FMC
CONNECTING DENTISTRY

CLINICAL DENTISTRY

Practical. Progressive. Educational.

April 2025
Vol 5 No 4

However you **prefer** to work...

Eurus S6
Flagship, compact folding legrest

Eurus S1
Over-the-patient delivery system

Eurus S8
Fully ambidextrous holder type delivery

we have a Eurus treatment centre **perfect for you**

Come & experience our **Eurus treatment centres** on **Stand E46**
at the **Dentistry Show Birmingham 16th & 17th May**

Belmont
Perfecting the art of dentistry

belmontdental.co.uk

CLINICAL DENTISTRY

Practical. Progressive. Educational.

FMC CONNECTING DENTISTRY

April 2025
Vol 5 No 4

ENHANCED CPD 7 HOURS PER ISSUE

FLYING HIGH

The sky's the limit: case reports, tips and techniques to take your clinical practice to new heights

Dentistry CPD

SCAN QR CODE TO GAIN CPD

Join us on **stand G50** at Dentistry Show Birmingham

Be **happy**...

Be **Practice Plan**.

Ant Davies, Principal Dentist, in his surgery.

Like many of the dentists we've helped to make a successful move away from the NHS, Ant Davies says he feels happier, less stressed and that he's enjoying his dentistry again. There's never been a better time to make the move to private dentistry.

Be happy, get in touch...

Practiceplan
The business of dentistry

The **NHS to private** conversion experts

www.practiceplan.co.uk

The leading provider of practice-branded plans

CLINICAL DENTISTRY
Practical. Progressive. Educational.

April 2025 ■ Vol 5 No 4

MISSIONSTATEMENT

Clinical Dentistry is committed to the advancement of practical clinical skills in dentistry. Through its focus on inspirational clinical casework, its sole aim is to help general dental practitioners enhance their skills and techniques across every facet of dentistry in an easy-to-assimilate and practical way.

FMC CONNECTING DENTISTRY
Hertford House, Farm Close, Shenley, Hertfordshire WD7 9AB
T: +44(0)1923 851777 E: info@fmc.co.uk W: www.fmc.co.uk

FIRST-CLASS DENTISTRY

Welcome to the April issue of *Clinical Dentistry*!

With articles on a wide range of topics – including endodontic access, dealing with temporomandibular disorders in orthodontics, rebuilding bony defects ahead of implant placement and tackling white spot lesions – this edition is packed with superb case reports demonstrating techniques and tips to elevate your clinical dentistry.

Spring has seemingly sprung in the UK – but it's not just the weather that's lifting spirits at FMC! The team is riding high on the back of a hugely successful North of England Dentistry Show, which saw more than 1,000 people pass through the doors of Manchester Central Convention Complex.

With more than 70 speakers presenting across nine different theatres, I think it's safe to say it was no small feat to deliver an event of this scale. But deliver it we did, and we're thrilled with how it went!

It seems that we're not alone: based on the feedback, everyone left the show feeling invigorated and ready to implement the day's learnings come Monday morning upon return to the practice.

As always, the clinical topics proved a hit with attendees, with the hands-on sessions selling out, and the clinical theatres full to bursting. But that's not all, for the first time, we invited dental students to experience everything that the North of England Dentistry Show had to offer, which went down a storm – and not just with the students.

Indeed, the Next Gen theatre provided much food for thought for everyone who managed to get a seat.

With thought leaders imparting advice on everything from pursuing a route to specialisation to utilising social media, it felt like a really valuable theatre for those at the start of their careers – as well as those more established!

All in all, the insight and wisdom shared throughout the day made for an unmissable event.

FMC has never been one to rest on its laurels, so you can count on the fact that we're already looking at ways to make next year's show even bigger and better when it returns to Manchester on Saturday 7 March 2026.

If you'd like to share your thoughts on the topics or speakers you'd love to see at next year's show, don't hesitate to get in touch and let us know!

Siobhan Hiscott
Group Managing Editor
siobhan.hiscott@fmc.co.uk

CONNECT WITH US

Printed by: Buxton Press
ISSN: 2752-3969

JOIN US ON SOCIAL MEDIA
FACEBOOK dentistryonlineuk
X @dentistry
INSTAGRAM dentistry.co.uk

CONTACT
PHONE +44 (0) 1923 851777
EMAIL hello@clinicaldentistry.co.uk
WEB www.fmc.co.uk

Meet the editorial board

Clinical Dentistry proudly presents its editorial advisory board – our panel of leading clinicians helping guide the title to clinical excellence

Ben Atkins
BDS
A past president of the Oral Health Foundation.

Claire Louise Berry
DipDentHyg
Dental hygienist and BSDHT ambassador.

Colin Campbell
BDS FDS (RCS Ed)
Specialist in oral surgery. Clinical director of The Campbell Clinic.

Arnaldo Castellucci
MD DDS
Assistant professor of endodontics at the University of Cagliari and professor at the University Federico II of Naples.

Simon Chard
BDS BSc
Cosmetic dentist and immediate past president of the BACD.

George Cheetham
BDS MJDF (RCS Eng) MSc
Aesthetic dentist and senior partner of Ridgway Dental.

Andrew Dawood
BDS MSc MRD (RCS Eng)
Specialist in prosthodontics and periodontics at Dawood & Tanner.

Rahul Doshi
BDS LDS (RCS Eng)
Clinical director for Portmandentex and cosmetic dentist.

Mervyn Druian
BDS DGDPRCS
Cosmetic dentist and founder of the London Centre for Cosmetic Dentistry.

Tony Druttman
BSc MSc BChD
Specialist in endodontics and visiting lecturer at UCL Eastman.

Rhona Eskander
BChD MJDF
Cosmetic dentist and principal of Chelsea Dental Clinic.

Abid Faqir
BDS MFDS MSc DipImpDent
Dentist with a special interest in restorative and implant dentistry.

