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THE MAGAZINE FOR DENTAL PROFESSIONALS IN IRELAND

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The time is now

Unlock the full potential of Ireland's dental hygienists

The recent call by the Irish Dental Hygienists Association (IDHA) to Jennifer Carroll, Ireland's Minister for Health, urging legislative change to enhance the role of dental hygienists, must be met not just with support but with immediate action. This is not an issue of professional ambition; it is an urgent matter of public health strategy and is key to the modernisation of the oral healthcare delivery system.

The core issue lies within the Dental Act 1985; in the four decades since its enactment, the Irish dental landscape has been revolutionised by advancements in technology, training and preventative therapy. Yet, the foundational legislation governing one of our most crucial professions remains stubbornly rooted in the past.

Currently, this outdated framework mandates that dental hygienists must operate solely under the referral of a dentist. This effectively places a structural barrier between highly trained professionals and the patients who desperately need timely preventative care. The consequences of this outdated model are stark and increasingly unsustainable.

The IDHA has highlighted how waiting times for essential dental treatments, particularly for vulnerable groups such children and adults with disabilities requiring general anaesthesia, can stretch to more than two years.

The delays prevent opportunities for early intervention; turning manageable issues into complex, invasive and costly treatments.

In a climate defined by a persistent shortage of dentists and soaring patient demand, we are actively restricting the capacity of a professional group trained to mitigate this crisis.

The proposed solution, a simple amendment to the Dental Act 1985 to allow direct access to dental hygienist services, is not radical; it is pragmatic and long overdue. Dental hygienists undergo rigorous education and training, equipping them with the comprehensive skills necessary to independently assess a patient's oral hygiene needs, conduct preventative treatments and refer cases requiring a dentist's expertise. Unlocking their full potential means allowing them to utilise these skills without the bureaucratic hurdle of mandatory referral for routine scaling, polishing and oral health education.

This shift would deliver profound benefits across the entire oral healthcare ecosystem. For the public, it would mean immediate, faster access to preventative care, reducing the likelihood of disease progression and improving overall oral health outcomes.

For the dental practice, it represents a crucial strategic advantage. Dentists, facing mounting pressure from complex restorative and surgical cases, can confidently delegate routine preventative care to hygienists. This allows dentists to focus their highly specialised time and skills where they are most needed, optimising practice efficiency and improving workflow for the entire team.

Furthermore, moving to a direct access model finally brings Ireland into alignment with international best practice. Colleagues across Europe and the globe have long adopted this system, recognising the hygienist as a primary partner in prevention-led care.

Ireland's continued adherence to the referral-only model is an anomalous position that needlessly stifles its capacity to deliver efficient care.

Crucially, the IDHA's demand is entirely consistent with the Irish Government's own policy objectives, particularly those laid out in *Smile agus Sláinte*. The policy explicitly advocates for a greater emphasis on prevention and the introduction of preventative care packages.

There is a glaring contradiction in supporting a prevention-led strategy while simultaneously restricting the professional best positioned to deliver that prevention on the front line.

The Minister for Health now has a clear mandate and a moral imperative to support this essential legislative change. It is an opportunity to cut waiting times, improve public health and modernise the Irish dental sector in one decisive legislative stroke.

We urge the Government to listen to the voice of the IDHA, to trust the training of dental hygienists and to enact the necessary amendments to the Dental Act 1985 without delay.

The time for deliberation is over; the time to legislate for a stronger, more efficient, and prevention-focused dental future for Ireland is now.

Dr Paul O'Dwyer BDS MSc (Healthcare Management)

Listening to the unsaid

The art of silence in dentistry

There are moments in the surgery when the only sounds are the hum of the suction and the slow rhythm of breathing through a nose partially numbed by local anaesthetic. Words fade, instruments whisper and both patient and clinician settle into a kind of shared quiet.

That silence is not empty. It is full of small messages; the tightening of a hand, a change in eye focus, a subtle shift of the jaw. In those moments, the dentist becomes less a technician and more a 'listener', hearing what is not said. We speak often in dentistry about the importance of communication. We train our teams to explain, reassure and obtain consent; we discuss 'small talk' as the social lubricant of the dental chair. But less often do we talk about the art of silence; how listening, observation, and presence can sometimes achieve more than any carefully rehearsed script.

The space between words

Silence has a language. It can be anxious, peaceful, awkward or trusting. It can signal pain, hesitation, or calm acceptance. The challenge is learning to interpret it.

Every clinician will remember the patient who sits in silence throughout a procedure, stoic and still – until the treatment ends and a flood of gratitude emerges.

Or the patient whose silence is heavy with fear, whose eyes dart at each sound of a bur. The meaning lies not in the absence of speech but in the presence of subtle signals.

In a profession obsessed with precision, we sometimes forget that communication is less about words than connection. Psychologist Albert Mehrabian famously proposed that only 7% of emotional meaning comes from spoken words; tone and body language do the rest.

Dentistry, with its masks, gloves, and machinery, challenges those remaining 93% – but it does not erase them.

Non-verbal fluency

Research into non-verbal communication in clinical encounters reminds us that empathy is often conveyed without speech; through posture, facial expression and attentiveness.

One study in Patient Education and Counseling (Eide & Eide, 2021) found that patient satisfaction correlated strongly with clinicians' non-verbal cues — particularly eye contact and physical orientation toward the patient.

In dental practice, we can cultivate 'non-verbal fluency'. It begins with awareness; noticing micro-expressions, hand tension or subtle withdrawal when a mirror approaches. It develops through mindfulness; staying present enough to sense what the patient feels even before they articulate it.

This fluency matters. Many patients fear dentistry precisely because they have felt unseen or unheard while immobilised in the chair. When we tune into unspoken communication, we restore balance to that power dynamic.

The mindful clinician

Mindfulness has become a buzzword, but in its essence it is simply paying attention on purpose. In the dental context, that means being fully present for the person in the chair; not the schedule, not the next case, not the ticking of the clock.

A mindful clinician perceives silence as data. Is the patient's breathing slowing? Are their shoulders dropping as they relax? Are they staring fixedly at the ceiling in self-distraction? Each clue helps us adjust pace, tone and reassurance.

Training ourselves and our teams in such mindful observation can reduce stress on both sides of the chair. It can even enhance efficiency; a patient who feels sensed and safe is more compliant and easier to treat.

From silence to action

So what can we do with this awareness? Start by noticing. In your next procedure, pause for a heartbeat before you speak. Observe your patient's micro-responses.

Ask yourself what their silence might mean – comfort, confusion, fatigue? Then respond appropriately, perhaps with a nod, a reassuring hand signal or simply gentle pacing.

Leaders in dental teams can embed this awareness in training; debrief after challenging appointments, share examples of 'unspoken cues' that changed a case's outcome, and celebrate the quiet successes where understanding arose without words.

For those engaged in audit or education, there's scope to measure this too – perhaps through patient-reported experience surveys asking, Did you feel the dentist understood how you were feeling, even without words?

The quiet conclusion

In a noisy world, silence can be a rare gift. It is in the quiet that trust forms, confidence grows and healing begins. As clinicians, we are not only providers of procedures but interpreters of pauses.

Next time your surgery falls silent, listen closely. You might discover that what your patient isn't saying is the most important conversation of all.

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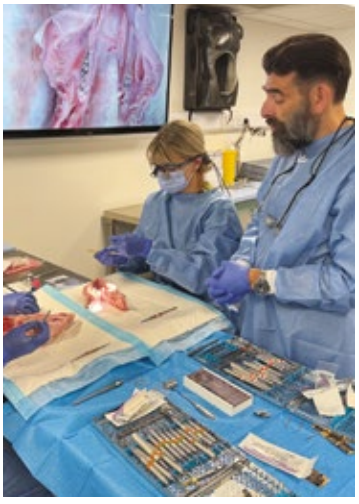

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Dental charity launches project working with homeless

Dentaid is looking for volunteer dentists and dental nurses to give their time

DENTAID, the dental charity, is returning to Northern Ireland in 2026 to help vulnerable people in need of vital dental care to access support and oral health advice.

The charity enjoyed a record-breaking year in 2025, with its volunteer-led, dedicated teams helping to provide essential care for thousands of people across the UK facing homelessness, harm, poverty and abuse. Its work now covers more than 35 counties around the UK, with more than half a dozen receiving visits for the first time in the last year.

Dentaid will visit Derry for a week of clinics between 2 and 6 February, working in partnership with the homelessness charity Depaul. The project will see volunteer dentists and dental nurses support Depaul's service users, with treatments to relieve dental pain and assessments for those who are rough sleeping or vulnerably housed.

The charity has held clinics in Armagh, Belfast, Coleraine and Lisburn last March, supported by the Simon Community. It launched its low-emission mobile dental vehicle, Clover, in Northern Ireland in November 2024, allowing it to deliver its services in a more environmentally friendly way and which will return for the upcoming clinics in Derry.

Among Dentaid's key projects in 2025 was an expansion of its work in helping vulnerable women gain access to dental care, including survivors of domestic abuse, people facing exploitation or modern slavery and women working in the sex industry. This work went alongside the charity's continuing efforts to reach those in need of important dental treatment in fishing, Traveller, Roma and Gypsy communities, refugees and those seeking asylum and other vulnerable members of society.

Dentaid is looking for volunteer dentists and dental nurses who would like to give their time on their mobile dental units to help those less fortunate.

They would also like to hear from anyone looking to get involved in teaching oral health education to children in Northern Ireland as part of their BrightBites scheme.

To learn more about the charity and how to get involved with volunteering, visit **www.dentaid.org**

Campbell Academy appoints clinical education director

GLASGOW implant dentist Colin Burns has been appointed Clinical Director of Education at The Campbell Academy, Scotland and Northern Ireland.

Burns, a Visiting Professor at the University of Central Lancashire, is also a Fellow of the International Team for Implantology (ITI), Chairman of the UK and Ireland Section of the ITI and a Straumann Clinical Mentor.

Colin both places and restores dental implants and provides bone block grafting and sinus augmentation.

His particular areas of interest are implant surface technology, bone biology and bone regeneration, for which he achieved an MSc (with Merit) in Implant Dentistry from the University of Warwick.

Colin qualified from the University of Glasgow in 1990 and received his MFDS MRCS from The Royal College of Surgeons in 2005.

