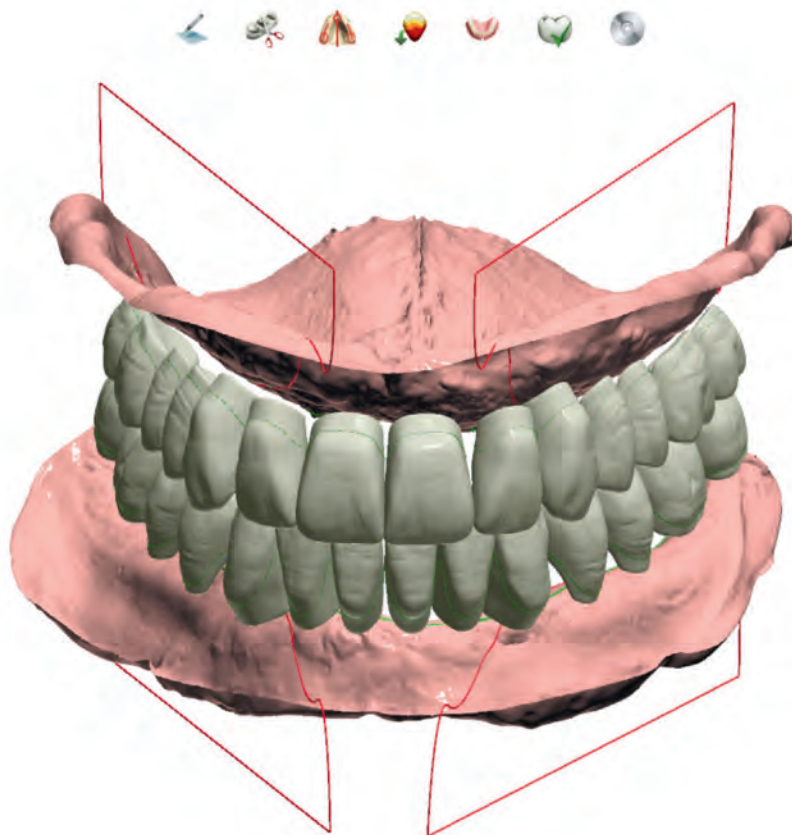
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The VAT ruling everyone needs to read

Matt Everatt reports from a recent HMRC ruling that will impact labs up and down the country



MATT EVERATT

Editor-in-chief of Laboratory and director of S4S Dental Laboratory

On 7 July 2026, the Upper Tribunal handed down its decision in HMRC versus Align Technology.

HMRC won. Clear aligners are now standard rated for VAT, not exempt.

If you make or supply orthodontic appliances, retainers, or even mouthguards and occlusal splints, this matters.

WHAT ACTUALLY HAPPENED

Align had been treating Invisalign supplies as exempt 'dental prostheses' under Schedule 9 of the VAT Act.

The First Tier Tribunal (FTT) agreed with them in 2025. HMRC appealed and the Upper Tribunal overturned it.

The whole case turned on the definition of 'dental prosthesis'.

The Tribunal looked at dictionary definitions, EU guidance, case law from completely different fields, a colostomy bag case, a disability discrimination case about ankle pins, and came to a clear conclusion.

A prosthesis replaces something missing or broken. It performs the function of a part of the body that isn't there or doesn't work.

HMRC's position, which the Tribunal accepted, is that an aligner doesn't replace anything. It moves teeth that are already there into a better position.

The judgment leant hard on the definition – dental prostheses are 'artificial items which replace missing or damaged teeth'.

Aligners don't do that, so they no longer qualify for exemption.

NO CHANGE ON CLINICAL CHARGES

One distinction is worth being precise about, and this is really important because it is easy to conflate the two.

The dentist's clinical exemption for providing treatment is untouched by this ruling.

A dentist or orthodontist providing a course

of orthodontic care, assessing the patient, planning treatment, fitting and adjusting the appliance, remains exempt as the supply of medical care by a registered professional. That remains unchanged.

What has changed is the VAT treatment of the appliance itself, being classed as a product.

When a lab supplies an aligner, retainer, splint or similar item as a good, that supply now sits outside the prosthesis exemption unless it replaces missing or damaged tooth structure, according to the HMRC ruling.

The treatment stays exempt. The product the lab makes and sells does not, unless it is one of the traditional prosthetic items.

This is a lab side VAT change, not a change to how clinical fees are treated in practice, although this could change if HMRC are looking for other areas to gain more tax receipts.

WHY THIS ISN'T JUST AN ALIGN PROBLEM

Here's the part that affects us all as a profession.

The Tribunal wasn't ruling on Invisalign specifically. It was ruling on what the word 'prosthesis' means in law.

That interpretation now applies to anyone supplying anything described as a dental prosthesis.

The acid test used by HMRC is simple. What does the appliance actually do?

Once you apply 'does it replace, or does it just support, protect, or move' as the test, a lot of things we've all quietly assumed were exempt start looking shaky.

Think about what a dental lab actually makes in a given month. Crowns, bridges, dentures – clearly exempt, no argument, they replace missing or damaged tooth structure. I cannot see HMRC coming for those.

But what about retainers, occlusal splints, bruxism guards and nightguards, orthodontic expanders and functional appliances, mouthguards, sports guards.

WHAT SHOULD WE DO NOW

It goes without saying, I'm not a tax adviser nor a VAT specialist.

Anyone reading this should get proper VAT advice before changing anything, but the practical shape of it looks like this.

VAT is self assessed. There won't be a letter coming from HMRC telling you what to do.

The obligation to get your VAT position right sits with the business, not with HMRC chasing you down.

Waiting to be contacted by HMRC isn't a sensible position, it's a way of building up financial risk, because interest and penalties run from when VAT should have been charged, not from when someone notices.

This is now binding Upper Tribunal precedent. But it isn't final by any stretch.

Align could still go to the Court of Appeal, and some businesses may choose to take a considered, advised position around that uncertainty.

But wait and see as a default, without engaging an adviser, isn't a defensible strategy anymore.

It's worth noting that Align itself stopped charging its UK customers on an exempt basis back in August 2025, nearly a year before this ruling landed, while the appeal was still pending.

That is the largest orthodontic appliance company in the world taking a precautionary position rather than waiting for the final word.

It is a reasonable indicator of how seriously a well advised business treats this kind of exposure.

The sensible starting point for any lab is a straight audit of the product list. Split it into two piles – things that replace missing or damaged tooth structure, and things that move, hold, or protect existing teeth.

The first pile stays exempt. The second pile needs a conversation with your accountant about VAT treatment.

Laboratory

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Another kick in the teeth for dental labs

Firstly, I must thank Matt Everatt for his eye-opening report on the recent Upper Tribunal ruling in HMRC versus Align Technology.

His clear breakdown of what this legally means for the definition of a 'dental prosthesis' is essential reading for every single lab owner in the country.

And let's call this ruling what it really is – another devastating kick in the teeth for dental laboratories.

Just when we thought the dental laboratory sector had navigated enough turbulence with soaring energy bills and severe staffing shortages, HMRC has delivered another blow.

Under this new legal interpretation, labs supplying appliances that move, protect, or support teeth – such as retainers, occlusal splints, functional appliances, and sports mouthguards – will be forced to put a 20% standard rate of VAT on their invoices.

That is a massive, sudden jump in cost for everyday items that we have all traditionally assumed were entirely exempt.

What makes this particularly hard to swallow is that not a single penny of this extra 20% charge stays with the dental lab.

This isn't a price increase that can be used to offset rising overheads or reward hardworking technicians at the bench.

Lab owners are being forced to act as unpaid tax collectors, absorbing the brunt of client frustration while watching their client relationships put under severe strain.

Lab owners now face an agonising choice. Do they pass the cost directly onto dental practices and risk losing clients, or do they try to absorb the tax themselves and watch their remaining, razor-thin profit margins disintegrate?

The long-term knock-on effect of this is highly predictable, and it represents a massive threat to the commercial lab sector.

Faced with a sudden 20% markup on laboratory-made appliances, many dental practices are inevitably going to look for ways to manufacture these items cheaper.

The obvious next step is for clinics to bypass commercial labs entirely, investing in basic desktop 3D printers to bring production in-house.

This ruling doesn't just squeeze lab's finances – it actively incentivises practices to cut labs out of the workflow altogether.

As Matt pointed out, waiting for a letter from HMRC is not a strategy – it is a massive financial risk.

Get professional tax advice, and start having open, transparent conversations with clients as soon as possible.

And more importantly, be a little less subtle with dental practices about why professional laboratory expertise simply cannot be replaced by an in-office printer.

SEB EVANS

Editor of *Laboratory*



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

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Laboratory's Lab Experts panel

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



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Managing director and co-owner, Hive Dental Laboratory



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KASH QURESHI

Clinical dental technician and managing director, Bremadent Dental Laboratory



DANIEL SHAW

Maxillofacial prosthetist and laboratory manager, Chesterfield Royal Hospital



LOLA WELCH

Senior dental technician, Quoris 3D

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Tooth-regeneration drug set for first trials in target patients

A Japanese biotech company is moving towards its first trial of a drug aimed at regenerating teeth in patients.

Toregem BioPharma said the Phase II trial would test its experimental antibody treatment in people with severe congenital hypodontia, defined by the company as the absence of six or more permanent teeth.

The Kyoto University spin-out said total funding, including grants and subsidies, had now exceeded US\$29 million.

The drug, TRG035, works by blocking USAG-1, a protein that suppresses tooth development.

The aim is to activate dormant tooth buds and stimulate new tooth growth.

Phase I trials in healthy adults with at least one missing tooth concluded without serious adverse events.

The approach is rooted in the concept that humans retain vestigial tooth buds capable of producing a third set of teeth, but that USAG-1 normally prevents these from developing.

For paediatric patients with severe



hypodontia, the clinical stakes are significant.

Because implants cannot usually be placed until jaw growth is complete, children may be managed with removable dentures for years, with potential consequences for function, nutrition and quality of life.

However, TRG035 remains experimental and has not yet been shown to regrow teeth in humans.

While researchers ultimately hope the approach could be used for adult patients with acquired tooth loss, that remains a longer-term goal.

Partial fasting found to reduce gum disease inflammation

A new study has found that temporarily restricting calorie intake could improve the inflammation associated with gum disease, building on previous research which linked fasting with reduced inflammation.

The team at King's College London divided periodontitis patients into two groups, one following a five-day restrictive diet and the other continuing as normal.

The patients on the fasting diet ate 1,100 calories for two days, then 750 calories for three days, with their diet returning to normal by day seven. This process was repeated three times within six months.

After this period, blood and gingival

crevicular fluid were taken from the patients and analysed. The fasting patients were found to have reduced inflammation markers in both samples than those in the control group.

This includes both C-reactive protein – a general marker of bodily inflammation – and specific indicators of gum disease.

Senior author Professor Luigi Nibali said there could be many reasons why fasting is beneficial for periodontitis patients.

'Fasting reduces oxidative stress in the body, a common cause of inflammation, which can damage cells and DNA.

'Intake of high calorific foods and refined carbohydrates, for example in cakes and biscuits, can also cause inflammation – so restricting these foods



also reduces oxidative stress in the body.

'It may also be that fasting has beneficial effects on the microbiome – the body's community of bacteria that help to keep it healthy.

'However, further research is needed to confirm this relationship.'

Experts slam cuts to ‘vital’ dental public health roles

Experts have warned that cuts to dental public health roles could weaken prevention work in some of England’s most deprived communities, despite the government reducing the scale of its original plans.

An initial government consultation proposed significant cuts to dental public health consultant positions across the UK.

For example, the south west was due to see 1.85 whole-time-equivalent posts reduced to just one. This has now been increased to 1.35 following the release of the consultation outcome report.

The reduction in staff is part of the government’s plan to abolish NHS England and bring its functions under the Department of Health and Social Care.

In the midlands, three dental public health positions will be carried over into the new system out of the current seven.

While the initial consultation proposed that only two posts should remain, one additional post was retained by converting a public health position into a dental public health role.

DEFENDING DENTAL PUBLIC HEALTH

The British Dental Association (BDA) said the reductions in cuts ‘don’t do enough to protect this strategically essential function’.

BDA chair Eddie Crouch said: ‘We have argued forcibly to defend and expand the vital dental public health role.



‘We’ve made NHS England exercise some restraint here, but it does not go far enough to protect a vital function.’

‘There is a loss of 58% in the midlands dental public health workforce, which has some of the most deprived communities in the country where prevention programmes are paramount.’

‘We’ve curbed these plans, but cuts still run deep, and any protection here shouldn’t be at the expense of public health colleagues.’

‘These are distinct specialities, and this is not a game of either/or.’

‘The government likes to talk the talk on prevention. It will not be able to deliver on that agenda without a serious, long-term commitment to and investment in these

expert roles.’

The decision to bring NHS England under the government is estimated to result in a 50% reduction in staff, aiming to avoid duplication across the two organisations.

Announcing the abolition, outgoing prime minister Sir Keir Starmer said: ‘I can’t, in all honesty, explain to the British people why they should spend their money on two layers of bureaucracy.’

‘That money could and should be spent on, nurses, doctors, operations, GP appointments.’

