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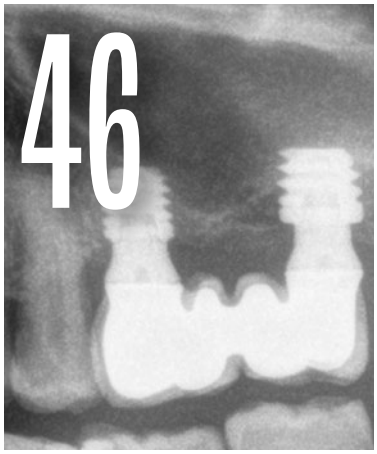

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A second opinion

Artificial intelligence (AI) is quietly rewriting the dental care playbook

This autumn, the Royal College of Physicians and Surgeons of Glasgow will stage its annual dental conference, with the title *AI in 2026 and Beyond*[1]. From diagnosis and treatment planning to patient communication, the one-day conference will explore the role of AI across modern dentistry.

This magazine will carry a report on the conference, benefitting from the expertise and insights of the speakers. But, for now, here is a slightly (actually, significantly) less expert rumination on AI in dentistry. For generations, the dental chair has been viewed as a place of vulnerability. The patient lies back, stares at a textured ceiling tile and waits for the verdict. When a dentist points to a grey smudge on an X-ray and says: "We need to look at this," patients have historically had no choice but to rely on their trust in a healthcare professional.

But behind the scenes, a quiet transformation is under way. Artificial intelligence is making itself comfortable in the treatment room; as a dentist's observant, tireless co-pilot. It is not about robotic arms holding the drill; it is about using machine learning to take the degree of (albeit informed) guesswork out of oral healthcare.

Historically, dental diagnostics have carried a surprising degree of subjectivity. Ask three different dentists to look at the same borderline bitewing X-ray, and you might get three slightly different treatment plans. One might suggest a filling immediately, another might suggest monitoring it and a third might miss a tiny shadow indicating early-stage decay altogether. In clinical studies[2], this variance is measured through inter-examiner reliability (how much different dentists agree) and intra-examiner reliability (how much the same dentist agrees with themselves over time). Studies show that while agreement is very high for obvious, deep cavities, it drops significantly when identifying early-stage, incipient decay.

AI is erasing these grey areas. Advanced computer vision models, trained on millions of annotated radiographs, can scan a digital X-ray in seconds. They highlight bone loss, identify microscopic cavities long before they can be felt, and even outline the exact boundaries of gum disease with sub-millimetre precision. Instead of trying to decipher a vague grey gradient, patients can be shown clear colour-coded visuals showing exactly where bone level changes or decay exists. This level of transparency could be a gamechanger in terms of patient trust. When you can see a bright red highlight outlining a cavity, treatment recommendations feel less like a sales pitch and more like objective science.

While diagnostic software is in the spotlight, some of AI's biggest victories in dental clinics are happening where patients rarely look; in daily workflows and paperwork. The modern dental team is perpetually bogged down by administrative tasks; transcribing periodontal measurements, verifying complex codes and charting treatment plans. AI speech-to-text systems now allow hygienists to call out numbers hands-free during gum exams, automatically populating patient charts in real time. Predictive booking algorithms optimise scheduling, drastically reducing empty chair time and keeping clinics running on schedule. By offloading these tasks to machine learning systems, dental professionals can reclaim what they went into the profession for; direct, empathetic patient care.

With all this technological integration, it is natural for patients to ask: "Is my dentist being replaced?" Obviously, no. AI systems are incredibly fast pattern-recognition engines, but they lack clinical intuition, ethical judgment and, clearly, the physical dexterity required to perform delicate micro-surgery inside a human mouth. An algorithm might spot a problem, but it cannot comfort an anxious child, adapt to a patient's unique gag reflex or weigh the psychological impact of a complex cosmetic decision.

But what we are witnessing is the dawn of collaborative intelligence; the algorithm acts as a safety net while the dentist retains the final say, guiding the treatment plan with years of human experience. Clearly, we must be conscious of hype. But let us, borrowing from the book *All the President's Men*[3], about the Watergate scandal, 'follow the money'.

Here is an extract from a report[4] in *Dentistry Today*: "When Wardah Inam arrived in the United States from Pakistan to pursue her PhD at MIT, dentistry was not on her radar. AI was. But a single experience changed everything. After switching dentists and receiving a dramatically different treatment plan, she realised oral healthcare was operating more on intuition than on evidence. She co-founded Overjet in 2018 to fix that.

"Today, Inam leads the #1 dental AI company in the world. Overjet's FDA-cleared platform detects and quantifies oral diseases on X-rays with sub-millimetre precision. Under her leadership, Overjet raised $133 million, reached a $550 million valuation, and earned recognition from *TIME*, *Fast Company* and EY."

References

[1]*rcpsg.ac.uk/education/annual-dental-conference#programme*
[2]*pmc.ncbi.nlm.nih.gov/articles/PMC4327495*
[3]*www.amazon.co.uk/All-Presidents-Men-Bob-Woodward/dp/1416527575*
[4]*www.dentistrytoday.com/women-in-dentistry-two-women-one-mission-transforming-oral-health-through-ai/*

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Transactional 'care' is not care

Dental care. A phrase very often attached to practices of a certain time period. Prior to that was the '& Associates' era and the now historic 'Pullem and Fillem' practice names based on those in situ. The current trend for 'Smile Design' or 'Boutique' suggests a very different reality; less a solicitor's office and more the 'place to be'. 'Advanced Dentistry' seems to be a thing too. All the above are lacking in any clear idea of what is going on the background.

I do wonder if there might come a time for a 'Basic Dentistry' clinic. With all the advances in care and digital workflows, I ask myself if it is my own prejudice or sheer lack of ambition or whether these changes in clinic ethos and direction are leaving me behind? Have I reached that point of the career where my entrenched opinions are entirely in need of blowing up? Those aged clinicians I lacked respect for in my twenties who, with the inevitability of older (professional) age, fail to understand how things really are. I think there is certainly an element of my own narcissism. A confidence in my own thoughts which allows me to write to you with my vision and insight on the profession. However, bear with me and see if you agree.

Dentistry is, or should be, about healthcare. We know that current diets and eating habits are not helpful for the oral environment. We know that increased longevity with more teeth leads to greater complexity, especially as polypharmacy and age robs us of some of our most successful protective elements, from gum to saliva. Greater intervention leads to greater maintenance requirements. Add into that our vanity and its manipulation through social media, TV and film personalities with their unfeasibly white, straight teeth. This move towards the cosmetic treatment pushed by almost all clinics, mine included, is increasing our workload.

The younger practitioners' idea that alignment and bonding is the way forward seems to be at the expense of basic care. This is my fear from a range of points of view.

The first point is about care. If everyone is focusing on the aesthetic, then who is doing the stuff in the background? Basic care which gives a foundation for everything else. Who actually tells patients off for their catastrophic sugar addiction with enough humour, good grace and gravitas to get the message across without alienating a patient and having them leave the practice? Without that solid base and 'caring' relationship, there is no chance of a long-lasting aesthetic result. Maybe we do not care about longevity: it is not the best for fee generation. However, if we do not have a decent longevity that exposes us to the next point.

Point two: patients have unrealistic expectations in terms of the aesthetic and functional outcome and the relative cost. With more providers, comes more competition and it is incredibly difficult to measure one dentist's skills versus another. If all people do is look at Instagram accounts and base cost, there is a race to find people who are cheaper with better webpages. This does not equal higher skill, better results or longevity. These types of consumer are much more likely to resort to litigation, especially as they have no long-term tie to a professional. Transactional 'care', I would argue, is not care.

The third point follows on. If we are seeking to base our working lives on transactional treatment plans, then our professionalism and that of dentistry stops being just that. We become operators with a formula for results. The crown prepping robot becomes increasingly appealing. It will be all 'AI' driven and people will lap it up. If we are doing automated, picture-based results, why not go for an automated clinic? Surely those results will be more guaranteed than with a person? Cheaper and available at 10pm on a Sunday evening, if that is what suits the patient.

You need a person, I hear you say. Well maybe that is the fourth point. I still believe you do need a person. And it is that person's ability to do the job, see the whole picture and deliver care. But if all those treatments are based on the high-value aesthetic transactions, then the value of those businesses is solely based on the operator. We can work our whole lives to become super skilled and efficient. However, if we do not do the basic care and have registered patients, then the value of that business is inherently in the individual. When we come to sell our businesses to facilitate our well-deserved retirement, then we may find the business is not worth much at all unless we have somehow found a way to clone ourselves or suffer ridiculously long tie-ins.

Back to basic care then. Relationships built on years of two-way information and understanding that create a better patient and clinician. On that foundation we can build better habits that allow for aesthetics that last. Businesses with inherent value and goodwill. Something we can sell onto the next generation of professionals and which they can cherish and grow. Improve and enhance: the patients and the business. Within all of that lies care. The fundamental reason for people to go to the dentist time and again. Not simply for one-off treatment for a wedding or other new life event. Demonstrable, consistent, improving, enhancing care. Also, it should not be underestimated, available when things go wrong.

I am getting old and grumpy and entrenched. I am back to preaching about professionalism and its virtues. I am not sorry in the slightest. Dentistry is a great, caring profession but it is at risk of losing that care.

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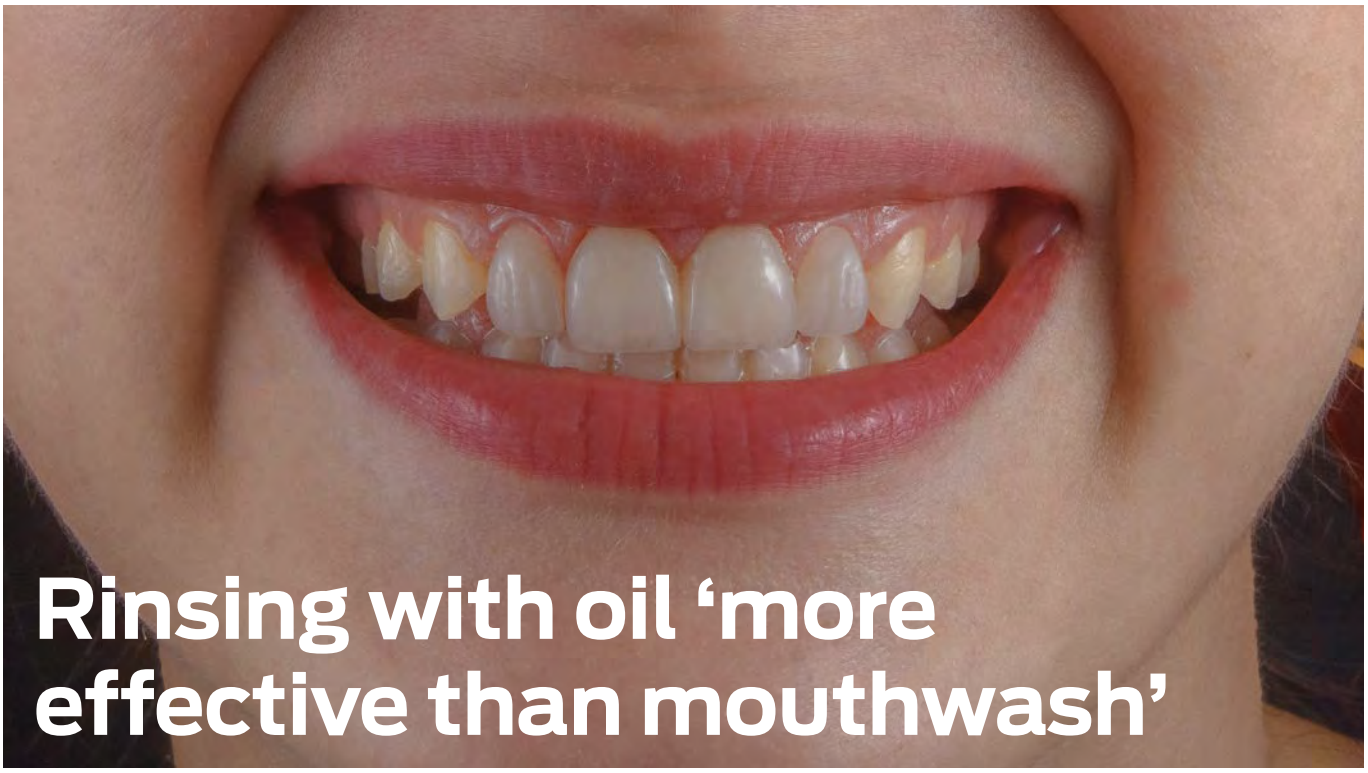

Rinsing with oil 'more effective than mouthwash'

Image credit: unsplash.com/@dentistozkanguner

Researchers suggest ancient practice of 'oil-pulling' is an effective natural alternative

OIL-PULLING, in which a tablespoon of sunflower oil is swished around the mouth until it becomes milky and thin before being spat out, is a "natural, well-tolerated alternative to conventional mouthwashes", according to a study[1].

The practice is rooted in Ayurvedic medicine, an ancient system that focuses on mind, body and spirit using natural products, diet adjustments and daily lifestyle habits to promote health.

Opinion over the effectiveness of oil-pulling has been divided, with a 2018 'Bad Science' article[2] in the *British Dental Journal* saying that it was "uncertain" whether the practice can make a positive contribution to good dental hygiene.

However, the new study, in which 63 adults were split into three groups – one using oil-pulling, the second a marketed alcohol-based anti-gingivitis mouthwash and the third a placebo for 15 days – found that the test group demonstrated a greater reduction in bacteria compared with the comparator and placebo groups.

Gum inflammation and plaque index measurements were shown to be improved in the test group. The group also exhibited improvements in oral dryness, breath freshness and teeth shade. No adverse events were reported.

"The evaluated oil-pulling oral rinse showed potential to reduce oral microbial counts and improve plaque and gingival parameters during short-term use," said the study's authors. "It presents a natural, well-tolerated alternative to conventional mouthwashes."

However, the authors highlighted the short intervention period, the modest magnitude of change observed for some outcomes and the limited sample size.

"Larger, multicentre randomised controlled trials with longer follow-up periods are warranted to confirm these findings and establish the long-term efficacy and clinical applicability of the intervention," they said.

[1] https://tinyurl.com/uv5c7cdx
[2] www.nature.com/articles/sj.bdj.2018.281

College seeks new finance trustee

THE College of General Dentistry (CGDent) is seeking a new trustee with a professional background in accountancy or finance.

CGDent is the first independent college for primary care dentistry in the UK; a professional body and registered charity serving the public interest in oral health, it is the UK's only medical college run by and for dental professionals.

Supporting development and recognition for the whole dental team, it is building on the achievements of the former Faculty of General Dental Practice of the Royal College of Surgeons of England (FGDP[UK]) in setting standards for general dental care.

The Board of Trustees supports the college's historic mission to build a future Royal College for dentistry by ensuring the proper running of the organisation and the fulfilment of its legal and regulatory obligations.

Trustees require an appreciation of the business imperatives underpinning a growing organisation, reconciling delivery of our mission in the patient and public interest with financial viability. The college said that the finance trustee should bring experience in accounting, audit, investment or strategic financial oversight and should understand charity and company financial governance, including financial controls, risk management, reserves policy, audit requirements and reporting obligations.

Applications should be made by CV and a covering letter which addresses the requirements described in the role profile[1] and cites two referees. These must be received by Sunday 11 October, addressed to contact@cgdent.uk with the subject line 'Finance Trustee application'.

[1] cgdent.uk/wp-content/uploads/securepdfs/2026/07/CGDent-Finance-Trustee-role-profile-Jul26.pdf

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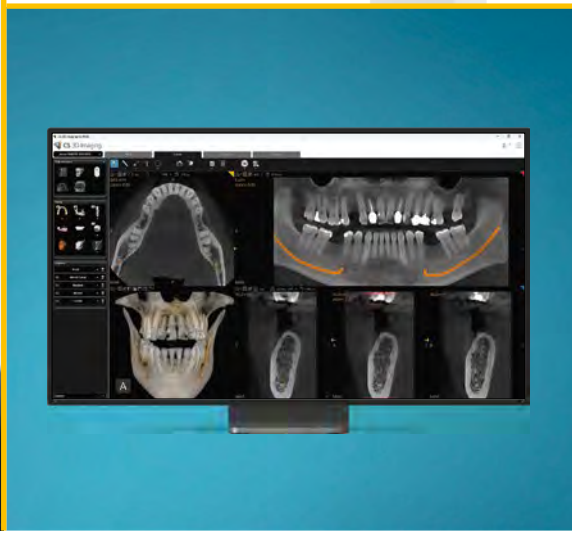

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[1] Work-in-progress, optional features available for sale starting Q3 2025

Dentistry at a distance

Glasgow University completes check-up from 400-miles via satellite

PEOPLE living in remote areas could one day receive specialist medical care without leaving their communities, thanks to advances in telemedicine through satellite communications.

The European Space Agency (ESA) and the University of Glasgow have successfully run a remote dental examination using a secure satellite link combined with a portable 5G cellular system.

During the test, a dentist based at ESA's European Centre for Space Applications and Telecommunications (ECSAT) in Harwell, near Oxford, conducted a full dental inspection of a simulated patient located more than 400 miles away at the university's Scottish Centre for Ecology and the Natural Environment at Loch Lomond.

The dentist operated a robotic arm in real time through a hybrid satellite and 5G connection. Once the examination was complete, the team dispatched a drone to deliver medication to the 'patient'. The drone was monitored using a 5G-enabled tracking system, demonstrating how multiple technologies can work together to support timely care.

The demonstration was part of ESA's 5G REMOTE project, which aims to bridge the gap between satellites and portable 5G networks for communications. The pop-up network used in the demonstration can be used wherever satellite coverage reaches, providing high-quality connectivity that enables advanced telemedicine services. The simulation was carried out through collaboration between ESA's Connectivity and Secure Communications directorate and the Glasgow Next Generation (GXG) testbed at Glasgow University.

"Access to healthcare should not depend on postcode," said Professor Muhammad Imran, Head of the university's James Watt School of Engineering.

Robotic arm running a dental inspection on a simulated patient at the Scottish Centre for Ecology and the Natural Environment

"Our team's work with ESA demonstrates a practical pathway to bring specialist assessment and timely intervention closer to remote and rural communities."

Glasgow named top university in UK for dentistry

The University of Glasgow has been placed first in the UK for dentistry by the Complete University Guide.

In the guide, Glasgow has moved up from third place last year, toppling the University of Dundee, which this year has been placed second. As well as being placed first for dentistry[1], Glasgow was also placed first for nursing and fifth for medicine. "These results reflect the outstanding teaching, research and commitment of our staff and students across Medical, Veterinary and Life Sciences," said a university spokesperson.