He lectures extensively in the UK, Europe and beyond to dentists, nurses and dental technicians.

Diploma exam dates announced

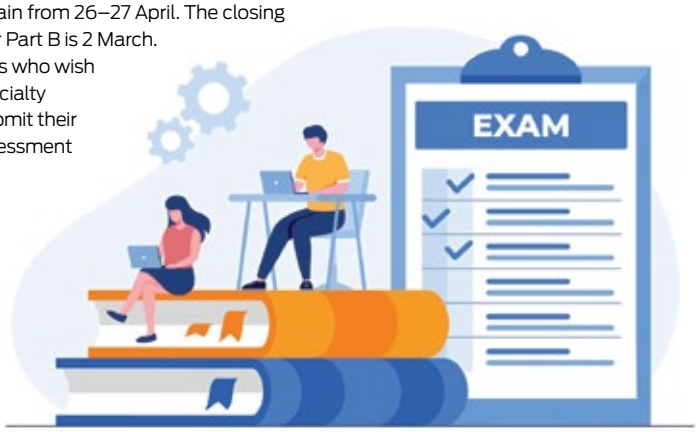
THE Faculty of Dentistry at the Royal College of Surgeons in Ireland (RCSI) has announced the schedule for its upcoming Specialist Fellowship Diploma examinations. The dates are:

- Part A – OSOM / Oral Medicine: 8 January 2026 (Online)
- Part B – OSOM / Oral Medicine: 26–27 April 2026, Bahrain
- All Other FFD Specialties: 26–27 April 2026, Bahrain

The Part A OSOM and Oral Medicine examinations will take place online on 8 January (registration has closed). The Part B OSOM and Oral Medicine examinations, along with all other FFD Specialty Examinations, will be held in person at RCSI Bahrain from 26–27 April. The closing date for registration for Part B is 2 March.

First-time candidates who wish to sit the FFD RCSI Specialty Examinations must submit their documentation for assessment here: **www.ffd.facultyofdentistry.ie**

Pre-approved candidates holding an existing approval letter do not require a new approval letter and can register here: **tinyurl.com/3cjba2n6**



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Making dental drills less anxiety inducing

Work has begun on developing dental devices that can enhance patient comfort

RESEARCHERS say that by studying a dental drill's aeroacoustics the anxiety-causing sounds can be identified and decreased.

Odontophobia, the irrational fear of dentists and dental procedures, is a well-known cause of people avoiding care and treatment. One aspect of their anxiety comes from the sound of the dental drill.

Tomomi Yamada, an Assistant Professor at the University of Osaka's Graduate School of Dentistry, has witnessed discomfort and fear in her patients. "I realised that almost no one, not even dentists, was tackling this sound problem scientifically," she said.

To understand the aerodynamics of the drill, Professor Yamada and her collaborators from the University of Osaka, Kobe University and National Cheng Kung University used Japan's flagship supercomputer to conduct large-scale aeroacoustics simulations. They were able to visualise how air moves through and around the drill to create its noise.

Professor Yamada presented her work[1] at the Sixth Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan in December.

"Our research showed that just making the drill quieter isn't enough to make the sound less unpleasant," said Professor Yamada.

"What really matters is improving its sound quality." The researchers also tested the psychological effects of the dental drill,

which can generate high-pitched sounds reaching nearly 20 kilohertz, with children and adults.

They found that younger listeners had different reactions to the drill, perceiving the sounds as louder and more unpleasant. To address this, Professor Yamada and her colleagues are working on optimising the blade geometry and exhaust port of the drill to minimise the noise while maintaining the performance.

"Our framework provides a foundation for aeroacoustic optimisation for air turbine handpiecess, thereby supporting the development of quieter dental devices that can enhance patient comfort and reduce anxiety in clinical settings," said Professor Yamada.

[1]www.mdpi.com/2076-3417/15/15/8187

BSDHT launches podcast

THE British Society of Dental Hygiene and Therapy (BSDHT) is launching *Dental Health Matters*, a podcast created to support, inform and connect dental hygienists and dental therapists across the UK. The podcast will be hosted by BSDHT President, Rhiannon Jones, with guest hosts and contributors joining throughout the series. The podcast will be available in both video and audio format on Spotify, Apple Podcasts, Google Podcasts, Amazon Music and YouTube, ensuring easy access at home, between appointments or on the commute. Commenting on the launch, Rhiannon said: "Our profession thrives on shared learning, connection and support. This podcast creates a space for open, practical and uplifting conversations that reflect real life in practice. I am excited to share stories, ideas and insights that inspire confidence and pride in the amazing work dental hygienists and dental therapists do every day."

The first three episodes will be released together on 20 January, giving listeners the flexibility to begin with the discussions that feel most relevant to them. The opening episode will feature Dr Mahrukh Khwaja, founder of Mind Ninja, who will explore practical, evidence-informed approaches to prioritising self-care and supporting emotional resilience in the dental profession. From there, the series moves into conversations grounded in everyday experiences, including wellbeing, professional identity, confidence, and the evolving role of dental hygienists and dental therapists in the wider oral health landscape.

Visit: www.bsdht.org.uk/podcast

Countries agree to end mercury fillings by 2034

MORE than 150 countries, including the UK and Ireland, have agreed to phase out the use of mercury-based amalgam in fillings by 2034.

At a conference in Geneva in November, signatories to a treaty aimed at protecting human health and the environment from mercury pollution agreed "to end the use of dental amalgam by 2034, marking a historic milestone in reducing mercury pollution".

The Minamata Convention on Mercury is an international treaty to protect people and the environment from the adverse effects of mercury and mercury compounds. "This science-based, time-bound agreement marks a decisive step toward the total elimination of mercury use in dentistry and a safer future for all communities," the signatories said in a statement.

Some countries have already banned its use in dental amalgam, a common filling material used for more than 175 years. But it remains the most common material for NHS permanent fillings across the UK. Ireland is revising public payment systems to favour mercury-free alternatives.

> "THIS SCIENCE-BASED, TIME-BOUND AGREEMENT MARKS A DECISIVE STEP TOWARD THE TOTAL ELIMINATION OF MERCURY USE IN DENTISTRY AND A SAFER FUTURE FOR ALL COMMUNITIES"

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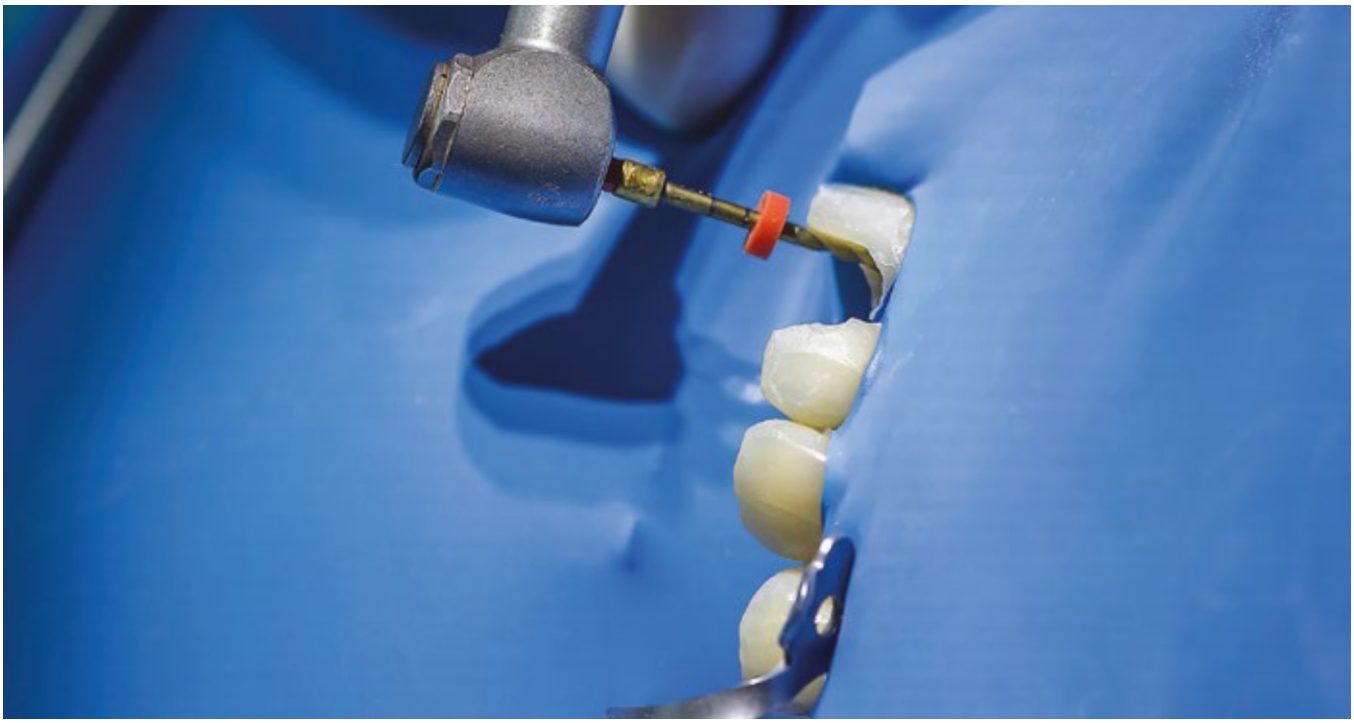

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Introducing our award-winning dentist Gary O'Neill at Blue Sky Dental & Implant Clinic

Dr Gary O'Neill is an award-winning cosmetic and restorative dentist at Blue Sky Dental and Implant Clinic, who is passionate about delivering world-class dentistry and exceptional patient care. Known for his meticulous attention to detail, advanced clinical skills and warm, approachable manner, Gary is dedicated to helping patients achieve beautiful, natural smiles.

After graduating with a Bachelor of Dental Surgery (BDS) from Newcastle University in 2017, Gary completed multiple postgraduate qualifications, including a Masters degree with Distinction in Aesthetic Restorative Dentistry from King's College London and a Postgraduate Diploma in Clear Aligner Orthodontics. He is also a Member of the Faculty of Dental Surgery at the Royal College of Surgeons of Edinburgh (MFDS RCSEd).