‘So today, I can announce we’re going to cut bureaucracy across the state, focus government on the priorities of working people, and shift money to the front line.’

South Africa dental technician crisis

Three South African universities have taken the South African Dental Technicians Council (SADTC) to the Gauteng High Court in Pretoria over a long-running dispute that has halted dental technology training and threatened the sustainability of the profession.

The Cape Peninsula University of Technology (CPUT), Durban University of Technology (DUT), and Tshwane University of Technology (TUT) – the only three institutions in South Africa that train

dental technicians – initiated the legal action to resolve what they describe as a prolonged regulatory deadlock.

According to a joint statement from the universities, ongoing disputes with the regulator since 2019 have prevented new student intakes for several years, severely restricting the supply of new professionals.

The impact on graduate output has been severe: the universities reported that only five students have graduated from TUT since 2023.

Furthermore, the legal challenge seeks to compel the SADTC to register 159 pipeline

students who successfully completed their qualifications before 2022 but remain unable to register and practice.

The universities are also asking the High Court to set aside a final practical examination framework unilaterally imposed by the SADTC.

Under this disputed system, diploma students are automatically failed if they do not meet every single one of 112 binary pass-or-fail criteria.

The academic institutions argue that this framework is entirely out of step.



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Laboratory

INVESTMENT GUIDE 2026



Welcome to the Laboratory Investment Guide 2026

If the last few years have taught the UK dental technology sector anything, it is that standing still is the fastest way to fall behind.

We are living through an unprecedented era of digital transformation.

The tools, materials and workflows available to us today aren't just small updates on yesterday's technology – they completely transform how dental prosthetics are designed and produced.

It is with great excitement that we introduce the Laboratory Investment Guide 2026, a comprehensive blueprint designed to help you navigate this new world of capital equipment and digital workflows.

There has never been a more critical, or more rewarding, time to invest in your laboratory's future.

For years, the conversation around digital dentistry focused heavily on the clinical side – intraoral scanners shifting the workflow at the chairside.

But in 2026, the spotlight has firmly transitioned to the laboratory.

The technology right now is designed specifically to solve the biggest headaches plaguing lab managers across the country – severe skilled labour shortages, skyrocketing overheads and the relentless demand for faster turnaround times, whilst keeping quality high.

Why now?

Investing in the latest technology is no longer a luxury for the high-end boutique lab, it is the definitive way to get ahead of your competitors.

By integrating advanced solutions – whether that is the latest high-yield milling machines or breakthrough monolithic, multi-material 3D printing platforms – you instantly elevate your business profile.

It allows you to offer local dental practices a level of consistency, speed and restorative customisation that traditional methods simply cannot match.

When you automate the repeatable,



THE TECHNOLOGY RIGHT NOW IS DESIGNED SPECIFICALLY TO SOLVE THE BIGGEST HEADACHES PLAGUING LAB MANAGERS ACROSS THE COUNTRY – SEVERE SKILLED LABOUR SHORTAGES, SKYROCKETING OVERHEADS AND THE RELENTLESS DEMAND FOR FASTER TURNAROUND TIMES, WHILST KEEPING QUALITY HIGH

precision-heavy elements of the manufacturing process, you free up your skilled technicians to focus on what they do best – the artistry and the quality control.

Ultimately, this guide is about three things: streamlining your workflow, protecting your margins and improving patient outcomes.

True optimisation means your equipment works for you – even when the lights are off.

This can help turn labour-intensive daytime processes into automated overnight production.

The financial maths makes sense, too. When you reduce microscopic human

errors and eliminate the need for tedious manual adjustments, you drastically cut down on costly remakes and chairside refinements.

The future dental lab

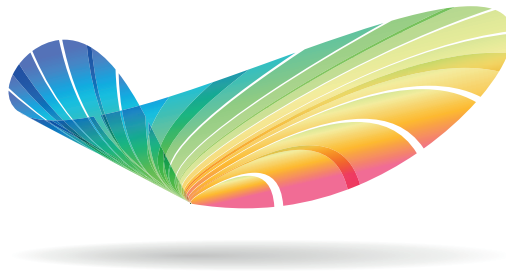
Over the following pages, you will find a curated showcase of the latest technology hitting the dental market.

We highly encourage you to read on, dive into the technical specifications, and find out everything there is to know.

The future of dental technology is being built right now – make sure your laboratory has a seat at the table.

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Image courtesy of Spencer Greening, CDT.



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About Align Technology

Align Technology

Align Technology designs and manufactures the Invisalign System, the most advanced clear aligner system in the world, iTero intraoral scanners and services, and exocad CAD/CAM software.

These technology building blocks enable enhanced digital orthodontic and

restorative workflows to improve patient outcomes and practice efficiencies for approximately 299.5 thousand doctor customers and are key to accessing Align's 600 million consumer market opportunity worldwide.

Over the past 29 years, Align has helped doctors treat approximately 22.8 million patients with the Invisalign System and is driving the evolution in digital



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Expansion of indications for fixed implant-supported dentures

Vita Zahnfabrik

Manually adjusting conventional denture teeth to an implant-supported framework is time consuming and does not necessarily result in components with a precise fit.

All this is changing with the Vita Vionic Dent Disc MultiColor.

As of February 2026, it is also approved for precise, CAD/CAM-assisted fabrication of dental components – on supporting frameworks made of titanium, cobalt-chromium, zirconia and PEEK – for fixed implant dentures.

This expands the range of applications for the polychromatic, highly cross-linked composite disc, made from the proven VITA Microfiller Reinforced Polymer Matrix (MRP) – the same material used to manufacture all

VITA Premium teeth for modern digital dentures.

Expanded range of applications

Thanks to the expanded indications for Vita Vionic Dent Disc MultiColor, users can now enjoy even greater flexibility in their digital workflow.

In addition to the proven tooth fabrication for removable partial and full dentures, precisely fitting tooth elements can now also be designed and milled for use on supporting framework structures.

This allows for an optimally adjusted layer thickness and a uniform bonding gap for fixed implant-supported restorations.

New possibilities for implant dentures

This means that the Vita Vionic Dent Disc MultiColor polychromatic composite disc



opens up new functional and aesthetic options for implant-supported restorations.

The wide range of materials available for the supporting framework also expands the scope of therapeutic options.

This makes it possible to find the right combination of materials for every clinical situation and every user preference.

hs.vita-zahnfabrik.com/en/vita-vionic-dent-disc-multicolor

Digital workflows and innovative materials for high-quality full dentures

Zirkonzahn

With the Florence Totalprox Denture System, Zirkonzahn presents a fully digital workflow for the efficient production of high-quality full dentures.

The key element of the system is the new Zirkonzahn.Modifier software: tooth setup and denture design can be carried out flexibly, with the complete digital design created in just about six minutes.

For a durable and aesthetic restoration, high-performance, nearly monomer-free resins are used.

Abro Basic Multistratum ensures lifelike tooth aesthetics with its natural colour gradient from dentine to enamel.

For the denture bases, Denture Gingiva Basic Mono and the practically unbreakable Denture Gingiva Pro Mono are available.

Their blanks with a diameter of 125 mm allow the production of up to two bases in a single milling process, increasing efficiency in the laboratory.

In the final working step, teeth and bases are bonded with Polibond according to the principle of cold welding.

During drying, Polibond seamlessly

bonds the two resins without leaving any residue, creating a homogeneous, stable unit.

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'Nina, I've got a good one for you...'

Nina Frketin details the technical and emotional challenges of a complex BPS case, proving that the bond between clinician and technician is the key to restoring a patient's identity



NINA FRKETIN
Dental technician and founder
of Nightshift

'Nina I've got a good one for you'.

That's usually how my clinical dental technician, James Mallon, approaches me when a case is either technically challenging or on a very tight turnaround.

Occasionally – and somewhat cruelly – it's both.

I've been working with James for the past year at Queensway Dental Lab, and together we've restored quite a few smiles. I genuinely enjoy our cases.

James is detail-focused and committed to doing things properly.

We discuss every case thoroughly, and thanks to clear communication and his strong clinical skills, I'm able to do what I love most – producing work that is not only technically sound but also aesthetically meaningful.

So when James turned around one day with a grin on his face, I already knew something was coming.

'Which one is it?' I asked.



**CLAIM
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GDC anticipated outcome: C

CPD hours: One

Topic: Complete dentures

Educational aims and objectives: To demonstrate a complex BPS case.

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



‘Quick... or hard?’ That’s when I met Trevor – or rather, Trevor’s models.

Trevor was a 65-year-old patient preparing to leave the country for what he described as a once-in-a-lifetime, three-month trip.

When was he leaving you ask? In one week.

On examination, several issues were immediately apparent:

- Poor occlusion with inadequate incisal length
- Mismatched tooth shades due to previous denture additions, resulting in an uneven appearance
- Underextended flanges, compromising support and retention
- A dental midline that did not align with the patient’s facial midline
- Lack of an adequate buccal corridor on the left-hand side
- Several missing teeth
- A noticeably canted incisal plane.

CASE OVERVIEW

Trevor presented requesting new full upper and lower dentures following recent extractions and denture additions.

His existing dentures were clinically unsatisfactory and aesthetically compromised.

In short, the dentures were doing very little for Trevor – functionally or aesthetically.

And with a long holiday ahead (and no doubt plenty of photographs), he was keen for a significant improvement.

His request was refreshingly simple: better aesthetics and whiter teeth. No pressure.

TREATMENT PLANNING AND CLINICAL-LABORATORY COMMUNICATION

After discussing the case in detail with James, we opted for Biofunctional Prosthetic System (BPS) dentures.

Given the patient’s expectations, anatomical presentation, and limited timeframe, BPS provided a predictable workflow that allowed us to deliver accuracy, function, and aesthetics without compromise.

James took the preliminary impressions along with a centric tray bite.

From there, I articulated the models following BPS principles and fabricated a



Gnathometer M.

For those unfamiliar, the Gnathometer M is essentially a combined maxillary and mandibular special tray with an integrated gothic arch tracing system.

It allows precise jaw relation records while maintaining efficiency – an invaluable tool when time is not on your side.

TRAY DESIGN: WHERE DETAILS MATTER

Special tray design is one of those steps that can easily be underestimated, but it plays a huge role in the success of the final prosthesis.

When fabricating the maxillary special tray, border design must be carefully considered.



The mandibular tray requires even more attention to detail:

- The retromolar pads were covered with a thin layer of material to avoid interference
- with the buccal–tongue contact point
- The sublingual fold was built up thicker to create an effective sealing area
- The retromylohyoid area was kept thin
- The buccal shelf was thickened to maximise support
- And adequate room was allowed for the tongue – because a cooperative tongue makes life easier for everyone.



In cases with ideal ridge conditions, borders should remain uniform and thin.

However, when ridge resorption is present, thicker borders are required to compensate for lost support and improve stability.

This isn't about following rules blindly – it's about reading the anatomy and responding accordingly.

Thankfully, Trevor was a class I case, which meant no surprises, no drama, and no occlusal gymnastics – just pure craftsmanship at work.

TOOTH SETUP AND OCCLUSION

After articulating the master casts using the horizontal guide, I carried out a full model analysis.

This step is critical; due diligence at this stage saves problems later on.

The teeth were set following class I rules, using BPS principles throughout. When setting up a BPS denture, two template options are available: 2D and 3D templates.

These templates help achieve a more symmetrical, controlled tooth arrangement, supporting both function and aesthetics. A fully balanced occlusion was established.

While symmetry and balance are essential, dentures should never look too perfect.

To create a more natural, individualised appearance, I introduced rotations and light crowding into the tooth setup.

These small details make a big difference – they turn a denture from something that looks manufactured into something that looks believable.

WAX-UP: THE UNSUNG HERO

The way a denture is waxed up is incredibly important and often overlooked.

A correct wax-up promotes effective muscle grip, contributing significantly to comfort, retention, and overall function.

Waxing isn't just about filling space – it's about understanding muscle dynamics, respecting anatomy, and shaping the denture so it works with the patient, not against them.

TRY-IN AND FINALISATION

At the try-in stage, Trevor was extremely happy with both the function and aesthetics.

That's always a reassuring moment – especially when the patient is about to board a plane.

We proceeded to finish the dentures in Ivobase, with the addition of Anaxgum pink composite to enhance gingival characterisation and create a more lifelike

appearance.

I had the pleasure of meeting Trevor in person at this stage, and he happily announced that he looked like a young Burt Reynolds. That was all the confirmation I needed that we were heading in the right direction.

The fit stage of the case was carried out by Dr Salman Siddiqi, who also kindly provided the excellent clinical photographs featured in this article.