[1]***www.thecompleteuniversityguide.co.uk/league-tables/rankings/dentistry***

University seeks referrals from GDPs

THE University of Glasgow is asking General Dental Practitioners (GDPs) to refer suitable patients for a course of treatment at their student outreach clinics.

The clinics are where final-year Bachelor of Dental Surgery students plan and complete a course of treatment for patients in supervised clinics. Treatment is free to patients, however, they should expect the students to take longer completing treatments.

Referrals are suitable for patients who require simple treatment such as NSPT, direct and indirect simple restorative cases, prosthodontic cases and orthograde RCT.

Patient's will be discharged back to their GDP following completion of their treatment plan.

Referral is via: ***www.gla.ac.uk/schools/medicine/dental/practitionerreferrals/***

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MRI may replace dental X-rays

A new type of dental imaging could improve how dentists care for patients

MAGNETIC resonance imaging (MRI) could one day replace dental X-rays, according to researchers.

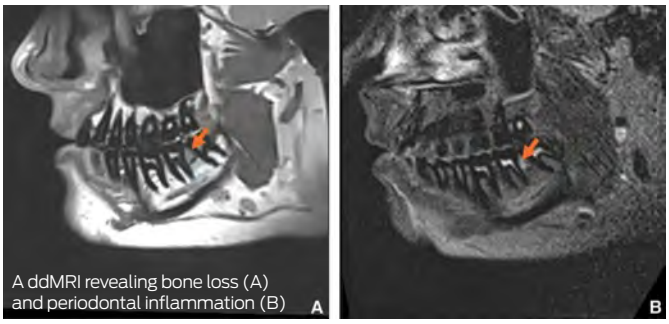
While X-rays and CT scans help dentists see teeth and bone, they provide limited detail of soft tissues, inflammation and early disease. But advances in MRI technology and dental-specific equipment are opening new possibilities.

Researchers are exploring the potential use of dental dedicated MRI (ddMRI) which, unlike traditional imaging, does not use radiation and can show detailed images of teeth, bone, gums, muscles, joints and inflammation in one scan.

Studies[1] suggest ddMRI can detect active inflammation, tell the difference between healing and disease and improve understanding of gum and implant health. In addition, it could support complex treatment planning and provide safer imaging for children and patients needing repeated scans.

The extra detail could help dentists answer key questions, such as whether an infection is still active, whether the jaw is under stress, and whether tissues are healthy enough for implants or treatment. It may be especially useful for complex cases, including patients with medical conditions, past trauma, or extensive dental work.

Dr Saoirse O'Toole, a clinical lecturer in prosthodontics at King's College London's Faculty of Dentistry, Oral & Clinical Sciences, said: "Dental MRI is designed to complement rather than replace



A ddMRI revealing bone loss (A) and periodontal inflammation (B)

X-rays or CT scans, helping dentists make more personalised and confident decisions.

"It allows us to see not just structure but also activity, including whether tissues are inflamed, healing or under stress.

"Although ddMRI is not yet routine, it does show strong promise. Some challenges remain, including cost, access, and training but this new approach could help dentists see more while exposing patients to less."

[1] ***www.thejpd.org/article/S0022-3913(26)00379-3/fulltext***

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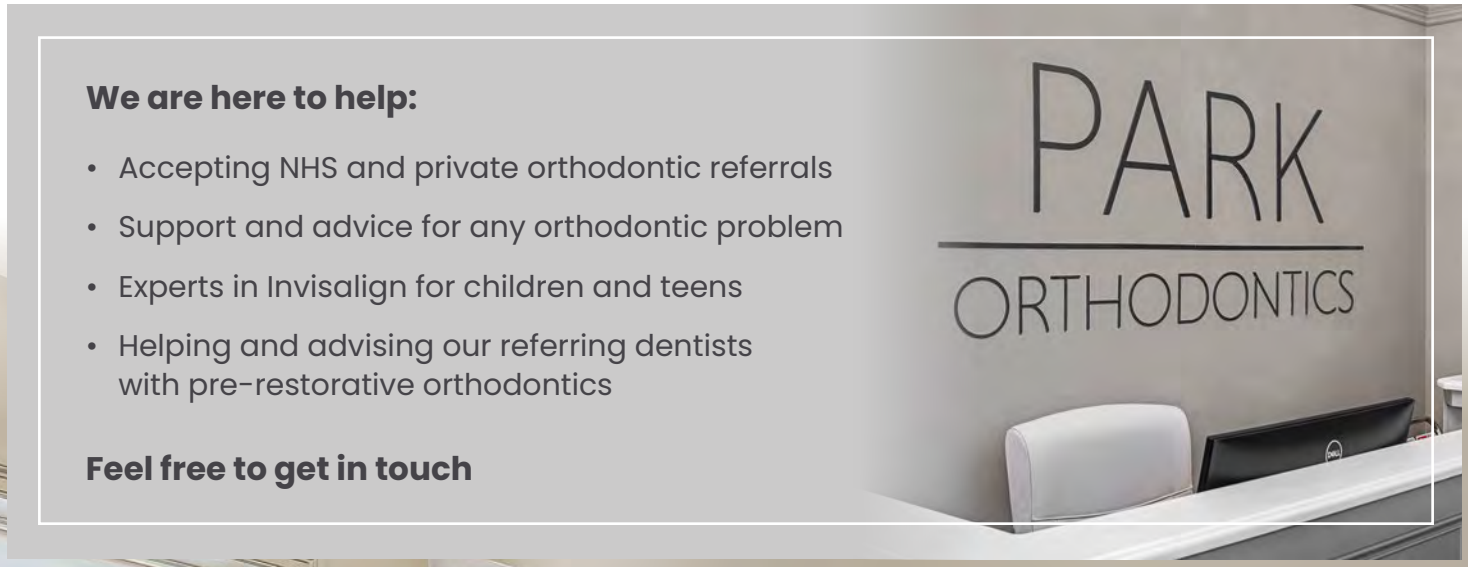

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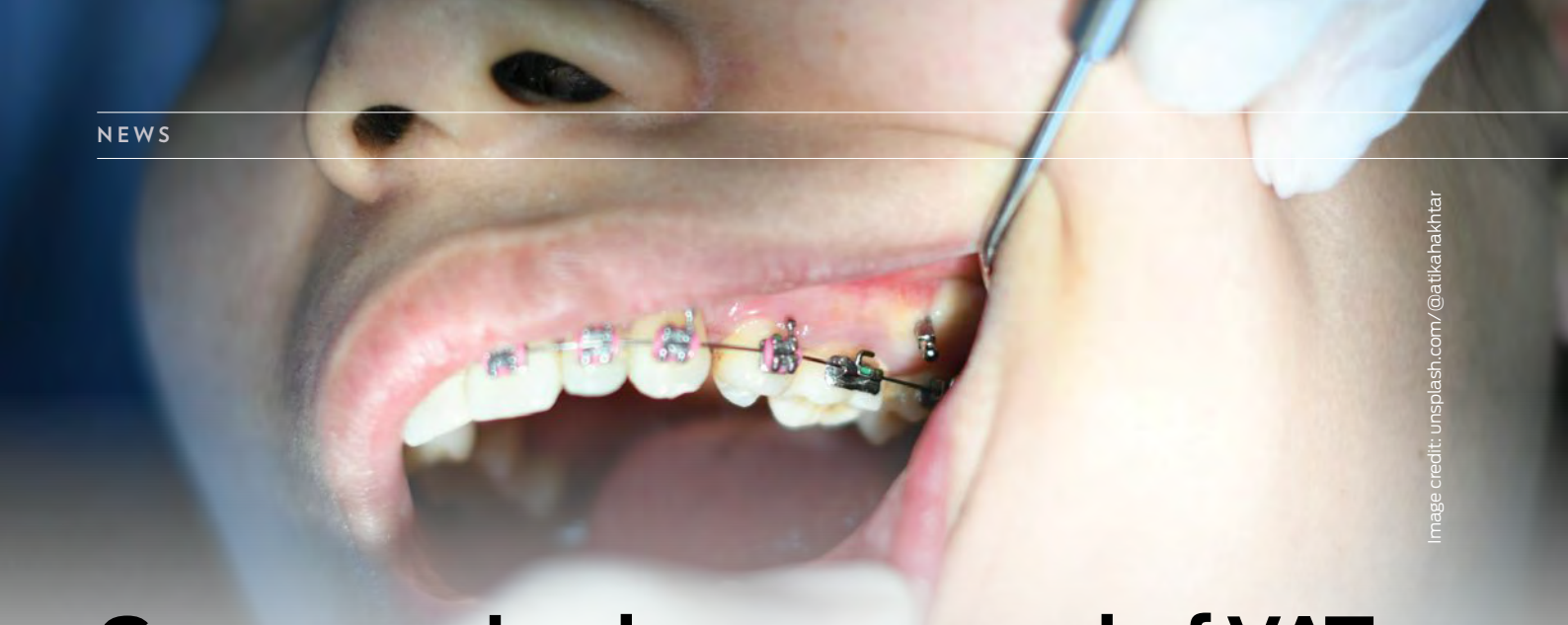

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Concern raised over removal of VAT-exemption from orthodontic aligners

Fears expressed that decision may signal broader reassessment of VAT on ortho appliances

THE British Orthodontic Society (BOS) has expressed deep concerned over HMRC's recent decision to remove orthodontic aligners from the list of VAT-exempt dental appliances.

The change has significant implications for both patients and orthodontic practitioners, said the BOS, and risks increasing the cost of orthodontic treatment at a time when affordability and access to care are already under pressure.

Removal of VAT exemption from orthodontic aligners will increase the cost of providing treatment and for practices that are unable to absorb these additional costs, patients will face higher treatment fees.

The decision risks placing orthodontic care beyond the reach of some individuals and may widen inequalities in access to treatment.

The BOS said it was also concerned that this decision may signal a broader reassessment of the VAT treatment of orthodontic appliances. Many laboratory-manufactured orthodontic appliances, including retainers and removable appliances, are integral components of orthodontic treatment.

Matt Clover, Director of Clinical Practice for the BOS, said: "Of particular concern is the potential impact on NHS orthodontic services for children and young people. NHS orthodontic contracts are already financially challenging to deliver, with practices operating within fixed contract values that have not kept pace with rising costs.

"If VAT is applied to orthodontic appliances required as part of NHS treatment, providers will be unable to recover these additional costs through NHS contract payments. This would further erode the already limited margins associated with NHS orthodontic care. The British Orthodontic Society is concerned that increasing the cost burden of providing NHS orthodontic treatment may make some NHS contracts financially unsustainable."

The BOS has been actively engaged in discussions surrounding the VAT treatment of orthodontic appliances.

The society submitted evidence to both the High Court proceedings and the subsequent appeal relating to the VAT status of orthodontic aligners.

In addition, a member of the society's board has met directly with HM Treasury officials to discuss the potential impact that the introduction of VAT on orthodontic appliances could have on patients, practitioners and the sustainability of NHS orthodontic services.

BOS announces new orthodontic therapist guidelines

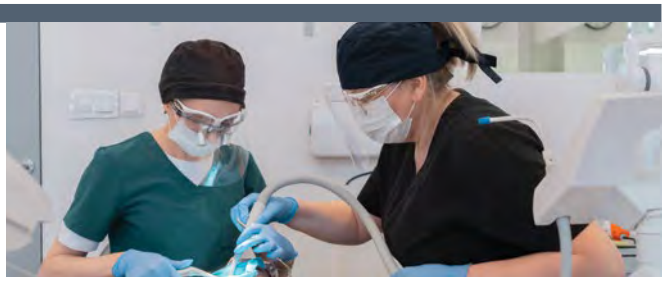

Image credit: Shutterstock/Dmitrij Galacewicz

THE British Orthodontic Society has announced the release of the latest orthodontic therapist guidelines[1]. These follow on from the General Dental Council Scope of Practice guidelines from November 2025.

The safe supervision of orthodontic therapists requires a clear understanding of the roles and competencies of both the supervising dentist and the orthodontic therapist.

The document outlines key points. The orthodontic therapist and supervising dentist should work together at all times to put patients' interests first and act to protect them, to ensure safe patient care.

Both the orthodontic therapist and supervising dentist should work within their competencies, training and scope of practice and be aware of the roles and responsibilities of other members of the dental team.

The supervising dentist should see the patient in-person at least every other visit

If the supervising dentist is not present, a comprehensive written prescription for the visit should be provided for the orthodontic therapist.

It is recognised that there may be specific clinical situations that require a different approach. Any deviation from this practice should be justified and documented.

When using technology for remote monitoring, the supervising dentist is ultimately responsible for the treatment and is accountable for the patient's overall care, including the safe progress of the orthodontic treatment, ensuring the patient's oral health has not deteriorated and there are no additional treatment needs.

[1] ***tinyurl.com/y4snh83***

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BSPD welcomes launch of training for health visiting teams

It combines an e-learning programme, practical mouth check guide and an age-staged oral health advice checklist

Image credit: unsplash.com/@amanda_sofia_

THE British Society of Paediatric Dentistry (BSPD) has welcomed the launch of new Mini Mouth Care Matters (Mini MCM) training and resources for health visiting teams.

Developed in partnership with the Institute of Health Visiting, the package[1] equips health visitors and wider health visiting teams to promote good oral health from the antenatal period through to early childhood. It brings together an e-learning programme, a practical 'lift the lip' mouth check guide and an age-staged oral health advice checklist covering toothbrushing, diet, fluoride and dental attendance.

BSPD says the launch marks an important step in embedding oral health into routine early years contacts and making every contact count. By helping health visiting teams identify early signs of dental problems, sharing consistent prevention advice and signposting families to dental support where needed, Mini MCM aims to help reduce inequalities in children's oral health and support healthier starts in life.

> "THIS NEW MINI MOUTH CARE MATTERS TRAINING GIVES HEALTH VISITING TEAMS PRACTICAL, EVIDENCE-BASED TOOLS TO WEAVE ORAL HEALTH INTO EVERYDAY CONVERSATIONS AND CHECKS"

The launch also supports the BSPD's President's Charter 2025–2026[2], which calls for good oral health for every child in the UK and identifies the integration of oral health into wider healthcare settings, including initiatives such as Mini MCM, as an immediate priority.

Dr Urshla (Oosh) Devalia OBE, President of BSPD and National Lead for Mini Mouth Care Matters, said: "Health visitors are trusted professionals who have vital contact with families during pregnancy and the earliest years of a child's life. This new Mini Mouth Care Matters training gives health visiting teams practical, evidence-based tools to weave oral health into everyday conversations and checks."

The package includes:

- Mini Mouth Care Matters e-learning to support health visiting teams in promoting oral health in the early years
- a Lift the Lip mouth check guide, using a simple traffic-light approach to help interpret findings and identify next steps
- an oral health advice checklist for health visiting teams, covering evidence-based advice from pregnancy through to two years and beyond

[1]learninghub.nhs.uk/catalogue/mini-mouth-care-matters
[2]www.bspd.co.uk/Home/BSPD-Blueprint-and-President-Charter

BOS announces 2026 research awards

THE British Orthodontic Society (BOS), alongside The Faculty of Dental Surgery at the Royal College of Surgeons of England, has announced the recipients of its 2026 research awards.

This year's pump-priming grants have been awarded to two early career researchers whose projects are primed to make a significant impact; one related to the condition cleft lip and palate and the other to the mitigation of climate change.

The recipients of the FDS-BOS pump-priming grants are:

› Joshua Kennedy: e-Learning resource on cleft lip and/or palate for undergraduate dental students in the United Kingdom
› Daakshini Patel: Carbon Footprint of Orthodontic Patient Travel in NHS Highland

Joshua Kennedy, an NIHR Academic Clinical Fellow at the University of Bristol, has spent several years involved with CLEFT Bridging the Gap, a UK-based charity focused on long-term sustainable cleft care in underserved regions of the world.

He is also an active member of early careers research groups and national committees, including those of the Craniofacial Society of Great Britain and Ireland and the BDA. Daakshini Patel is based in Inverness and access to care throughout the Scottish Highlands has been a hot topic in recent years. The distances and time involved for orthodontic patients can be considerable, especially as there is now only one clinic in Inverness and a satellite in Wick to cover the entire region.

"I want to find out exactly how much people are travelling and how they are doing that – public transport is somewhat limited in this area," said Daakshini. "A patient/public group has been involved in the design of the study, and this will hopefully provide evidence as a pilot study for a larger one to follow. I am so thankful to have the support of BOS and FDS – it really means a lot."

Professor Peter Mossey, Director of Research, BOS, said: "I would like to extend our warmest congratulations to the recipients of the 2026 BOS/FDS Research Awards.

"The quality of submissions this year was exceptionally high, and I think this reflects the strength and diversity within the orthodontic specialty."

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Gum disease may spur serious heart valve disease

Study identifies potential biological pathway linking gum disease to calcific aortic valve stenosis

GUM disease bacteria may spur calcium buildup in the heart's aortic valve, leading to a common and serious heart valve disease, according to research presented at the American Heart Association's (AHA) Basic Cardiovascular Sciences Scientific Sessions 2026.

Calcific aortic valve stenosis (CAVS) occurs when the aortic valve thickens and calcifies, restricting blood flow from the heart to the rest of the body. In early stages, there may be no symptoms; however, as the condition progresses, it can cause fatigue, chest pain, shortness of breath, fainting, heart failure and sometimes premature death. Standard treatment for severe CAVS is valve replacement surgery.

The study[1] has identified a potential biological pathway linking chronic oral gum disease and infection to calcific aortic valve stenosis.

"There are currently no medications proven to prevent or slow the progression of CAVS. We hope our findings demonstrating the link between periodontal disease and CAVS will stimulate further research into new preventive and therapeutic approaches for this condition," said co-lead author of the study, Chenyang Li, M.D.

Picture: unsplash.com/@dentistozkanguner

The researchers focused on the bacteria Porphyromonas gingivalis (P. gingivalis), which plays a disproportionately large role in causing gum inflammation and the destruction of gum tissue. P. gingivalis has also previously been associated with systemic inflammation and the risk of cardiovascular disease, including plaque buildup in the arteries and coronary artery disease.

"We were surprised by how much P. gingivalis was present in the calcified aortic valves," Li said. "Although it was not one of the most abundant bacteria overall, it showed one of the largest differences between valves with CAVS and valves without CAVS. This unexpected finding led us to investigate its potential role in the development of CAVS."