Gary's clinical expertise includes smile makeovers, porcelain veneers, Invisalign clear aligner orthodontics, composite bonding and minimally invasive restorative dentistry. His work has been recognised nationally and internationally, earning multiple prestigious awards.

AWARDS AND RECOGNITION

He has received multiple awards for clinical excellence in cosmetic and restorative dentistry. Highlights include:

- Best Young Dentist – Winner (2021)
- Best Young Private Dentist – Winner (2021, 2022, 2023)

Dr Gary O'Neill

Below: Some of Dr O'Neill's cases, before and after

- Best Transformed Smile – Winner (UKI Live Align Technology Awards 2023)
- Best Young Irish Dentist – Winner (2024)
- Best Porcelain Makeover – Winner (Clinical Dentistry Awards 2024)

TREATMENT PHILOSOPHY

Gary is a firm believer in minimally invasive dentistry, aiming to preserve as much of the natural tooth structure as possible while achieving outstanding aesthetic outcomes. He places strong emphasis on orthodontic tooth alignment prior to restorative work, recognising that properly aligned teeth not only enhance cosmetic results but also allow for more conservative, long-lasting treatments such as composite bonding and porcelain veneers.

LECTURING

In recognition of his clinical skill and commitment to excellence, Gary has been invited to teach and lecture at some of the UK's most prestigious dental universities, including King's College London and the College of Medicine and Dentistry, Birmingham. He lectures postgraduate students on dental photography, smile design and advanced restorative techniques, helping to shape the next generation of cosmetic dentists.

Gary is also committed to continual learning, regularly attending advanced training courses both in the UK and internationally to stay at the forefront of modern cosmetic and restorative dentistry.

Outside of dentistry, Gary enjoys travelling, photography, music (especially 80s vinyl records) and keeping active with tennis and golf. Patients value his relaxed, reassuring approach and the pride he takes in helping every individual feel confident with their smile.

To see more of Gary's clinical work and smile transformations, visit his Instagram page @thecosmeticdentist. If you would like to refer a patient to Dr O'Neill, please fill out our online form www.blueskydentist.com/referrals or phone 028 9068 7722 to speak to our friendly team. Our address: Blue Sky Dental & Implant Clinic, 28 Wellington Park, Belfast, BT9 6DL.

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REVERSE EVIDENCE-BASED DENTISTRY

An innovative approach to dental education and clinical practice

Evidence-Based Dentistry (EBD) involves the integration and interpretation of the most current research evidence with personal experience. First cited in professional dental literature in 1995[1], EBD allows dentists, as well as academic researchers, to keep abreast of new developments and make decisions that improve clinical practice. Today, most dentists are familiar with EBD and generally support its implementation[2].

However, despite its benefits, barriers to EBD implementation remain, including insufficient time, inadequate training and a perceived lack of relevance of the evidence to everyday practice[3]. Dentists often rely on colleagues, key opinion leaders, company sales representatives or social media forums to gain new information.

However, these sources are not always up to date or correct and may provide financially motivated advice. Social media forums lack quality control, and yet due to the visibility of cases posted they are likely to have an overinflated effect on practice[4]. Busy clinicians need access to selective, efficient and patient-driven research. It is crucial for clinicians to be able to assess the level of evidence of publications to formulate an evidence-based treatment plan and provide patients with accurate, current, and trustworthy information.

In light of these challenges, this commentary introduces the concept of Reverse Evidence-Based Dentistry (Reverse EBD); defined as a structured analytical process that inverts the conventional EBD sequence. Unlike traditional EBD, which begins with published evidence to inform clinical decisions, Reverse EBD starts from real-world clinical practices or historical observations and systematically traces backward to identify and evaluate the supporting scientific evidence. This approach not only clarifies the evidence base behind established protocols but also trains learners to discern gaps between practice and research, fostering reflective, critical and evidence-aware clinical reasoning.

EBD has a significant influence on oral healthcare, yet persistent barriers – such as limited time, perceived complexity and insufficient translation of evidence into practice – continue to hinder its consistent adoption. Reverse EBD is proposed as a complementary framework designed to address these limitations. Unlike conventional EBD, which follows a top-down model that begins with published evidence and applies it to clinical settings, Reverse EBD starts from real-world clinical practices and works backward to identify and evaluate the supporting scientific rationale.

This inversion of the evidence pathway promotes active engagement, contextual understanding and reflective inquiry, helping clinicians and students critically assess both established and emerging treatment protocols. By fostering a dynamic link between observation and evidence, Reverse EBD bridges the gap between theory and practice, making evidence-based reasoning more accessible and applicable to everyday clinical decision-making.

WORDS
ANDREA MASCOLO, OANA DINCULESCU, MARIA MEZETTI, GILBERT MERCIECA AND FRANCESCA BUSUTTIL

At the European Institute of Medical Studies (EIMS) in Malta, Reverse EBD has been integrated into undergraduate teaching within a neutral, non-promotional pedagogical framework aimed at developing analytical and reflective competencies. This educational implementation demonstrates how Reverse EBD can strengthen evidence-based thinking while preserving academic independence and methodological rigor.

Additionally, EIMS has introduced the concept of Reverse EBD through an engaging and easily reproducible process that builds on foundational clinical skills. By readapting the concept of reverse engineering to dentistry, Reverse EBD is defined as a structured analytical process through which one seeks to understand, by means of deductive reasoning, how an established clinical or educational procedure has been developed and supported by scientific evidence. This perspective enables learners to reconstruct the rationale behind existing practices and critically evaluate their evidence base.

Undergraduate students at EIMS received foundation training in EBD principles and then applied Reverse EBD to a foundational unit of their curriculum: History of Medicine.

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As part of this exercise, students virtually examined Mayan human skulls exhibited at the Peabody Museum at Harvard University, questioning how three shell fragments were integrated into the mandible.

Additionally, they also considered archaeological evidence from other cultures. They explored how the Etruscans in Italy and the Ancient Egyptians used cast iron, copper and even oxen bone to create the first tooth substitutes. This exercise allowed students to link different units and develop a critical assessment of their learning. By examining historical practices through the lens of modern evidence-based principles, students gained insights into the evolution of dental practices and the importance of EBD in modern dentistry.

The Reverse EBD approach can also be applied to clinical protocols beyond historical contexts. For instance, while laser protocols have been strongly promoted for the treatment of periodontal disease and peri-implantitis, students applying the Reverse EBD process discovered differing recommendations. In fact, the S3 Level Clinical Practice Guideline for the treatment of Stage I-III periodontitis[5], published by the American and European Academies of Periodontology, does not recommend use of lasers. This critical reverse process stimulates learners to adopt a more conscious and evidence-based approach to clinical practice, encouraging them to evaluate and validate current protocols against the best available evidence.

Another example of the Reverse EBD process applied to clinical protocols is for the use of platelet-rich fibrin (PRF). PRF, used alone or in combination with grafts or other biomaterials, has shown regenerative effectiveness in different clinical fields[6]. The Reverse EBD exercise allowed students to assess higher levels of evidence related to specific procedures.

For instance, a meta-analysis on the effectiveness of PRF as an adjunctive material to bone graft in maxillary sinus augmentation demonstrated no clear advantage or disadvantage in using PRF preparations or their by-products alongside bone graft materials[7]. This exercise helps students critically evaluate evidence, understand the complexities of clinical protocols, and identify alternative protocols equally supported by evidence.

In forensic dentistry, it has been noted that EBD is sometimes employed to justify procedures rather than to genuinely guide best practices. This misuse of EBD is a concern that is acknowledged within both forensic and general dental literature[8]. In this context, as well as in clinical dentistry, the Reverse EBD process could be a valuable tool for critically evaluating evidence and proposed protocols.

By encouraging a more thorough examination of clinical practices, the Reverse EBD approach may result in an improved understanding and application of evidence-based practices in clinical settings. Furthermore, through Reverse EBD, clinicians may identify procedures that may be more compatible with variables such as their level of clinical experience.

Over the past 30 years, the contents, methods and assessment of EBD education have been widely studied and discussed. A recent scoping review revealed that the current literature focuses mainly on teaching of critical appraisal skills, traditional teaching methods and short-term outcome assessments. To address these gaps, future research should explore comprehensive educational models, multifaceted teaching approaches and validated outcome assessment tools[9].

Among the strategies described for effectively teaching EBD in undergraduate courses, the following have been highlighted: designing continuing and frequent dental education courses; establishing collaborative student research groups; utilising online tools for EBD education; and dividing EBD courses into shorter modules[10].

Teaching strategies that incorporate clinical experiences tend to be more effective in fostering critical thinking and application of EBD principles. Implementing EBD in the foundational years of dental education, even when students have limited prior dental knowledge, can encourage early development of analytical and reflective skills essential for evidence-based practice.

Furthermore, the concept of Reverse EBD has been formally incorporated into the newly accredited Bachelor of Science (Honours) in Dental Science (180 ECTS, Malta Qualifications Framework (MQF) Level 6) at EIMS. The programme adopts an interdisciplinary curriculum combining dental science with biomedical engineering, health IT and research methodology, offering a neutral pedagogical framework that integrates Reverse EBD as both a theoretical and practical approach to developing analytical and reflective competencies.

This programme combines dental science with biomedical engineering, health IT and advanced research methodologies, preparing graduates for careers at the intersection of clinical practice, research and healthcare innovation[11,12]. Within this curriculum, Reverse EBD is applied not only as a theoretical framework but also as a practical pedagogical tool, enabling students to critically analyse both historical practices and contemporary protocols.

> “REVERSE EBD BRIDGES THE GAP BETWEEN THEORY AND PRACTICE, MAKING EVIDENCE-BASED REASONING MORE ACCESSIBLE”

This integration illustrates how Reverse EBD supports the development of innovative educational approaches and the enhancement of critical appraisal competencies among future dental professionals.

The introduction of Reverse EBD encourages clinicians to critically assess the level of evidence in publications and to differentiate between evidence-based guidelines and market-driven protocols. By focusing on protocols supported by robust evidence, and using a hierarchical pyramid for initial evaluation, clinicians can ensure that they are applying the most appropriate and effective treatments based on solid research and critical assessment of their own knowledge and skills.

The Reverse EBD framework enhances the understanding and practical application of evidence-based practices by promoting a systematic, reflective approach to evaluating existing protocols and identifying the scientific rationale behind them.