Daniel Flynn
BDentSc MFDS MClinDent
Specialist in endodontics.

Richard Field
BDS
Aesthetic dentist.

Jas Gill
BDS LDS (RCS Eng) MFJDP
Practice principal of Moonlight Dental.

James Goolnik
BDS MSc
Founder of the Bow Lane Dental Group and best-selling author.

Linda Greenwall, BEM
BDS MGDS (RCS Eng) MSc MRD FFGDP(UK)
Specialist in prosthodontics and restorative dentistry. Founder of the BDBS and the Dental Wellness Trust.

Elaine Halley
BDS MFGDP(UK)
Cosmetic dentist and principal of Cherrybank Dental Spa.

Dominic Hassall
BDS MSc FDS RCPS (Glas) MRD (RCS Ed) FDS (Rest Dent) RCS PGCLTHE
Specialist in restorative dentistry, prosthodontics, periodontics and endodontics. Director of Dominic Hassall Training Institute and Smile Concepts.

Ross Hobson
BDS FDS MDS FDS (RCS Eng) MDO FDS (RCS Ed) PhD SFHEA
Specialist in orthodontics and founder of Windmill Dental Suite.

Richard Horwitz
BDS MClinDent MFDS (RCS Ed) MPerio (RCS Ed) Cert Perio (EFP) FHEA
Specialist in periodontics and a visiting lecturer at UCL Eastman and QMUL.

Robbie Hughes
BDS
Principal director of Dental Excellence.

Zaki Kanaan
BDS MSc DipDSed LFHom
Implant and cosmetic dentist, joint owner of K2 Dental and ADI president.

Shiraz Khan
BDS BMedSc MJDF (RCS Eng)
Director of the Young Dentist Academy.

Bob Khanna
BDS
President of IAAFA and clinical director of Dr Bob Khanna Training Institute.

A dental show like no other

Clinical Dentistry reports back from the 2025 North of England Dentistry Show

This year's North of England Dentistry Show took Manchester by storm last month with hundreds of dental professionals passing through the doors of Manchester Central Convention Complex.

Taking place on Saturday 8 March, the event brought enlightening lectures, engaging discussion and dynamic product demos to all in attendance.

The venue was abuzz with more than 1,000 attendees positively thrilled to experience everything on offer in the sun-filled hall.

From lively panel discussions and interactive polls to immersive hands-on sessions and educational lectures, the North of England Dentistry Show had something to offer every visitor.

Across the nine lecture theatres, more than 70 speakers took to the stage to present fresh insights on the biggest opportunities, developments and issues facing dentistry today.

A standout moment came from headline speaker Ash Jones, a globally acclaimed authority on personal branding. Known for shaping the social media successes of high-profile figures like Steven Bartlett and Gary Neville, Ash captivated the audience with a masterclass on marketing. He unveiled the strategies behind impactful personal branding, offering practical tips and actionable insights for attendees to elevate their own profiles.

NORTH OF ENGLAND Dentistry SHOW 2025

MAKING AN IMPACT

The North of England Dentistry Show 2025 was a success for delegates and exhibitors alike.

On the stands, attendees kept company reps busy throughout the day with lively discussion and product demos, allowing them to discover the cutting-edge products transforming dental practice. Exhibitors enjoyed in-depth conversations with engaged dental professionals who came armed with questions about the latest innovations.

With so much on offer for the whole dental team, this year's North of England Dentistry Show was buzzing with energy and innovation.

Dental professionals, students and experts were able to connect, network and explore the latest offerings all under one roof.

The North of England Dentistry Show 2025 proved to be the go-to event for anyone in dentistry looking to make an impact.

Missed out on this year's vibrant atmosphere, energy and innovation? Fret not, the unmissable North of England Dentistry Show will return on Saturday 7 March 2026.

Save the date and keep your eyes peeled for more details! CD

Dentistry Compliance

BECAUSE MANAGING COMPLIANCE SHOULD BE THIS SIMPLE

Effortless compliance so you can focus on patient care.

BOOK YOUR DEMO NOW

medenta

putting finance into practice

Supporting you to provide **0%** interest-free credit to your patients

> **The hands-on approach from Medenta is phenomenal!**
>
> Amit Jilka : Dentist and Practice Owner, Abbey House Dental

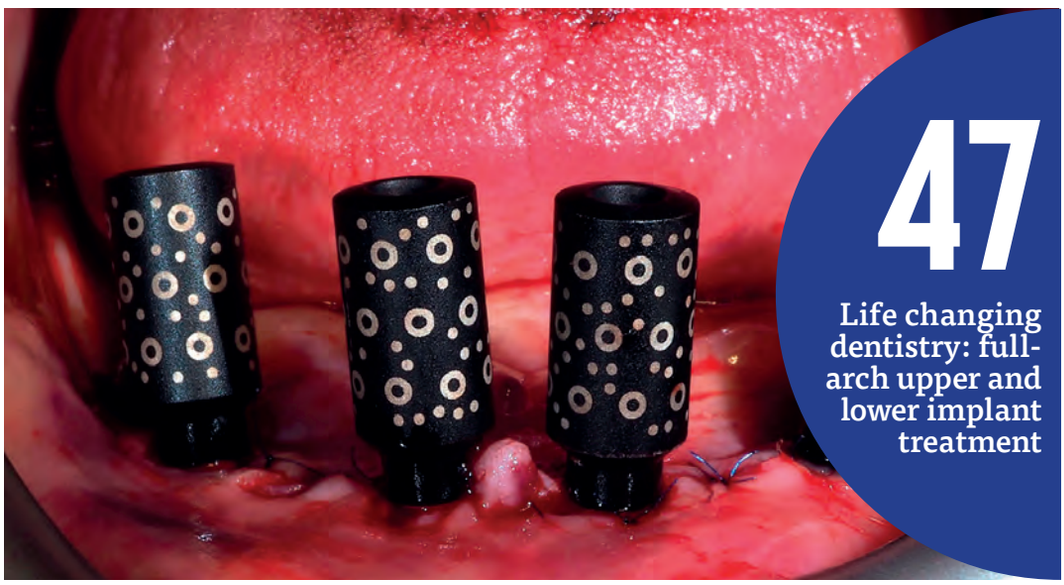
Let us support you...