FINAL THOUGHTS

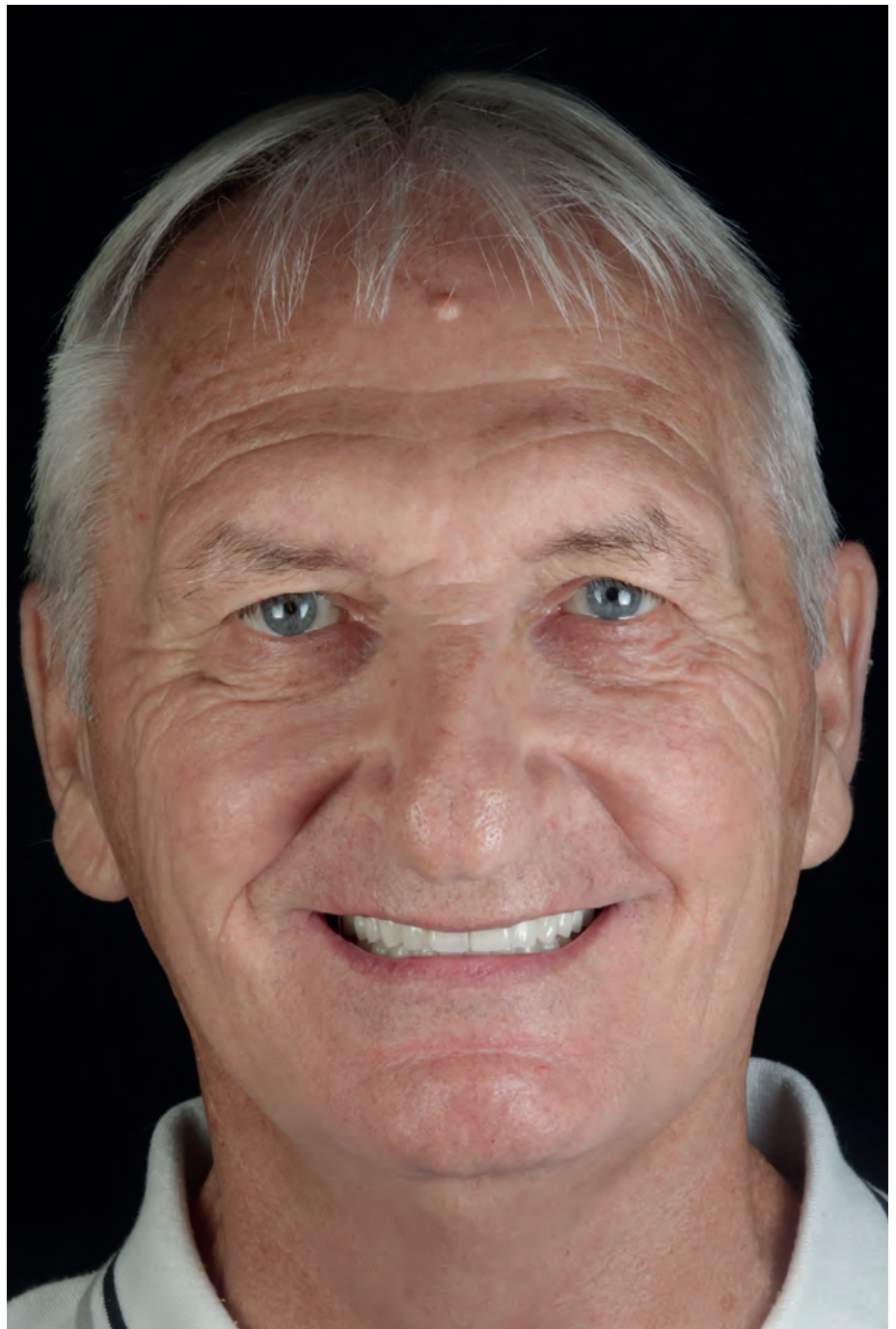
In a world that constantly demands things to

be faster and cheaper, I'd like to encourage technicians to aim for better instead.

When communication between clinician and technician is strong, when systems are respected, and when craftsmanship is prioritised, even the most time-pressured cases can be genuinely rewarding.

Trevor made his flight, left with a confident new smile, and hopefully enjoyed his adventure knowing his dentures were working with him – not against him.

As for James? I still get suspicious every time he says: 'Nina, I've got a good one for you'. But more often than not... he really does.



Digital dentures and the four principles of occlusal scanning

Spencer Greening shares a scanning framework to eliminate analogue guesswork and deliver predictable digital dentures in just two appointments



SPENCER GREENING
Clinical dental technician

Where do we start with digital dentures?

Let's face it: most clinicians do not enjoy providing dentures.

Historically, removable prosthodontics has been associated with multiple appointments, uncomfortable impressions, unstable bite registrations and unpredictable outcomes.



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CPD hours: One

Topic: Complete dentures

Educational aims and objectives: To demonstrate predictable dentures using digital methods.

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

From both the clinician's and technician's perspective, this has often resulted in frustration, increased chair time and dissatisfied patients.

Digital denture workflows have fundamentally changed this narrative.

By replacing analogue impressions and wax bite registrations with accurate intraoral scanning and digital design, dentures can now be delivered with greater predictability, fewer appointments and significantly improved patient experience.

In my clinical and technical workflow, digital dentures are delivered predominantly in two visits:

- Appointment one: intraoral scanning and occlusal capture
- Appointment two: try-in or final fit.

Over the last four years, I have not used a traditional wax bite or registration block.

More than 90% of my denture patients are successfully treated in two appointments.

The key to achieving this lies in understanding and correctly applying the four principles of occlusal scanning.

These four principles determine how the occlusion is captured and how the digital

denture is set up.

When applied correctly, they eliminate guesswork and allow the technician to design a stable, functional and aesthetic prosthesis with confidence.

CHALLENGES

The primary challenge in digital dentures is not the technology itself, but knowing how and when to capture occlusion.

Unlike fixed prosthodontics, denture patients present with a wide range of clinical scenarios: fully dentate opposing arches, existing dentures of varying quality, partial dentitions, or fully edentulous patients without a stable intercuspatal position.

Without a clear framework, digital workflows can quickly become inconsistent.

This is where my four principles of occlusal scanning provide structure and clarity.

TECHNICAL WORK

The four principles of occlusal scanning

The foundation of a predictable digital denture workflow is understanding which

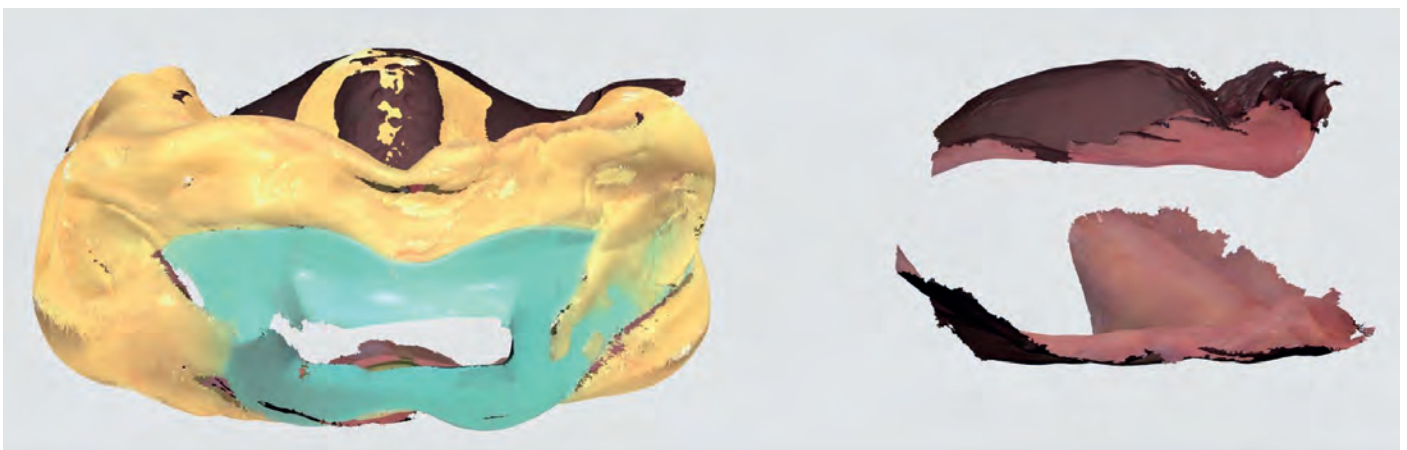


Figure 1: Centric tray occlusal capture

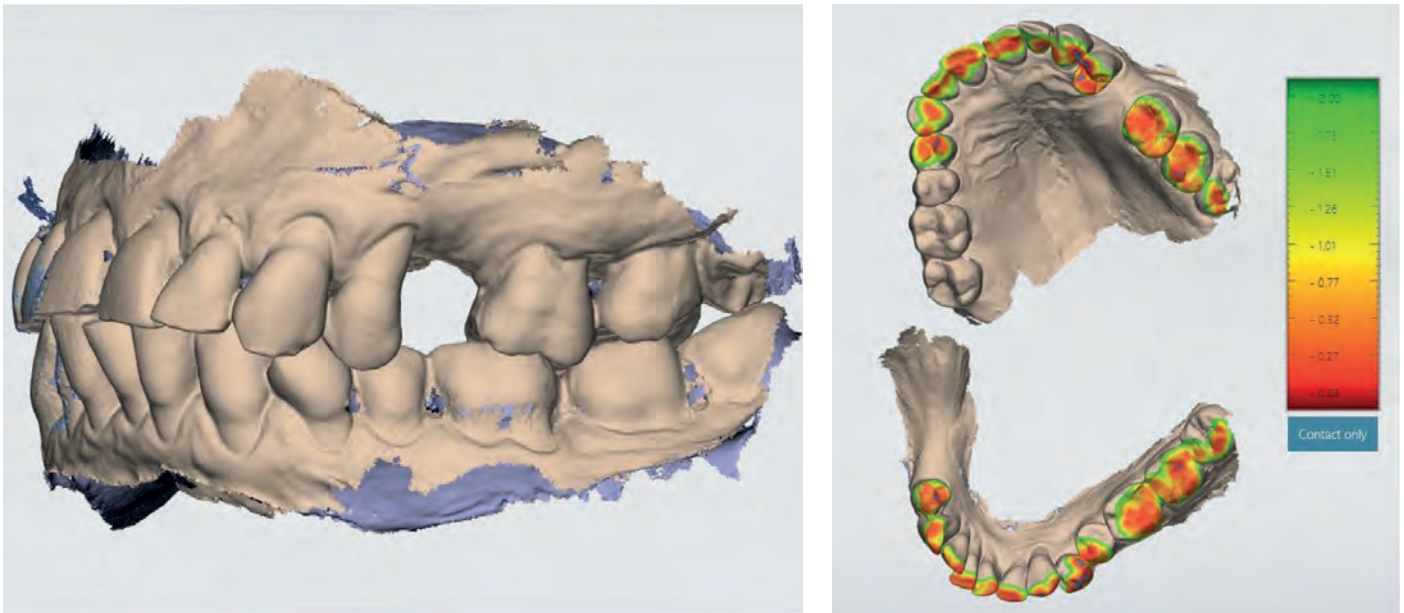


Figure 2: ICP occlusion capture

occlusal capture strategy is required for each patient.

I have broken this down into four clear principles:

1. Intercuspal position (ICP)

This principle applies when a patient has stable natural dentition or a stable opposing arch and can reliably occlude in ICP.

Indications include:

- Natural dentition opposing natural dentition
- Stable occlusion with reproducible intercuspation.

Workflow includes:

- Upper and lower arches are scanned independently
- Buccal bite scans are taken in ICP

- The digital software aligns the scans based on the bite record.

This is the most straightforward workflow and closely mirrors fixed restorative scanning protocols.

When ICP is stable, digital accuracy is excellent and occlusal predictability is high.

2. Reference denture

A reference denture is used when an existing full denture provides an acceptable occlusal vertical dimension (OVD), centric relation and aesthetics against the opposing arch.

Indications:

- Existing dentures with acceptable occlusion
- Patients happy with tooth position and bite

Common challenges include:

- Lack of a reproducible bite position
- Poorly fitting existing dentures
- Absence of stable occlusion
- Communication gaps between clinician and technician
- Clinician uncertainty around scan strategy selection.

- Full or full/full denture replacements.