Reverse EBD represents a complementary approach to traditional EBD, fostering critical appraisal of both historical and contemporary protocols. Its integration into the innovative BSc (Hons) Dental Science programme demonstrates its potential as both a pedagogical strategy and a clinical mindset, supporting the development of critically minded, research-driven dental professionals.

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CROWN JEWEL OF DENTAL RESTORATION IN SIGHT

Researchers say the technology enables same-day, 3D-printed dental restorations made of zirconia

A technology that enables same-day, 3D-printed dental restorations made of zirconia, the gold-standard material for permanent dental work, has been developed by researchers at the University of Texas at Dallas (UT Dallas), *writes Kim Horner.*

The team is working to make the technology, which could be used for crowns, bridges, veneers and other restorations, commercially available.

Above: A dental crown is produced by combining enhanced heat transfer with the use of porous graphite felt, which can reach temperatures above 2,550 degrees Fahrenheit

"We are excited to be advancing the commercialisation of chair-side 3D-printed, all-ceramic zirconia permanent dental restorations," said Dr Majid Minary, professor of mechanical engineering at the Erik Jonsson School of Engineering and Computer Science.

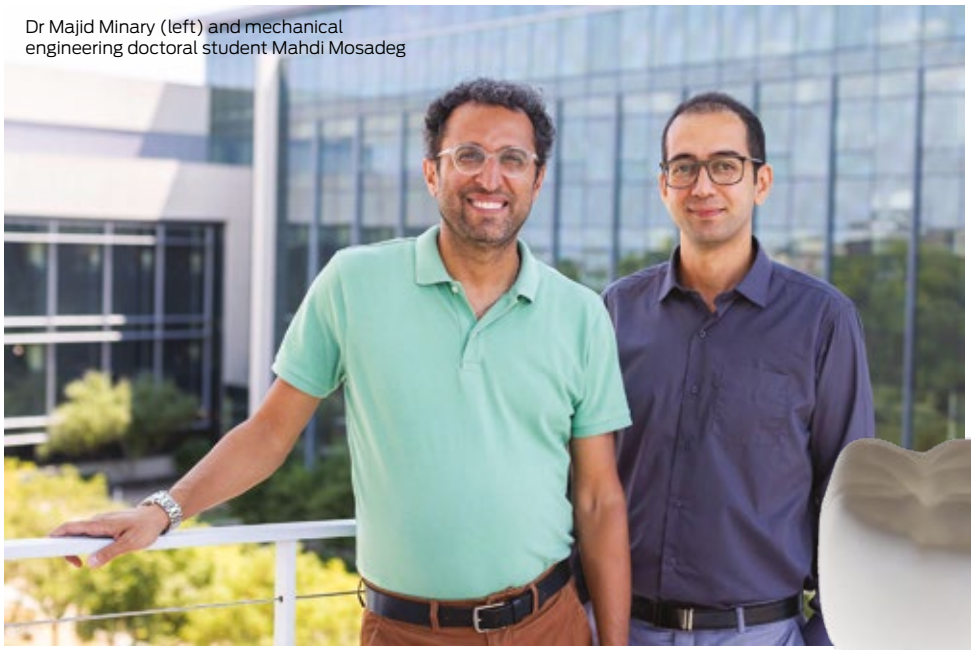
"Because the crowns can be custom printed for each patient on the same day, this approach offers greater personalisation, faster treatment and the convenience of receiving a permanent restoration in a single visit."

Dental crowns are caps that are placed over damaged or decaying teeth. They can also serve as supports in a dental bridge, which replaces a missing tooth. 3D-printed restorations have emerged as an option that offers better customisation and colour-matching, as well as a more efficient manufacturing process that could reduce cost and waste.

However, the currently available same-day, 3D-printed crowns are made of ceramic resins that are not as strong as zirconia. While same-day zirconia crowns are also available, they are not 3D-printed; rather, they are milled, a process that involves carving the crown from a block of zirconia. These zirconia restorations face challenges and limitations in design complexity and the risk of micro-cracking during milling or sintering.

The UT Dallas researchers and their collaborators have solved a challenge in producing 3D-printed zirconia restorations by significantly reducing the time involved in processing a zirconia restoration after it is 3D-printed.

The researchers explained their approach in the September print



Dr Majid Minary (left) and mechanical engineering doctoral student Mahdi Mosadeg

edition of the journal *Ceramics International*[1]. The method will require clinical validation and regulatory approval before it becomes commercially available.

After a zirconia crown is 3D-printed, it must undergo two key steps: debinding and sintering. In the debinding stage, heat is applied gradually to burn off the resin that held the zirconia particles in place during printing. This process can take from 20 to 100 hours.

Once the resin is removed, the crown undergoes sintering, a high-temperature firing process similar to baking clay in a kiln, which fuses the zirconia particles together into a dense, hardened solid.

"Debinding has been the bottleneck in the process," said Minary, corresponding author of the article. "It must be done very slowly. If you speed it up, the polymer being burned off turns into gas, and if that gas cannot escape, the crown may crack or fracture.

"A debinding time of 20 to 100 hours is not practical for same-day dental service. As a result, 3D-printed permanent zirconia restorations are not yet commercially available."

The team's technology reduces debinding time to less than 30 minutes; a breakthrough that could make same-day permanent dental restorations possible.

Their approach combines enhanced heat transfer with the use of porous graphite felt, which can reach temperatures above 2,550 degrees Fahrenheit. The felt covers the 3D-printed restoration, allowing gas released from the resin to escape, while a vacuum system simultaneously removes the gas.

"The combination of all of these features is what makes it work," said Minary. "With our technology, if a practitioner wants to offer a 3D-printed zirconia crown chair-side, they could provide it to a patient within just a few hours."

The UT Dallas team led by Minary, in collaboration with Pan-AM Dental Laboratory, recently received a $550,000 award through the NSF's Partnerships for Innovation – Technology Translation project to support commercialisation of the technology.

> "THEIR APPROACH COMBINES ENHANCED HEAT TRANSFER WITH THE USE OF POROUS GRAPHITE FELT, WHICH CAN REACH TEMPERATURES ABOVE 2,550 DEGREES FAHRENHEIT"

A finished dental crown created by the UT Dallas researchers' technology

The commercialisation project also involves 3DCeram Sinto Inc. in Grand Ledge, Michigan; and Dr Amirali Zandinejad, a prosthodontist in Arlington, Texas, and former associate professor at the Texas A&M University College of Dentistry.

Other UT Dallas-affiliated contributors include Mahdi Mosadegh, first author and mechanical engineering doctoral student; modelling engineer Moein Khakzad; chemistry doctoral student Zahra Sepasi; mechanical engineering graduate student Kalyan Nandigama; and Dr. Golden Kumar, Associate Professor of Mechanical Engineering.

In addition to the NSF, the research in the paper was also supported by the US Air Force Office of Scientific Research.

Kim Horner is Communications Manager at UT Dallas.

[1]www.sciencedirect.com/science/article/abs/pii/S0272884225023417

Single-step thermal debinding for ceramics vat photopolymerization in less than 30 minutes

The following is an abstract from the authors' paper published in Ceramics International.

Vat photopolymerization (VPP) 3D printing of ceramics is known for producing high-resolution, high-quality ceramic parts, particularly in the dental industry.

However, the thermal debinding (TD) process in ceramic VPP is time- and energy-intensive due to the large binder content (40–60 vol%), limiting its widespread adoption. The TD step often takes 20–100 h, significantly increasing manufacturing costs and preventing the use of VPP for processes requiring fast turnaround times.

Ee demonstrate an ultrafast thermal debinding (UFTD) process for zirconia parts fabricated by VPP, achieving complete binder removal in under 30 min.

By utilising the unique advantages of vacuum debinding and rapid heating with porous graphite felts, we accelerate binder removal while maintaining the structural integrity of the ceramic parts.

Our results show a 40-200-fold reduction in processing time and a 3,500-fold decrease in energy consumption compared to conventional thermal debinding, with the UFTD-processed samples exhibiting properties comparable to conventionally processed 3D-printed zirconia.

This approach provides a promising method for faster, energy-efficient production of zirconia parts, while the findings also offer valuable insights into the mechanisms of UFTD, paving the way for its application in other ceramic-based additive manufacturing processes.

www.sciencedirect.com/science/article/abs/pii/S0272884225023417

BEECHVIEW
DENTAL CARE

Welcoming referrals in:

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Dr Jordi Marques Guasch
DDS,MSc

Implantologist and Oral Surgeon
GDC: 263032

Jordi graduated as a dentist at International University of Catalunya (UIC). He also completed a Master's Degree in Clinical Research and a three-year International Master's Degree in Oral Surgery and Implantology at the same institution. Since then, he has collaborated with several clinics in London, Spain, and recently Belfast. Jordi's clinical practice is in the field of implant dentistry. He has significant experience and expertise in the treatment of bone tissue regeneration, implant related surgical procedures, as well as soft tissue management. Jordi is a university professor and a clinical lecturer at UIC where he teaches only masters and postgraduate students from the Oral and Maxillofacial Surgery department. He regularly attends congresses, lectures, and conferences, on all aspects of implantology to maintain his knowledge in this field. Jordi's aim is to always make patients' oral surgery experiences as pleasant as possible. In his spare time, he enjoys practicing a variety of sports and travelling.

If you would like to discuss referring a patient to **Dr Marques,** please contact our friendly reception team on **028 9024 3107,** visit us at **cosmeticdentists-belfast.co.uk** or email **reception.beechview@portmandental.co.uk**

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NEW BIOINSPIRED GEL RESTORES AND REGENERATES DENTAL ENAMEL

WORDS
WILL PEAKIN

Breakthrough opens up the possibility of effective, long-lasting preventive and restorative treatment

Bioinspired describes the process of developing novel materials, devices, structures or methods by abstracting and applying the functional principles found in biological systems.

It is a design approach that looks to the natural world, which has optimised solutions through billions of years of evolution, for ideas to solve human problems in technology, engineering and architecture.

Examples in medicine include:

• **Cell membrane-coated nanoparticles:** Inspired by natural cell membranes, scientists coat drug-carrying nanoparticles with material taken from red blood cells or cancer cells. This 'cloaking' helps the drug-carrying particle evade the immune system and specifically target tumours.