01691 684175

Medenta Finance Limited is acting as a credit broker not a lender. Funding by V12 Retail Finance

CLINICAL DENTISTRY INCORPORATES... Aesthetic Dentistry TODAY Endodontic PRACTICE IMPLANT DENTISTRY TODAY OralHealth ORTHODONTIC PRACTICE

April 2025 ■ Vol 5 No 4

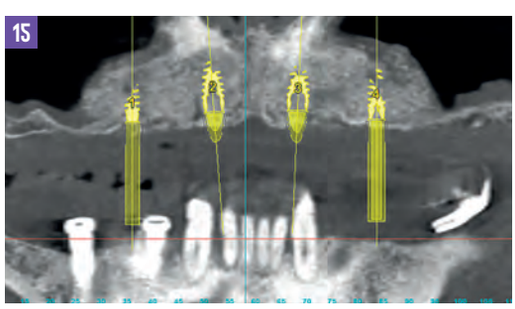


47 Life changing dentistry: full-arch upper and lower implant treatment

FEATURES

GENERAL DENTISTRY 13

15 MAXILLARY BILATERAL SINUS LIFTS
A challenging bilateral sinus lift case using a grafting material to rebuild significant bony defects ahead of implant restoration – Wail Girgis

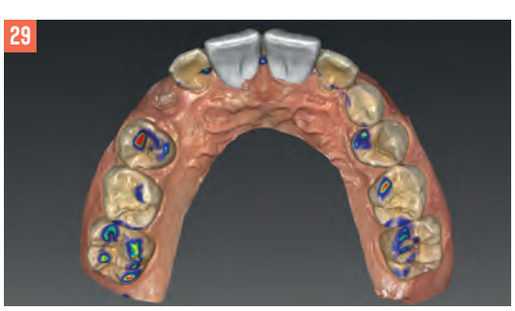


AESTHETIC DENTISTRY 21

23 TRAUMATIC HYPOMINERALISATION
Treating traumatic hypomineralisation with a combination of infiltration and direct composite restoration – Vincenzo Vitale

DIGITAL DENTISTRY 27

29 MINIMALLY INVASIVE TRAUMA RESTORATION
Definitive and minimally invasive trauma restoration with characterised hybrid ceramic and a digital workflow – Sergio Ruiz and Marga Achútegui



FEATURES

Dominic Hassall
Training Institute

Certificate • Diploma • Masters
Restorative & Aesthetic Dentistry
Bioclear • Occlusion • Implant

DISCOVER WHY MORE DENTISTS ARE CHOOSING THE AESTHETICS CAREER PATHWAY GET YOUR FREE EDUCATIONAL TOOL KIT VISIT DHTI.co.uk
OVER 2500 dentists have already enrolled.

Career Pathway

STEP 1
PG Cert in Contemporary Restorative & Aesthetic Dentistry

STEP 2
PG Cert in Advanced Contemporary Restorative & Aesthetic Dentistry

STEP 3
PG Dip (Restorative Aesthetic Dentistry)

STEP 4
MSc University of Kent

NEW

Biodentine™ XP

Your NEW dentine restoration system

All Biodentine's science with the e*XP*erience you expect

- All-in-one cartridge
- Direct placement
- Choice of volume

Biodentine™ brings one-of-a-kind benefits for the treatment of deep caries and up to 85%* of irreversible pulpitis cases:

- Vital Pulp Therapy allowing complete dentine bridge formation
- Minimally Invasive treatment preserving the tooth structure
- Immediate Pain relief for your patients' comfort
- Bio-Bulk filling procedure for an easier protocol

*Taha et al. 2018

septodont

www.septodont.co.uk

GENERALDENTISTRY

WAIL GIRGIS
Maxillary bilateral sinus lifts

15

The sinus lift procedure has been utilised for several decades as a way of creating more space and facilitating bone augmentation in order to allow primary stability of placed implants. Both one- and two-stage surgeries have been described in the literature. Success of these procedures, both in terms of graft and implant survival rates, is shown to be high – Wail Girgis, p15

Schottlander Soft Touch Flexible Nitrile

"Mmmm ... do I choose the Pink or the Blue gloves"

A new generation of nitrile gloves

- Greater Flexibility
- Softer Feel
- Better Tactile Control

Prove it for yourself with a FREE box of 200 gloves in pink or blue

Call Schottlander on Freephone 0800 97 000 79 and quote D425

Available in Pink & Blue

Follow us

New users only.
Maximum 1 free box per practice*
Offer ends 30th April 2025

schottlander

Freephone 0800 97 000 79

WAIL GIRGIS
Wail is a clinical director at Devonshire House and a specialist prosthodontist. He trained at King's College Hospital Dental School, London and went on to complete an MSc degree in conservative dentistry at the Eastman Dental Hospital, London, where he taught thereafter as a clinical lecturer. Wail was a tutor at the International Centre for Excellence in Dentistry on the Implant Certificate Course and he is a member of the International Team for Implantology for whom he is a clinical lecturer. Wail is also a clinical supervisor for the MSC in implantology for VSS Academy, part of the University of Central Lancashire and works at the department of prosthodontics at the Eastman Dental Hospital in London as a locum consultant in prosthodontics and restorative dentistry.

ENHANCED CPD
CPD hours: one
GDC development outcome: C
Topic: General dentistry
Educational aims and objectives: To present a challenging bilateral sinus lift case using a trusted grafting material to rebuild significant bony defects ahead of implant restoration.
This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

Implant success is largely dependent on achieving high primary stability upon placement. However, this is made difficult in an atrophic jawbone. In particular, reduced vertical bone height in the maxilla makes implant placement challenging.