[1] ***tinyurl.com/bdft4y9j***

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New brush test detects oral cancer in one hour

It could provide clinicians with a rapid, accurate and non-invasive way to triage patients

THE use of a non-invasive brush biopsy test that can detect oral cancer within one hour has been outlined by a team of researchers in a paper[1] published in the journal *Biomarker Research*. The test could revolutionise oral cancer detection and prevent more than 90% of unnecessary and harmful scalpel biopsy procedures.

According to Global Burden of Disease data, lip and oral cancer is among the world's most rapidly increasing causes of early death. More than 10,000 people in the UK were diagnosed with oral cancer last year, according to the charity Mouth Cancer.

The study is the largest of its kind, involving more than 1,000 samples from 545 patients. The team included researchers from Queen Mary University of London's Centre for Oral Immunobiology & Regenerative Medicine, King George's Medical University in India, Modern Dental College & Research Centre in India, and the All India Institute of Medical Sciences.

Early diagnosis of oral cancer – oral squamous cell carcinoma (OSCC) – is critical, yet most oral potentially malignant disorders (OPMDs) are benign, and patients frequently undergo unnecessary invasive scalpel biopsies, creating diagnostic delays and patient harm.

A scalpel oral biopsy can be extremely painful, especially in the tongue (the most common cancer site), because part of the tongue is cut off, which discourages both patients and clinicians from doing this repeatedly and in a timely fashion.

Muy-Teck Teh, Professor of Molecular Oral Oncology at Queen Mary, and the lead researcher said: "Oral cancer survival is directly linked to how early it is found, yet our current diagnostic pathway is blunt. Most patients with a suspicious lesion end up having an invasive biopsy even when the overwhelming likelihood is that it is benign.

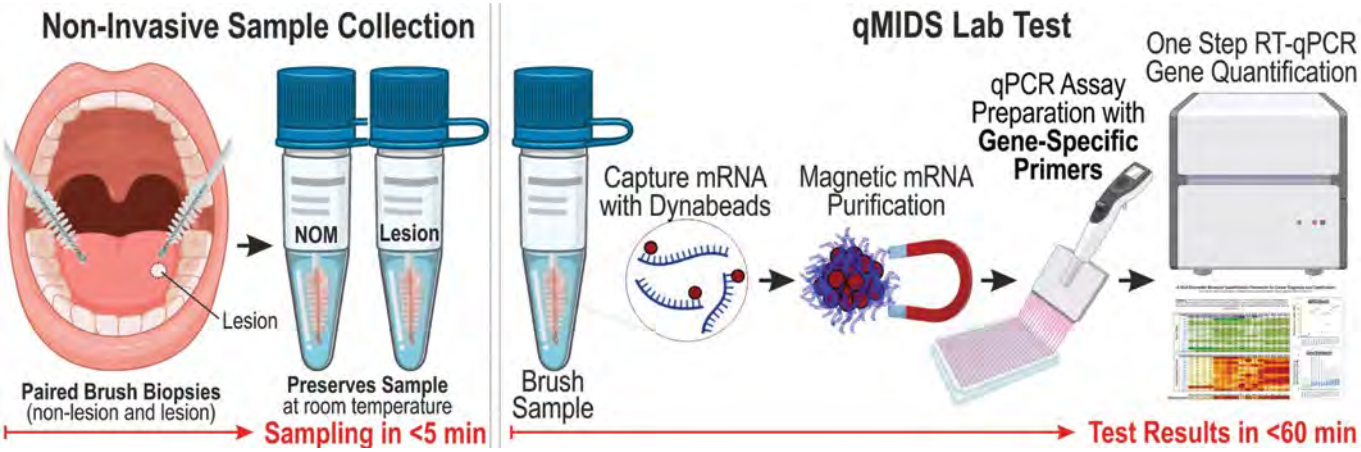
"This test changes that. It gives clinicians a rapid, accurate and non-invasive way to triage patients, and crucially, it can be repeated. That means we can now monitor patients with persistent pre-malignant lesions regularly and systematically and pick up cancers much earlier than we would have been able to before."

Professor Teh added: "We were genuinely astonished by the fact that the brush swab test performance is comparable to a microbiopsy.

"It suggests that the biological signal captured by these four genes is sufficiently strong and consistent that it can be detected even from the superficial exfoliated cells collected by a brush biopsy.

"The clinical implications are significant; patients no longer need even a minimally invasive procedure to benefit from molecularly guided triage."

[1] ***link.springer.com/article/10.1186/s40364-026-00963-7***



In the clinic, samples are collected; one from normal mucosa and one from the lesion. In the lab, mRNA is extracted via magnetic beads and analysed using a qPCR assay that quantifies four biomarker genes within 60 minutes

Patricia Thomson awarded College Medal

PATRICIA Thomson FCGDent has been awarded this year's College Medal, the most prestigious honour conferred by the College of General Dentistry (CGDent).

Reserved for just one recipient per year, the College Medal is awarded for exceptional service to the dental profession and its patients in a manner aligned with the values and mission of the College.

Dr Thomson has received the award in recognition of her wholehearted commitment to the profession, and her longstanding service to CGDent and previously to the Faculty of General Dental Practice (FGDP), both nationally and in the west of Scotland.

The medal was conferred at the College Fellows' Summer Reception in June.

Dr Thomson (pictured) is the fifth recipient of the College Medal, following Ian Mills, Andrew Hadden, Ario Santini and Kevin Lewis.

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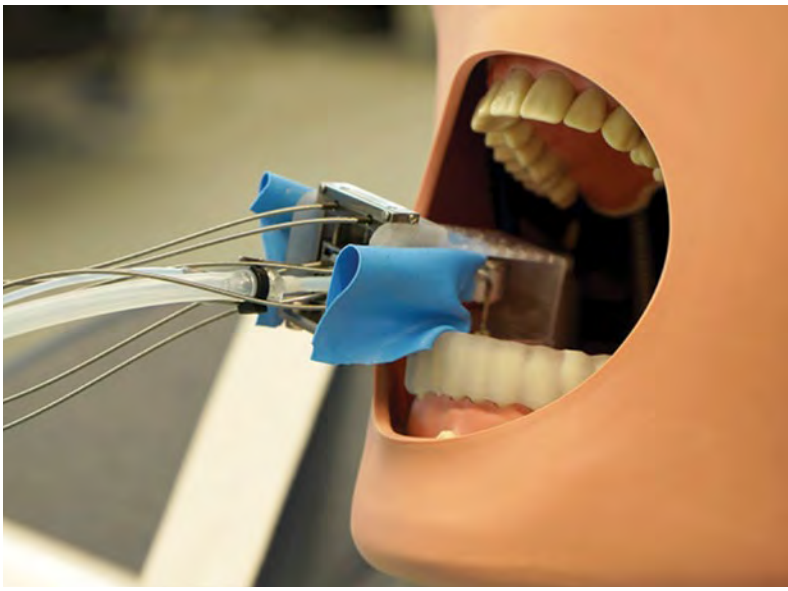
Mini robot could simplify dental treatment

As a next step, the researchers plan to integrate sensors and a camera



A MINIATURE dental robot that could one day automatically prepare teeth for crowns, and reduce the number of appointments needed for treatment, has been developed by researchers at the University of Basel.

The prototype is about the size of a wine cork. Its motors and control system are located outside the robot and connected to it via flexible drive shafts, cables and tubes. "It is designed to be small enough to fit comfortably into an open mouth," says Dr Yukiko Tomooka, first author of a paper[1] in *IEEE Transactions on Medical Robotics and Bionics*.

The prototype, called MIR, short for Miniature Intraoral Robot, is designed to prepare teeth precisely, according to a digital plan.

After a scan during the first appointment, dentists could plan exactly how the robot should remove the tooth material and order the crown straight away, rather than waiting for a second appointment. The scan is used not only to plan the crown, but also to produce a custom-fitted dental splint to which the robot is attached.

The researchers tested their robot on tooth models made of synthetic resin and on a ceramic material with a hardness like that of tooth enamel.

The robot prepares the tooth in two steps; first, it uses a wide drill to reduce the tooth surface, removing material from above. In the second step, a longer, thinner drill works on the sides of the tooth. In tests, the positional error was less than 0.2 millimetres, which could be further reduced after sensors are integrated into the system.

As a next step, the researchers plan to integrate sensors and a camera into the robot so that the system can monitor its position and the progress of the treatment. "Even after a power outage, MIR would know where it is and where it needs to continue based on the sensor data," said Professor Georg Rauter, the research group leader.

[1] ***ieeexplore.ieee.org/document/11478483***

New oral health guide for parents and carers of children and young people with diabetes

Image credit: Shutterstock/Andrey_Popov

THE British Society of Paediatric Dentistry (BSPD) has launched a new leaflet offering clear, practical oral health advice for parents and carers of children and young people (CYP) living with diabetes.

Developed with input from paediatric dental specialists, diabetes clinicians and families, the guide provides up-to-date support for those navigating the additional oral health considerations linked to diabetes.

Covering topics such as "How does diabetes affect my child's oral health?", "What should I look out for?" and "How can we prevent problems?", the leaflet offers confidence building guidance alongside practical tips, preventive advice and links to further trusted resources. It aims to empower families to feel informed, prepared and supported in helping their child maintain healthy teeth and gums for life.

The leaflet is available to download from BSPD's website[1]. The Society hopes it will reach every parent, carer and professional for whom understanding the oral health needs of a child with diabetes is an important part of their personal or professional role.

For many families, managing diabetes can feel overwhelming. Oral health may not always be front of mind, yet children with diabetes can be at increased risk of certain dental problems. BSPD's new guidance explains these risks clearly and sensitively, while emphasising the simple, achievable steps that can make a meaningful difference.

Dr Oosh Devalia OBE, BSPD President, said: "BSPD is committed to ensuring that every child, whatever their health condition, has the opportunity to enjoy a healthy smile for life. We hope this new leaflet will provide reassurance, clarity and practical support to families of children and young people with diabetes, helping them feel confident in protecting their child's oral health."

[1] ***tinyurl.com/55h3pdty***

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Jackfruit shows promise for treating periodontitis

Image credit: unsplash.com/@andoyc

Fruit's latex was mixed with pomegranate peel extract and simvastatin, an anti-inflammatory drug

A BIOMATERIAL containing jackfruit latex, pomegranate peel extract and simvastatin has been developed by researchers at the Pontifical Catholic University of São Paulo in Brazil.

Conventional treatments aim to control infection and inflammation, but they do not effectively promote the regeneration of periodontal tissues, which limits their long-term effectiveness. Techniques such as guided tissue regeneration and bone grafting have been suggested for these cases, but their clinical effects are inconsistent and sometimes unpredictable.

To address this issue, the researchers focused on exploring natural, bioactive biomaterials that could combat the condition in an integrated manner.

"We began to view latex extracted from jackfruit as an interesting alternative, as it has adhesive properties," said Professor Eliana Aparecida de Rezende Duek, of the university's Department of Surgery.

"This led us to believe that it could remain longer at the site affected by periodontitis, promoting a more targeted release of therapeutic compounds and potentially reducing the need for systemic antibiotic use."

The substance was combined with pomegranate peel extract, which has recognised antimicrobial potential for topical application, and simvastatin, an anti-inflammatory drug that has been studied for its ability to stimulate bone formation. This combination resulted in a mucoadhesive matrix that acts directly at the site of the lesion.

In the study[1], the scientists conducted an experiment in which latex was manually extracted from freshly harvested jackfruit and underwent careful purification. Then, pomegranate peel extract was incorporated into the matrix.

"Overall, the results were very encouraging for us," said Professor Duek. "We observed that the developed biomaterial has great potential for future applications in treating periodontitis and in other areas as well, especially since it involves a material that has received little attention in the scientific literature for biomedical use.

"Despite these promising results, we're continuing to move forward with new studies to more thoroughly evaluate the efficacy and safety of the system," she added.

[1] ***link.springer.com/article/10.1007/s00289-026-06358-w***

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Researchers develop nature-inspired toothpaste

The paste includes a material originally developed for bone grafting

A NEW toothpaste for relieving tooth sensitivity has been developed by University College London (UCL) researchers using a nature-inspired material that supports bone regeneration.

The technology, developed by scientists at the UCL Centre for Nature-Inspired Engineering (CNIE), includes a material originally developed for bone grafting, called AeroGraft, with a novel structure that can rapidly rebuild tooth surfaces with material indistinguishable from bone.

Unlike most sensitive toothpastes, which work by either numbing the nerve or slowly blocking tiny channels inside the tooth over days or weeks, AeroGraft quickly seals exposed tubules while releasing calcium and phosphate ions to form a protective mineral layer on the tooth surface.

Tooth sensitivity occurs in around half the UK population. It can lead to significant pain and cause people to avoid certain foods, impacting quality of life. The new technology has been licensed for development into a new range of toothpaste and oral gel called OZEN.

Professor Marc-Olivier Coppens, who leads the development team, said: "This work grew out of fundamental research into hierarchically structured catalysts as well as nature-inspired materials and how they support mineral regeneration in the body.

"What has been particularly exciting is seeing the science translated from lab research into a consumer product that can unlock real world benefits for people."

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Many thanks to our exhibitors, including gold sponsors CJS Dental Services, JDN Technical, Dental Directory, Dentsply Sirona and Wrights Dental, silver Sponsor Trycare and bronze Sponsor Scrubs UK.

The show's education programme featured all the GDC's recommended and highly recommended topics as well as lectures and workshops on clinical expertise, wellbeing and the business of dentistry.

Among the speakers was Margaret Black, Professional Educator at Oralieve, whose presentation *Dry Mouth and its Impacts on Patients* was very well received by attendees, with delegates declaring the value of the content for everyday application in dentistry.

Within a busy dental setting the impact of dry mouth can often be overlooked. The presentation reintroduced the physiological and psychological impact of dry mouth on patients, with attendees hearing real-life experiences from patients with xerostomia due to radiotherapy, polypharmacy or systemic disease.

Delegates learned of the prevalence and causes of dry mouth and of management techniques to make their patients more comfortable both during dental treatment and for everyday self-care.

The presentation underlined the importance of a comfortable mouth in a palliative care setting, stressing how the introduction of dry mouth products can ease the distress patients suffer in their final months, weeks, days and minutes – resulting in a more peaceful passing. This makes the transition easier for not just the patients but for families caring for their loved ones.

The presentation introduced the range of Oralieve products discussing their active ingredients and different patient groups who will benefit from the products and how to recommend and obtain products.

Speaking after, Margaret said: "It contained evidence-based information relevant to both dental and medical professionals and brings with it a reminder of why we work within dentistry. We are not just about teeth, but about people and quality of life."

Pictured: Scottish Dental Show gold sponsors Dental Directory, Dentsply Sirona, JD Technical CJS Dental Services and Wrights Dental, silver sponsor Trycare and bronze sponsor Scrubs UK

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Dentsply Sirona speaker Amanda Bassey-Duke explored how artificial intelligence and digital dentistry are transforming the management of dental caries by creating a seamless workflow from diagnosis through to definitive restoration. Rather than focusing on technology in isolation, her session *From Detection to Restoration: an AI-driven workflow for modern caries management* demonstrated how these innovations can be integrated into everyday clinical practice to improve efficiency, patient communication and treatment outcomes.

Using real patient cases, Amanda demonstrated how AI-assisted radiographic analysis with Dentsply Sirona Smart View and Pearl AI can support clinicians in detecting pathology earlier and communicating findings more effectively with patients. The presentation then followed the complete digital workflow, showing how diagnosis can be combined with digital scanning using Dentsply Sirona Primescan 2 and DS Core to streamline treatment planning and improve collaboration amongst colleagues and patients using the Canvas feature.

A significant focus was placed on minimally invasive dentistry and the importance of identifying lesions at the earliest stage. Amanda discussed how materials such as Curodont can enable non-invasive treatment of early carious lesions detected using the Primescan 2 caries detection feature. This helps preserve healthy tooth structure and shifts the emphasis from restorative interventions to prevention whenever possible.

The session concluded by demonstrating how digital restorative workflows, including same-day CAD/CAM dentistry, allow clinicians to restore teeth efficiently while delivering a more convenient patient experience.

Throughout the presentation, Amanda emphasised that AI is not a replacement for clinical judgement but a tool that enhances decision-making, supports patient education and builds trust through greater transparency. As digital technologies continue to evolve, clinicians have an exciting opportunity to deliver more personalised, predictable, and minimally invasive care while improving both patient experience and practice efficiency.

The key message was simple: the future of dentistry lies not in adopting technology for technology's sake, but in using digital innovation to empower clinicians and provide better outcomes for every patient.

Anita Hosty, a registered dental hygienist, fitness instructor and the creator of Loose Hands, an ergonomic and fitness programme, outlined how to prevent and manage musculoskeletal pain in dental settings. Many dental professionals suffer from neck, shoulder, back, wrist and hand pain. The primary objective was to give participants practical advice on preventing and reducing this discomfort.

The presentation emphasised that good ergonomics alone is not enough. Long-term wellbeing requires a combination of ergonomics, regular movement, strength and mobility exercises, and healthy daily habits. Delegates were encouraged to view physical wellbeing as an essential part of day-to-day living, rather than something to address only after pain develops.

Another important takeaway was that small, consistent changes can have a significant impact. Incorporating short movement breaks, improving posture awareness and following a structured exercise programme can enhance comfort, reduce fatigue and support career longevity.

The session also highlighted the importance of taking a proactive approach to self-care. Investing time in physical health benefits not only the individual clinician but also improves concentration, productivity, and the quality of patient care.

Overall, delegates left the session saying they felt empowered with practical strategies that they could implement immediately. The aim was to demonstrate that by combining ergonomics with targeted exercise and well-being practices, dental professionals can continue to enjoy healthy, sustainable careers.

Andrew McGregor, Principal of Park Orthodontics in Glasgow, hosted the workshop *Introducing a Simple, Cost-Effective Bonded Retainer Technique*. The session delved into the critical final stage of orthodontic treatment; long-term retention.

The workshop opened with a comprehensive review of the latest evidence and research regarding retention and stability. It examined the biological and mechanical factors that influence post-treatment shifts, emphasising that a successful outcome is only as good as the protocol that maintains it.

Transitioning from theory to practice, Andrew described a streamlined, cost-effective technique for direct bonded retainer placement. Delegates were provided with 3D printed models to gain hands-on experience using Ortho FlexTech Wire. This practical element allowed for real-time troubleshooting and refinement of handling techniques.

To further support chairside implementation, the session was packed with clinical 'pearls', including precise methods for measuring wires, selecting the most reliable bonding cements, and mastering moisture control for a predictable bond.