• **Silkworm silk for tissue scaffolds:** The natural protein silk fibroin, from silkworm cocoons, is used as a biomaterial in regenerative medicine. Its strength, biocompatibility and slow degradation rate make it an excellent scaffold for growing new tissues or for use in advanced wound healing patches.

Now a new bioinspired material has been used to create a gel that can repair and regenerate tooth enamel, opening up new possibilities for effective and long-lasting preventive and restorative dental treatment.

Scientists from the University of Nottingham's School of Pharmacy and Department of Chemical and Environmental Engineering, in collaboration with an international team of researchers, have developed a material that has the potential to regenerate demineralised or eroded enamel, strengthen healthy enamel and prevent future decay.

Tooth enamel is characterised by an intricate hierarchical organisation of apatite nanocrystals that bestows high stiffness, hardness and fracture toughness. However, enamel does

not possess the ability to regenerate, and achieving the artificial restoration of its microstructure and mechanical properties in clinical settings has proved challenging.

To tackle this issue, the Nottingham team engineered a tuneable and resilient supramolecular matrix based on elastin-like recombinamers (ELRs) that imitates the structure and function of the enamel-developing matrix.

When applied as a coating on the surface of teeth exhibiting different levels of erosion, the matrix is stable and can trigger epitaxial growth of apatite nanocrystals, recreating the microarchitecture of the different anatomical regions of enamel and restoring the mechanical properties.

Their study, published in *Nature Communications*[1], demonstrates the translational potential of their mineralising technology for treating loss of enamel in clinical settings, such as the treatment of enamel erosion and dental hypersensitivity.

The gel can be rapidly applied to teeth in the same way dentists currently apply standard fluoride treatments. However, this new protein-based gel is fluoride free and works by mimicking key features of the natural proteins that guide the growth of dental enamel in infancy.

When applied, the gel creates a thin and robust layer that impregnates teeth, filling holes and cracks in them. It then functions as a scaffold that takes calcium and phosphate ions from saliva and promotes the controlled growth of new mineral in a process called epitaxial mineralisation.

This enables the new mineral to be organised and integrated to the underlying natural tissue while recovering both the structure and properties of natural healthy enamel.

The new material can also be applied on top of exposed dentine, growing an enamel-like layer, which has many benefits including treating hypersensitivity or enhancing the bonding of dental restorations.

Enamel degradation is a major contributor to tooth decay and is associated to dental problems affecting almost 50% of the world's population.

These problems can lead to infections and tooth loss and can also be associated with conditions such as diabetes and cardiovascular disease.

Enamel does not naturally regenerate; once lost it is gone forever. There is currently no solution available that can effectively regrow enamel. Current treatments such as fluoride varnishes and remineralisation solutions only alleviate the symptoms of lost enamel.

Dr Abshar Hasan, a Postdoctoral Fellow and lead author of the study, said: "Dental enamel has a unique structure, which gives enamel its remarkable properties that protect our teeth throughout life against physical, chemical and thermal insults.

"When our material is applied to demineralised or eroded enamel, or exposed dentine, the material promotes the growth of crystals in an integrated and organised manner, recovering the architecture of our natural healthy enamel.

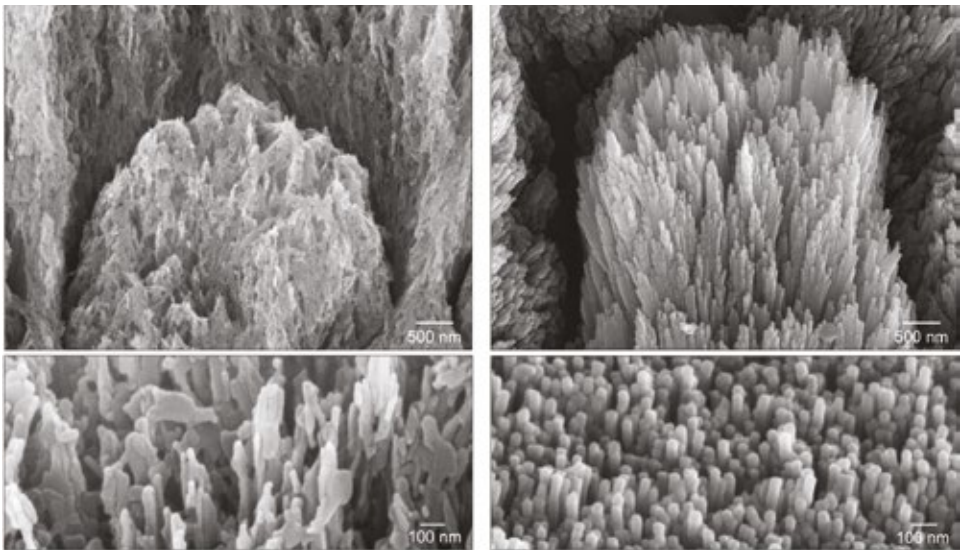
"We have tested the mechanical properties of these regenerated tissues under conditions simulating 'real-life situations', such as tooth brushing, chewing and exposure to acidic foods, and found that the regenerated enamel behaves just like healthy enamel."

Alvaro Mata, Professor in Biomedical Engineering and Biomaterials, added: "We are very excited because the technology has been designed with the clinician and patient in mind. It is safe, can be easily and rapidly applied, and it is scalable.

"Also, the technology is versatile, which opens the opportunity to be translated into multiple types of products to help patients of all ages suffering from a variety of dental problems associated with loss of enamel and exposed dentine.

"We have started this process with our start-up company Mintech-Bio (www.mintech.bio) and hope to have a first product out next year. This innovation could soon be helping patients worldwide."

Paul Hatton, a professor of biomaterials science at the school of clinical dentistry in Sheffield and member of the British Dental Association's health and science committee, told the BBC: "Recreating natural enamel to repair teeth has been something of a 'Holy Grail' for dental materials scientists for many years [and] this paper suggests an exciting breakthrough has been made."



[1] ***www.nature.com/articles/s41467-025-64982-y***

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THOUGHTS ON SUCCESS

"Sometimes I think I have read and listened to so many people that I may have lost my own sense of who I am and why I do what I do"

THESE are not my words but those of a youngish dental client. Increasingly, I find myself helping people not just with the business of dentistry, but also with far more fundamental issues. A common problem is the sheer overload of information.

So distracting are some of the issues that I recently considered changing the business name away from *The Dental Business Coach* to address the fundamentals of business *and* the rest of life. But my imagination failed me.

The phrase "change is the only constant in life" or "life is flux" is attributed to Heraclitus and his view that, "we can never step in the same river twice". Heraclitus wrote but a single book, on papyrus, which unsurprisingly has not survived through more than two millennia.

Like much of what we take as wisdom will have been distorted by the hearsay and opinion of others.

With more than 50 years of studying, working and reflecting on the practice and business of dentistry, I have come to see, to accept or reject, a variety of theories and alleged facts. So, as the year-end rolls around, here are a few of my thoughts on success.

WORDS
ALUN K REES

Alun K Rees BDS is The Dental Business Coach. An experienced dental practice owner who changed career, he now works as a coach, consultant, trouble-shooter, analyst, speaker, writer and broadcaster. He brings the wisdom gained from his and others' successes to help his clients achieve the rewards their work and dedication deserve.

alunrees@mac.com

Start with the end in mind

Stephen Covey's book, *The Seven Habits of Highly Effective People*, came into my life from three sources in the space of a month when it was part of the recommended reading. Firstly, via a retreat at a Church in Cheltenham.

Next up was Mike Wise's year-long postgrad course in restorative dentistry in Wimpole Street. Finally, it was the suggestion of my tutor on the Open University MBA course.

Habit #2, 'Begin with the end in Mind', includes the instruction to imagine yourself at your own funeral; what would you want to hear people say about you in tyour eulogy?

Write it out in detail, do not miss a thing and go deep. Next, ask yourself, how are you going to get from here to there? What are your long- and short-term plans? What is your first step? Then steps two, three and so on.

No matter how slowly you start, momentum is the thing

Seth Godin cites Mark Twain, who said: "The secret of getting ahead is getting started.

"And the secret of getting started is breaking your complex overwhelming tasks into small, manageable tasks, and starting at the first one."

This latter 'secret' is sometimes referred to as 'baby steps' and helps to prevent burn out, often a significant problem in dentists, especially, but not exclusively, owners of small- to medium-sized practices.

Gather a good posse

Surround yourself with people who can help you achieve what you have set out to do.

From lawyers and accountants, through to clinical and administrative support staff, laboratories cleaners and, of course, patients (or customers if you wish) who *will* become your most important sales force and will refer you "people like them".

This latter group will save you tens of thousands in marketing costs because they are easy to recruit, do not charge you and know exactly what you are like.

Set clear expectations of everyone and make sure they know what they are to expect from you. Be prepared to have difficult conversations when they are required.

Avoiding clear expectations and conversations is tempting but will result in confusion and resentment.

Take the best care of yourself

It is not easy, nothing worthwhile is, but it will be rewarding in every measure if you know what you want, are ambitious and honest with yourself and others, are not tempted to break your own rules, or make demands on yourself that you cannot keep.

Build and maintain a small circle of true friends with whom you can be truthful, are able to share problems when they arise and whom you can support in your turn.

Dentistry, especially as a practice owner, can feel like a solitary life. So beware what can be called a 'silo' existence; the risks of this have been well described by Gillian Tett of King's College, Cambridge, in her book *The Silo Effect*.

Briefly, teams or groups within businesses or businesses within communities focus on their own goals without considering the wider picture. The results are isolation, little or no collaboration, conflicting goals and negative consequences.

Dentists are often lonely; they and their practices can develop an isolationist mentality, resulting in a distorted world view.

To keep your mind healthy, remain curious, stay in touch with developments in your profession, talk and listen to others. Join study groups, support your local BDA or other organisation section and limit social media.

Every day, mentally wipe your feet on leaving the practice. Do not take work home; it will grind you down and you will not complete it.

Take holidays and downtime. A cardinal rule, not an original of mine but one that was a lifesaver, is "never come back from a holiday without the next one already in the appointment book".

Grow up, be not afraid

Choose courage over comfort. Professional maturity is realising, accepting and embracing that you are on your own.

Mentors, wise friends and a coach can help you but nobody else can walk your chosen path for you.