Workflow:

- Take a functional impression inside the existing denture(s)
- Scan the denture with the functional impression in place
- Scan the opposing arch, either natural dentition or an opposing full denture with

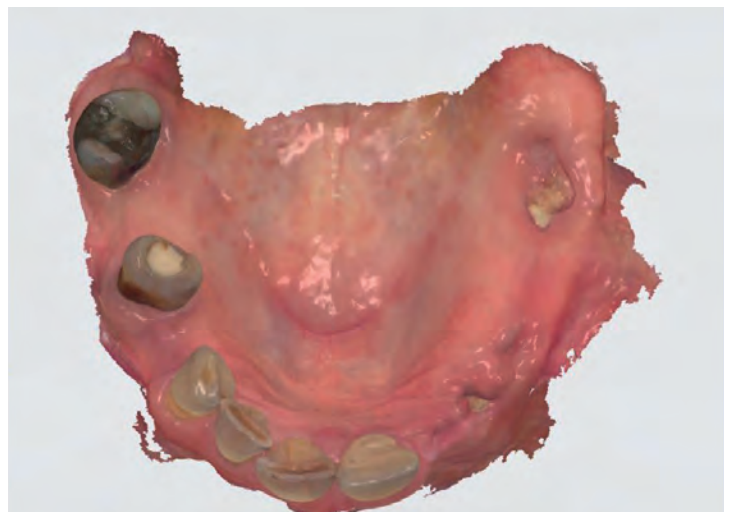
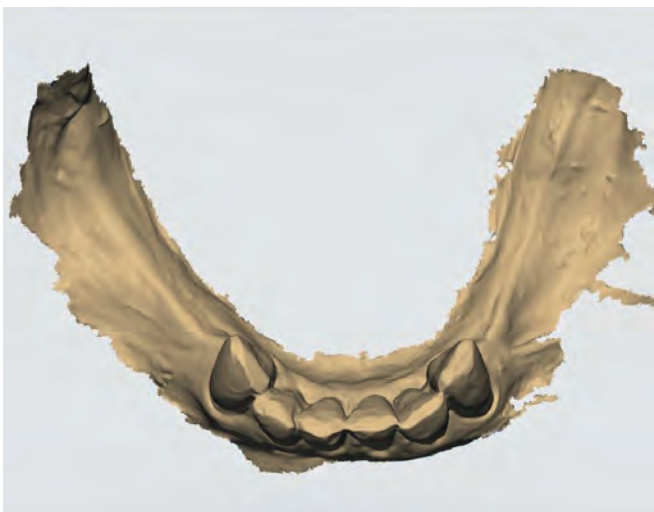


Figure 3: Intraoral scans



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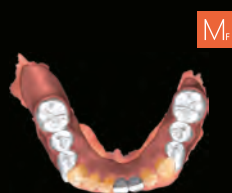


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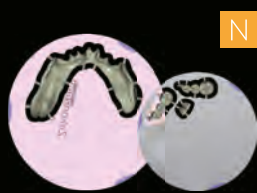


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CALCULATION & NESTING:
~ 8 min*



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~ 10 min

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- a functional reline wash
- Reinsert the denture(s) intraorally and scan the occlusion.

The reference denture acts as a digital blueprint.

Tooth position, OVD and occlusion are transferred directly into the digital design.

A comprehensive laboratory prescription outlining any required changes helps reduce adjustment time and increases patient acceptance.

3. Pre-prep scan

The pre-prep scan is invaluable for patients who have dentures with a positive occlusion.

Once dentures are removed, there is often no stable occlusion or ICP relationship.

Indications:

THE PRIMARY CHALLENGE IN DIGITAL DENTURES IS NOT THE TECHNOLOGY ITSELF, BUT KNOWING HOW AND WHEN TO CAPTURE OCCLUSION

- Cases requiring preservation of existing occlusal relationships
- Patients wishing to copy existing aesthetics.

Workflow:

- Scan the arch or arches with the dentures in situ
- Capture ICP or habitual occlusion
- Scan the soft tissues without the dentures in situ
- Align the soft tissue scan with the denture scan using anatomical landmarks.

This approach preserves the patient's familiar occlusion and aesthetics, improving adaptation and satisfaction with the final prosthesis.

4. Centric tray/bite block

The centric tray or bite block is used when there is no stable ICP and no suitable reference denture.

Indications:

- Fully edentulous patients
- Patients without a reproducible bite
- Severe occlusal instability.

Workflow:

- Scan the upper and lower arches



Figure 4: Reference denture

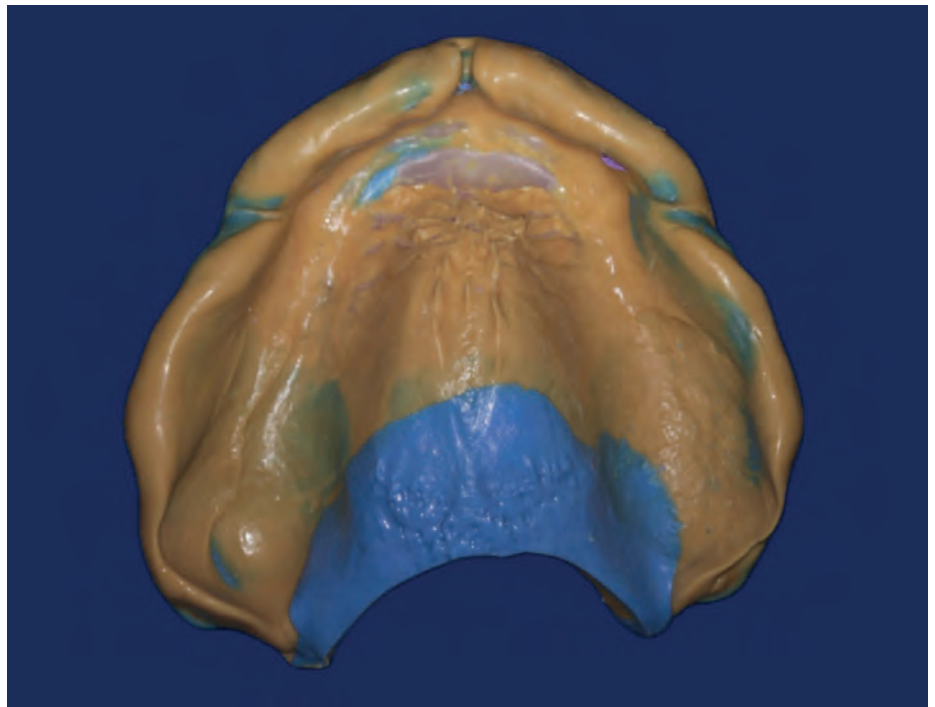


Figure 5: Functional impressions

- Use a centric tray or bite blocks to record the jaw relationship at the correct OVD
- Perform a 360-degree scan of the centric tray or bite block
- Digitally align the soft tissue scans to the 360-degree centric tray or bite block. This principle replaces traditional wax rim techniques. If unsure you can still use bite block instead.

In these cases, a third appointment may be required; however, overall predictability remains high.

COMMUNICATION AND COLLABORATION

Clear communication between clinician and technician is critical.

By capturing good soft tissue scans and correct occlusions, this reduces remakes, adjustments and unnecessary chair time.

FINAL PRODUCT

By applying the correct occlusal scanning principle, the final digital denture is designed with accurate tooth positioning,

stable occlusion and predictable aesthetics.

The majority of cases proceed directly to final fit, with minimal adjustments required.

Patients consistently report improved comfort, confidence and satisfaction.

Clinicians benefit from reduced appointments and streamlined workflows, while technicians gain greater control and consistency in design.

REFLECTIONS

From a technician's perspective, the success of digital dentures depends less on the software and more on understanding occlusion.

The four principles of occlusal scanning provide a simple, repeatable framework that removes uncertainty and elevates outcomes.

What works well is the clarity this approach brings to both clinical and laboratory teams.

What can be improved is continued education and confidence-building for clinicians new to digital dentures.

The key lesson is simple: when occlusion is captured correctly, digital dentures become predictable, efficient and highly rewarding for everyone involved.

FROM A TECHNICIAN'S
PERSPECTIVE, THE
SUCCESS OF DIGITAL
DENTURES DEPENDS
LESS ON THE SOFTWARE
AND MORE ON
UNDERSTANDING
OCCLUSION



Figure 6: Preprep occlusal scan

Titanium versus cobalt chrome for removable partial dentures

Is it time to rethink our default framework material, questions **Antony Wainwright**



ANTONY WAINWRIGHT
Director, Optadent Solutions

For decades, cobalt chrome has been our default material for removal partial dentures (RPD). It is rigid, strong and relatively inexpensive. However, its main selling point was ease of use, particularly for casting purposes, which was a crucial consideration...decades ago.

The advent and development of digital dentistry now means that this casting-friendly metal is no longer the best option.

Regulatory developments and evolving expectations around biocompatibility are prompting many in the profession to reconsider whether titanium may be the more future-proof choice (spoiler alert: it is).

THE REGULATORY CONTEXT

Cobalt has undergone increased regulatory attention in recent years. The International Agency for Research on Cancer (IARC) now classifies cobalt metal (without tungsten carbide) and soluble cobalt (II) salts as group 2A – 'probably carcinogenic to humans'.

In addition, under EU/UK classification, labelling and packaging (CLP) regulations, cobalt metal carries harmonised hazard classifications including carcinogenicity category 1B, mutagenicity category 2, and reproductive toxicity category 1B.

This doesn't automatically mean that cobalt chrome RPDs are giving patients cancer, this does mean that investigations are underway to determine how this relates to cobalt in alloys such as cobalt-chrome.

Early investigations lead to a dental-industry technical statement summarising International Standardisation for Organisation style immersion testing reports cobalt-based dental alloys' total ion release in the range of

~0.5–20 $\mu\text{g}/\text{cm}^2$ over seven days, stated to be well below a cited limiting value of 200 $\mu\text{g}/\text{cm}^2$ /seven days in that context.

Either way, cobalt-chrome used in dentistry is around 60% cobalt, so if we have better options available now, why wouldn't we use them?

WEIGHT AND PATIENT COMFORT

Titanium frameworks are roughly 45–50% lighter than cobalt-chrome equivalents of the same volume. In maxillary RPDs particularly, this reduction in weight can translate into improved comfort, reduced awareness of the prosthesis, and enhanced patient acceptance.

When patients comment that a titanium framework 'feels lighter,' they are not imagining it – it genuinely is.

I would also add that studies show clasp longevity is significantly greater with titanium and its alloys over repeated insertion cycles.

One of the most immediately noticeable advantages of titanium is its density:

- Commercially pure titanium: ~4.5 g/cm^3
- Cobalt-chromium alloys: ~8.3 g/cm^3 .

BIOCOMPATIBILITY AND CORROSION RESISTANCE

Titanium's long-standing reputation in implant dentistry is based on its stable titanium dioxide passive oxide layer. This surface film reforms rapidly if disrupted and provides exceptional corrosion resistance.

In practical terms, titanium is widely regarded as one of the most biocompatible structural metals available in dentistry. It is associated with low allergenic potential and minimal ion release compared with many alternative alloys.

CONCLUSION

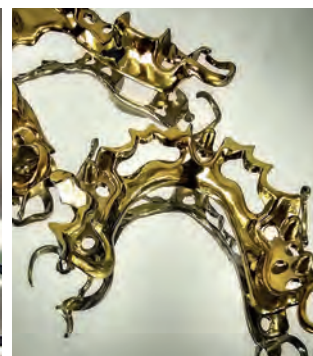
If cobalt-chromium remains clinically acceptable, regulatory scrutiny won't decrease.

Titanium provides:

- Significantly lighter weight
- Excellent biocompatibility
- No cobalt content
- Favourable clasp flexibility
- Predictable manufacturing pathways.

Cobalt-chrome has served dentistry well. However, titanium frameworks – particularly when digitally designed and milled – represent a modern, accurate, and biologically reassuring alternative.

On paper, this sounds great right? In the real world based on feedback from the now thousands I have made, it is even better.



The comparison trap

Ellie Ford explores the hidden impact of comparison in the dental lab and how to turn workplace envy into a powerful tool for self-improvement



ELLIE FORD
Dental technician

THE ISSUE LIES IN HOW WE VIEW AND RESPOND TO IT. WHEN APPROACHED WITH INTENTION RATHER THAN INSECURITY, COMPARISON CAN BECOME A POWERFUL TOOL FOR GROWTH

Comparison in the lab is unavoidable. We work side by side, assess each other's work on the bench, and scroll through an endless stream of impressive work on social media.

While that exposure can be inspiring, it can also feel slightly uncomfortable, bringing a flicker of self-doubt and even slight jealousy or envy.

While comparison is rarely discussed within our industry, it's something that many technicians experience daily.

It can shape our confidence in powerful ways, both positively and negatively.

NAVIGATING THE EXPERIENCE GAP

Entering the workforce as a newly qualified dental technician can feel very overwhelming.

Walking into a lab where colleagues have spent years, even decades, perfecting their craft can intensify that feeling.

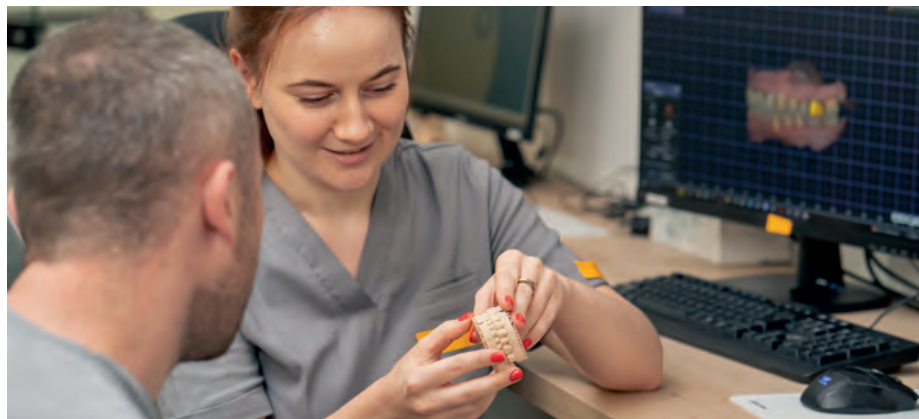
In such a setting, it's very normal to feel 'less than'.

It's incredibly easy to compare our work to that of senior technicians while completely disregarding the decades it took them to get there.

This can trigger doubt in our abilities before our career has even started.