The session was delivered in conjunction with Sue Johnston and the team at Identiti Training UK. As providers of high-quality postgraduate orthodontic education for registered dentists, Identiti's mission aligned perfectly with Andrew's goal of bridging the gap between academic research and practical, everyday clinical skills.

> "THE FUTURE OF DENTISTRY LIES NOT IN ADOPTING TECHNOLOGY FOR TECHNOLOGY'S SAKE, BUT IN USING DIGITAL INNOVATION TO EMPOWER CLINICIANS AND PROVIDE BETTER OUTCOMES FOR EVERY PATIENT"

Elaine Tilling, patron of The Society of British Society of Dental Nurses, spoke about *The Good, The Bad and The Ugly of Social Media.* Elaine detailed the regulatory guidelines relating to social media and professionalism. Her exploration through scenario discussion aimed to help delegates recognise and manage the professional risks that they come across when socialising, exploring or working online. The session covered an exercise in checking your personal digital footprint and shared strategies for staying safe online.

The Dental Directorate of Public Services Delivery Scotland (PSD Scotland) provided an engaging overview of its vision for dental education, workforce development and service transformation across Scotland. Led by Lee Savarrio, the Dental Director and Postgraduate Dean, the session highlighted the transition from NHS Education for Scotland (NES) to PSD Scotland, a new organisation established to drive innovation, digital transformation, workforce planning and nationally coordinated services across health and social care. A key focus of the presentation was the breadth of education and training opportunities available to support every member of the dental team.

Delegates learned about PSD Scotland's continued investment in pre-registration and post registration education, with particular emphasis on dental nurse training through the Modern Apprenticeship in Dental Nursing, and training pathways that support professional development and optimise skills mix across dental services.

Addressing workforce challenges was another major theme. PSD Scotland outlined plans to develop a new national Dental Technology training pathway, creating accessible routes into the profession, a new pre-registration programme and the development of longer-term development pathways.

The team highlighted vocational training programmes for dental therapists and dentists, including the new two-year Longitudinal Dental Foundation Training programme, launching in September, which broadens clinical experience across general, hospital and public dental services while supporting the transition into practice.

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Lyall Dominick | Dentist with Special Interest in Endodontics | BDS MFDS RCPSG MSc GDC no. 243639

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Sedation

Clive Schmulian and Ian Cumming | Sedationists

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Postgraduate training within the public and hospital dental service through dental core training was also highlighted, alongside pathways into dental specialty training in Scotland.

Delegates also heard how the clinical effectiveness 'ecosystem' brings together research, development of Scottish Dental Clinical Effectiveness Programme (SDCEP) evidence-based guidance and educational initiatives to support implementation.

The presentation concluded with an overview of the extensive portfolio of CPD opportunities for the dental team. Delegates were encouraged to access learning and development opportunities through TURAS Learn and Portal.

Overall, the session demonstrated PSD Scotland's commitment to developing a skilled and sustainable dental workforce through education, research and innovation.

Further information
TURAS Learn:
learn.nes.nhs.scot/3089/nes-dental

This year's lectures were delivered by:

Laura Wilson, David Gilmour, Tariq Ali, Christine Park, Emma O'Donnell, Kirstyn Donaldson, Lewis Olsson, Varkha Rattu, Colin Campbell, Kaly Jaff, James Elliott, Simon Kidd, Lee Savarrio, Ailsa Morrison, James Neilson, Margaret Saunders, Jan Clarkson, Mohammed Tiba, Adele Johnston, Lauren Long, Omayma Siddig and Anita Hosty.

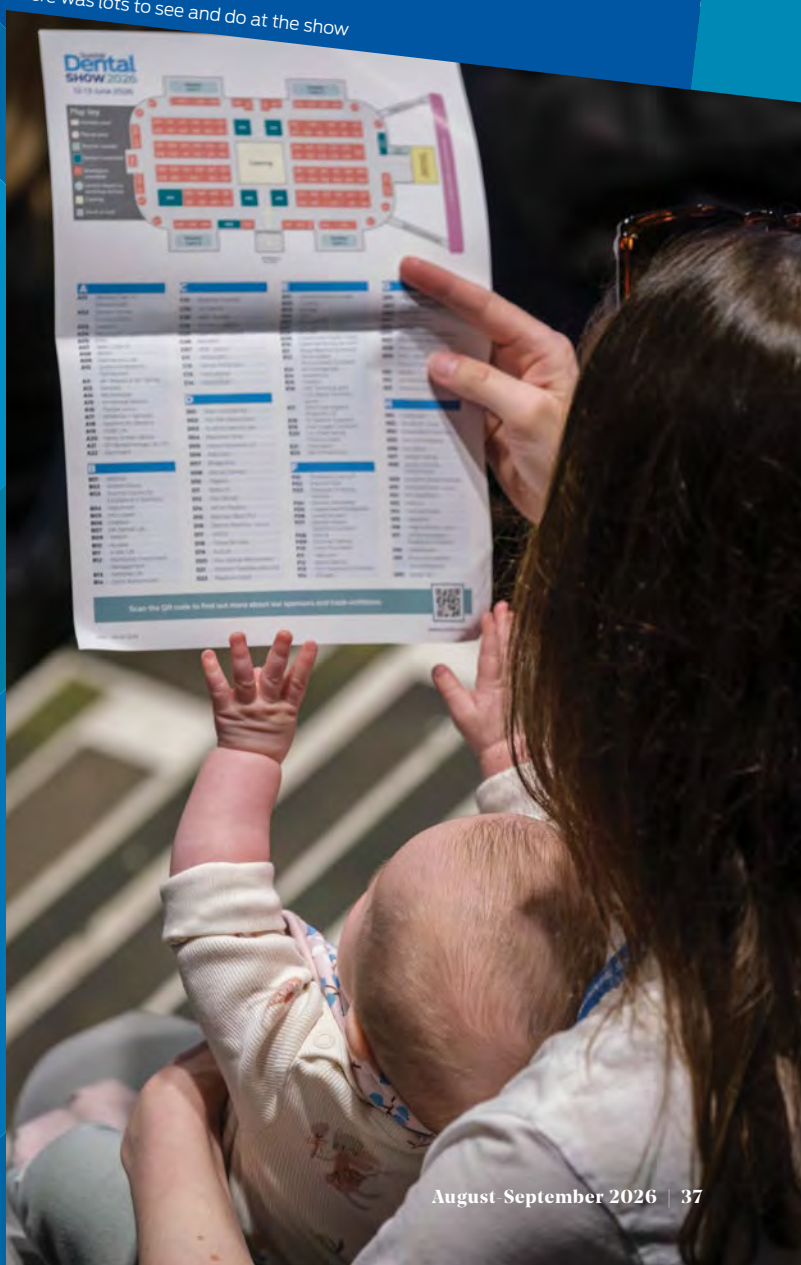
Workshops were hosted by:

Arshad Ali, Jenny Walker, Emma McGroarty, Asnain Sadiq, Agnieszka Nohawica, Amber Aplin, Margaret Black, Navid Saberi, Jacqueline Moore, Amy Jones, Derek Goodwin, Elaine Tilling, Dr Jordan Bain, John Perry, Angela Cocolin, Yanna Myint, Jennifer Lindsay, Andrew McAllister, Kirstie Walker, Nina Farmer, Carolyn Roberts, Kaly Jaff, Allan Wright, Craig McKerracher, Amanda Bassey-Duke, Andrew McGregor, Carolyn Roberts, Clement Seeballuck, Jess Lomas and Rachael Clark.

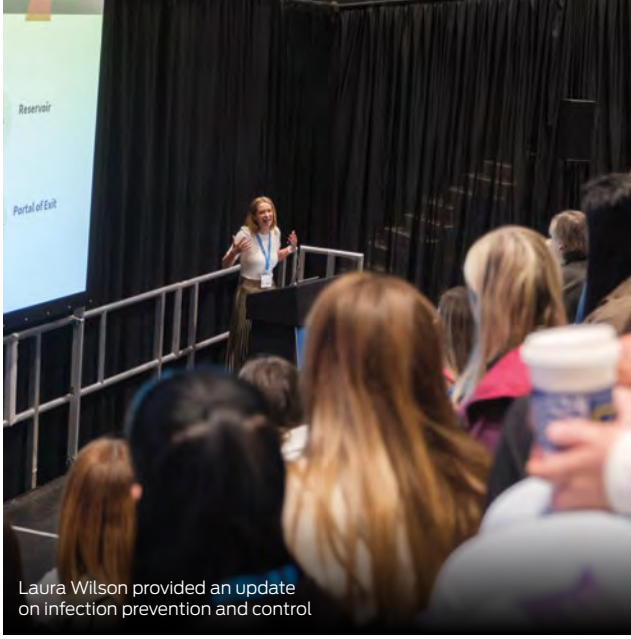
The show also featured NSK sessions hosted by Siobhan Kelleher, Lauren Long and Jenny Walker on Piezo tip selection, air-polishing and powders and an Introduction to implant instrumentation.

Arshad Ali hosted a workshop on building a better treatment plan

There was lots to see and do at the show



Andrew McAllister hosted a workshop on clinical photography



Laura Wilson provided an update on infection prevention and control

James Elliott outlined ways to improve X-rays

Next year's show is on 11-12 June at Braehead Arena, Glasgow.

To enquire about exhibiting contact ann@connectcommunications.co.uk and to enquire about speaking contact will@connectcommunications.co.uk

Mohammed Tiba detailed a paradigm shift in managing pulpitis

Navid Saberi shed light on the mysteries of dental resorption

WORDS
KELLY CHAE AND AZEEZA SHAHNAAZ MOHAMED KASIM
(UNDERGRADUATE STUDENTS, UNIVERSITY OF DUNDEE)

DENTAL CONNECT

Connecting dental companies to the Dundee community

Dental Connect was co-created by students and staff at Dundee Dental Hospital and School in 2023 with the mission to tackle dental inequity in the local area via community outreach and oral health education[1]. Since then, our successes have exponentially compounded. This year alone, we have distributed more than 500 toothbrushes and toothpastes and promoted oral health advice to people of all ages using interactive and tailored workshops.

Devoted volunteers have visited primary schools, community centres, STEM and athletics clubs, food banks and English for Speakers of Other Languages (ESOL) classes. These sessions focused on improving oral health literacy, oral hygiene, and managing dental trauma in accordance with the International Association of Dental Traumatology (IADT) guidelines[2].

The presentations and resources used have been produced by dedicated students and quality assured by experienced clinical lecturers. Considering the unification of the Dundee faculty of Dentistry, Medicine and Nursing, we have created skin cancer awareness resources and have supplied these along with SPF sunscreen to food banks and events held at Dundee Science Centre.

Our invitation to the Scottish Dental Show both last year and this year has further propelled our initiatives. Presenting a stall in 2025 and 2026, as well as visiting stalls hosted by other organisations, enabled us to showcase our society's ethos and achievements to exhibitors and attendees.

During our first appearance at the Scottish Dental Show, we interacted many dental and non-dental organisations. Spreading awareness about our society and the importance of our charitable initiatives allowed us to not only capture the attention of multiple leading companies and individuals in the industry but to also form strong alliances with them. Throughout this past year, we have liaised with these tremendous institutions to discuss the possibility of a collaboration as joining forces and gaining their contributions are inestimable to support our charitable initiatives.

Returning to the show this year undoubtedly strengthened our rapports with existing sponsors such as Haleon, whose regular donations of dental supplies greatly aids our goals. In addition, we engaged with more proponent companies who were interested in establishing a partnership with the society. As undergraduate dental students, this networking opportunity also deepened our knowledge of the dynamic dental world as it is today and its potential in the future, thus preparing us for our careers ahead.

Openings like these are so valuable to our student society in branching out and highlighting the crucial interdependency between the dental industry, healthcare, education and community. We have observed that the dental industry plays a critical role in providing a collaborative ecosystem which facilitates professional development, potential for improved patient outcomes and opportunity for innovation. Together, these different sectors work harmoniously to enhance oral and general wellbeing as well as public perceptions of health and sustainability.

Azeeza Shahnaaz Mohamed Kasim, President, left, and Kelly Chae, Resource Manager, right, representing Dental Connect at the Scottish Dental Show 2026

As a non-profit organisation, sponsorships from leading dental cooperations are priceless in assisting us to eliminate oral health inequality and ensure vulnerable people have access to oral health provisions. Dundee Dental Connect would like to convey a special thanks to Will Peakin, editor of *Scottish Dental* magazine, for providing us with this invaluable opportunity. We look forward to collaborating with many more spectacular organisations and attending this event in upcoming years.

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DIGITAL DENTISTRY PART ONE

Learning dental clinical skills with touch technologies and simulations

WORDS MARGARET J COX

What do we mean by digital dentistry?

The rapidly growing number of new technologies being produced in the health sciences and those already embedded into higher education courses are providing new opportunities for dental educators, clinicians, trainers and practitioners.

Collectively, the use of these technologies in dentistry is frequently called 'digital dentistry' which includes virtual simulators using haptic (sense of touch) interfaces such as the one shown below (Figure 1). Here, we see a year 1 BDS dental student using the award-winning hapTEL system designed in 2007-9, where the learner is holding a dental drill in his hand and operating the 'drilling' procedure using a dental foot pedal[1, 2]. He can 'feel' the resistance of the tooth through a haptic device while trying to create a cavity in a tooth with decayed tissue. The simulator has a second screen on the side (not shown) on which the student can select the type of cavity, instrument, speed of drill and magnification of the image, and keep a record of the operations etc.

Alongside virtual haptic simulators, other digital resources found in dental schools and training centres include computer-based devices such as 3-D scanners and printers, CAD-CAM milling equipment, radiography and computer implant dentistry. As these become part of the dentist's resources for treating patients, so their uptake in dental education is also increasing.

Ten years of extensive research using the hapTEL system with more than 1,200 students at King's College London showed that it can provide equally effective training as the traditional system, with the additional advantages of costing less and providing immediate documented individualised feedback to every student[1].

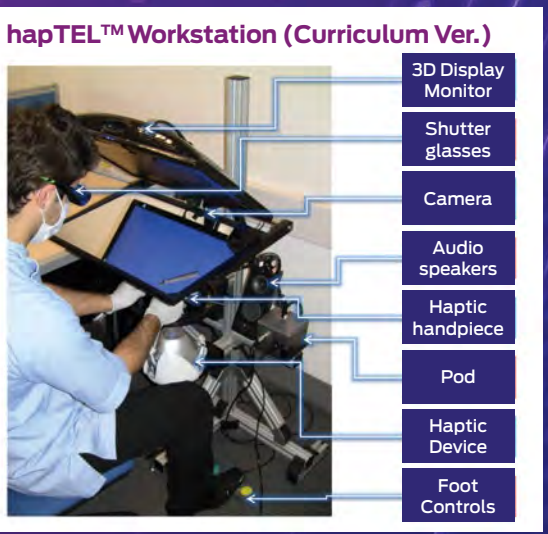

Figure 1: HapTEL simulator being used by BDS Year 1 students

Figure 2: The Simodont System developed by ACTA

Another well-known haptic simulator is the Simodont system (shown in Figure 20, which was developed by the ACTA team in the University of Amsterdam during the same period.

Although the design of these two systems is different, the educational purposes are similar; each was developed to enable learners to perform common dental procedures, such as the removal of caries from a single tooth or a tooth embedded in a jaw.

All recent systems include many other dental procedures relevant to orthodontics, prosthodontics, oral and maxillofacial surgery etc. These simulators also include, for novices, non-dental specific tasks, such as drilling into a '3D block'. Even with the now more realistic up-to-date virtual dental work-stations such as SIMtoCARE (shown in Figure 3) the basic operation of

Figure 3 (above): The SIMtoCARE Dental Simulator

the learner is to hold a device in one hand, and sometimes the mirror in the other, and apply force and precision to conduct a procedure which can be controlled by the use of the foot pedal and the hand-manipulation of the user.

The SIMtoCARE simulator shown here has two screens, one of which is a control panel at which the learner can select what kind of tooth/jaw etc., he or she might choose to operate on, with many different instruments, speeds, magnification etc. These have now been installed in more than 30 dental schools worldwide with many having suites of eight or more being used for the undergraduate and postgraduate programmes.

With modifications, these systems can now also be used for dental hygienists, medical and nurse education on a wide variety of procedures from suturing to injections. Further technological developments provide the opportunity to broaden these application to other fields and contexts, such as patient rehabilitation after strokes, improving motor skills with feedback and monitoring progression in performance and understanding.

Challenges in learning dental skills for the novice student

The first practical difficulty dental students encounter is learning to hold the instruments correctly and ergonomically positioning the patient. Novices often use too much pressure for too long, with the concomitant removal of too much dental tissue. Using haptic simulators allows them to go through this process repeatedly without destroying plastic or natural extracted teeth, which are in short supply.

The students can learn clinical skills to prepare carious virtual teeth and later to transfer these skills into the real clinical environment. The student and tutor can play back a video to examine the technique and to see how much decayed versus healthy tooth they had removed.

As one student said: "When you first come into dentistry everything is very alien to you; the way you position your hand, the tiny movements that you need to perform procedures. These are difficult to achieve. The hapTEL system allows you to repeat a task over and over again; it gets ingrained into your muscle memory and improves your manual dexterity."

Assessing what students are learning

A major part of any teaching and learning programme or professional development course is how to assess the learning outcomes and the acquisition of skills. Previous world-renowned research by Black and Wiliam[3] shows that the most effective basis for improving learning through assessment is by formative assessment, whereby

> "FOR EACH STAGE IN THE STUDENTS' OPERATION, THEY CAN SEE HOW WELL THEY HAVE DONE AND WHERE THEY CAN IMPROVE WITHIN MINUTES OF THE ACTIVITY"

the learner is challenged to express their ideas and understanding and discuss those with the teacher, and by getting feedback during the learning activity.

In healthcare education, a large proportion of the assessment is conducted through either observation of practice e.g., in clinics or in the Phantom Head Lab, or through assessing assigned clinical competence tasks in a simulated clinical environment against a set of criteria e.g., the Objective Structured Clinical Examinations (OSCEs). With the former approach, the students are given feedback but usually on their level of performance with limited detail, whereas in the latter assessments, these are summative and take place after months of teaching and learning.

The advantage of using virtual dental simulators instead of the traditional phantom head is the ongoing and immediate formative feedback provided to the learner. For each stage in the students' operation, they can see how well they have done and where they can improve within minutes of the activity. Furthermore, they learn how to evaluate their own learning which provides a foundation for learning strategies which makes them better learners for the rest of their lives.