Finally, to return to Covey's *Habits #2*. In the final analysis, the only question you will be asked is: "Did you make the most of your gifts?"

That all depends on you and your choices; be wise.

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A novel aesthetic technique for restoring dental implant access holes

Keisuke Seki, Koji Shiratsuchi, Arata Toki, Atsushi Kamimoto and Yoshiyuki Hagiwara

Good dental implant outcomes require not only functionality but also excellent aesthetics[1,2]. Successful implant treatment is achieved not only by the absence of pain, signs of peri-implant tissue inflammation and bone resorption over time, but also by the satisfaction of the surgeon and patient with the outcome of the treatment[3].

The special mechanism of fastening the superstructure to the implant body via abutment screws, which is unique to implant superstructures, protects the implant body from the damage caused by excessive occlusal forces[4,5,6].

Additionally, the risk of local infection caused by biofilm adhesion is reduced by the ability to remove the implant for cleaning. This mechanism also allows for removal and repair against the chipping or fracture of the superstructure.

In contrast to these advantages, screw-retained implant superstructures have the disadvantage of poor aesthetics. If the access hole is dark, the aesthetics of the prosthetic treatment of the anterior region, which is visible when smiling, as well as the molar region, can be compromised, leading to a reduction in the patient's expected treatment outcome[7].

Even if there are no functional problems, the true success of implant treatment cannot be considered if the patient is not satisfied with the aesthetic aspect. Although this problem can be solved by cementing the superstructure, residual cement can cause peri-implantitis[8,9].

Furthermore, a decline in the long-term sustainability of cement is also a concern and discussion regarding the fabrication of ideal superstructure and management methods is ongoing[10,11]. Studies on sealing techniques for occlusal screws have been reported by many researchers since about 2000[12,13,14,15].

Currently, a light-cured composite resin with excellent sealing and wear resistance is often used as the final repair method for access holes. However, an opaque composite resin that can completely shield the metallic colour in the access hole has not yet been developed.

In addition, a light-cured composite resin that shrinks is also problematic for the microleakage of saliva and oral bacteria, as well as cotton pellets and silicone materials[16,17]. Salivary contamination from the access hole is thought to influence the development of peri-implantitis if it extends into the implant–abutment connection[18].

Despite their poor aesthetics, porcelain-fused-to-metal crowns that seal access holes have been commonly used as the primary implant superstructure, but a combination of titanium-based abutments and zirconia crowns has now become the dominant structure[19,20].

Although zirconia crowns appear to have solved the aesthetic problem because of their greater strength and lighter colour[21,22], microleakage through the access hole remains a problem.

Complications after the placement of implant superstructures can be divided into mechanical complications, such as a crown or abutment screw fractures, and biological complications, such as peri-implant mucositis or peri-implantitis[23,24,25].

Even if the superstructure functions without problems immediately after placement, there will inevitably be some cost and effort to maintain it over 10 years[26]. The longer the period of maintenance treatment, the greater the incidence of both complications and, in many cases, the superstructure must be removed to deal with these problems.

Therefore, unlike natural tooth crown prosthetics, removability is an important factor for implant superstructures. Unfortunately, no superstructure has yet emerged that would solve all these problems.

To meet the conflicting requirements of aesthetics, functionality and removability, we have devised a new method of restoring implant superstructures that we term the inlay-covering aesthetic technique. In this technique, the conventional superstructure fabrication process is augmented with an inlay body covering the access hole of the crown.

We undertook a case in which the inlay was fabricated using computer-aided design/computer-aided manufacture and then cemented, with good results obtained. The purpose of this case report was to present the details of a novel fabrication method and to detail progress in its use.

2. Case presentation

2.1. Problems to date

Access holes designed on the occlusal surface are highly removable, but there is no gold standard for sealing methods, which are often associated with poor

Figure 1: A typical example of unaesthetic access holes in the teeth of a 61-year-old man. The access hole in the superstructure of the porcelain-fused-to-metal crown is sealed with composite resin. The colour tone is poor because it reflects the metal colour of the inner surface, while the filling surface is flat.

aesthetics (Figure 1). Especially in the case of porcelain-fused-to-metal crown superstructures, the interior of the access hole is made of metal and often suffers from dark tones. Because the inlay covering aesthetic technique has particularly excellent aesthetic performance, the procedure will be explained with case examples.

2.2. Case report using the ICE technique

A 72-year-old female patient visited our hospital for the treatment of severe periodontitis (Figure 2a–c). After initial periodontal treatment, implants (Straumann® Bone Level SLActive® Φ4.1 × 10, Straumann, Basel, Switzerland) were placed in the mandibular molar region (#46). The surgery was performed in a two-stage procedure, where an acrylic resin provisional crown was placed, and the patient was followed up for three months. Because there were no problems with occlusal function and the peri-implant mucosa was stable, a precise impression was made.

2.3. Impression taking

First, the provisional crown is removed to confirm that the mucosal morphology of the subgingival contour is adequately scalloped. As in the conventional method, impressions are taken with silicone impression material using an implant-specific impression coping. Even when optical impressions were made at the implant level, the following procedure remained the same, so the surgeon could choose either impression method (Figure 3).

Figure 2: (a) A 72-year-old woman with severe periodontal disease (2022). (b) Right lateral view at initial examination. The occlusal plane is greatly distorted because of the posterior bite collapse. (c) Left lateral view.

Figure 3: After comprehensive periodontal treatment, implants were placed in both mandibular molars in a two-stage procedure. Scalloping of the subgingival contour was achieved with a provisional crown at #46. No inflammation of the peri-implant mucosa was observed.

Figure 4: (a) The dental technician marks the inlay cavity on the semi-sintered crown. (b) Semi-sintered zirconia crown machined from a zirconium oxide disc and cavity preparation before sintering. (c) Sintered crown (main body).

Figure 5: (a) The inlay cavity in the crown scanned with the laboratory scanner. (b) New inlay body designed with software (Dental System® Ver.2.23.1.1, 3Shape, Copenhagen, Denmark). (c) Completed highly translucent, partially stabilised, zirconia inlay body.

> **IF THE INLAY BODY IS BROKEN BECAUSE OF OCCLUSAL FORCES, A NEW REPLICA CAN EASILY BE FABRICATED FROM COMPUTER-AIDED DESIGN DATA”**

2.4. Fabrication of superstructure (main body)

The screw-retained superstructure with highly translucent, partially stabilised, zirconia discs (Sakura Zr. Disk ML, Straumann Japan, Tokyo, Japan) was fabricated by computer-aided design/computer-aided manufacture (D2000, 3Shape, Copenhagen, Denmark). After milling, the inlay cavity was prepared by a dental technician in a semi-sintered state for easy grinding, and then sintering was performed (Figure 4a–c).

2.5. Scanning of the main body and fabrication of the inlay body

The superstructure was then scanned with a laboratory scanner, and the inlay body (Sakura Zr. Disk ML, Straumann Japan, Tokyo, Japan) was fabricated separately (Figure 5a–c). In addition to covering the access hole, the cavity was given a retention form and a resistance form. The margin of the cavity is different from that of an ordinary inlay restoration and requires special processing. The inlay body must be removed when the abutment screw is fastened for maintenance.

After maintenance, the removed inlays can be placed again. For this purpose, the apical margin of the inlay cavity in the crown body should be prepared and an undercut should be made.

This makes it easier to remove the inlay body with an inlay crown remover. Although the occlusal inlay has excellent aesthetics, it was designed as an onlay rather than an occlusal inlay because there was no place on the side of the body to hook pliers.

If the inlay body is broken because of occlusal forces, a new replica can easily be fabricated from computer-aided design data. If an occlusal approach is

required, occlusal adjustments can be made directly in the oral cavity.

2.6. Completion of the superstructure components

All components were characterised, and the superstructure was completed (Figure 6).

2.7. The superstructure placement and maintenance treatment

After the abutment screws were tightened to the torque indicated by the manufacturer, the inlay body was luted with glass polyaluminate cement (IP Temp Cement, Shofu, Kyoto, Japan) (Figure 7). The left molars (#35, 36) were also fabricated using the same technique (Figure 8a–d), and maintenance treatment was started (Figure 9a–d). Maintenance was continued for one year, and no problems, such as fracture of the main body, detachment of the inlay body, or loosening of the abutment screw, were observed.

Plaque control was well maintained, and there was no redness, pus discharge, or swelling of the peri-implant mucosa. The comprehensive treatment of severe periodontitis resulted in an improvement in the disorder of the occlusal plane, harmonisation of the dentition and improvement of the occlusal function. The patient was aesthetically satisfied and will continue to receive implant-supported therapy.

3. Discussion

This case report presents a new technique to solve the problems associated with access holes in conventional implant superstructures. This method is a simple way to aesthetically seal the access hole by fabricating a zirconia crown and inlay, with excellent mechanical strength and minimal negative impact on peri-implant tissue[27]. The fixation of the superstructure by occlusal screws requires the tight sealing of the access hole. Several disadvantages associated with access hole sealing methods have been identified. Previous studies have reported that it is difficult to achieve good functional and aesthetic access hole-filling using screw-retained implant prosthetics[28].

In addition to colour discordance, these disadvantages are presumably related to filling operation difficulties, poor sealing because of composite resin shrinkage and wear resistance. Patient visits for frequent access hole repair have a significant impact on the patient's quality of life. Currently, cotton pellets, gutta-percha, silicone sealing material and vinyl polysiloxane are used as buffers in the access holes[29,30,31]. However, more research is needed to identify a material that does not degrade, is easy to remove and meets hygienic requirements. There is currently no gold standard for occlusal surface screw sealing methods[32].

Although composite resin has excellent sealing properties, it is difficult to hide the metallic colour of the inner surface of the access hole, even with the use of a sealant with an opaque colour.

In addition, it is difficult to provide proper occlusal contact with the composite resin because of incorrect manipulation and wear during filling. We think that our method can solve this problem because the inlay body can be designed in advance by a computer. It can be inferred that the incidence of prosthetic complications increases with a prolonged maintenance period.