REFRAMING THE MINDSET

Comparison is often framed as a negative attribute, and, when left unchecked, can



have a serious effect on mental wellbeing.

However, comparison itself is not the issue. The issue lies in how we view and respond to it.

When approached with intention rather than insecurity, comparison can become a powerful tool for growth within the lab.

THREE QUESTIONS FOR SELF-REFLECTION

Looking inward when negative comparison arises is crucial.

If this is something you recognise, here are three questions to ask yourself:

- 1. What am I actually reacting to?** Is this truly about a lack of skill, or is it a fear of falling behind? Perhaps it's discomfort triggered by change. In many cases, negative comparison reflects natural uncertainty rather than a lack of ability
- 2. What does this comparison show me?** When framed correctly, comparison can be used as a powerful way to improve our work. It can highlight gaps within our knowledge, allowing us to identify areas for growth. This is where we can begin creating opportunities to develop skills and knowledge rather than being overcome by self-doubt
- 3. Am I forgetting my own progress?** Progress is easiest to overlook when you're focused on someone else's work. The most valuable comparison is often with yourself. Have you developed your skills since last year, last month, or even last week? That perspective matters

more than any external comparison.

CURIOSITY OVER CRITICISM

For many technicians, comparison no longer stops at the lab bench.

Much of it now happens via social media, where there is an endless amount of carefully curated work.

If you find yourself responding negatively to someone's work online, ask yourself: 'What can I learn from this to enhance my own work?'

By getting curious rather than critical, we allow ourselves to progress and develop both professionally and personally.

There is a vast amount of information available if we choose to use it to our advantage.

FOSTERING OVER GROWTH

How we manage comparison on a personal level shapes the culture within our labs.

In an industry where comparison often carries negative weight, it is essential that we reframe how we view colleagues.

We are not in competition; we are here to guide and learn together.

Creating a positive connotation around comparison through the sharing of techniques, knowledge, and experience fosters growth rather than division.

This collaborative approach plays a key role in accelerating professional development.

Labs thrive when comparison leads to learning, not competition.

Caring beyond the craft

Emilia Lesca reflects on the hidden, deeply human side of the profession, where technical skill meets emotional growth to restore more than just smiles



EMILIA LESCA
Clinical dental technician

When people ask what I do for a living, I often see a moment of confusion. 'So... you're a dentist?', 'you make dentures?'

The role of a clinical dental technician (CDT) still isn't widely recognised, yet it plays a powerful part in changing patients' lives.

When I began my journey to becoming a CDT, I thought it was all about making high-quality dentures, until I realised that a big part of the role is learning how to care for people.

This realisation reminded me how valuable it is to reflect on our work – not only by looking back at photographs of completed cases, but by thinking about how we can improve our approach to patients

BUILDING TRUST THROUGH COMMUNICATION

We often say that becoming a CDT bridges the gap between dentists and dental laboratories, and that communication with the laboratory is the most important part in successful denture provision.

But we sometimes underestimate the power of communication between the patient and the clinician.

Technical and clinical excellence matter, but without trust, patients won't feel comfortable expressing what they need.

Patients need to feel heard, not bombarded with technical language or sales pitches.

Many patients don't understand how dentures are made or why certain steps are necessary. Simple, clear explanations reduce anxiety and help create a safe environment.

Being transparent about limitations and realistic outcomes builds trust, manages expectations, and reassures patients without dismissing their concerns.

The most memorable cases for me are often not the most technically complex, but the most emotionally meaningful.



One patient, who had avoided smiling for years, told me after fitting their new dentures, 'I finally recognise myself again – I look like myself.'

Moments like that remind me why this role matters so much, and how we can change someone's life.

BY BRIDGING THE GAP BETWEEN LABORATORY SKILL AND PATIENT CARE, CDTs OFFER SOMETHING UNIQUE: A BLEND OF CRAFT AND COMPASSION

ADVICE FOR ASPIRING CDTs

For technicians considering becoming CDTs, my biggest advice is to prepare for both technical and emotional growth.

You'll need strong clinical and technical skills, but you'll also need empathy, patience, and confidence in patient communication.

Invest in continuous learning. Dentistry evolves, materials change, and patient expectations grow.

The most successful CDTs are those who stay curious, reflective, and open to improving both their craft and their patient care.

THE PATH I DIDN'T PLAN

I've always known about the role of a CDT, but I didn't take a straight path into it.

At 17, when it was time to choose what to

do after secondary school, I applied for art courses. As much as I loved being creative, something didn't feel quite right.

A week before the application deadline for the dental technology course at Leeds University, I had a last-minute change of heart. I rewrote my application and sent it first class, just hoping it would arrive in time. It did.

That decision changed everything, and I've never looked back.

I always knew I wanted to work directly with patients, so I completed additional training to become a CDT.

The combination of seeing people face to face and being able to craft dentures with my own hands felt like the perfect fit for me.

I get to be creative, work with my hands, and help people on a daily basis, and that balance is something I'm genuinely grateful for.

In conclusion, every day as a CDT reminds me that our work is about more than creating dentures – it's about restoring confidence, comfort, and a sense of self. I hope more people, both within the dental profession and beyond, recognise the impact we can have.

By bridging the gap between laboratory skill and patient care, CDTs offer something unique: a blend of craft and compassion.

For me, there's nothing more rewarding than seeing a patient smile genuinely again, knowing that I've played a part in that transformation.

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For Graduates

Life after graduation

Natasha Appleton shares her honest journey of navigating early career setbacks, surviving the job hunt, and finding the perfect professional fit



NATASHA APPLETON
Dental technician at Lab94

In the past 18 months I have graduated with a 2:1 in 'Clinical dental technology' from University of Lancashire, in July 2025.

While finishing up my degree, I had already started applying for positions and talking to potential labs and clinics to try to secure a role in a timely manner.

In this quest, I was lucky enough to secure a dental technician role at a corporate lab, near home, a few days after graduation and started at the end of July.

Perfect, or so I thought.

A ROCKY START TO PROFESSIONAL LIFE

The role started, with some nerves but a lot of excitement towards starting my professional career and changing from that shy university student to a budding dental professional.

However it soon became clear, the role was not the right fit for me.

With the pressure of goal posts changing daily and very little stability of the workload and procedures, the role came to an end.

A DELIBERATE SEARCH FOR THE RIGHT FIT

Back I went to job hunting, this time taking more time to investigate the company ethos and working practices, as well as the exact job description and what would be expected from me along with what I could expect from the company.

During this process, I attended many in person and online interviews and completed multiple bench tests, trying to work out if this role was the correct fit for where I was at the start of my professional dental career.

This was due to me feeling like this decision was even more important than before, I needed a role that was going to give me confidence and allow me to excel and expand my knowledge and skills.

TAKING A LEAP OF FAITH

In the few weeks after my previous role ended, I was lucky to secure a number of job offers and I ultimately decided to accept a role at Lab94, in Wrexham, as a dental technician.

This was a large leap of faith in myself and the company, as accepting this new role took me away from home, meaning I was adjusting to both a new living and professional environment.

This was made easier by the fact Lab94 are a thriving and ever-growing local lab with a family feel and have helped nurture my skills and confidence to develop from a university graduate to a dental professional.

IF AN OPPORTUNITY TAKES YOU AWAY FROM YOUR COMFORT ZONE, BELIEVE IN YOURSELF AND YOUR SKILLS AND BE OPEN TO INVEST IN THE FUTURE PROSPECTS OF YOUR CAREER

In the three short months I have been at Lab94, I have improved the quality of work I am making and providing to patients, as well as the speed I am fabricating these dental devices.

I am very much at the start of my professional journey but have high hopes that my role at Lab94 will develop over time.

In the future I would like to continue developing my lab skills and knowledge, be able to expand my knowledge into the



digital side of dental technology and re-enter the clinical space to continue providing patients with their smiles again.

My tips for applying for roles after graduation:

-  Don't stress, you will find the right role
-  Apply for any roles you find, even if you don't have the experience advertised as companies will train you in their procedures over time
-  Research the company and their values to decide if they are a good fit
-  If an opportunity doesn't work out, don't be afraid to give yourself time to find a new one
-  If an opportunity takes you away from your comfort zone, believe in yourself and your skills and be open to invest in the future prospects of your career.

STRAUMANN UN!Q™

Excel with customer prosthetics



From craft to clinic to building my own laboratory

Donna Cole reflects on a 35-year journey from the workbench to the clinic, sharing the realities and steep learning curves



DONNA COLE
Clinical dental technician and founder
of Go Tooth Dental Laboratory

BEING BOTH CLINICIAN
AND TECHNICIAN
PROVIDES A UNIQUE
PERSPECTIVE. I SEE FIRST-
HAND THE FUNCTIONAL
AESTHETIC AND
EMOTIONAL NEEDS OF
THE PATIENTS

As a dental professional with a career spanning over 35 years, and now working as a clinical dental technician, my work has always centered around one core principle: restoring confidence through care.

Gaining wide-ranging experience across most facets of dental technology early in my career involved a lot of hard graft, but it was an absolute privilege to learn the discipline so thoroughly.

As my career evolved over the decades, my focus naturally shifted and sharpened, ultimately leading me toward a specialist interest in implant-retained restorations and removable prosthetics.

Over the years, I have always been aware of the gap that can exist between the clinical setting and the laboratory bench.

Addressing this was not simply a business decision; it was a professional commitment to raising standards in the provision of dental restorations and ensuring continuity of care for the patient.

This conviction ultimately led to the creation of Go Tooth Dental Laboratory.

WHY I FOUNDED GO TOOTH DENTAL LABORATORY

Being both clinician and technician provides a unique perspective.

I see first-hand the functional aesthetic and emotional needs of the patients.

GO TOOTH

DENTAL LABORATORY

Founding my own dental laboratory, allowed me to:

- Strengthen communication between clinic and technician – helping eradicate the subtle but critical details that can be lost
- Deliver a truly patient-centred experience
- Maintain full oversight of materials and quality
- Create an environment where craftsmanship and clinicians are equally valued.

Beyond prosthodontics, I also wanted to champion education and knowledge sharing ensuring experience and insight continue to shape better outcomes.

FROM CONCEPT TO REALITY

My journey into independence did not begin with a business plan; it began with an opportunity, determination, and the drive to simply 'go for it.'

Turning this vision into reality took countless hours of kitchen-table planning, long nights of hard graft, and invaluable support from people within the industry, as well as from my friends and family.

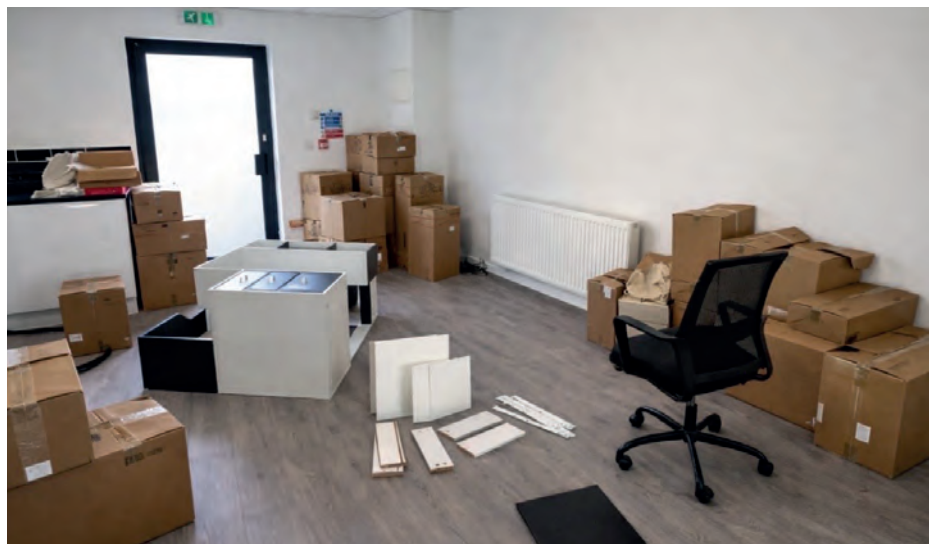
For this, I will be eternally grateful.

THE REALITY: YOU CAN'T JUST MAKE TEETH!

As clinicians and technicians, we are taught to focus primarily on technical skills, which often leaves our business skills undeveloped.

The financial pressure in the early months is hard.

No matter how well you plan, something





you had not accounted for always pops up.

Every decision carries weight, and cash flow is a daily consideration.

Building professional networks and referral pathways also takes consistency and trust – growth does not happen overnight.

On top of that, regulatory compliance, equipment investments, and workflows all demand constant attention.

General Dental Council standards and Medical Device Regulations require structured systems right from the outset.

Documentation, traceability, and quality assurance quickly become just as important as the tooth-making itself.

The learning curve is steep.

THE CHALLENGE OF DUEL ROLES

Resilience and determination are essential qualities for this path.

There is a constant need to wear multiple hats; on any given day, I may move between clinical consultations, case planning, working at the bench, and managing administrative tasks.

Time management becomes absolutely

essential.

PATIENT-CENTRED AESTHETICS

Patients are increasingly informed and aesthetically aware.

Personalisation, characterisation, and natural contouring are no longer optional – they are expected.