The sinus lift procedure has been utilised for several decades as a way of creating more space and facilitating bone augmentation in order to allow primary stability of placed implants. Both one- and two-stage surgeries have been described in the literature.

Success of these procedures, both in terms of graft and implant survival rates, is shown to be high (Pjetursson et al, 2008). There is also evidence that a grafted sinus lift affords greater vertical bone height gain than non-grafted surgeries (Lie et al, 2022).

Though an autogenous bone graft material is viewed to be the gold standard and offers a potentially quicker healing time, the drawbacks of a second surgical site are less than ideal for many patients. Bone substitutes, therefore, offer an alternative that many patients and practitioners prefer, offering comparable clinical and radiological results (Hoveidaei et al, 2024).

The following case demonstrates the successful implementation of using 100% allograft during a bilateral sinus lift procedure, with delayed implant placement after a six-month healing period.

CASE PRESENTATION

A male patient was referred by his routine clinician for implant treatment in the upper arch. He presented with a minimally retentive upper denture that was held in place by two grade III mobile canine teeth.

The patient had already received two implants in the lower jaw that were retaining the lower denture with locators and, due to the success of this procedure, he was interested in something similar for the upper arch.

A comprehensive clinical assessment was conducted, including a full medical history and evaluation of the soft tissue, occlusal vertical dimension and freeway space. The denture was also assessed to determine whether it could be used to fabricate the new implant-retained prosthesis.

A fractured incisor tooth had recently been extracted, leaving a relatively fresh extraction socket at the UR1 site.

With regards to lifestyle factors, the patient was a regular smoker. However, he agreed to stop the month before surgery and remain smoke-free at least for the duration of the surgical phase of treatment. He was made well aware of the increased failure rate with smokers (Mustapha, Salame and Chrcanovic, 2021).

TREATMENT PLANNING

A full suite of diagnostic images was taken, including a CBCT to assess the underlying bony infrastructure.

Bilateral sinus lifts were indicated in order to place implants for an implant-retained denture. Two infected canines would also require extraction.

The soft tissue was also assessed for mucosa health and volume, smile line, as well as the sulcus depth and keratinised mucosa, determining

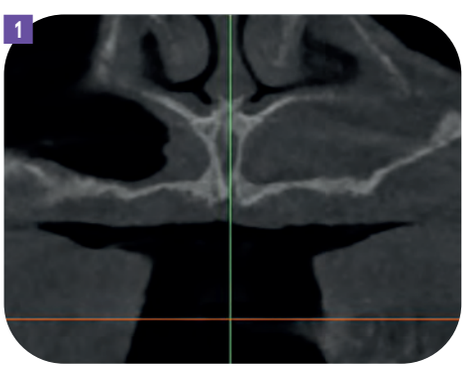


FIGURE 1: *Preoperative sinus extends to the midline*

Wail Girgis discusses a challenging bilateral sinus lift case using a grafting material to rebuild significant bony defects ahead of implant restoration

Maxillary bilateral sinus lifts

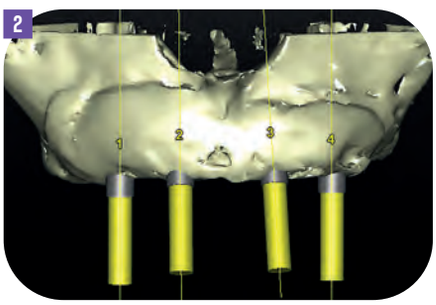


FIGURE 2: *Simplant implant planning*

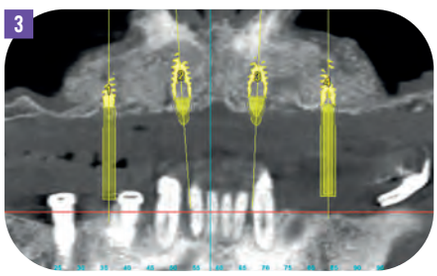


FIGURE 3: *Ideal implant positions, depths and angles determined*

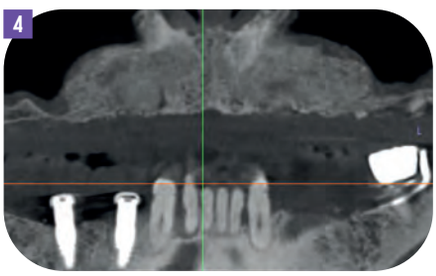


FIGURE 4: *Four months post bilateral sinus lifts*

whether soft tissue grafting would be necessary and if any other challenges should be anticipated during treatment.

Surgical treatment was digitally planned using Simplant software and a bone supported placement guide was made based on what was established to be the ideal implant position.

The patient was informed that during the healing time, he would not wear the denture for three months to prevent pressure on the grafted area.

A new CBCT would be taken after four months of healing following the sinus lift procedure. The implants would then be placed and another four months allowed before the restoration phase began.

SURGICAL TREATMENT

The bilateral sinus lifts were performed in two sessions, approximately two weeks apart. In each situation, the same procedure was followed.

Local anaesthesia was administered and a flap raised. The sinus membrane was elevated and 3.5-5cc of Mineross (Biohorizons Camlog) was placed into the site with the intention of not only creating bone vertically but also horizontally.

An allograft material was ideal as there was minimal autogenous bone present in the lower jaw, making harvesting adequate autogenous bone difficult – especially considering that the amount of graft material needed was more than what could be gathered from a single ramus or the chin. The patient also expressed a preference to avoid another surgical site.

Adding to the complexity in this case was the extremely large size of the sinus lift

In addition, Mineross provides rapid bone conversion to vascularised bone to allow for successful implant placement within the following months. This is preferable than when using xenograft or other synthetic grafting materials.