The method also has an advantage in that the inlay body is easily removed for maintenance, even if the inlay body is damaged, it can be easily remanufactured using the data from the scanning process[33]. Specifically, it is assumed that this is a case of retightening a loose abutment screw. Additionally, it has the biological advantage of maintaining healthy peri-implant tissue because it avoids the problem of residual cement in the subgingival area, as in the case of the conventional cement retention method. Additionally, the restriction of the implant placement direction is reduced, allowing for a wider range of indications.

With these advantages, we consider that the ICE technique might allow implant treatment to become more predictable. However, a small inlay body may impair retentive force and resistance and may easily drop out of the cavity. Therefore, the direction of transmission of occlusal force should be considered when designing the crown shape[34,35]. Care should be taken to ensure that the area covered by the inlay body does not contain a functional cusp and that the inlay body is not subjected to harmful lateral occlusal forces. In addition, a sufficient area in the lateral chambers contributes to the stability of the inlay body.

Of note, the degradation of the cement over time is a problem because it can damage the body of the inlay, leading to impaired aesthetics. This problem needs to be solved in the future. In addition, detailed studies on luting materials, including glass ionomer cement and resin cement, are also required. Achieving an optimal marginal

Figure 6: Completed stained and characterised superstructure.

Figure 7: Excellent aesthetics with the superstructure placed after the abutment screw was fastened at 20 N/cm. The removal instrument is hooked into the notch at the bottom of the inlay when access to the abutment screw is required.

Figure 8: The superstructure of the left molars (#35, #36) fabricated using the same technique. (a) After sintering. (b) Completed superstructure. (c) High aesthetic value was achieved. (d) Occlusal view.

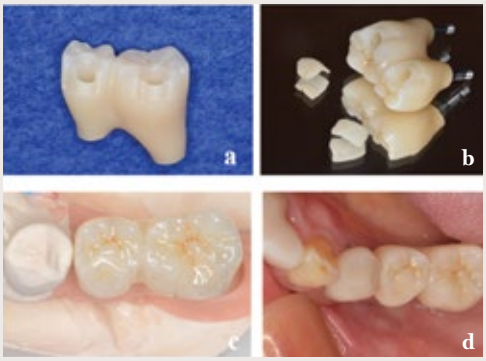

Figure 9: Images taken during maintenance treatment. (a) Left lateral view. (b) Frontal view. (c) Right lateral view. (d) Mandibular occlusal view.

adaptation of restorative materials is essential to prevent microleakage, improve restoration longevity and maintain periodontal health.

Therefore, it is important for clinicians to select materials such as lithium disilicate, zirconia or other advanced ceramics that offer superior adaptation to the tooth structure to ensure durable and biocompatible restoration[36].

The aesthetic restorative technique presented here is most suitable for molars with a wide occlusal surface because of the importance of the stability of the inlay body. The application of this technique to canine and anterior teeth is a subject for future study.

Although the new technique reported here provided good results, a limitation of this study is that it is only a case report with an insufficient follow-up period.

This technique is not suitable for full arch rehabilitation, and it can complicate the eventual retrievability of the access hole in the case of implant prosthetic complications.

> **IF THE PROCESS OF IMPLANT SUPERSTRUCTURE FABRICATION INTRODUCED IN THIS CASE REPORT RESOLVES ALL THE PREVIOUS PROBLEMS RELATED TO AESTHETICS, FUNCTIONALITY AND CLEANABILITY"**

In addition, the ability to maintain good adhesion of the inlay body is an important issue for future study.

Future studies should include a large number and variety of samples and cases, with long-term observation to validate the true effectiveness of this method and obtain generalisable results.

4. Conclusions

The process of implant superstructure fabrication introduced in this case report resolves all the previous problems related to aesthetics, functionality and cleanability.

This novel restorative technique compensates for the shortcomings of conventional screw-retained and cement-retained superstructures and leads to improved outcomes for dental implant treatment, contributing to an improvement in oral quality of life.

For references see: www.sdmag.co.uk/restoring-dental-implant-access-holes-references

A FIRST FOR IRELAND

Level 11 diploma in implant dentistry could open a lucrative new chapter in your career. Don't miss out! Register your interest at www.dentalimplantdiploma.com

Dr Tariq Ali with implant diploma delegates

The only Level 11 postgraduate Dental Implant Diploma to be offered in Ireland launches this autumn. It offers several advantages, not least elimination of the cost and inconvenience of travelling a long distance to gain the qualification.

The diploma has been developed by Dr Tariq Ali and his team at the Centre for Implant Dentistry in Glasgow. The centre has been offering its highly regarded courses on implantology and the restorative aspects of implant dentistry, training hundreds of dentists in Scotland, for several years.

Dr Ali is a recognised leader in his field, providing cutting-edge solutions for patients faced with edentulism, from single implants to complex full-arch treatments, as well as being a teacher and mentor to dentists across the country. The diploma will be conducted by Dr Ali and his team, including Dr Jimmy Makdissi and Dr Hatem Algraffee.

"It will provide the discipline and expertise required to build the procedural skills, competence and ethical practices needed to perform in the region of 40-50 implants per year and we are committed to ensuring delegates who take our diploma achieve this goal," said Dr Ali.

He added: "Our diploma has been designed entirely with this in mind, with a pedigree of exceptional quality teaching together with hands-on practical masterclass and surgery on patients that delegates have selected and planned themselves.

"Following this, delegates will be able to advance their development in implant dentistry. Our aim is to create and nurture a body of dental professionals instilled with a core ethic that puts their patients' best interests as paramount at all times."

The course comprises five units, including CBCT Levels One and Two, with training undertaken in Dublin. In addition to the tuition, one week of mentoring during unit three will be conducted in practice with Dr Ali in Glasgow.

A comprehensive reading list and a list of prescribed texts to be purchased will be provided for each unit once registered for the diploma. Candidates with be assessed on an ongoing basis.

The main component will be a case presentation involving all aspects of implant care for the candidate's patient. Candidates will be assessed on this case at the end of the course. The Centre for is EduQual approved and the diploma is EduQual accredited.

> "THE COURSE WILL PROVIDE THE DISCIPLINE AND EXPERTISE REQUIRED TO BUILD THE PROCEDURAL SKILLS, COMPETENCE AND ETHICAL PRACTICES NEEDED TO PERFORM IN THE REGION OF 40-50 IMPLANTS PER YEAR"

The diploma, which costs €12,450, comprises five units over approximately 13 days (meals included) and one week mentoring with Dr Ali, plus DTX planning software worth more than €4,000.

Visit the Dental Diploma website at www.dentalimplantdiploma.com to find out more and to register.

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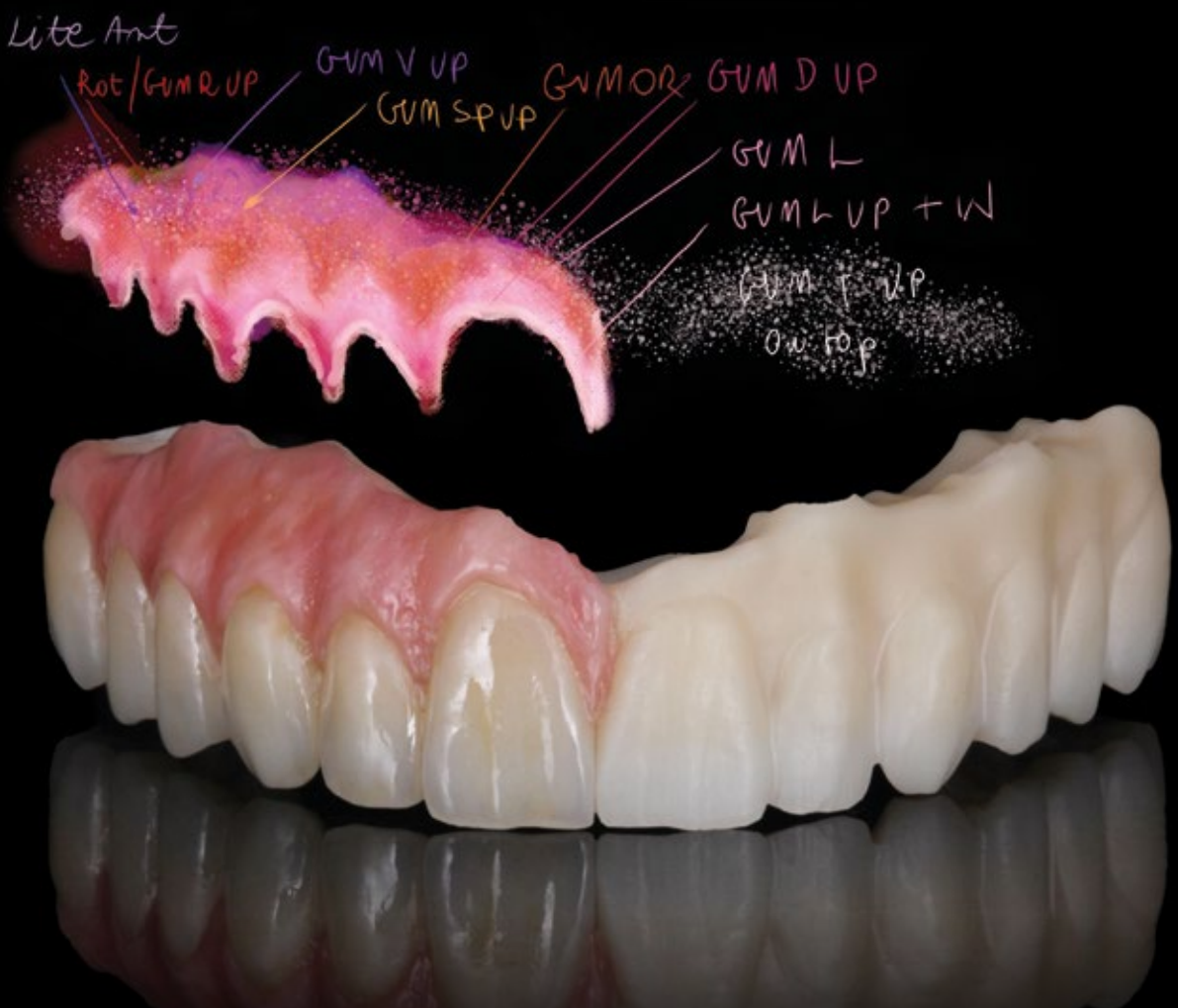

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Restoration: DT Inga Potoczna, Saarbrücken/Güdingen, Germany

A YEAR IN REVIEW

Cathy Murphy, Senior Business Agent – Dental, Christie & Co, shares some highlights and challenges in the Northern Ireland dental market

OVERVIEW OF THE DENTAL MARKET IN NORTHERN IRELAND

The last 12 months have shown a strong demand for quality, private-led practices. Multi-site owners and larger groups are actively pursuing well-run private or predominantly private sites that demonstrate a consistent performance with the capacity to grow further via the introduction of additional services. This reflects a trend in the Northern Ireland market where buyers are prioritising sustainable income while exploring opportunities to enhance patient revenue streams.