For me, Go Tooth Dental Laboratory represents more than just a business; it is an active participation in this evolving landscape, blending traditional artistry with modern innovation while keeping patient care at the absolute centre.

DIGITAL INTEGRATION

Digital workflows, intraoral scanning and computer-aided design/computer-aided manufacturing are redefining efficiency.

While traditional craftsmanship plays a huge and invaluable role, digital technology allows additional alternatives.

STRENGTHENING THE FOUNDATION

In September 2024, Robert Stanley registered dental technologist joined Go Tooth Dental Laboratory as a director.

His depth of knowledge and shared ethos have strengthened our ability to grow while remaining true to our founding principles.

ON REFLECTION

Yes, of course, there are moments of doubt, growth rarely feels comfortable.

Yet, with every successful case, I am more than happy with my decision.

The transition from technician to clinician and laboratory owner has been both humbling and empowering.

As I continue to evolve within the profession, I remain committed to innovation, collaboration, and delivering outcomes that genuinely change lives – one patient, one restoration, and one partnership at a time.

AS I CONTINUE TO EVOLVE
WITHIN THE PROFESSION,
I REMAIN COMMITTED
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COLLABORATION, AND
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THAT GENUINELY CHANGE
LIVES



Beyond the software

Tracing the shift from analogue to digital, **Lola Welch** explains why software cannot replace human experience in full-arch planning



LOLA WELCH

Senior prosthetics technician at Ceramic Designs Laboratory

got lucky... or at least that's how it felt. My first job came easily, and straight away I was thrown into implant supported restorations.

That was over 20 years ago now, which is honestly a bit terrifying to admit.

Back then, almost everything happened by hand. Wax ups, stone models, and far too much time fiddling with articulators.

You could actually see the vertical dimension shifting in front of you. If something was off, you felt it, sometimes before you could even explain why. I never liked the plaster room, by the way. Still don't.

And I've done more chairside full arch conversions than I can count.

The kind of days where you're running on coffee and adrenaline and hoping everything seats the way it should. Now most of that work happens on a screen.

FROM PLASTER ROOMS TO PIXELS

We use cone beam computed tomography scans, intraoral scans and digital wax ups.

The precision is incredible, genuinely. It's definitely more efficient in a lot of ways.

But don't let anyone tell you it's easier, because it isn't. If anything, the pressure has gone up. When things are digital and 'perfect', people expect perfection.

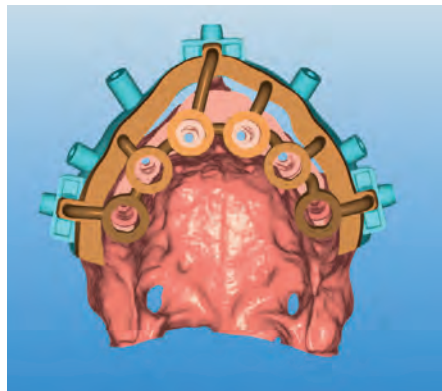
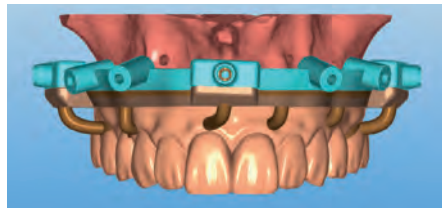
About eight years ago, I decided to move into implant planning properly.

I took one course, but if I'm honest, most of my learning came from hours on YouTube and messing around with different planning software late into the evening, and wondering why I'd chosen such a stressful hobby.

In 2024, I joined Quoris3D, and that decision changed everything for me.

It transformed how I work and how I see my role. I genuinely love what I do, even when my brain feels like it has way too many tabs open.

Over the last year and a half, I've planned



BUT THE SOFTWARE DOES NOT CARE ABOUT LIP SUPPORT, PHONETICS, OR HOW EASY IT WILL BE FOR A PATIENT TO CLEAN THEIR PROSTHESIS IN FIVE YEARS

hundreds of full arch cases.

Some go smoothly. Some make you rethink everything halfway through. And a few stick with you because you think you could have planned them better.

Those are the ones that teach you the most, whether you like it or not.

THE ILLUSION OF DIGITAL CONTROL

Digital planning gives this reassuring sense of control. Measurements are precise, visuals are polished, everything looks tidy and safe. But the software does not care about lip support, phonetics, or how easy it will be for a patient to clean their prosthesis in five years.

It does not worry about what happens when the swelling goes down or what the

tissue is going to do. It just follows instructions.

In full arch rehabilitation, the small decisions matter more than you realise.

Lose a bit of vertical space. Angle an implant slightly off ideal. Focus more on available bone than final tooth position.

None of it feels dramatic at the time, but it adds up. And later, you are the one trying to make it all work without creating a bulky nightmare.

At some point, I stopped starting with implants and bone. Now I start with the teeth.

- Where do the incisal edges belong?
- How much lip support does this patient actually need?
- Is the vertical dimension right for their face, not just what the scan suggests?
- Where will the screw channels emerge in the final prosthesis, because they always seem to appear in the one place you do not want if you are not careful?

One of my best friends, Julia, works with me. We have known each other for 10 years, and she designs the wax ups for the cases I plan. We understand full arch work, and we understand each other, which makes everything smoother and honestly calmer. That matters.

I also work closely with James, our chief executive officer and a surgeon, and Jack, who completes the initial case assessments.

I am currently training Aaron, our newest planner, who has taken to it like a duck to water.

We talk through cases, challenge each other, occasionally disagree, and review everything carefully.

The feedback we get from clinicians genuinely keeps us going.

CULTIVATING THE 'DREAM TEAM'

People talk about prosthetic driven planning all the time.

In full arch cases, it is not optional. It is essential.

If you let bone dictate everything, you often end up with bulky, difficult to clean prostheses and screw channels emerging in less than ideal positions.

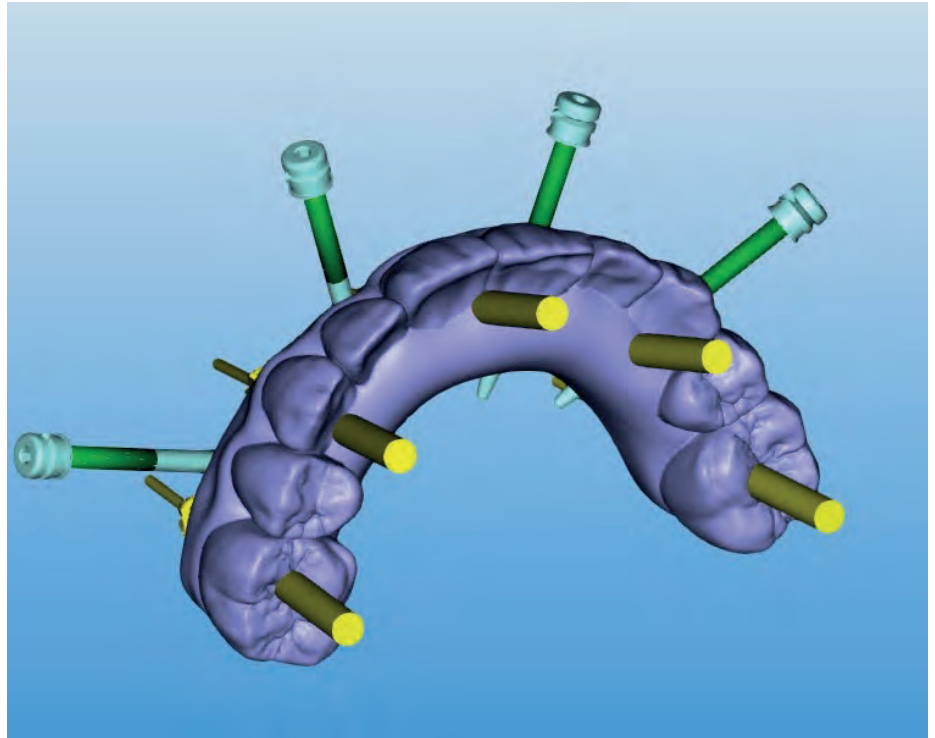
Yes, stability matters. Of course it does. But so does the long-term outcome, and so does not making something the patient cannot keep clean.

The laboratory's role has evolved as well. In complex full arch cases, we are no longer simply fabricating what is prescribed.

We are involved early. We assess restorative space, question angulations, suggest modifications and sometimes push back when something does not sit right.

That takes confidence, especially when you are working with experienced clinicians.

But it is part of modern planning now.



THE FINAL VERDICT

Digital workflows, particularly immediate load protocols, leave very little room for error. The guide follows the plan. The provisional follows the plan. The final restoration follows the plan.

If something is wrong at the planning stage, it will show up later.

Because of that, I am more deliberate now. I double check the data and the restorative space. I review patient photographs again.

If an angulation is technically acceptable but does not sit comfortably with me, I

look again. Rushing rarely saves time in the long run.

If I had to give one piece of advice to someone starting in full arch planning, it would be this.

Just because it works digitally does not mean it works clinically.

Think about soft tissue. Protect restorative space. And if something feels off, pause and go back over it.

Digital dentistry has changed what we can achieve in full arch rehabilitation.

The outcomes can be life changing for

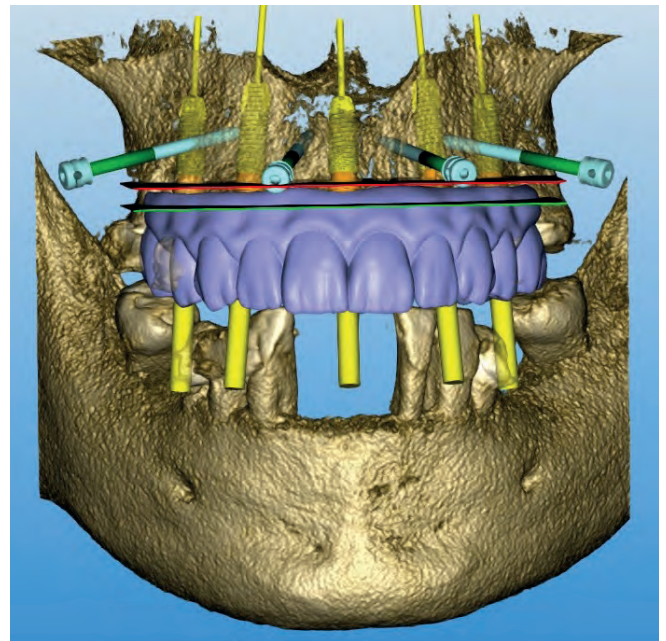
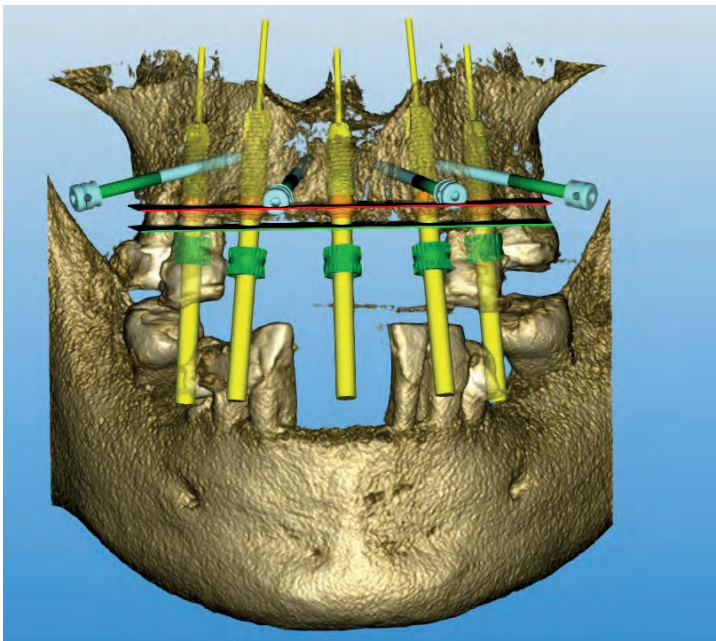
patients. But behind every successful case are countless careful decisions that no one sees.

You might ask, what's the point? Won't your job be taken over by robots soon?

At some point I was worried too but now my answer is: no.

Software is powerful, but I truly believe these tasks will not be fully replaced by artificial intelligence any time soon.

The judgement still belongs to us. And honestly, that only comes with time and experience.



Engineering Flexmon Partial

The material innovation at the core of metal-free partial dentures : interview with Zirkonzahn's Material R&D team

After the successful launch of the Florence Totalprox Denture System for full dentures, the Italian company Zirkonzahn is now ready to set new standards also in the field of partial dentures with their new Flexmon Partial system.

Flexmon Partial permits to produce metal-free partial dentures through a seamless workflow combining software and materials. The digital design is stored in the software, ensuring reproducibility over time, whereas the entire restoration is manufactured entirely from high-performance resins.

Clasps, base, and framework form one homogeneous unit, all made from a uniform material, and if a denture shows wear after years of intensive use, it can be quickly and cost-effectively renewed – a true benefit for both dental labs and patients.

In this article, we interview Mr Thomas Berteotti, member of Zirkonzahn's Research & Development department for materials, to explore more about Flexmon Pro Multistratum, the innovative resin used for the production of teeth and clasps.