The soft tissue was closed over the surgical site and sutured without tension. Standard postoperative instructions were given to the patient to protect the site during initial healing and encourage excellent oral hygiene. This meant avoiding chewing in the area and regularly using an antimicrobial mouthwash.

The patient was delighted with the initial outcome achieved and the importance of his smoking cessation was emphasised.

REVIEW AND REFLECTION

Sinus lifts are advanced procedures that should be approached only when the clinician has sufficient training and experience.

Adding to the complexity in this case was the extremely large size of the sinus lift, which extended from the molar sites to the incisive canal in the midline.

Another difficult aspect of this treatment was provisionalisation – the graft was extensive and could not come under any pressure while healing to avoid resorption.

As well as this, it was important to place enough graft material to allow decent distribution of the implants placed while also maintaining height and width of bone around the implants.

The sinus lifts were performed within two weeks of each other to allow the patient to chew on one side at a time. This was why it was important to avoid denture wear for at least three months during the healing process.

The case also highlights why graft material selection is crucial. I have been using Mineross for around five years because the cortical component in the granules leads to very little bone resorption, while the cancellous particles promote revascularisation.

It gives a much better tissue response with healing compared to other solutions – it does not get incorporated into the surrounding soft tissue and periostem, making second stage surgery neater as the mucosa lifts from the bone easily for effective soft tissue manipulation.

Mineross also exhibits simple handling, especially when mixed with blood, and I use it confidently in any case that requires grafting.

It is part of a broad biomaterials portfolio that I utilise to meet different patient needs and clinical scenarios, including Mem-Lok and Novomatrix, which facilitate accurate implant placement and efficient soft tissue thickening respectively. CD

REFERENCES

Hoveidaei AH, Ghaseminejad-Raeini A, Esmaeili S, Sharafi A, Ghaderi A, Pirahesh K, Azarboo A, Nwankwo BO, Conway JD (2024) Effectiveness of synthetic versus autologous bone grafts in foot and ankle surgery: a systematic review and meta-analysis. *BMC Musculoskelet Disord* 25(1): 539

Lie SAN, Claessen RMMA, Leung CAW, Merten HA, Kessler PAWH (2022) Non-grafted versus grafted sinus lift procedures for implantation in the atrophic maxilla: a systematic review and meta-analysis of randomized controlled trials. *Int J Oral Maxillofac Surg* 51(1): 122-132

Mustapha AD, Salame Z, Chrcanovic BR (2021) Smoking and dental implants: a systematic review and meta-analysis. *Medicina (Kaunas)* 58(1): 39

Pjetursson BE, Tan WC, Zwahlen M, Lang NP (2008) A systematic review of the success of sinus floor elevation and survival of implants inserted in combination with sinus floor elevation. *J Clin Periodontol* 35(8 Suppl): 216-40