An extensive review conducted in 2021 by 39 European dental educators/researchers investigating the abundance of simulation technologies available to support the delivery of dental education concluded that "there is a need to empirically scrutinise today's digital simulators in the context of dental training and education, to identify their potential utility as pedagogical tools and to inform their future design improvement"[4, p20].

Guidelines commissioned for Health Education England in 2023, disseminated to all dental education and training establishments, provide further extensive research evidence of how digital dentistry has enhanced

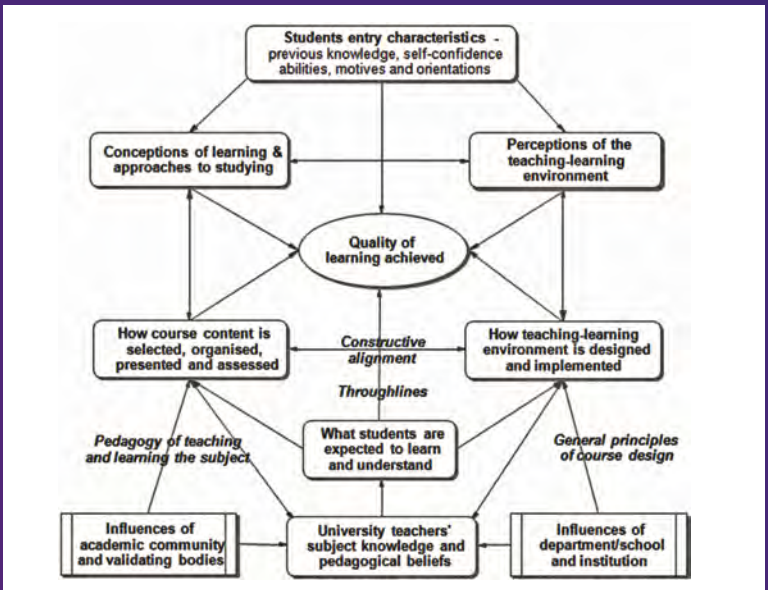

Figure 4: Conceptual framework showing influences on student learning (Entwistle & Peterson[6])

teaching and learning across the field in different education and training settings[1].

Today's challenges

In 2026, at every international dental conference the latest haptic simulators are on display showing how they can enhance teaching, learning and training. This expansion in digital dentistry use is not only due to innovative educators adopting them but also because of the increasing influence of students themselves.

Despite many universities still focusing mainly on traditional teaching, the increasing number of students entering Higher Education and the explosion of IT technologies in society and industry has led to universities needing to develop new ways of teaching, and thereby new ways for students' learning. This has led to growing expectations that traditional learning and teaching systems will need to adapt and change in universities to keep up with students' expectations and benefit from the opportunities which technology enhanced learning (TEL) can offer to teaching and learning. An analysis of the impact of TEL on higher education establishments by Diana Laurillard[5], over more than three decades, shows that teachers in higher education have had to become more professional in their approach to teaching, matching their professionalism in research to their strategies for teaching, and the advantages of computer technology has resulted in a pedagogical shift in higher education.

The reality: how widely used are haptic simulators in dentistry?

Despite all the positive evidence available to date and the relentless march of digital dentistry, including simulators, over the past 50 years many have remained infrequently used and are still not prominent in the dental curricula. At dental conferences, how many posters do we see showing integrated uses of haptic simulators in the undergraduate curriculum? At the American Dental Education conference (ADEA2026) in Montréal, in March, very few such posters were about digital dentistry and even fewer exhibits showed the latest versions of haptic simulators.

The explanations for the slower than expected uptake and limited use can be provided by many studies in other areas of Higher Education research, particularly through the extensive work of Noel Entwistle (edwebprofiles.ed.ac.uk/profile/noel-entwistle), who spent years investigating the factors which influence students' learning in Higher Education. As an outcome from his investigations, he produced a model (Figure 4) which shows all the factors which can directly or indirectly affect the quality of students' learning. This has been used by many researchers since to help us understand that innovations in teaching and learning have many influencing factors on the path to full integration[1,6]. If we look at this framework, we can see that even if the teaching and learning environment, i.e. virtual haptic simulators and other digital dentistry devices, has been shown to be beneficial to students' learning, the quality of the learning achieved will also depend upon how the course content is selected, organised, presented and assessed.

All too often, dental schools do not have enough devices for all students to have equal access or to use them frequently enough to benefit their learning. In such situations, the uses become unsupervised optional extras are, thereby, seen as less important than all the other learning activities the students are required to follow. Furthermore, how the teaching and learning environment is designed and implemented will depend upon the influences of the dental school/department and so on. So, the reasons that virtual dental simulators might not yet be used regularly or even at all in some dental schools include:

- The use of these simulators must be included in the planning of the whole teaching, learning and assessment programme from the start.
- Those who decide and plan a dental course or training programme need to understand how these devices can complement other teaching resources and which skills and concepts will be learnt.
- Those dental teachers assigned to using these devices need to know how they can be used to best educate the learners and how to organise the learners and the teaching and learning sessions accordingly.
- Equal importance needs to be given to the uses of the virtual haptic simulators as to all the other practical clinical sessions.
- Finally, assessing what the students are learning and providing feedback should be given the same weight and importance as any other learning activity on the programme.

These are just a few of the requirements known to be important to the successful uptake and integration of digital dentistry for education and training. If we are to harness these powerful teaching and learning devices to enhance the skills of our future dentists, then these strategies need to take centre stage in every dental school and training centre.

Professor Margaret J. Cox is Emeritus Professor of Information Technology in Education at King's College London and Honorary Professor at the University of Portsmouth.

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DIGITAL DENTISTRY PART TWO

From optional innovation to essential competence

WORDS
REINHARD CHAU AND SZABOLCS FELSZEGHY

Digital technologies such as intraoral scanning, CAD/CAM, 3D printing, CBCT and AI-supported systems are already reshaping clinical dental practice, yet their integration into dental education remains inconsistent. This creates a gap between what students learn and the workflows they will encounter after graduation. This article argues that digital competence should be treated as a foundational professional skill rather than an optional enhancement.

Effective preparation requires graduates who are fluent in both analogue and digital approaches, able to select appropriate methods, and capable of critically evaluating digital outputs. Key risks include cost, faculty readiness, curriculum pressure, equity of access, and the potential for deskilling if tools are used uncritically. A measured, outcomes-focused approach that prioritises faculty development, progressive integration across disciplines, and hybrid teaching is proposed. The aim is not technological enthusiasm or resistance, but the development of clinicians who can use digital systems wisely and with clinical judgement intact.

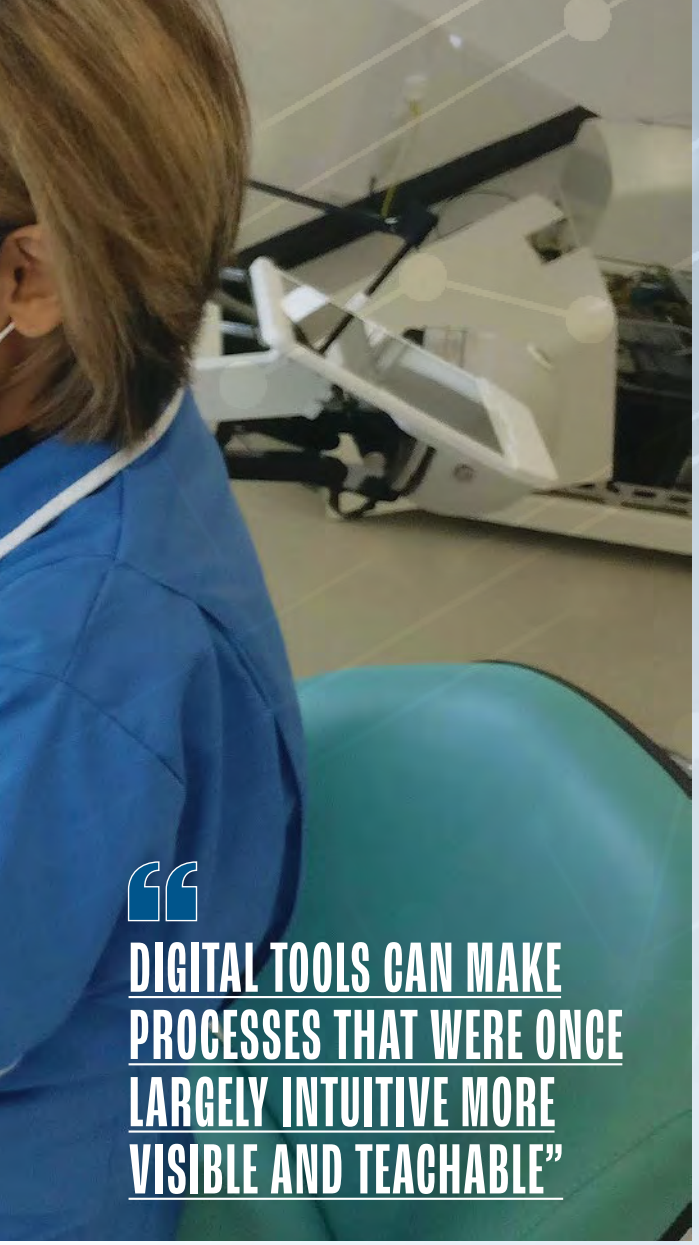
Digital technologies are already reshaping clinical dentistry. Intraoral scanning, CAD/CAM, 3D printing, CBCT, guided surgery, teledentistry and AI-supported systems form part of everyday workflows in many practices. Yet their integration into dental education remains uneven. This gap between clinical reality and educational preparation deserves careful attention.

The goal is not to replace traditional skills with technology, but to develop graduates who are fluent in both analogue and digital approaches. Clinicians need the ability to move between workflows, choose the most appropriate method for each clinical situation, and recognise sources of error in complex digital systems.

Technical proficiency alone is insufficient. Discernment, adaptability and ethical responsibility matter equally. Graduates must be able to evaluate new tools critically, understand their limitations, and consider their implications for patients and the wider system of care. In this light, digital competence is no longer an optional enhancement. It is becoming a foundational element of professional readiness.

The potential contribution of digital tools

Digital tools can make processes that were once largely intuitive more visible and teachable. AI-supported visualisation, virtual design, and simulation allow anatomy, restorative planning, and procedural steps to be examined, compared, and discussed with greater clarity. Immediate feedback becomes possible, assessment can be more objective and communication



> “DIGITAL TOOLS CAN MAKE PROCESSES THAT WERE ONCE LARGELY INTUITIVE MORE VISIBLE AND TEACHABLE”

between student, teacher and patient can improve through shared visual references.

These capabilities are particularly useful in simulation, formative assessment and shared decision-making. Students can identify preparation errors more clearly, compare their work against defined standards, and explain treatment options with visual mock-ups that patients can understand. When used thoughtfully, digital technology does not simply accelerate learning, as it can support more deliberate practice and greater confidence.

It also opens possibilities for more resource-conscious education, such as reducing material waste, limiting the need for repeated physical models and supporting more efficient use of limited clinical resources.

Risks that require attention

Progress brings genuine challenges. Cost, ongoing maintenance, rapid software change and variable faculty readiness are not minor details, as they often influence whether new approaches succeed or stall. Crowded curricula, questions of equity and access, increasing reliance on automated outputs, and unresolved issues around data privacy and AI governance add further complexity.

A more subtle risk is the gradual loss of depth. When learners accept software suggestions without understanding the underlying processes, or trust outputs without interrogating their validity, clinical judgement can erode. Dentistry rests on biological understanding, mechanical principles and experienced decision-making. These cannot be outsourced.

Hybrid education is therefore not a compromise but a necessity. Students and educators need to work with digital systems while retaining the capacity to question them, interpret them and, when required, override them. The future will be shaped less by the technologies themselves than by the professionals who use them with judgement.

A measured approach for schools

Meaningful change does not begin with the purchase of equipment. It begins with clear intention. A realistic sequence starts with faculty development and shared understanding of purpose, followed by the building of digital literacy and simulation capacity. Only then does it make sense to move into preclinical application, supervised clinical integration, and ongoing quality improvement. At the centre of any such effort should sit a simple principle: outcomes before instruments. The primary question is not which devices to acquire, but which competencies graduates need. Curricula, teaching methods and assessment can then be aligned with those goals.

Faculty development cannot be deferred. Infrastructure is most effective when planned strategically and shared rather than fragmented. Assessment should track growth over time rather than isolated performance. Quality improvement works best when it is continuous and embedded rather than occasional. Recent educator surveys examining barriers to digital adoption, together with feedback on emerging training tools such as multi-layered drilling plates, underline the importance of these practical considerations. They also highlight the value of proceeding in measured stages rather than through abrupt technological leaps. Sustainability offers an additional reason for careful implementation. Thoughtfully designed digital workflows can reduce material consumption, decrease the need for repeated procedures and support more efficient use of resources, therefore contributing to a more environmentally responsible model of education and care.

Integration across the curriculum

Digital dentistry cannot remain confined to a single course or speciality. Restorative dentistry, orthodontics, radiology, implantology, periodontics, endodontics, paediatric dentistry and teledentistry each engage with digital technologies in distinct ways, with different applications, challenges and competency requirements. Effective preparation therefore requires a longitudinal approach: competencies developed progressively, reinforced across stages of training and assessed in varied clinical contexts. This supports not only technical skill but also critical judgement and discipline-specific expertise.

The deeper question for dental education is whether schools can prepare graduates who are both technologically fluent and clinically sceptical. Producing students who can operate digital devices but cannot judge when to trust them falls short of the educational task. The most useful curriculum will neither celebrate digital tools uncritically nor reject them out of caution. It will equip educators and students to use them wisely and ethically, with clinical judgement intact.

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Transcrestal sinus elevation in extremely atrophic bone (2-3mm of residual bone height) using PRFG-endoret as grafting material. A retrospective case series.

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ABSTRACT

Introduction

Rehabilitation of the posterior maxilla with dental implants remains challenging in patients with severe vertical bone atrophy caused by sinus pneumatisation and post-extraction alveolar resorption. Transcrestal sinus floor elevation has progressively emerged as a minimally invasive alternative to the lateral approach, particularly when combined with short or extra-short implants and biologically driven regenerative protocols. The aim of this retrospective study was to evaluate the longterm clinical outcomes of transcrestal sinus elevation performed in severely atrophic posterior maxillae using PRGF-Endoret® as the sole grafting material.

Materials and Methods

A retrospective case series was conducted including patients treated between January 2010 and June 2015 with 5.5- and 6.5mm implants placed in posterior maxillary sites with residual bone height ≤5mm using transcrestal sinus elevation and exclusive use of PRGF-Endoret. Only implants with a minimum of 10 years of follow-up after loading were included. Implant placement was performed by a single surgeon using a biologically guided low-speed drilling protocol with a frontal cutting drill for controlled sinus floor access. Primary outcome was vertical apical bone gain. Secondary outcomes included implant survival, peri-implant marginal bone loss and complications.

Results

Thirty-five patients receiving 47 implants fulfilled the inclusion criteria. Mean residual bone height increased from 3.94 ± 0.82mm to 7.15 ± 0.63mm after treatment, resulting in a mean vertical gain of 3.21 ± 0.99mm ($p < 0.001$). Mean insertion torque was 23.08 ± 3.36 Ncm. Implant and prosthetic survival reached 100% after a mean follow-up of 133.63 ± 16.29 months. Mean mesial and distal marginal bone loss was 0.51 ± 0.56mm and 0.52 ± 0.50mm, respectively. Minor complications included screw loosening and one provisional resin fracture.

Conclusions

Transcrestal sinus elevation combined with extra-short implants and PRGF-Endoret appears to be a predictable long-term treatment option for severe posterior maxillary atrophy, achieving stable bone regeneration and excellent implant survival with minimal morbidity.

Introduction

Rehabilitation of the posterior maxilla with dental implants continues to represent one of the greatest challenges in oral implantology, especially in patients with advanced loss of vertical bone volume secondary to progressive maxillary sinus pneumatisation and physiological resorption of the alveolar process following tooth loss[1-3]. These anatomical alterations frequently result in insufficient residual bone height for the placement of conventional implants, requiring the clinician to resort to reconstructive procedures aimed at restoring adequate bone volume for functional rehabilitation of the posterior maxillary sector[1,4,5].

For decades, sinus elevation through the lateral window approach was considered the reference procedure for the treatment of these atrophic situations, especially in cases with reduced residual bone heights (residual bone height less than or equal to 5mm)[6-8]. However, the advancement of contemporary implantology toward less invasive protocols, together with the evolution of implant design and a better understanding of biomechanics and the biological processes associated with osseointegration, has progressively modified this therapeutic paradigm[4, 9–12]. Currently, transcrestal sinus elevation techniques have gained increasing relevance by allowing a significant reduction in surgical morbidity, operative time and complications associated with the lateral approach, while maintaining high implant survival rates and peri-implant bone stability[13–17].

Since the original description by Dr Robert B Summers, transcrestal techniques have undergone multiple modifications aimed at improving procedural safety and expanding their clinical indications. Initially, these techniques were reserved for situations with relatively favourable residual bone heights; however, the introduction of new surgical protocols and biomaterials has progressively extended their use to cases with more severe atrophy.

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In parallel, the development of short and extra-short implants has contributed decisively to this conceptual change[14,15,18–22].

The combination of transcrestal sinus elevation and extra-short implants has become established as an alternative for the rehabilitation of the atrophic posterior maxilla[23–25]. With the aim of optimising this procedure, our group developed a technique based on biologically guided drilling using a frontal cutting drill as the final part of the protocol, designed to perform controlled and atraumatic access to the sinus floor[26]. This protocol allows progressive preparation of the implant bed, promotes preservation of the sinus membrane, and facilitates placement of extra-short implants with adequate insertion torque.

Additionally, the use of PRGF-Endoret as a biological grafting material in transcrestal sinus elevation procedures represents an alternative based on stimulation of the body's own regenerative mechanisms, avoiding the need to use large volumes of biomaterials or heterologous grafts[26–30]. The autologous fibrin matrix generated through this technology acts as a biological scaffold rich in growth factors, promoting angiogenesis, cell migration and new bone formation within the subantral space[29,31,32]. Different clinical and experimental studies have shown that the use of PRGF-Endoret may promote stable and predictable bone regeneration in sinus augmentation procedures, with adequate tissue maturation and high biocompatibility, while also reducing surgical manipulation and morbidity associated with the use of other grafting materials[28,32–35].