What makes Flexmon Pro Multistratum a special material? How was it developed?

"Flexmon Pro Multistratum is a soft, flexible and exceptionally fracture-resistant thermoplastic PMMA. What makes it utterly strong and flexible is the meticulous iteration approach we use.

"In the team, we have developed over 100

versions of the formulation before we were willing to put our name on the result.

"Every iteration went through rigorous mechanical testing, including fracture and drop testing, flexural behaviour, long-term load, until flexibility and strength stopped competing and started working together.

"That is precisely why clasps can engage undercuts gently, correct for divergent insertion paths, and absorb daily stress through controlled flexibility rather than resisting it rigidly, surviving long-term wear without fracturing."

How do you ensure the colour matches perfectly every time?

"The true test of a shade is the patient's mouth, not a screen — so we test it there.

"Our colour development combines continuous side-by-side shade comparison in the lab with in-patient colour optimisation, fine-tuning the balance of opacity and translucency until it reproduces the natural play of light.

"We then analyse every single production batch for colour, so the shade that the user orders is the shade that will be received across the full range with no batch-to-batch surprises."

How does this material innovation actually improve the laboratory's daily workflow?

"Before the blank reaches the lab, we make consistency our priority.

"The resin blanks are produced by injection molding. Colour is introduced through our extrusion process for homogeneous shading throughout the entire blank — not just at the surface. When you mill the blank, the colour holds true all the way through.

"Combined with our verified mechanical reliability, that means no remakes and confidence in every restoration."



WITH FLEXMON PARTIALS, THE ENTIRE PARTIAL DENTURE IS MANUFACTURED ENTIRELY FROM HIGH-PERFORMANCE RESINS

What makes Flexmon Pro Multistratum an innovative material on the market?

"Working in a Research & Development team means being innovators: never settling, constantly improving, and proving it! We developed over 100 material versions, and through exhaustive mechanical validation our proudest achievement is purity.

"This new resin delivers exceptionally low residual monomer concentration, far beneath the legal thresholds. It is a CE-marked Class IIa medical device conforming to the relevant ISO standard for denture base polymers, and it's also registered by the Medicines & Healthcare products Regulatory Agency (MHRA)."

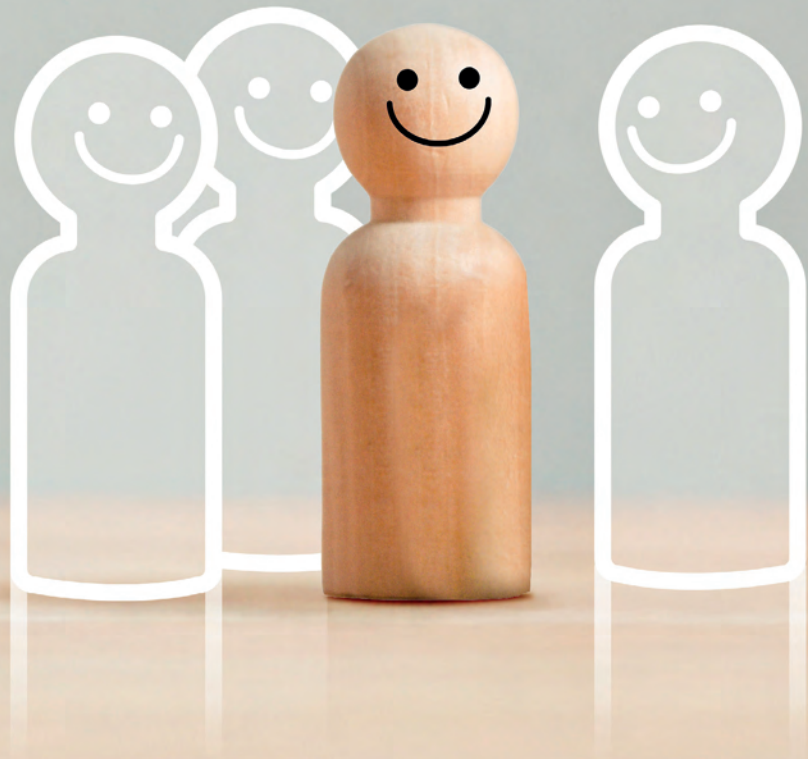
Over the years, what has always set Zirkonzahn apart is the complete package it offers beyond the product itself: technical assistance, product training, dedicated pre-and after-sales care as well as in-house control of production processes to ensure high quality. As with all Zirkonzahn products, Flexmon Partial is built around an uncompromising commitment to each laboratory's success. Zirkonzahn takes care of the complex material science — from iterations and batch analyses to testing in the laboratory and in the mouth — allowing dental laboratories to focus on creating prostheses that fit beautifully, last longer, and keep patients smiling.

FOR MORE INFORMATION

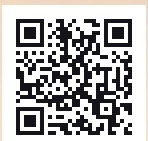
contact Zirkonzahn's Team for the UK and Ireland.
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BATCH PRODUCTION OF FLEXMON PRO MULTISTRATUM



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Tackling the dental technician shortage

Eleanor Pittard outlines how dental labs can turn workforce shortages into a competitive advantage through internal development and cross-skilling



ELEANOR PITTARD

Co-founder and director of The Hive Dental Clinic & Laboratory

THE SHORTAGE ISN'T JUST ABOUT HIRING, IT'S A STRUCTURAL WORKFORCE GAP THAT THREATENS EFFICIENCY, TURNAROUND TIMES, AND SERVICE QUALITY IF LABS DON'T ADAPT

Across the dental laboratory sector, the challenge of finding, retaining, and upskilling qualified dental technicians has moved from 'pressing' to strategic priority.

The shortage isn't just about hiring, it's a structural workforce gap that threatens efficiency, turnaround times, and service quality if labs don't adapt.

The good news? Labs that lean into internal development, cross-skilling, and team-wide engagement are turning this challenge into a competitive edge.

WHY THE GAP IS GROWING

Industry reports show labour shortages persist even as demand grows, driven by ageing populations, more digital workflows, and rising restorative case volumes.

The traditional model of recruiting

externally is no longer enough.

Rather, fostering talent internally and broadening the team's skill set is a sustainable path forward.

ACTIONABLE STRATEGIES FOR YOUR LAB

Map core competencies across roles

Start by listing critical skills your lab needs, from digital design and computer-aided design/computer-aided manufacturing workflows to analogue finishing and quality control.

Then assess where gaps exist and opportunities to cross-train.

Tip: Create a simple skills matrix (eg, Google Sheet with roles on one axis and skills on the other). Update quarterly to track progress and training needs.

Cross-training: break down silos

Rather than confining technicians to one narrow task, empower team members to learn adjacent skills.

- A ceramist could learn fundamentals of digital design
- A digital designer could build understanding of finish-phase quality checks.

This builds flexibility in staffing and reduces bottlenecks when workloads fluctuate.

Internal workshops and peer teaching

Formal training budgets are tight for many labs, but internal expertise is a free resource.

Set monthly short sessions where team members teach a skill they excel in: 'Shade Matching 101', 'Intraoral scan prep best practices', 'Troubleshooting print failures'.

These sessions promote knowledge

sharing and team cohesion.

Cultivate a culture of learning

Celebrate learning milestones, even small wins like mastering a new design software tool or printing workflow.

Add these achievements to team meetings or internal newsletters.

Recognition reinforces that development is valued by leadership, not just a human resources checkbox.

Action plan

The technician shortage doesn't have a quick fix, but it does have a sustainable solution: internal investment in people and processes. Here's your three-step action plan to bridge the gap this quarter:

1. Create your skills matrix

List eight-12 core skills your lab needs. Plot where each team member currently sits and where they could grow with training

2. Schedule cross-skill sessions

Block a 30-minute weekly slot dedicated to peer education (eg, Thursday mornings). Rotate topics based on your skills matrix gaps

3. Review quarterly progress

At the end of each quarter, update your skills matrix, note improvements, and reset goals. Identify any critical training needs requiring external courses or software certification.

Embedding this kind of intentional training rhythm will make your lab more adaptable, more competitive and more attractive as a workplace, turnaround times and morale rise together when your team feels invested in.

Things you should not shake!



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FLEXMON PARTIALS: METAL-FREE PARTIAL DENTURES REIMAGINED Zirkonzahn

With Flexmon Partials, Zirkonzahn presents a fully integrated system for the modern production of metal-free partial dentures.

Materials and digital workflow are perfectly coordinated, enabling efficient, precise, and reproducible results in the lab.

The prosthesis is based on a well-engineered material concept: Flexmon Pro Multistratum is used for both teeth and

clasps, offering an integrated natural colour gradient, high translucency, and excellent flexural strength, combined with flexibility.

This allows clasps to securely engage undercut areas and flex elastically during insertion and removal – without permanent deformation or fracture.

Retention remains stable while stress peaks on the dies are reduced.

Denture Gingiva Pro Mono is used for the denture base and is characterised by high fracture resistance and mechanical strength.

The digital design is carried out using the Zirkonzahn.modifier software, enabling fast and flexible implementation.

Intelligent features support the entire design process, ensuring consistently high quality with reduced time effort.

The result is a system for metal-free partial dentures that combines functional performance, aesthetic quality, and cost-efficient production within one seamless workflow.

<https://r.zirkonzahn.com/l6a/>



STRATASYS EXPANDS TRUEDENT DIGITAL DENTURE PLATFORM WITH ADVANCED AESTHETICS POWERED BY TRUEVOXEL

Stratasys has introduced Truedent Advanced Aesthetics powered by Truevoxel, a new evolution of its Truedent digital denture solution that enables highly natural-looking denture aesthetics to be printed automatically – directly within the digital workflow.

Built on voxel-level control, the new capability allows aesthetic details such as incisal translucency, internal structures, and cervical gradients to be designed and printed directly into denture teeth.

Unlike traditional approaches that rely on

manual staining, painting, or layering, Truedent Advanced Aesthetics delivers these effects automatically, without adding design steps or post-processing labour.

‘Truedent Advanced Aesthetics is built on biomimetic principles – using voxel-level control to replicate the way natural teeth are structured and how they interact with light,’ said Chris Kabot, vice president, dental, at Stratasys.

‘By printing these aesthetic details directly into the teeth, labs can deliver lifelike results that are not only more natural looking, but are also consistent and reproducible every time, without any additional manual steps.’

This new software release is fully

integrated into the existing Truedent workflow, requiring no changes to design or printing processes.

Aesthetic data is generated digitally and reproduced precisely in every print, helping labs achieve consistent, lifelike outcomes across remakes and reprints – an ongoing challenge with handcrafted or manually characterised dentures.

Truedent Advanced Aesthetics is particularly impactful for partial denture applications, where monolithic printing simplifies production of the denture base, while advanced aesthetics improve matching to surrounding natural dentition – one of the most critical success factors in partial denture cases.

As dental laboratories continue to face labour shortages and rising demand for premium, natural-looking prosthetics, Truedent Advanced Aesthetics helps bridge the gap between aesthetic quality and scalable production.

Labs gain a competitive differentiator, while patients benefit from dentures that look more natural and feel more personal.

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stratasys.com/dental

Advanced Aesthetics. Automated.

TrueDent® Monolithic Full-Colour 3D Printed Dentures



Monolithic Full-Colour

Single, continuous, multi-shade print eliminates assembly



True-to-Design Fidelity

Consistent, accurate print ensures optimal fit, form and function



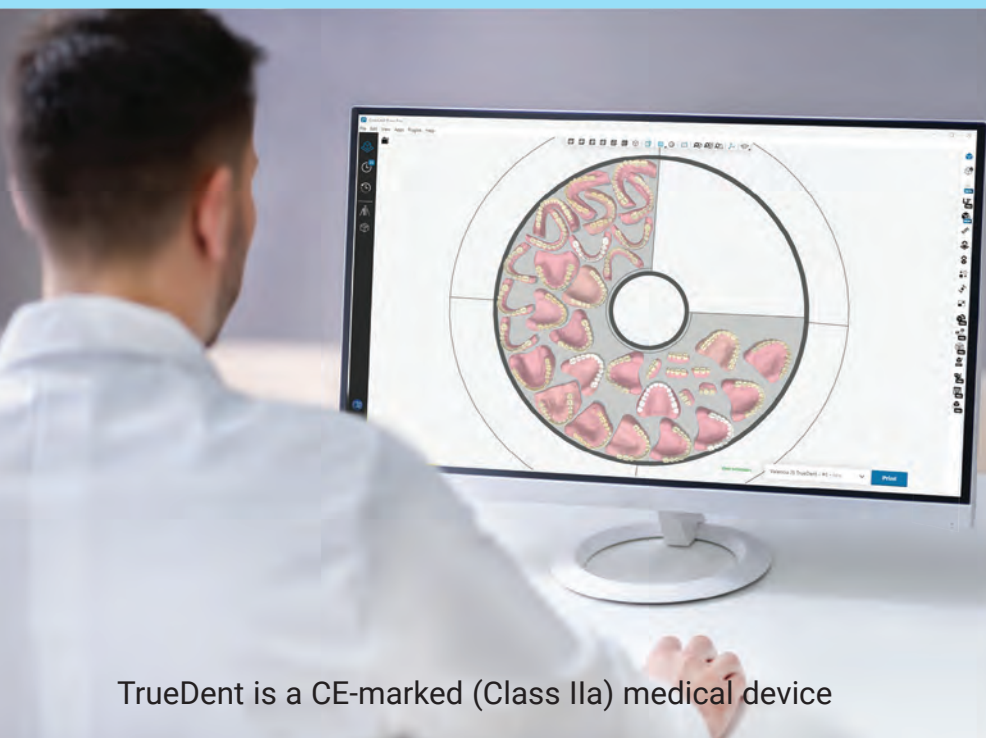
Advanced TrueVoxel™ Aesthetics

Lifelike incisal translucency, internal structures and cervical staining - automated



Exact Reproducibility

Produce perfect copies and reprints with the click of a button



TrueDent is a CE-marked (Class IIa) medical device

34 Dentures. One Build. Zero Assembly.



LEARN MORE



MKT-000021EN Rev. A

Bridging analogue and digital workflows for precision model casting dentures

Lukas Wichnalek, Norbert Wichnalek, Arbnor Saraci, Patricia Strimb and Ovidiu Moldovan present a seamless hybrid case study showing how an outsourced metal framework can be paired with high-precision, milled composite teeth



LUKAS WICHNALEK
Dental technician



NORBERT WICHNALEK
Dental technician



ARBNOR SARACI
Dental technician



PATRICIA STRIMB
Dental technician



DR OVIDIU MOLDOVAN
Clinical dentist and academic researcher

Actually, we no longer produce model casting dentures' was the answer from Highfield.design in response to a request from a dental practice.