PRODUCTS USED

Mineross Biohorizons Camlog
Simplant Dentsply Sirona

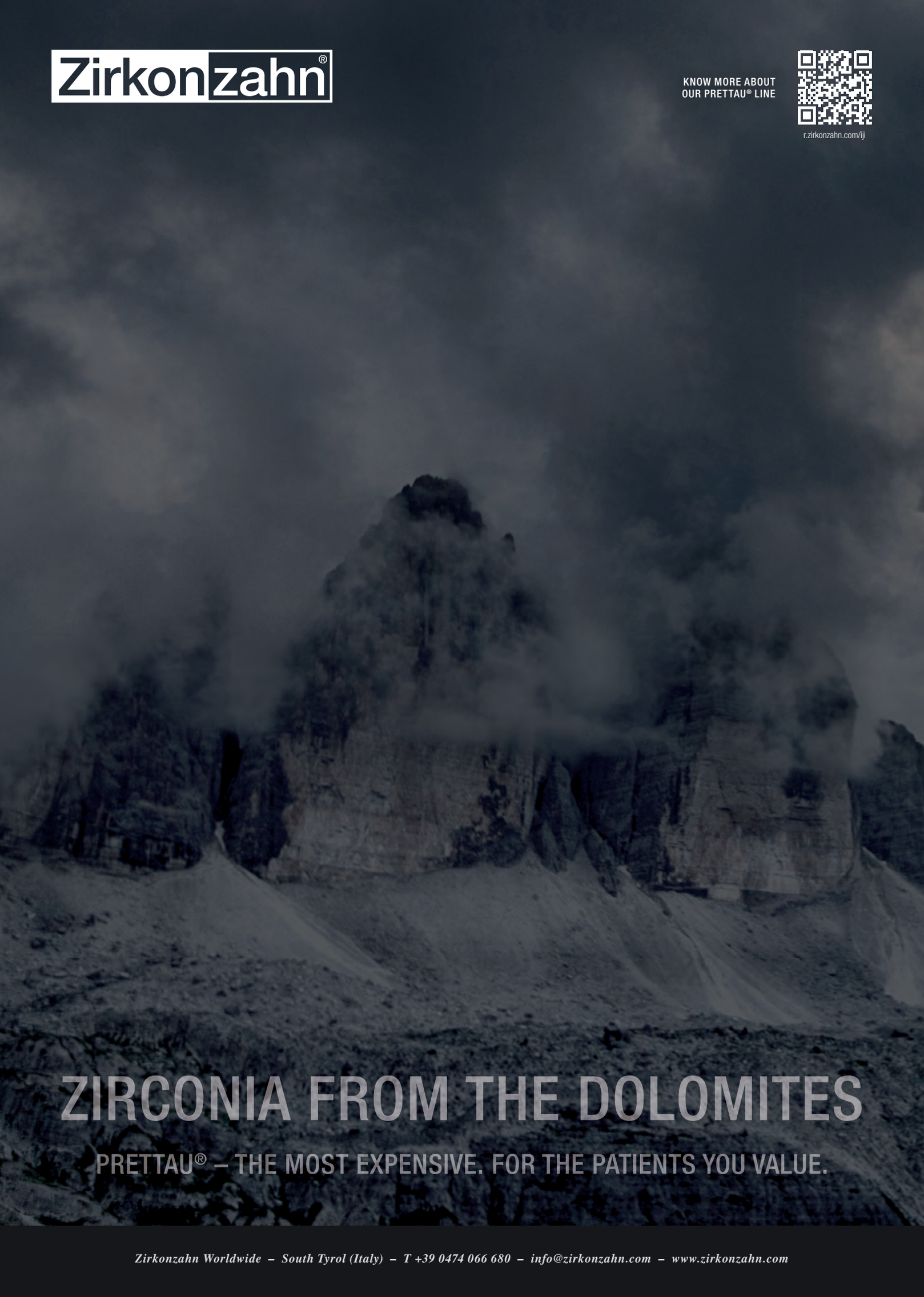
CONNECT TO WHAT'S NEXT

a-dec 10 YEAR WARRANTY

A-dec 500 Pro: Experience a new level of connection.

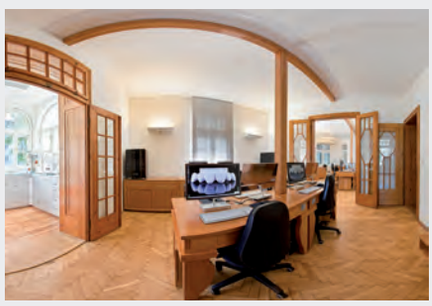
Everything you've come to appreciate about the A-dec 500 dental chair, is now available with a new delivery. Enabled with A-dec+ and an updatable software platform, the A-dec 500 Pro delivery system supports your dental team with a new level of connection.

a-dec
a-dec.co.uk/500


Zirkonzahn®
KNOW MORE ABOUT
OUR PRETTAU® LINE
r.zirkonzahn.com/iji
ZIRCONIA FROM THE DOLOMITES
PRETTAU® – THE MOST EXPENSIVE. FOR THE PATIENTS YOU VALUE.
Zirkonzahn Worldwide – South Tyrol (Italy) – T +39 0474 066 680 – info@zirkonzahn.com – www.zirkonzahn.com

HANDS-ON COURSES AT ZIRKONZAHN EDUCATION CENTER BRUNICO

TRAININGS ON SOFTWARE, AESTHETICS, MATERIAL DIVERSITY AND DESIGN FOR ANY LEVEL OF EXPERTISE FROM ZIRKONZAHN



Zirkonzahn Education Center Brunico is located in South Tyrol a few kilometres away from Zirkonzahn's central office and is the headquarters of all Zirkonzahn Education establishments worldwide. Here, many courses are offered in multiple languages by Zirkonzahn's team of instructors, who are continuously trained in-house and who form the company's dental laboratory research team. This ensures that participants receive up-to-date, practical knowledge directly from the firm's own experts.

All courses are regularly updated and expanded based on the latest innovations developed by the firm. Every new solution is integrated into the training programs through intensive sessions, fostering a collaborative atmosphere where instructors and participants can practice and network.

FOR ALL LEVELS OF EXPERTISE

At the Education Center Brunico, participants can choose from a broad range of practical courses suitable for all levels of expertise. For instance, for dental technicians interested in improving their skills in the use of milling units and software, the CAD/CAM Milling courses provide in-depth, hands-on knowledge along with valuable tips on the maintenance of Zirkonzahn's devices, workflow organisation and digital patient acquisition.

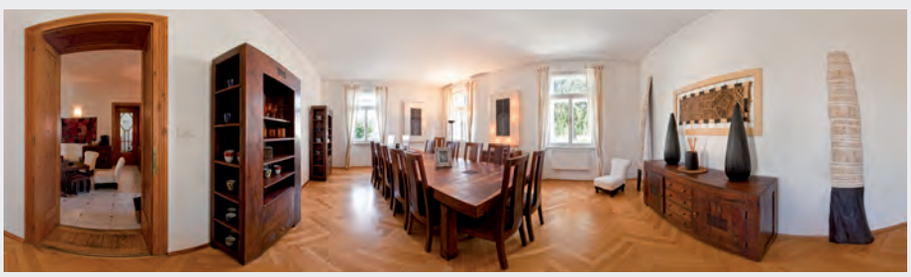
Those interested in improving their software design skills and exploring material diversity can benefit from the CAD and Application courses.

The Application courses are instead the perfect solution for those who are mostly interested in aesthetics and complementary techniques.

WEBINARS AND EVENTS

In addition to the courses held at the Education Center Brunico, Zirkonzahn offers online webinars covering various dental and dental technical subjects and organises international events in the premises of the Klinik DeMedici. In this location, dentists can also find special courses on the topics of minimally invasive tooth preparation and ultra-thin zirconia veneers. Furthermore, the company's educational offering also includes The Zirkonzahn School, conceived by the company's founder, Enrico Steger.

All schools are immersed in the alpine landscape and what makes the teaching programme very special is the combination of solid technical education with a focus on life skills and South Tyrolean culture. CD



Zirkonzahn®
Human Zirconium Technology

ZIRKONZAHN

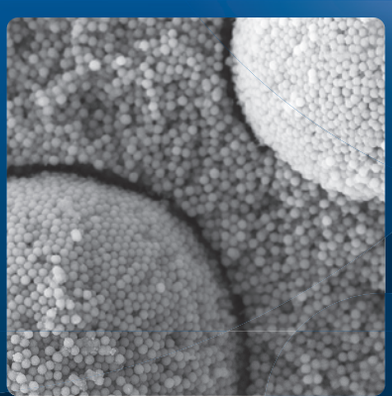
To find out more about courses at Zirkonzahn Education Center Brunico or any other educational opportunity, visit **www.zirkonzahn-education.com,** email **education@zirkonzahn.com** or call **+39 0474 066 650.**

Tokuyama

OMNICHROMA

COLOUR FROM LIGHT

INFINITE POSSIBILITIES



Clearly visible in the SEM image: The bead structure of OMNICHROMA compared to conventionally crushed particles.