The aim of the present retrospective study is to analyse the clinical behaviour of 5.5- and 6.5mm implants placed in posterior maxillary sectors with reduced residual bone heights (up to 5mm) by means of transcrestal sinus elevation using the frontal drilling protocol described by our study group, associated with the use of PRGF-Endoret as a biological grafting material. The evaluated outcomes include implant survival, peri-implant bone stability, vertical bone gain after the procedure, and possible complications during long-term clinical follow-up, with a mean follow-up exceeding 11 years, providing clinically relevant information on this minimally invasive approach in situations of severe maxillary atrophy.

Materials and methods

Patients who underwent placement of 5.5- and 6.5mm-long dental implants in residual bone crests with up to 5mm of bone height, associated with transcrestal sinus elevation using PRGF-Endoret exclusively as grafting material, between January 2010 and June 2015, were retrospectively recruited. As a requirement to establish long-term follow-up, implants were required to have at least 10 years of follow-up after loading and patients had to maintain follow-up until the present with periodic radiographic controls.

All patients were evaluated before implant placement by means of diagnostic casts, intraoral examination and dental CT (cone-beam) subsequently analysed using dedicated software (BTI-Scan III). Before implant placement, antibiotic premedication consisting of oral amoxicillin 2g one hour before surgery and oral paracetamol 1g (as analgesic) was administered. Subsequently, patients continued treatment with oral amoxicillin 500–750mg every eight hours (according to body weight) for five days.

Implant placement was performed by a single surgeon using the biologically guided drilling technique, at low rotational speed and without irrigation [36–38]. Final drilling of the sinus cortical plate was carried out using the frontal cutting drill (designed for this technique), allowing removal of the maxillary sinus floor without damaging the Schneiderian membrane[39–42]. Once the membrane became accessible and was elevated through the crestal perforation, the graft (PRGF-Endoret) was placed and the implant inserted using a surgical motor set at 25Ncm and 25rpm, completing implant insertion with a torque wrench.

At the end of surgery, a panoramic radiograph was obtained following a standardised positioning protocol. To ensure image reproducibility during follow-up, fixed references were used for patient positioning, including simultaneous support at the glabella and chin, as well as floor positioning references for proper body alignment. At all subsequent follow-up visits, new panoramic radiographs were obtained using the same technical protocol, allowing reliable comparison of longitudinal implant evolution and peri-implant bone level changes.

After implant placement, a waiting period of approximately four to five months was established for osseointegration before proceeding with the second surgical phase, depending on bone density and final insertion torque. At this stage, Multi-Im transepithelial abutments were placed, designed to support multiple screw-retained rehabilitations.

Radiographic evaluation of marginal bone loss was performed on the last orthopantomography obtained under these standardised conditions. Digital images were calibrated using dedicated radiographic analysis software (Digora for Windows, SOREDEX Digital Imaging Systems), using a known implant dimension as reference. After entering this calibration value, the software automatically corrected the magnification inherent to panoramic imaging, allowing accurate linear measurements.

Crestal bone loss was independently recorded on the mesial and distal surfaces of each implant. Marginal bone loss was evaluated by measuring the distance from the implant shoulder to the first visible contact point between bone and implant surface. Apical bone gain, in contrast, was quantified by a perpendicular measurement from the implant apex to the newly formed sinus cortical wall, forming a right angle (90°) relative to the longitudinal axis of the implant on the cone-beam acquired before implant loading.

Statistical analysis

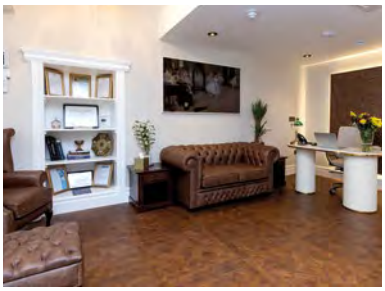
For descriptive analysis, the implant was considered the unit of analysis for all variables related to location, dimensions and radiographic parameters. Demographic variables and medical history were analysed considering the patient as the statistical unit. Distribution of quantitative data was assessed using the Shapiro–Wilk normality test.

Qualitative variables were expressed as absolute frequencies and percentages, whereas quantitative variables were described as mean and standard deviation.

Cumulative implant survival was calculated using the Kaplan–Meier method. The primary outcome of the study was vertical bone growth induced in the apical region following the transcrestal elevation technique. Secondary outcomes included implant survival rate and mesial and distal marginal bone loss. Statistical processing and data analysis were performed using SPSS v15.0 for Windows (SPSS Inc., Chicago, IL, USA).

Results

Thirty-five patients, in whom 47 implants were placed, fulfilled the

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inclusion criteria. All implants were inserted using transcrestal sinus elevation with progressive drilling and PRGF-Endoret as the sole grafting material. Implant placement was performed in the first and second maxillary molar regions, with the exception of one implant placed in position 15 (Figure 1). The most frequent position was tooth 26, accounting for 31.9% of cases.

Implant length was 5.5mm in 17% of cases and 6.5mm in the remaining 83%. Implant diameters ranged from 4.25 to 6.25mm. Implant diameters and lengths are shown in Figure 2.

Mean baseline bone height was 3.94 mm (± 0.82), while mean bone height after implant placement and consolidation was 7.15mm (± 0.63). This represented a mean bone gain of 3.21 ± 0.99mm compared with baseline conditions. Statistical analysis using paired sample comparison demonstrated statistically significant differences between both measurements ($p < 0.001$), confirming the ability of the procedure to predictably increase subantral bone volume in cases with reduced residual bone height (Figure 3).

Implant insertion torque ranged from 10Ncm to 30Ncm, with 25Ncm being the most frequent value (57.4%) and a mean insertion torque of 23.08 (± 3.36).

> “THIS SURGICAL STRATEGY NOT ONLY ALLOWED SIGNIFICANT VERTICAL BONE GAIN AFTER THE INTERVENTION BUT ALSO MAINTAINED HIGH LONG-TERM PERI-IMPLANT STABILITY”

All implants were restored with screw-retained prostheses placed on transepithelial abutments. Three cases were restored with single crowns (Unit – single transepithelial abutment), while the remaining cases received multiple restorations. Among the multiple prostheses, 12.8% corresponded to full-arch rehabilitations and 78.7% to fixed bridges.

Initially, restorations were fabricated in resin using prefabricated bar structures as progressive loading prostheses between four and six months after implant placement, with a mean loading time of 5.2 months (± 0.80). Definitive restorations in metal-ceramic were subsequently delivered within a period ranging from 5 to 7 months (mean: 5.6 months ± 2.3).

During the follow-up period, no implant failures were recorded, corresponding to an implant survival rate of 100%. Likewise, no prosthetic failures were observed. Reported complications included screw loosening in five cases and fracture of the resin component of the progressive loading prosthesis in one case.

Mean follow-up time was 133.63 months (± 16.29; range: 100–148 months). At the end of follow-up, mean mesial bone loss was 0.51mm (± 0.56), while mean distal bone loss was 0.52mm (± 0.50).

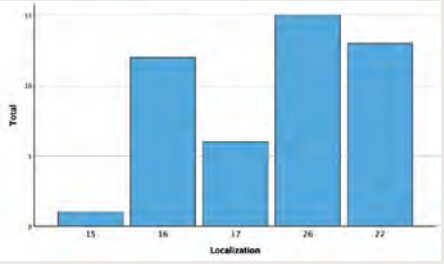


Figure 1: Implant locations included in the study

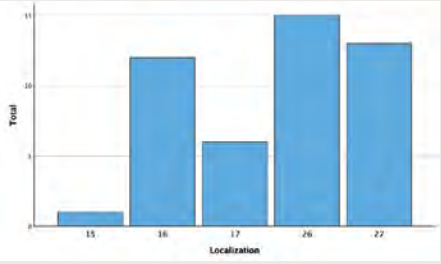


Figure 2: Diameters and lengths of the implants included in the study

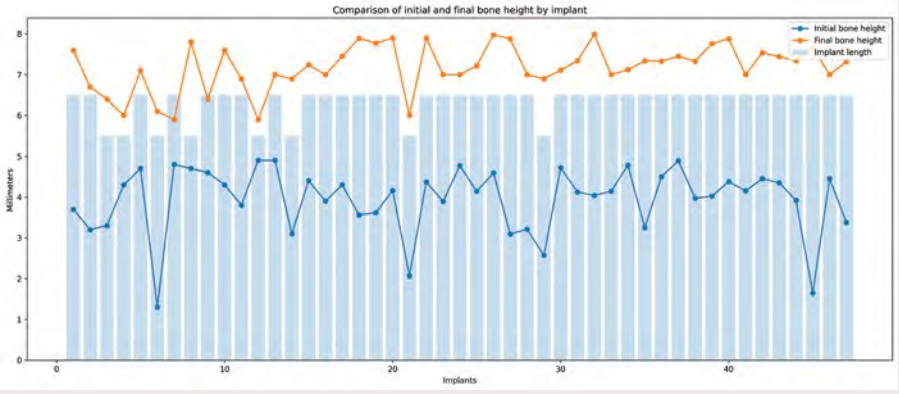
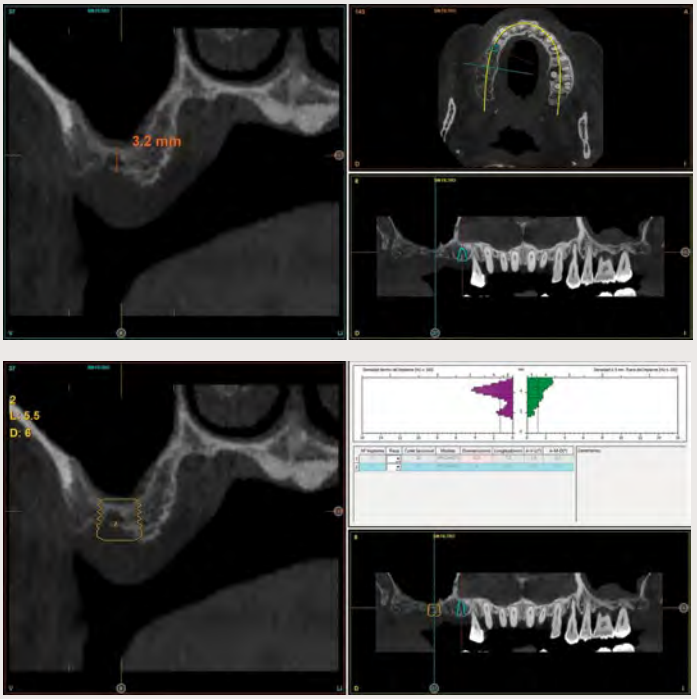


Figure 3: Initial and final bone height, showing the length of the implant inserted in each case

Discussion

The findings of the present study confirm the effectiveness and predictability of the transcrestal sinus elevation technique using PRGF-Endoret exclusively as grafting material for rehabilitation of the atrophic posterior maxilla. This surgical strategy not only allowed significant vertical bone gain after the intervention but also maintained high long-term peri-implant stability, with reduced marginal bone loss and a cumulative implant survival rate of 100% during follow-up. Overall, these results reinforce the validity of this minimally invasive and biologically optimised protocol for the treatment of severe maxillary atrophy.

The high predictability observed is probably related to the combination of different biological and mechanical factors integrated within the surgical protocol. The use of biologically guided drilling at low rotational speed, progressively adapted to the recipient site and finalised using a frontal cutting drill specifically designed to minimise the risk of Schneiderian membrane perforation, allows controlled and atraumatic access to the maxillary sinus[15,26,43]. Thanks to this approach, even in borderline situations characterised by limited residual bone volume or low bone



Figures 4 and 5: Follow-up cone-beam images of the first case, showing a residual bone height of 3.2 mm, as observed, and planning of the implant to be placed using the transcrestal elevation technique

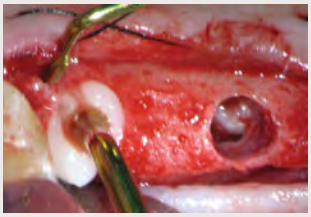


Figure 6: Placement of PRGF-Endoret after preparation of the neo-alveoli and before implant insertion

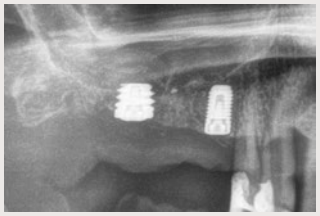


Figure 7: Postoperative radiograph showing the implant placed in position following transcrestal elevation

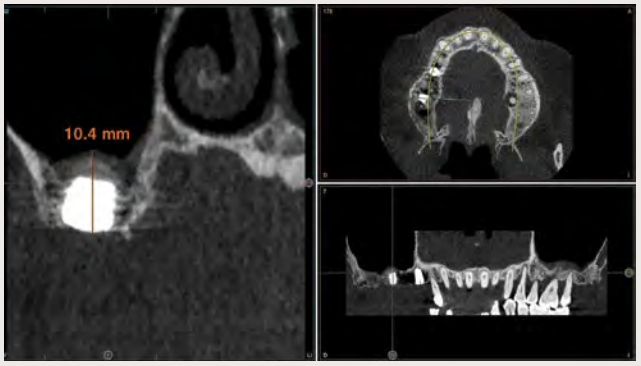


Figure 8: Bone gain achieved with the procedure after implant integration

density, it was possible to achieve adequate primary implant stability and subsequent successful osseointegration. Although a residual bone height greater than 5–6mm has classically been considered necessary to indicate transcrestal techniques[13,14,25,44], more recent evidence demonstrates that, through controlled surgical protocols and highly osteoconductive implant surfaces, favourable outcomes can also be achieved in heights below 4mm[45,46]. Our results support this trend, showing 100% implant survival and absence of intraoperative surgical complications, which is especially relevant considering that sinus membrane perforation remains the most frequent complication of these procedures, with reported incidences ranging from 4% to 12%[4,5,47–50].

Another notable aspect of this study was the high peri-implant bone stability observed after more than one decade of functional follow-up. Recorded marginal bone loss was 0.51 ± 0.56mm mesially and 0.52 ± 0.50mm distally, values that are particularly favourable compared with other published series on sinus elevation in the atrophic posterior maxilla. These results fall within the lowest range reported for transcrestal elevation procedures. A recent prospective study with a mean

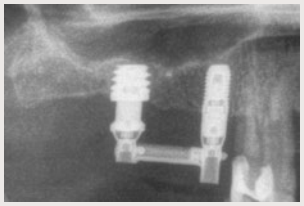


Figure 9: Initial loading of the implant with the progressive loading prosthesis six months after implant placement

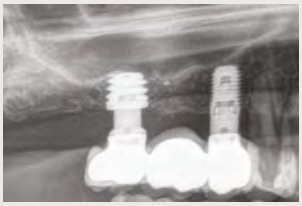


Figure 10: Radiograph after placement of the definitive prosthesis

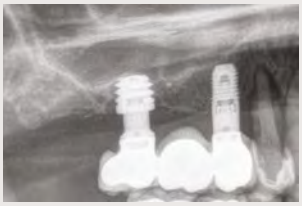


Figure 11: Radiographic image at 10 years after loading

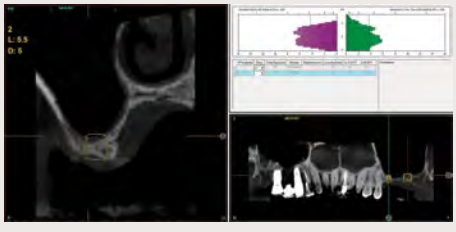


Figure 12: Planning section of the second case, showing the residual bone height and the implant to be placed in the area

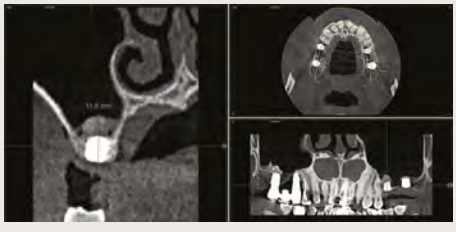


Figure 14: Cone-beam image before loading showing the vertical bone gain achieved in the area

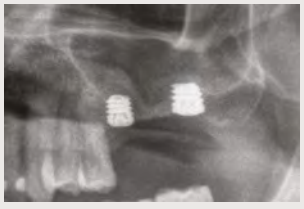


Figure 13: Postoperative radiograph

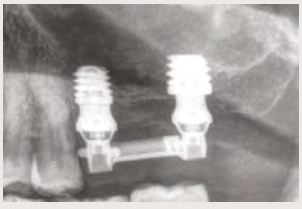


Figure 15: Radiograph of the implant during progressive loading

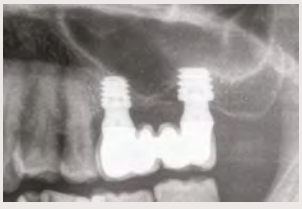


Figure 16: Follow-up image with the definitive prosthesis at eight years

follow-up close to eight years (Jiménez-Guerra et al)[51] reported a mean vertical gain of 4.3 ± 0.4mm, implant survival of 97.2% and biological complications below 10%, although peri-implantitis was observed in 9.3% of implants. Likewise, a systematic review focused on transcrestal sinus elevation with simultaneous implant placement (Lin et al)[25] reported mean marginal bone loss values of 0.16 ± 0.62mm for short implants versus 0.33 ± 0.71mm for conventional implants, suggesting that the combination of transcrestal approaches and reduced-length implants may be associated with limited crestal remodelling and clinically stable long-term outcomes.

Precisely, one of the distinguishing features of the present study is the exclusive use of PRGF-Endoret as regenerative material. Unlike most publications on transcrestal sinus elevation, which are based on heterologous biomaterials or graft mixtures, subantral regeneration in this series was performed exclusively using an autologous matrix rich in fibrin and growth factors. Studies specifically published on PRGF-Endoret have shown that this technology promotes early angiogenesis, cellular migration and tissue maturation, while improving biological clot stability within the elevated space[26,27,32,52–54].

Our study group has experimentally demonstrated that PRGF-Endoret stimulates proliferation and activity of primary human osteoblasts, promoting bone regeneration phenomena through autocrine and paracrine mechanisms[31,32,54]. Subsequently, Solakoglu et al[30], in a review focused exclusively on the use of PRGF-Endoret in guided bone regeneration and sinus elevation, described favourable histological and radiographic outcomes, with adequate tissue integration and high biocompatibility of the material.

Another relevant aspect is that the exclusive use of PRGF-Endoret eliminates the need to introduce slowly resorbing biomaterials into the sinus cavity. Although xenogeneic grafts have demonstrated good clinical results, different histological studies have shown prolonged persistence of residual particles even years after surgery[55–57]. In contrast, the use of an autologous matrix allows regeneration based fundamentally on newly formed bone and vital tissue, while also reducing surgical manipulation and morbidity associated with harvesting additional grafts[58–60]. This concept becomes particularly relevant in minimally invasive transcrestal procedures, where surgical simplicity and initial biological stability constitute key factors for treatment success and long-term predictability.