In fact, they had phased out metal casting equipment several years earlier, and since that time, had only produced these types of frameworks with a subtractive process using polyetheretherketone (PEEK) in a digital workflow.

But knowing the customer comes first, Norbert Wichnalek, Lukas Wichnalek, Arbnor Saraci and Patricia Strimb commissioned an external laboratory to create the framework, completing the work internally afterwards.

After several discussions with the team, the tooth material was custom-made using Vita Vionic Dent Disc Multicolor.

The way this 'digilog' workflow works and its advantages are presented based on the clinical case.

A ROUTINE CASE

A 60-year-old patient visited the dental practice because he wanted to stabilise his free-end denture in the first quadrant and the gap in region UL5 for a future fixed restoration with implants.

Given that this interim solution needed to be relatively low cost, the decision was made to use model casting dentures.

Before the single-step impression with Impregum, clamps were ground into place at UR4, UL4 and UL6. The impression was

WHEN THE FIT WAS FIRST
CHECKED ON THE MODEL
CASTING FRAMEWORK,
THE DENTURE
COMPONENTS ALREADY
FIT TOGETHER PERFECTLY
LIKE A PRECISION-
ENGINEERED, PLUG-IN
SYSTEM

sent to an external laboratory where a conventional process was used to fabricate the master model with the model casting framework on top of it.

The finished framework on the model was delivered to the Highfield.design – Zahntechnik Wichnalek laboratory.

When it arrived, the team discussed whether they should continue with an analogue or digital workflow.



FIGURE 1: The residual dentition in the maxilla after grinding clamps at UR4, UL4 and UL6



FIGURE 2: An impression was made of the clinical situation with Impregum



FIGURE 3: The model casting framework was produced by an external laboratory



VITA

Elevate your Digital Dentures

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FIGURE 4: The master model and framework were scanned for the digital workflow



FIGURE 5: The design in the CAD software was based on the Highfield.design tooth library



FIGURE 6: The design of the tooth material in the Exocad software

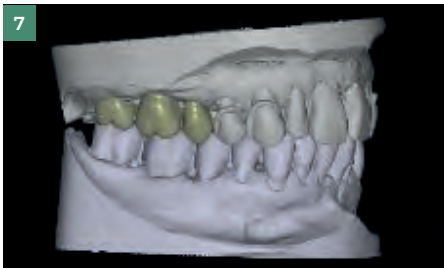


FIGURE 7: Teeth UR5, UR6 and UR7 were designed as one block



FIGURE 8: They can be designed to fit precisely, especially where space is limited



FIGURE 9: The dental material was fabricated from Vita Vionic Dent Disc Multicolor

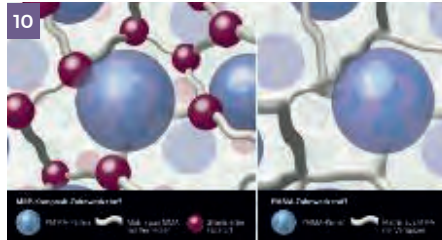


FIGURE 10: Highly cross-linked Vita MRP composite formulation in a schematic comparison to unfilled PMMA

THE OCCLUSION COULD ALSO BE DESIGNED IN THE COMPUTER-AIDED DESIGN (CAD) SOFTWARE TO BE FUNCTIONALLY SUITABLE FOR THE ANTAGONIST

CUSTOMISED TOOTH MATERIAL

The instinctive decision was to continue with the familiar digital workflow. During the discussions, the reason for this quickly became clear.

The tooth material could be produced from the Vita Vionic Dent Disc Multicolor A2 to fit the framework precisely and at the free end in a single cast.

That would ensure the greatest possible layer thickness and stability, as well as a secure bond through an even bonding gap.

There would be no need for a lengthy process of grinding the prefabricated teeth 'just in case'. The occlusion could also be designed in the computer-aided design (CAD) software to be functionally suitable for the antagonist. This is especially advantageous when there is limited vertical space, as was the case here.

The polychromatic disc consists of the proven and highly cross-linked Vita microfiller reinforced polymer matrix (MRP) composite formulation, which is used to produce all Vita premium teeth and has proven to be particularly resistant to abrasion (Pin-on-Block (POB) wear test, University of Regensburg, Germany, 2015).

The natural shade gradient and shade accuracy of the disc ensure a harmonious shade effect in relation to the natural teeth.

DENTURE TEETH USING PREMIUM FORMULA

The model casting framework was scanned on the model, as were the opposing jaw and the articulation. The data set was transferred to the Exocad software.

The appropriate tooth morphology was identified using the Highfield.design tooth library and adapted accordingly in the design software.

The free ends at UR5, UR6 and UR7 were constructed as one block. Tooth UR7 merged smoothly into an occlusal stop of the framework structure. Pins were constructed on all the teeth at the base, which were a perfect fit for the retention holes in the framework saddle.

The bonding gap was set at 0.01 mm, factoring in the opaquing. After nesting, which made optimal use of the shade gradient of the disc, the milling task was sent by the computer-aided manufacturing (CAM) software Coritec Icam V5 smart to the milling unit imes-icore 350i Pro.

CUSTOMISED PLUG-IN SYSTEM

The CAD/CAM-supported dental material was cut out of the disc.

When the fit was first checked on the model casting framework, the denture components already fit together perfectly like a precision-engineered, plug-in system.

The basal pins fit into the retention holes like Lego blocks, as did the mesio-distal

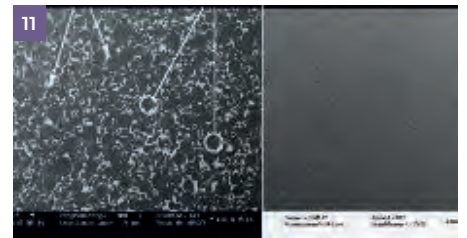


FIGURE 11: Comparison of MRP composite (left) and PMMA (right) under a scanning electron microscope (SEM)



FIGURE 12: The milled tooth material in the Vita Vionic Dent Disc Multicolor



FIGURE 13: The tooth material for the model casting dentures after removing the attachments



FIGURE 14: The retention pins for the dental material can be seen in the basal view



FIGURE 15: The denture components fit together perfectly like a plug-in system



FIGURE 16: The retention pins fit precisely into the hole structure of the free-end saddle



FIGURE 17: The universal Vita Vm Lc Primer I and II ensure a secure chemical bond

dimensioning into the framework structure.

After the attachments were ground back and finished with rubber polishers, the basal bonding areas of the basal framework were sandblasted with 110 µm aluminum oxide, conditioned with the universal Vm Lc Primer I and II and then masked with Vita Vm Lc flow Gingival Opaque.

After the basal-circular sandblasting and chemical conditioning of the tooth material with Vita Vm Cc Liquid, it was bonded to the

framework with a one-to-one mixture of the shade-accurate cold-curing polymerisable Vita Vm Cc Base Dentine A2 and Enamel.

DENTURE UNIT

The denture base was then completed with pink polymethyl methacrylate (PMMA) cold-curing polymer and, after a cut-back of 0.3 mm, individualisations were carried out with Gingiva Vita Vm Lc flow G1 (dusky pink) in the cervical area and G4 (brown-red) in the interdental area.

The Vita Akzent Lc composite stains were used to achieve minimal characterisations cervically using lemon and interdentally using dark red. A uniform gloss level was achieved using Vita Akzent Lc Glaze.

During integration, the teeth made from the Vita premium formulation harmoniously blended into the residual dentition functionally and aesthetically.

The 'digilog' workflow had created a precise and robust tooth material from the Vita Vionic Dent Disc Multicolor, which formed a denture unit similar to a modular system with coordinated conditioning, bonding, individualisation and characterisation on the material side.



FIGURE 18: Masking of the basal framework components was done using Vita Vm Lc Gingiva Opaque



FIGURE 19: The tooth material was bonded to the framework using the cold-curing polymer Vita Vm Cc



FIGURE 20: Situation after bonding the tooth material from the Vita Vionic Dent Disc multicolor



FIGURE 21: The base was completed using the composite Vita Vm Lc flow and the composite stains Vita Akzent Lc



FIGURE 22: The tooth material was polished to a high gloss using Vita Polish Hybrid



FIGURE 23: The finished model casting dentures with occlusal stop at UR7



FIGURE 24: Although teeth UR5, UR6 and UR7 had been fabricated as a block, they appeared to be individual teeth



FIGURE 25: The finished model casting dentures with teeth from Vita Vionic Dent Disc multicolor

Enhanced CPD

LAB/SUMMER/FRKETIN/PAGE 20

1. Why was the Biofunctional Prosthetic System (BPS) chosen for Trevor's dentures?

- ☐ a. It was the least expensive treatment option
- ☐ b. It provided a predictable workflow delivering accuracy, function and aesthetics within a limited timeframe
- ☐ c. It eliminated the need for jaw relation records
- ☐ d. It was only suitable for class I patients

2. What is the primary function of the Gnathometer M described in the article?

- ☐ a. To mill the final denture base
- ☐ b. To record gingival contours prior to waxing
- ☐ c. To combine maxillary and mandibular special trays with an integrated gothic arch tracing system for precise jaw relation records
- ☐ d. To measure tooth shade before processing

3. According to the author, how should the borders of a maxillary special tray be modified when ridge resorption is present? They should be...

- ☐ a. Made thinner to improve comfort
- ☐ b. Kept the same thickness throughout
- ☐ c. Removed from the posterior region
- ☐ d. Made thicker to compensate for lost support and improve stability

4. What was the purpose of introducing rotations and light crowding into the tooth setup?

- ☐ a. To reduce the time required for denture fabrication
- ☐ b. To create a more natural and individualised appearance while maintaining function and aesthetics
- ☐ c. To increase the vertical dimension of occlusion
- ☐ d. To improve the retention of the denture base

LAB/SUMMER/GREENING/PAGE 24

1. According to the author, what has primarily enabled digital dentures to be delivered with greater predictability and fewer appointments?

- ☐ a. The routine use of wax bite registrations
- ☐ b. The replacement of analogue impressions with intraoral scanning and digital design
- ☐ c. The use of conventional impression materials
- ☐ d. The elimination of technician involvement during treatment

2. Which occlusal scanning principle is indicated when an existing full denture provides an acceptable occlusal vertical dimension (OVD), centric relation and aesthetics?

- ☐ a. Intercuspal position (ICP)
- ☐ b. Pre-prep scan
- ☐ c. Reference denture
- ☐ d. Centric tray/bite block

3. When is a centric tray or bite block recommended within the digital denture workflow?

- ☐ a. When the patient has stable natural dentition with reproducible intercuspation
- ☐ b. When an existing denture provides an acceptable occlusal relationship
- ☐ c. When there is no stable intercuspal position and no suitable reference denture
- ☐ d. When copying the aesthetics of an existing denture with a pre-prep scan



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4. According to the article, what is the key factor in achieving predictable outcomes with digital dentures?

- ☐ a. Using the latest CAD/CAM software available
- ☐ b. Understanding and correctly applying the four principles of occlusal scanning
- ☐ c. Fabricating every case using traditional wax rims first
- ☐ d. Increasing the number of clinical appointments for every patient



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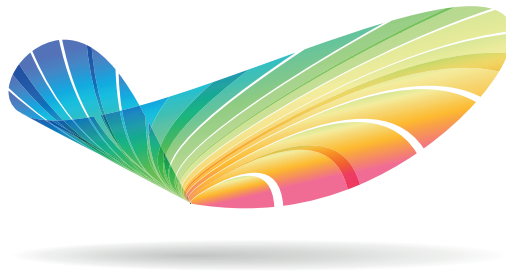


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