Smart Chromatic Technology – 1.000 Shades of White

- **Structural shade without artificial colour pigments:** adapts seamlessly to any tooth shade from A1 to D4
- **Bis-GMA-free formulation:** for better biocompatibility
- **Easy stocking:** only 1 shade for economic sustainability

Samples & More

Tokuyama

tokuyama-dental.eu

AESTHETICDENTISTRY

VINCENZO VITALE
Traumatic hypomineralisation

23

This case shows how resin infiltrant can function as a substrate that mimics the natural colour of dentine. Reflecting light from inside, with only a superficial amount of enamel composite, it is possible to achieve a satisfactory aesthetic result with a minimal invasive procedure – Vincenzo Vitale, p23

POWERED BY

AVANT GARDE™ DENTISTRY

Experience the future of dentistry.
Explore our upcoming courses and master all Avant Garde workflows.

www.avantgardedentistry.co.uk

Future proof your practice by becoming a Same Day Smile provider. Learn the skills, workflows, and strategies to grow your business while delivering exceptional patient care.

Upcoming Courses:

Same Day Sprint - Fri 9th May
Learn how to prep, design and fit 3D printed veneers, utilising cutting edge chair-side 3D printing

Guided Surgery - Sat 10th May
Integrating Guided Surgery into the Same Day Smile workflows.

Essential Photography - Sat 17th May
Learn the art of Dental Photography to help showcase your stunning work.

The Residency - Fri 13th June - Sun 15th June
The blueprint to modern dentistry: A 3 day comprehensive learning experience.

smile

Limited Spaces
Don't miss out

SCAN ME

SprintRay align FirstFit CARESTACK HMC
ivoclar MediForm RAYFace bd bryant dental EMS

DR VINCENZO VITALE
Vincenzo is a dentist based in Bologna, Italy. He focuses on minimally invasive aesthetic dentistry, implant surgery, endodontics and gnathology. Vincenzo is an active speaker at national courses and conferences focusing on conservative dentistry and endodontics.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Aesthetic dentistry

Educational aims and objectives: To discuss the treatment of traumatic hypomineralisation with a combination of infiltration and direct composite restoration.

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

In the era of minimally invasive dentistry, it is crucial to solve aesthetic and functional defects with as much tooth structure spared as possible. The resin infiltration concept is an ideal way to realise this when treating enamel white spot lesions.

Depending on their diagnosis and depth, white spot lesions can be treated by infiltration alone or pre-treated and finalised with a combination of resin infiltration and direct composite restoration.

DIAGNOSIS

A young girl presented to the practice with a white spot lesion on the UL1 (Figure 1). The white spot was located on only one tooth (differential diagnosis for molar incisor hypomineralisation [MIH] lesion pattern or metabolic origin lesion pattern) and was not removed in a prophylaxis procedure (differential diagnosis for intrinsic or extrinsic origin of the lesion).

Based on the review by Sulieman (2005), it was classified as a white spot lesion of intrinsic pre-eruptive traumatic origin.

Lesions of intrinsic origin are located deep within the enamel and often do not respond to the infiltration technique alone. For this reason, pre-treatment of the enamel is necessary. However, in this case, an attempt was made to use resin infiltration alone.

Ultimately, as the results obtained were poor, the lesion was pre-treated with a diamond bur and subsequent resin infiltration and direct composite application.

FIGURE 1: *Initial situation – extraoral view of white spot lesion on UL1*

FIGURE 2: *Rubber dam in place*

FIGURE 3: *Icon Etch applied to the lesion*

Vincenzo Vitale discusses the treatment of traumatic hypomineralisation with a combination of infiltration and direct composite restoration

Traumatic hypomineralisation

FIGURE 4: *Thorough rinse with water*

FIGURE 5: *Icon Dry syringe, with an ample amount of material applied to the lesion*

FIGURE 6: *After the second application of Icon Etch, the second previsual with Icon Dry*

FIGURE 7: *After the third application of Icon Etch, the third previsual with Icon Dry*

FIGURE 8: *Fourth application of Icon Dry. The white spot is still visible, indicating a deep lesion*

FIGURE 9: *Accessing the lesion body using small diamond bur*

FIGURE 10: *After pre-treatment with diamond drill, a new application of etchant is performed for three minutes*

FIGURE 11: *Apply an ample amount of Icon Dry to the lesion and allow to set for 30 seconds*

FIGURE 12: *Apply Icon Infiltrant after drying the tooth using the air syringe*

TREATMENT STEPS

Before isolation, the shades of UL1 were analysed.

This was done by placing small amounts of different shades of composite restorative material on the tooth surface. Once light-cured, the level of similarity was evaluated.

After analysis, an enamel mass (GE2, Micerium) was chosen.

Before starting the treatment, full rubber dam isolation was carried out to achieve a perfect dry environment and prevent both the etchant and the infiltrant from making contact with soft tissues (Figure 2).

The result after these applications, previsualised with Icon Dry, is improved but still not completely satisfying

The first application of etchant is performed by applying a quantity slightly greater than required for two minutes (Figure 3). Next, with suction and thorough rinsing with water for 30 seconds, the etchant is removed (Figure 4).

The tooth is then dried with an oil-water-free air syringe. To simulate the effect of the resin infiltration, the lesion is wetted with Icon Dry and allowed to set for 30 seconds (Figure 5).

When wetted with Icon Dry, the whitish-opaque colouration on the etched enamel should diminish. In this case, as expected (due to the origin of the lesion), the result is almost absent.

A second application of etchant and Icon Dry is carried out exactly like the first. Once again, the result, previsualised with Icon Dry, is not satisfying (Figure 6).