Conclusions

The results obtained suggest that the combination of transcrestal sinus elevation, extra-short implants and PRGF-Endoret may constitute a valid alternative, even in situations traditionally considered borderline for this type of approach. Beyond the implant survival recorded, the bone stability observed after more than 11 years of follow-up provides particularly relevant clinical information regarding the capacity of this protocol to maintain stable functional and biological outcomes over the long term in patients with severe posterior maxillary atrophy.

For references see www.sdmag.co.uk/2026/07/16/transcrestal-sinus-elevation-using-prfg-endoret

FORTY YEARS ON

General dental practice, 1986 and today

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.

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I QUALIFIED in Newcastle upon Tyne in 1978, and a significant part of my training was geared towards preparing patients for, and then providing, full dentures. By 1986, I was an associate in a new practice in Peterborough; 100% NHS and run with an approach that already felt old the day I walked in. Drill-and-fill, high volume, prevention an afterthought. I was desperate to do things differently, and within a few years I had. I opened my own practice 120 miles away in Abbeymead, built around a prevention-based philosophy that was, at the time, genuinely unusual on a UK high street. Looking back, that gap between the practices I trained in and the one I built is a fairly good map of how the whole profession has changed since.

From dentures to 'dreams'

That denture-heavy training was, in hindsight, a bit like preparing for the last war. I was born in 1953, the year sugar finally came off post-war rationing, and my own generation of patients did not want full dentures; they did not want any 'false teeth' at all, in fact. Dentistry had a fair bit of catching up to do to serve a population whose relationship with their own teeth had quietly changed. What we are seeing now feels like the far end of that same trajectory; a public with a growing appetite for 'health and beauty' and increasingly willing to pay for it, within reason. The upside is obvious; patients invested in keeping their own teeth rather than resigned to losing them. The risk is newer; when marketing drives desire faster than clinical skill can responsibly match it, the temptation to over-prescribe cosmetic treatment is real, and worth naming honestly rather than just celebrating the shift.

Prevention versus fee-per-item

The 1990 NHS contract was meant to nudge dentistry that way nationally; a hybrid of capitation, registration and fee-per-item designed to reward keeping patients healthy, rather than simply treating disease. It did not survive contact with the Treasury. Overspend triggered a 7% 'clawback' of fees in 1992, and the early-90s cuts that followed are widely credited with pushing a generation of dentists toward private work. That is exactly the moment I remember reducing my own NHS dependence. My Abbeymead practice moved steadily toward independence through the 1990s, working hand-in-hand with a full-time hygienist at a time when that was still a fairly rare model in general practice. England and the more urbanised parts of the UK moved private/independent faster than Scotland did. Scotland has, to this day, stayed closer to a pure fee-per-item system (the Statement of Dental Remuneration), even after its own significant 2023 overhaul simplified Determination I from more than 700 items down to 45.

Prescribing: from liberal to guarded

Antibiotics were prescribed far more readily in 1986, with no dedicated national guidance and huge variation between individual dentists, and general anaesthesia was still routinely given chairside; a practice all but ended by the Poswillo Report and the tighter rules that followed. Today's prescriber works to detailed antimicrobial stewardship guidance from the College of General Dentistry and the Faculty of Dental Surgery, and NHS data shows a steady decline in dental antibiotic dispensing in England through the later 2010s. Clindamycin prescribing alone fell by more than half between 2010 and 2017. The instinct has flipped from "prescribe first" to "drain it, don't dose it". A snappier way of saying, "antibiotics are adjunct to, but never a substitute for, surgical (that's what the 'S' in BDS stands for) drainage".

Graduates, hygienists, therapists

My decision to build a practice around a full-time hygienist and expanded duty dental nurses, put me ahead of a curve that took the rest of the profession another decade or two to catch. Remember, dental therapists barely featured in general practice at all in 1986 as they were largely confined to the Community and Hospital Dental Service until scope-of-practice rules loosened from 2002. By December 2025, the picture had reversed entirely; the GDC register held 47,916 dentists (up 3.4% on the year), 11,292 hygienists (up 11%) and 8,661 therapists (up 21% in a single year). Skill-mix has gone from a novelty to the backbone of how practices plan capacity. Tellingly, more than half of the dentists joining the register in 2025 were internationally trained; a dependency on overseas graduates that would have seemed strange to my 1986 cohort, when UK dental schools supplied the workforce almost single-handedly.

Gross versus net

By the time I sold my Abbeymead practice in 2005, it bore almost no resemblance to the one I had left in Peterborough; different funding mix, different team, different philosophy. That shift in the money is worth being blunt about. In 1986, a principal's overheads consumed a markedly smaller share of gross billings than they do now. By 2023/24, average taxable income for self-employed principal and associate dentists in Scotland stood at £90,600 – essentially flat on the year before – after an expenses-to-earnings ratio that, across the UK, now typically runs close to half of gross earnings, driven by staff costs, compliance, decontamination standards and materials. A 1986 dentist kept a substantially larger share of what they billed. Today's principal is running a far more heavily regulated small business before a penny reaches their own pocket.

In summary

Prescribing more careful, prevention more central, the team much bigger and better trained, the money harder-won and the patient wanting health and beauty rather than resignation; 1986 dentistry was simpler and more individually variable, for better and worse. Whether the trade-off has been worth it depends, I suspect, on whether you found your own way out of the old model — as I eventually did — or whether it found you.

FINANCING OPTIONS FOR DENTAL PRACTICES IN SCOTLAND

As dental practices face increasing operational and investment pressures, their approach to funding is evolving. Rising costs, continued investment in technology, recruitment challenges and succession planning mean many require greater access to capital. Practices historically relied on retained profits or partner capital to fund growth, but today's environment often requires a broader, more strategic approach. Understanding the available funding options can help you invest confidently, maintain competitiveness and support long-term sustainability.

FUNDING OPTIONS

1 OVERDRAFTS

Overdrafts provide flexible access to short-term funding, suitable for managing short-term cash flow fluctuations, seasonal working capital requirements or unforeseen costs but are typically more expensive than longer-term borrowing.

2 FIXED-TERM LOANS

Fixed-term loans are used to finance major investments such as refurbishments, equipment purchases or partner buy-outs. Repayments are spread over an agreed period, helping practices align borrowing costs with the benefits generated by the investment.

3 ACQUISITION FINANCE

The Scottish dental practice market continues to see strong levels of activity from independent operators, first-time buyers and larger groups. Acquisition finance can support the purchase of existing practices, covering both the acquisition costs and associated professional fees, allowing practices to move quickly when opportunities arise.

4 ASSET FINANCE

Asset finance can fund equipment such as dental chairs or imaging equipment, without significant upfront capital, spreading costs over the asset's useful life. This allows practices to preserve working capital while continuing to invest in modern equipment and services.

5 COMMERCIAL MORTGAGES

For practices looking to purchase their premises, relocate or release equity from existing property assets, a commercial mortgage can provide long-term funding. Property ownership offers greater control over occupancy costs while creating an additional asset. Refinancing existing property can also unlock capital that can be reinvested into other areas.

Lee Hayes, Corporate Finance Partner – Funding & Debt Advisory
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6 HEALTHCARE LENDING

Specialist providers understand the unique characteristics of dental practices, including NHS and private income streams, and can tailor funding solutions to the needs of owners. They may also be able to support transactions or borrowing requirements that fall outside traditional bank lending criteria.

SHOULD YOU EXPLORE FUNDING OPTIONS?

Funding should be viewed as a strategic enabler of growth rather than simply a source of capital. Appropriate funding can be key to support investment, expansion and succession planning, while maintaining financial flexibility. Proactively addressing funding requirements and aligning capital structures with long-term goals will leave practices better placed to compete, attract talent and deliver high-quality patient care.

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Clinical Director and Implant Surgeon
BDS (Glasg.) 2005 GDC No 85401

Dr Duncan Weir
Implant Surgeon
BDS (Glasg.) 2009 MFDS CLINIMPDENT - GDC No 176892

Edinburgh Dental - Implant and Cosmetic Dentistry
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DENTAL PRACTICE FINANCE: WHAT CAN I BORROW?

The landscape of purchasing dental practices has changed significantly over the last couple of years, with significantly improved access to finance. While finance has been readily available for dental practice purchases for the last two decades, a first time buyer could be limited to the amount that they could borrow, or had to find high deposits, which made purchasing a larger practice unfeasible.

BORROWING AMOUNTS

We have financed a number of purchases in 2026 where the borrowing amounts have been more than £2,000,000. In most instances, these have also been first-time buyers, so no previous experience of running a dental practice nor significant cash or assets available for the bank to take as security. This is allowing a first time buyer or other type of buyer to compete with corporate buyers.

DEPOSITS

In the above example of borrowing, the deposit level has only been between 5% and 10%. While each person will be considered on their own merits, these are not extraordinary circumstances where there were other assets in the background.

RATES

Rates are very competitive now, and we are managing to gain quotes from 1.7% to 2% plus base rate. The lower rates can certainly have a significant impact on the financials. A 1% saving on the interest rate on a £2,000,000 lend can equate to a £20,000 saving in interest per annum. For those who have already purchased practices, they can still benefit from these lower rates by switching lenders.

FINANCE PROPOSAL

When putting an application into the bank, they will require a good understanding of the practice but, more importantly, also how the practice would work under your ownership. It is no good to have a retiring principal undertaking £600,000 of gross fees, showing very high profit, to a new buyer coming in who is looking to undertake £300,000 of gross fees and requiring an associate to undertake the remainder and assume that the profit would remain the same. Any buyer should make sure that they understand what the financials of the practice will look like under their ownership, and this also needs to be demonstrated to the bank.

If you are looking at financing a dental practice or have existing finance and would like to see if your rate can be improved, using a specialist finance broker like PFM Dental, can save you time and money.

Martyn Bradshaw is a director and owner of PFM Dental. PFM Dental provides specialist advice to dentists: Financial Advice, Practice sales and valuations, Practice finance and Accountancy. Contact PFM Dental on 01904 670 820 or email sales@pfmdental.co.uk

A VISION REALISED

Cathedral Dental sets a new benchmark

Dr Vikram Kavi, Dr Jayendra Patel and Dr Prianka Hansrani have officially opened Cathedral Dental, a state-of-the-art squat practice built from the ground up.

Combining their extensive experience in NHS and private dentistry, the founders have created a versatile mixed-model facility that seamlessly balances high-end cosmetic treatments with accessible community care. Cathedral Dental represents the future of community dentistry in Coventry, merging clinical excellence with a luxury patient experience.

Transforming a blank canvas into a luxury clinical environment required key strategic partnerships. The team collaborated with Susan Marshall from Performance Finance, who designed a bespoke funding package structured to protect cash flow during the critical launch phase.

"Working with the team was an absolute pleasure," said Susan. "My priority was to strip away the financial stress associated with a squat practice. By structuring the funding to support their cash flow, we allowed them to focus entirely on their clinical setup. Their experience in the sector meant they knew exactly what was required to succeed."

This specialised financing covered both structural 'soft costs' and cutting-edge equipment, including:

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Susan Marshall
E: susan.marshall@performancefinance.co.uk
T: 07973 793 659

> **"SUSAN GAVE US THE CONFIDENCE TO GO 'ALL-IN' ON OUR VISION"**

The physical transformation was executed by NSD Projects Ltd, creating a sleek, minimalist reception and innovative surgery layouts that set a new regional aesthetic standard.

"We are absolutely delighted," said a spokesperson for Cathedral Dental. "Susan at Performance Finance gave us the confidence to go 'all-in' on our vision, and NSD Projects delivered a finish that is truly exceptional."

Looking to launch your own squat practice? Contact Susan Marshall at Performance Finance to bring your clinical vision to life.

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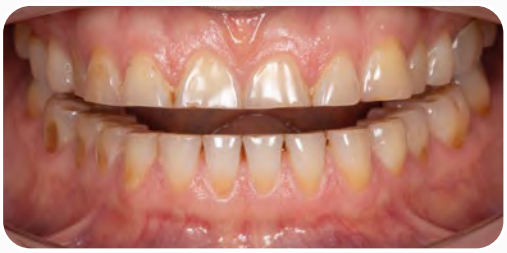

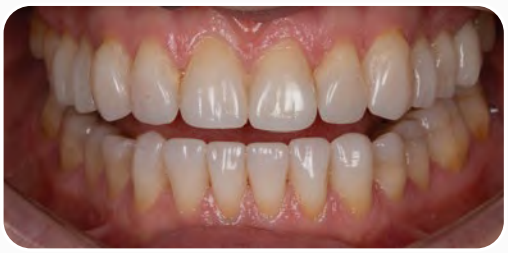

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WHAT REALLY DRIVES THE VALUE OF A SCOTTISH DENTAL PRACTICE?

Image credit: Shutterstock/ Meeko Media

Stuart Gunn
Dental Broker, Lily Head Dental Practice Sales

When practice owners think about value, it is easy to focus on turnover, profit or a headline multiple. In reality, buyers look more closely at how a practice performs, how dependent it is on the principal and how sustainable its performance is likely to be after a sale.

In Scotland, local context can make a significant difference. A practice in Glasgow, Edinburgh or Aberdeen may attract a different buyer audience from one serving a rural or island community, where recruitment, travel, patient demand and clinical cover may carry greater weight.

The balance of NHS and private income also matters, as does team stability, the quality of financial information, premises arrangements and the strength of the local patient base. These factors help buyers assess whether income is sustainable and whether the practice represents a manageable opportunity.

That is why a one-size-fits-all valuation rarely tells the full story.

Local knowledge can help separate short-term challenges, such as a temporary vacancy, from longer-term risks that may affect buyer confidence or funding appetite.

Early preparation gives owners more control. Clear accounts, well-documented income, reduced principal dependency and a settled team can strengthen buyer confidence. Just as importantly, understanding buyer demand can help owners decide when to sell, what to improve and which route to market may be appropriate.

In my experience, the strongest outcomes begin well before a practice is offered for sale. Owners who understand how their business may be viewed locally are better placed to protect value, manage risk and make confident decisions about the future.

Considering your options? Book an introductory call with Stuart Gunn, Lily Head's dental practice sales specialist in Scotland, for a confidential, no-obligation conversation about your practice, email stuart.gunn@lilyhead.co.uk

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The Dental Clinic Ayr


One of three surgeries at the clinic

WHAT A TRANSFORMATION

The Dental Clinic Ayr is a showcase for IWT Dental Supplies' expertise and exceptional service

Miller Road in Ayr is named after John Watson Miller, a master gunsmith who made his fortune in India catering to the demand for high-quality firearms among the British military and colonial elite. In 1852, on his return to Scotland, Miller purchased the barony of Montgomerieston, the site of an old Cromwellian Fort, and set about developing the area, including the building of a classic Victorian residential street that would take his name.

Number 13 Miller Road was one of several blonde sandstone fronted townhouses that were home to Ayr's merchant and professional classes. Throughout the mid-to-late 20th century, like many of its neighbours, Number 13 transitioned from a private residence into an office and commercial space – and today it is home to The Dental Clinic Ayr, founded by Dr Ailey McAllister.

Somewhat rundown when Ailey took it over in October last year, today the building has been transformed – thanks to her building contractor partner, who undertook the physical renovation, and to IWT Dental Dental Suplies Ltd., who provided surgery layout drawings and management support to the building contractor team. In addition, IWT Dental supplied three Siger U-500 ambidextrous dental chair packages, three Durr VSA single surgery suction motors, a Durr Vista Pano – 2D – Digital OPT machine, a Durr Vista Scan, intraoral x-ray scanner with smart scan technology, NSK iCare Hand piece cleaner,

Dr Ailey McAllister and her team

Bien-Air dental hand pieces, two Mocom B Classic – 22 Sterilisers, a MOCOM – D60 Tethys Range Washer, three Myray RXDC Intra oral x-ray machines with wireless firing switches and DenComp DC 4 dental compressor.

The clinic, born of Ailey's commitment to addressing the critical shortage of NHS dental services in South Ayrshire and aiming to provide high-quality care to a community facing long waiting lists, has three dentists, a dental therapist, a dental hygienist and support staff. It opened its doors in early February, with a visit from the local MP Elaine Stewart later that month to celebrate the launch. As well as being the home of first-class dental care, to patients the clinic's comforting interior feels like home; relaxing and stylish – but with a structural design that also pays tribute to its historic past.

ABOUT IWT

IWT Dental Supplies Ltd., delivers industry-leading solutions for dental practices of all sizes and at every stage of development

We partner with you to optimise your practice, equipment, and clinical workflows, so you can focus entirely on delivering exceptional patient care. From single-surgery installations to fully managed, end-to-end projects — including building works, plumbing, electrical services, flooring, dental chairs, and bespoke cabinetry — we collaborate closely with you and your team to understand your unique requirements and bring your vision to life.

Backed by long-standing relationships with the world's leading dental manufacturers and suppliers, and with deep expertise across the sector, we combine cutting-edge innovation with practical, reliable solutions tailored to any budget. Our experienced team provides expert guidance and outstanding service to ensure you receive the right equipment and support for your practice.

Our comprehensive offering spans IT infrastructure and networking, dental chair systems, imaging solutions, and complete project management. This integrated approach, delivered by our dedicated team of specialist technicians, drives our exceptionally high client retention rate and continues to set the standard for excellence in dental practice development.

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Abid is a graduate of the Glasgow Dental School. He has a master's degree at Glasgow University and a Diploma in Implant Dentistry from The Royal College of Surgeons in Edinburgh. He is a member of their Faculty of Dental Surgery, and he is the immediate past president of the Association of Dental Implantology. Abid limits his practice to implants and the management of complex restorative cases with a special focus on immediate loading – having placed in excess of 5,000 implants. He utilises digital dentistry, implants and smile design for the management of complex restorative cases.

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Image credit: Unsplash/Benyamin Bohloul

NOT NHS VS PRIVATE: WHY SCOTLAND IS BECOMING A MIXED DENTAL ECONOMY BY NECESSITY

For many years, dentistry has been framed as a binary choice: NHS or private. But for many practices across Scotland, that framing no longer reflects reality. Here, Practice Plan Regional Support Manager Selina Alexander examines the rise of the mixed practice

Fully NHS or fully private? That is how many dentists have seen their choices in the past. However, rather than being a case of choosing sides, the situation now is more about finding a sustainable way forward that works for clinicians and teams, as well as for patients. Increasingly, I am seeing practices moving towards a more blended or mixed model. This is because the pressures within the system are making a purely NHS approach harder to maintain. Consequently, this is leading to the emergence of a mixed dental economy with its roots in necessity rather than ideology.