MARKETPLACE HIGHLIGHTS FROM THE PAST YEAR

We have seen the emergence of smaller, highly motivated dental groups across Ireland, which often combine the personal touch of independent practices with the operational efficiency of larger organisations. As key groups grow in the area, their presence is contributing to competitive offers and favourable terms for sellers.

KEY CHALLENGES IN THE MARKET

Those sites with a significant level of HSC income have struggled in the market in the last 12 months, largely due to recruitment difficulties for associates and hygienists/therapists. Additionally, independent buyers have reduced, resulting in limited demand at the other end of the market. As a result, HSC-focused sites, particularly those that lend themselves to independent ownership, are taking longer to sell.

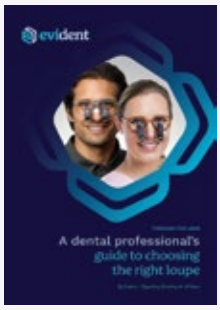
EXPECTATIONS FOR THE YEAR AHEAD

We expect to see a shift towards mixed practices as sellers look to balance HSE income against the higher margins offered via private dentistry. We will see a continuation of activity for private practices, particularly those in centralised locations with far-reaching patient catchments. Overall, we expect smaller group-led transactions to continue with the same momentum, as investors seek sustainable opportunities.

To find out more about the Northern Ireland dental market, contact Cathy Murphy.
E: cathy.murphy@christie.com
T: +44 7756 875 133

› EVIDENT

EVIDENT CELEBRATES 50 YEARS



Evident is marking its 50th anniversary with a striking new brand identity and a series of exclusive promotions designed to thank the profession for five decades of trust and support.

Since 1975, Evident has partnered with dental professionals nationwide, delivering premium products, tailored service and industry-leading expertise. From pioneering Apex Locators to supplying their first loupe in 1993, the company has consistently been at the forefront of clinical innovation.

Today, Evident counts many of the UK's most respected clinicians among its clients. "This is the company to go to for loupes," said Dr Linda Greenwall. "They've supported me for many years, helping me find the perfect set-up for my needs."

Exclusive 50th Anniversary Offers*

- 15% off ExamVision HD and Kepler loupes, plus free prescription lenses (worth up to £1,400) and free Blue Light Protection (worth £425)*
- 15% off ExamVision PowerGo Total light*
- Buy One, Get One Free on BulkEZ PLUS refill syringes for new customers*

Dental professionals can also access Evident's free Dental Professional's Guide to Choosing the Right Loupe and book personalised demonstrations with their expert team. Find out more, book a demo, or claim your offer at response.evident.co.uk/50-years-offers or download the free guide at response.evident.co.uk/loupes-buyers-guide

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Trusted for 50 years

***Offers are available for a limited time only. Terms and conditions can be found at response.evident.co.uk/50-years-offers**

› AGILIO

AGILIO LAUNCHES IGROW TO POWER GROWTH FOR INDEPENDENT DENTAL PRACTICES

Agilio has launched iGrow, a first-of-its-kind growth platform that gives independent practices the tools to compete with corporates, attract patients and build long-term value. At a time when independent dental practices are under growing pressure from corporates and large groups, iGrow provides a practical and proven way to compete more effectively. By bringing together three established Agilio solutions into one streamlined offering – Customer Relationship Management (CRM), specialist marketing services and a fully managed dental plan – iGrow enables practices to attract, convert and retain patients while freeing up valuable time for owners and teams to focus on care.

The solutions within iGrow are:

- CRM (DenGro): an intuitive enquiry management system that helps teams capture, track and convert more patient leads, ensuring every opportunity is maximised
- Marketing Services (The Fresh): specialist dental marketing support that drives visibility, builds reputation and generates a consistent flow of new enquiries
- Dental Plan (iPlan): a fully managed membership plan that encourages loyalty, provides predictable income and strengthens long-term practice valuation.

Independent practices already using the elements of iGrow are reporting impressive outcomes:

- 98% increase in revenue
- 44.2% uplift in patient conversion rates
- 10x return on investment (ROI)
- 23% of pay-per-click (PPC) traffic converted directly into revenue
- 500% increase in ROI for digitally-driven practices.

iGROW

To learn more about iGrow and how it can support independent dental practices, visit agiliosoftware.com/igrow

› AGILIO

AGILIO STRENGTHENS LEADERSHIP TEAM

agilio SOFTWARE

Agilio Software, the UK's leading provider of healthcare operations software, has unveiled three senior appointments that will help propel its next phase of expansion.

The new hires mark a major investment in Agilio's growth strategy, focused on mergers and acquisitions (M&A), international expansion and continued organic growth.

The new appointments are:

- Tom Cornwell, Chief Financial Officer (CFO) – Tom brings more than a decade of financial leadership and growth expertise from The Access Group, where he helped scale the company from £60 million to £1.2 billion through strategic M&A and sustainable expansion
- Bruce Fair, Chief Revenue Officer (CRO) – following a successful consulting period, Bruce now joins permanently. With a strong track record in scaling SaaS (Software-as-a-Service) and digital platforms, and global experience across the UK, USA and Australia, he will accelerate Agilio's revenue growth and international reach
- Mike Osborn, Chief Customer Officer (CCO) – a seasoned leader in healthcare and technology, Mike is known for building high-performing teams and delivering exceptional customer experiences. At OneAdvanced, he drove significant organic growth through customer-centric innovation.

Agilio supports more than 8,000 dental practices and thousands of GP surgeries, pharmacies and veterinary practices across the UK. The company has grown rapidly through acquisitions, partnerships and product development, and its investment in leadership underscores its commitment to redefining healthcare operations and empowering professionals to deliver better care.

For more information visit agiliosoftware.com/directors

› SERECLEAN

A NEW WAVE IN ORAL-CARE AND SPORTS PROTECTION

Sereclean is pioneering a new wave in oral-care and sports protection. Founded by cosmetic dentist Dr Sarah Mpi, the brand was created from a real clinical need: patients struggling to keep their aligners, retainers and dentures clean with outdated methods.

Dr Mpi is a London-based cosmetic dentist and entrepreneur with a special interest in clear aligner therapy, having completed an additional qualification in Invisalign and treating hundreds of aligner patients each year. Her clinical experience highlighted consistent gaps in appliance hygiene and athlete protection, which inspired her to create modern, design-led solutions that improve patient and user experience. Her mission remains clear; empower individuals to care for their smiles with confidence, convenience and innovation.

The MHRA Registered Class I Sereclean Pod offers a modern solution; a purpose-built ultrasonic cleaner that makes appliance hygiene effortless while fitting seamlessly into a clean, minimalist lifestyle. Designed to look as good as it performs, it brings aesthetic, everyday luxury to oral-care routines. Its features include 42Hz ultrasonic frequency, a 250ml tank capacity, auto shut-off safety mechanisms and temperature control.

Sereclean has also launched ProGuard, transforming a space where sports safety has barely evolved. While professional athletes access advanced protection, grassroots players are still relying on boil-and-bite guards that offer limited defence. ProGuard changes this with custom-fit, digitally designed mouthguards delivered through a mobile 3D intraoral scanning service, giving young athletes access to the level of protection they deserve.

To find out more, visit sereclean.com

› MISMILE

MISMILE CELEBRATES 10 YEARS

On 12 September, more than 500 dental professionals gathered at the Leonardo Royal Hotel, London, for the MiSmile NEXT Conference and Gala – marking 10 years since Dr Sandeep Kumar founded the MiSmile Network.

What began with just 20 practices has grown into a thriving community of more than 500, delivering more than 60,000 Invisalign smiles and raising £350,000 for Operation Smile. NEXT combined world-class education with celebration, energy and connection, reflecting MiSmile's mission to give patients beautiful smiles while supporting members to grow their practices.

Highlights included sessions from futurist Amelia Kallman, entrepreneur Bejay Mulenga MBE, communication expert Nigel Risner, and MiSmile Clinical Directors Dr Bhumita Shah and Dr Oliver Smart. Align Technology's leaders also underlined their ongoing commitment to the network.

Dr Sandeep Kumar, Founder and CEO, said: "This milestone is not only a celebration of what we've achieved, but a launchpad for what comes next. MiSmile is evolving into the Home of Practice Growth, supporting our members with the tools, training and inspiration they need to thrive for the next decade and beyond."

To find out more about MiSmile, and how you could be part of this incredible community, visit join.mismile.co.uk

› BOXLY

BOXLY LAUNCHES UK DENTISTRY'S FIRST AI RECEPTIONIST

UK dentistry saw a first in October with the launch of an AI-powered receptionist designed to transform patient communication and reduce admin pressure on practices. The innovation was revealed at Unbox the Future in Soho, London, hosted by UK health tech start-up Boxly.

Unlike a standard chatbot, Boxly's AI Receptionist works around the clock, handling patient enquiries with treatment-specific responses, booking appointments directly from a practice diary and following up across channels such as WhatsApp or social media. It gives patients a seamless experience while helping practices reduce missed leads and potentially double their website conversions. Boxly CEO Elliot Hamilton said the company's goal was to design a tool that keeps people at the centre: "Boxly was built with clinicians, for clinicians, so it delivers intelligent, personal communication that patients trust and teams can depend on every day. By removing repetitive tasks, we are giving dental teams time back to focus on care."

Dentist Dr Barry Oulton said: "By tackling the administrative challenge head on, it allows practices to focus more fully on patient-centred care and to deliver a smoother journey from first contact through to treatment." With Boxly, dental practices gain a partner that never stops improving, providing intelligent technology that evolves with the profession to deliver more patients, less admin and a better experience for all.

Boxly

To find out more, visit www.boxly.ai

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