WHY THE NHS MODEL IS UNDER PRESSURE

For most practices, the strain on NHS dentistry has several causes. Costs are rising, but remuneration has not kept up, making it harder to maintain standards. At the same time, admin continues to grow, often eating into time with patients. Add to these recruitment difficulties and the result is less flexibility in how care is delivered, and more pressure on the day-to-day. Meanwhile, patient demand continues to increase meaning access is becoming more stretched.

THE RISE OF PRIVATE DENTISTRY: PULL FACTORS AS WELL AS PUSH

While NHS pressure is clearly part of the picture, it's not the only reason things are shifting. Around 20% of dentists are now fully private, and that number has been building steadily. For a lot of dentists, the move towards private care is as much about what they gain. In practical terms, it often comes down to a number of things. Private dentistry offers more consistency in income, making it easier to plan and invest. It also gives more freedom in how to approach treatment with fewer constraints on time or materials.

Importantly, it also gives practices more scope to reinvest money into the business, whether that is in equipment, the environment, or simply creating a better overall experience for patients. In Scotland, that shift is becoming more noticeable. Private practices are attracting more interest and stronger valuations, which suggests growing confidence in that model. However, none of this means private is the "better" route. For many, it is starting to feel more manageable and a bit easier to build something sustainable.

MIXED PRACTICE: THE MIDDLE GROUND GAINING MOMENTUM

For many practices, it is no longer about choosing NHS or private but more about making the two work together. A mixed model combines both, and is a deliberate, practical approach rather than a compromise. It allows practices to keep a broad base of patients while at the same time helps spread risk and bring more consistency financially. For patients, it retains NHS access where possible, while giving the option of private treatment when needed. It reflects how dentistry is already working shaped by what patients need and what practices can sustain.

THE ROLE OF PAYMENT PLANS

For practices exploring a mixed model, patient membership plans are often part of the consideration.

Selina Alexander
Regional Support Manager,
Practice Plan

As well as giving patients a way to spread the cost of care, they provide practices with a consistent monthly income. However, dentists are often as concerned about how a plan will land and whether patients will see it as fair or changes the tone of the relationship. Opting for a plan that is branded to the practice, rather than a provider, can help underline a sense of belonging and increase patient loyalty. Patients have chosen to join the practice's membership plan, rather than simply changed the way they pay for their treatment.

In practice, this is affected by how it's introduced. Plans that are clear, straightforward and genuinely reflect the care being provided tend to be something both the team and patients can accept and feel comfortable about. In this case, especially, there's no need for hard selling, just an open conversation about options.

When that balance is right, plans can have the effect of strengthening the relationship. Patients know where they stand, are more likely to attend regularly, and practices have more certainty to plan for the future. In the current climate, that kind of stability is becoming increasingly important.

Full article here: www.sdmag.co.uk/2026/07/17/not-nhs-vs-private/

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THE SCOTTISH BUDGET'S IMPACT ON DENTISTRY

No big announcements but that does not mean the year ahead will be an easy one

At first glance, there is not much in the 2026/27 Scottish Budget that directly targets dentistry. No big announcements, no immediate changes to how practices operate. But that does not mean the year ahead will be an easy one.

What is actually happening is more subtle. With tax thresholds frozen, more dentists will drift into higher rates without necessarily feeling better off. We have already seen conversations happening with multiple clients who have increased their profits over the past couple of years yet feel like they have less room to breathe personally. That disconnect is becoming more common.

For practice owners, this sits alongside cost pressure that has not really gone away. Wages are still rising, lab bills have not eased and suppliers rarely move in your favour unless you push them. The practices that are coping best are the ones keeping a close eye on numbers throughout the year, not just at year-end. Simple things like regularly reviewing supplier terms or updating forecasts quarterly are making a noticeable difference.

The bigger question, though, continues to be NHS versus private. The Budget does not move the dial here and, realistically, any real change will come from contract reform rather than tax policy. In the meantime, most practices are having to work it out for themselves.

What we are seeing in practice is a gradual shift rather than a sudden change. Owners are not walking away from NHS work entirely, but they are becoming more selective. At the same time, they are putting more structure around private income: membership plans, hygiene-led growth and better uptake of elective treatments.

For associates not much changes on the surface, but the underlying drivers of income are becoming more important. Earnings still come down to the fundamentals: the practice model, the fee structure and how costs are shared. Two associates doing similar work can end up in very different positions depending on where they are based.

There is also a noticeable shift in expectations. Associates are more focused on long-term earning potential and flexibility than they were a few years ago. For owners, that makes retention less straightforward. It is no longer just about offering a competitive split but creating an environment where people can see a future.

From a personal planning perspective, the frozen thresholds make forward planning more valuable than ever. Pensions, timing of income and overall structure all play a part, particularly as private income grows. Small adjustments here can make a bigger difference than people expect.

For now, success in 2026/27 will come down to the basics: keeping costs under control, being clear on your income mix and making decisions early rather than reacting late. The external environment may be steady, but what happens inside the practice will matter more than ever.

Anna Coff
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BUYING A DENTAL PRACTICE

The legal must-knows before you purchase

Buying a dental practice is an exciting opportunity, whether you are taking your first step into practice ownership or expanding your group.

However, purchasing a practice involves much more than agreeing a price. Careful legal and financial planning at an early stage can help avoid costly surprises and lay the foundations for a successful acquisition.

At Thorntons, our Dental Team regularly advises dentists purchasing practices across Scotland and can guide buyers through each stage of the process.

FINDING THE RIGHT PRACTICE

Before making an offer, it is important to identify a practice that aligns with your professional and financial objectives. Factors such as location, patient demographics, NHS/private income balance, premises arrangements and future growth potential can all influence its value and suitability.

Many buyers find opportunities through specialist dental agents, who can provide information on practices currently available and assist in negotiations with sellers. At Thorntons, we work closely with a number of leading dental agents and are able to introduce prospective buyers to the right contacts when they begin their search.

WHAT EXACTLY ARE YOU BUYING?

This may seem like a straightforward question, but it is one of the most important issues in any acquisition.

If the practice is operated through a limited company, you may be buying either the goodwill and assets of the practice or the shares in the company itself. The legal and tax implications of these structures can differ significantly. A share purchase will involve taking on historic liabilities of the company, whereas an asset purchase often allows the buyer to acquire only specific assets and contracts.

Obtaining legal and accounting advice early in the process can help determine which structure is most appropriate.

Alison Stevenson
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T: 01382 933014

HEADS OF TERMS

Once a deal has been agreed in principle, the parties often enter into Heads of Terms.

This document records the key commercial points of the transaction, including the purchase price, proposed completion date, whether the seller will remain involved in the practice after completion and any conditions that must be satisfied before the sale can proceed.

Although largely non-binding, Heads of Terms can help identify and resolve potential issues before significant time and cost are incurred.

DUE DILIGENCE

One of the most important stages of any acquisition is due diligence.

This is the process by which the buyer and their advisers investigate the practice to ensure there are no unexpected issues. Areas commonly reviewed include employment and associate agreements, property documentation, equipment leases, regulatory compliance and any complaints or claims history.

The aim is to ensure that the practice is operating as represented and to identify any risks before completion. Experienced dental lawyers will understand the issues that can arise and, crucially, know the right questions to ask to uncover any concerns at an early stage

THE PROPERTY

The practice premises is often one of the most valuable assets involved in the transaction.

Whether the property is owned or leased, detailed investigation is required to ensure suitable occupation arrangements are in place and that any necessary consents are obtained. This is a crucial part of the purchasing process.

SALE AND PURCHASE AGREEMENT

One of the final legal stages is negotiating the Sale and Purchase Agreement.

This document sets out the terms on which the practice is being acquired and contains important protections for the buyer, including warranties and, where appropriate, indemnities from the seller.

While the agreement can appear lengthy and complex, our specialist lawyers will explain the key provisions and negotiate terms that properly protect your interests.

CONCLUSION

Purchasing a dental practice is a significant investment. Understanding what is being purchased, carrying out thorough due diligence and ensuring the transaction documents are properly negotiated can help minimise risk and provide confidence for the future.

With the right professional advice, buying a dental practice need not be daunting and can be an exciting step towards practice ownership and long-term growth.

Image credit: Unsplash/Ozkan Guner

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HOW IS THE ASKING PRICE OF YOUR DENTAL PRACTICE CALCULATED?

In this article, Joel Mannix, Director – Dental at Christie & Co, demystifies asking prices – what they mean and how they are calculated

WHAT IS AN ASKING PRICE AND WHY DO WE HAVE THEM?

An asking price signals a guide to the level of offers that the agent and seller expect for a business. For dental businesses, this typically reflects goodwill, fixtures and fittings, and, where relevant, the freehold property.

Agents use their experience and comparable sales evidence to recommend a realistic price, which allows sellers to decide whether to proceed with a sale and whether the likely outcome meets their objectives. For buyers, the asking price sets expectations and acts as a starting point for negotiation, helping them assess affordability and avoid pursuing unsuitable opportunities.

HOW IS IT CALCULATED?

Setting the right asking price is crucial, as pricing it too low and the vendor risks underselling, but too high and the business may struggle to attract buyers, often leading to later reductions. Both outcomes can be avoided through a comprehensive market appraisal by an experienced agent.

Asking prices are influenced by a range of factors, including financial performance, reputation, location, lease terms, property value, demand, market conditions and regulatory gradings. Most sectors follow established valuation methodologies based on market norms.

Typically, businesses are valued using the profits method, where a multiple is applied to fair maintainable profit. Central to this is EBITDA[1] (Earnings Before Interest, Tax, Depreciation, Amortisation), which is calculated from pre-tax profit, with adjustments made for non-recurring or personal costs that would not continue under new ownership.

Once a sustainable EBITDA is established, a suitable market multiple is applied to determine the asking price. This multiple varies depending on several factors and should be discussed with a specialist agent.

Ultimately, an asking price is not just a number, but a strategic tool designed to position a business correctly in the market. When supported by accurate financial analysis, market evidence and sector expertise, it helps generate interest, encourage competitive bidding and maximise value. Engaging with an experienced agent ensures that the price reflects both current market conditions and the true potential of the business, giving sellers the best possible chance of achieving a successful outcome.

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[1]www.christie.com/news-resources/blogs/what-does-ebitda-mean/

To find out more about the sales process, or for a confidential chat about your business options, contact Joel Mannix

THE TRUE COST OF KEEPING A GREAT DENTAL TEAM

By Victoria Forbes, Director, Dental Accountants Scotland

We are currently collecting responses for our latest Scottish Dental Sector Wages Survey and, even at this early stage, the emerging themes are clear. The pressure on practice owners has certainly not disappeared.

The cost of employing a dental team continues to rise, with National Minimum Wage movements and Employer NIC increases creating a very real squeeze. Early responses show that many practices are still expecting to increase wages again within the next 12 months, most commonly in the region of 3–5%.

Perhaps the most striking early finding is the narrowing gap between the National Living Wage and the rates being paid to junior qualified dental nurses. That "concertina effect" creates a difficult balance. Practice owners quite rightly want to reward experience, loyalty and skill, but the rising statutory floor means the whole wage structure is being pushed upwards.

Victoria Forbes
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Image credit: Shutterstock/ Zamrznuti tonovi

The interim results also show experienced GDC registered nurses now averaging around £14.68 per hour, with senior nurses averaging around £15.86. These numbers will be refined as more responses are received, but the direction of travel is clear: good people remain valuable, and retaining them is not getting cheaper.

However, pay is only part of the story. GDC subscriptions, CPD support, catering, and even team functions are now becoming expected rather than exceptional. The strongest practices are thinking more widely about culture, communication, training, leadership and role clarity. A motivated team is rarely built by wage rate alone.

At Dental Accountants Scotland, our view remains that team costs should not be looked at in isolation. They need to be considered alongside pricing, chair utilisation, associate performance, diary management, culture, and overall profitability.

If you would like a copy of our 2026 Scottish Dental Sector Wages Survey when published or would like to understand how your own practice compares, please do get in touch. We would be delighted to help.

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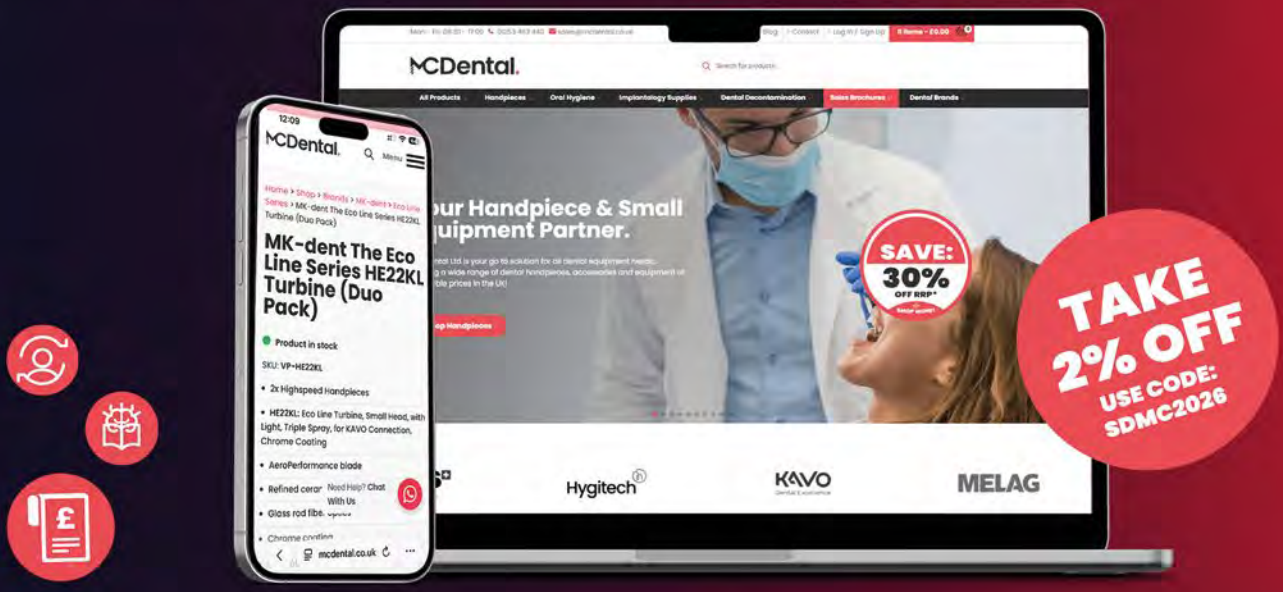

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MAGNUS EVERSHED • TRIGIENE

MEET MAGNUS EVERSHED

IF you have ever met Magnus, you will that know he enjoys nothing more than helping dental practices see what digital dentistry can really do. As Trigiene's Medit specialist covering Scotland, he is the friendly face behind countless scanner demonstrations, helping clinicians find the right solution for their practice without any hard sell.

Magnus takes real pride in looking after his customers. Whether he is demonstrating a Medit scanner, talking through digital workflows or answering those inevitable "what happens if...?" questions, he takes the time to make sure everything makes sense. From chairside milling and 3D printing to open systems and the software that connects it all, his knowledge comes from hands-on experience, and he genuinely enjoys sharing it.

His support does not end once a scanner is installed, either. Magnus is always on hand with follow-up training, practical advice and ongoing support to help practices get the most from their investment.

Outside of work, Magnus has a bit of an identity crisis about his accent. Born in London, brought up in Middlesbrough, schooled in York and now spending most of his time in Scotland, nobody can quite work out where he is from. Thankfully, while his accent keeps people guessing, his friendly approach and expertise in digital dentistry are instantly recognisable.

Magnus Evershed
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TRIGIENE DENTAL

› DENTALLY

DENTALLY LAUNCHES DENTALLY PULSE, BRINGING AI-POWERED INTELLIGENCE ACROSS THE ENTIRE DENTAL PRACTICE

dentally

DENTALLY has unveiled Dentally Pulse, a new AI-powered intelligence layer designed to reduce administration, support teams and create more time for patient care.

As Dentally reaches a milestone of supporting 5,000 practices and 70,000 dental professionals across the UK, Ireland, Australia, New Zealand and Canada, insights from its Designing a Stress-Free Practice guide[1] have reinforced the growing impact of operational complexity and time pressures on practice teams.

Launched at Dentally Live, an event exploring ways to reduce friction across the dental practice, Dentally Pulse sits across the Dentally platform, transforming conversations, clinical observations, patient interactions and operational data into practical outputs.

Rather than introducing a single AI feature, Dentally Pulse helps valuable information created throughout the patient journey become more useful across the practice.

By turning conversations, observations and practice data into re-usable information, Dentally Pulse helps teams work more efficiently and spend more time focused on patients.

The benefits of Dentally Pulse extend across the entire practice and, for clinicians, Dentally Pulse helps ensure information captured during appointments can be transformed into useful outputs without creating additional administrative work.

Clinicians remain responsible for decisions, oversight and patient outcomes, with technology working in the background to support rather than replace professional judgement.

Dentally Pulse will be rolled out progressively throughout 2026, with additional capabilities becoming available across Q3 and Q4. Practices interested in early access to the enhanced clinical notes feature and the opportunity to participate in beta testing for future Dentally Pulse capabilities can register their interest via Dentally at www.dentally.com/dentallypulse

[1]www.dentally.com/en-gb/insights-hub/designing-a-stress-free-practice

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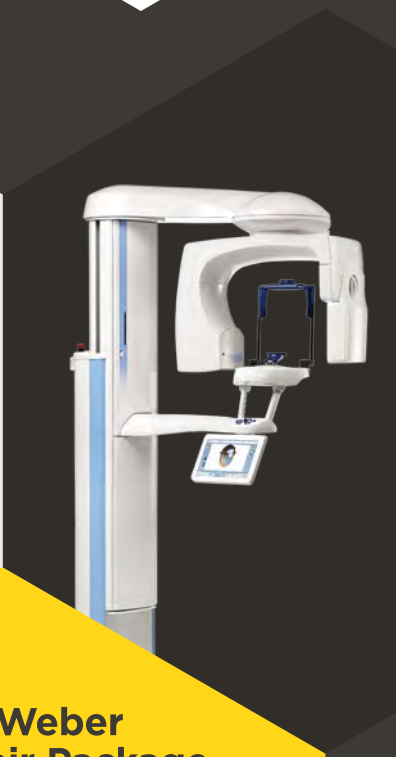

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Alastair Fraser, Principal Dentist, Greygables Dental

Support Driven Excellence

Speak to us today 0845 200 2219 info@iwtdental.co.uk www.iwtech.co.uk

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