A third and fourth attempt is performed, with the etching time increased to five minutes, forcing a deeper penetration of the Icon Etch.

The result after these applications, previsualised with Icon Dry, is improved but still not completely satisfying (Figures 7 and 8).

A total of four applications of etchant were performed, with the last two having longer application times.

The lesion is then pre-treated with a small round diamond bur.

Superficial removal and smoothening of the remaining small white spot is carried out without reaching the underling dentine (Figure 9).

Subsequently, the remaining lesion is etched for three minutes to remove the smear layer and allow the resin infiltrant to improve its penetration (Figure 10).

After thorough rinsing with an water-oil-free syringe, an amount of Icon Dry material is placed onto the lesion and allowed to set for 30 seconds.

When wetted with Icon Dry, the whitish-opaque colouration on the etched enamel diminishes, and the result is now satisfactory (Figure 11).

To move on with the infiltration, it is necessary to dry the tooth meticulously with water-oil-free air syringe.

Next, apply an ample amount of Icon Infiltrant and allow it to infiltrate for three minutes, occasionally activating it with a rubbing

FIGURE 13: *Apply Icon Infiltrant. After three minutes, excess material is removed*

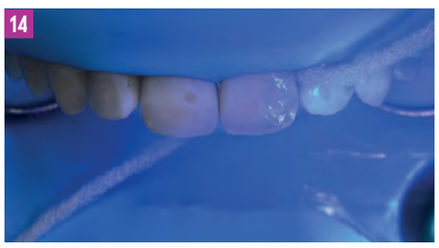


FIGURE 14: *Light-cure with a 450nm lamp*

FIGURE 15: *Once again, apply an ample amount of Icon Infiltrant for one minute, light-cure for 40 seconds*

FIGURE 16: *Restore the tooth with composite, modelling the restoration with brush*

FIGURE 17: *Polish using medium grit disc*

FIGURE 18: *Polish using superfine grit disc*

FIGURE 19: *Lustring procedure with aluminium oxide paste*

FIGURE 20: *Immediate postoperative situation*

FIGURE 21: *One-month control/ comparison before and after treatment*

movement (Figure 12). Improve the isolation with some dental floss (Superfloss, Oral-B), which is then further moved to clean the interproximal space before light-curing the resin infiltrant (Figure 13).

Light-cure with a 450nm lamp (subjected to periodic inspection) for 40 seconds (Figure 14).

It is necessary for the intensity of the light to be at least equal to 800mW/cm2.

Apply an ample amount of Icon Infiltrant a second time and allow it to penetrate for one minute with a rubbing movement (Figure 15).

Light-cure with a 450nm lamp as close to the material as possible for at least 40 seconds. The lesion, now covered with resin infiltrant, has changed its colour from white to orange dentine colour. This will serve as a liner substrate for the small composite restorative material that will be placed on top of it.

Resin infiltrant can function as a substrate that mimics the natural colour of dentine

RESTORATION

Based on the fact the infiltrant, as a resin, has a superficial inhibited oxygen layer, the bonding procedure is performed by applying only a self-etch adhesive system (Scotchbond Universal, 3M). The adhesive is light-cured for 20 seconds.

A small amount of composite restorative material (GE2 Enamel, Micerium) is then applied.

Using a Kolinsky brush, the composite is handled and the defect restored (Figure 16).

Final light-curing of composite is performed under glycerine (to allow polymerisation of the superficial inhibited oxygen layer). Contouring and finishing procedures are performed using medium and superfine grit discs mounted on a low-speed handpiece (Figures 17 and 18).

The restoration is then lustred with a fine diamond paste on a wool wheel (Figure 19).

Once the composite application is complete, the rubber dam is removed. The immediate postoperative situation is noted and photographed (Figure 20). The teeth are allowed to rehydrate for at least seven days before the final result is assessed.

After one month, the rehydration is complete, and the result shows natural integration with a perfect colour match (Figure 21).

EVALUATION

This case shows how resin infiltrant can function as a substrate that mimics the natural colour of dentine. Reflecting light from inside, with only a superficial amount of enamel composite, it is possible to achieve a satisfactory aesthetic result with a minimal invasive procedure. CD

PRODUCTS USED

Icon Dry, Icon Etch, Icon Infiltrant DMG
Superfloss Oral-B
Scotchbond Universal 3M
Enamel Plus HFO Micerium

The most complete AI toolset to unleash clinical performance.

Second Opinion®

Improve clinical accuracy, increase case acceptance and build patient trust with the only chairside AI software cleared by the FDA to automatically detect multiple forms of disease in dental x-rays.

★★★★★

"With Pearl, my patients leave confident, not confused. We're all working from the same page, and that's the foundation of trust and quality care"

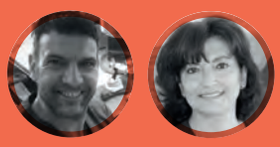
Dr. Kunal Rai
Dentist

For a live demo, scan QR code or visit:
say.hellopearl.uk/book-live-demo

DIGITALDENTISTRY

SERGIO RUIZ & MARGA ACHÚTEGUI
Minimally invasive trauma restoration

29



The enamel of the UR1 and UL1 was minimally reduced for 360-degree veneers, taking into account the original tooth morphology, and creating minimal chamfers. The dental arches and habitual occlusion were then digitised using Primescan. The 360-degree veneers were designed virtually – Sergio Ruiz and Marga Achútegui, p29

NEW

x-mind optima 3D

For more information or to speak to your local representative, scan the QR code.

acteon imaging suite

RealGUIDE™
UNIVERSAL OPEN SYSTEM

The smartest. The smallest. The ultimate.

Call us for a no-obligation consultation
on 0800 038 9840 or email info.uk@acteongroup.com

acteon

Enhancing
your workflows
through innovation

SERGIO RUIZ
Sergio is a dental technician and head of the Genlab* creative dental studio in Barcelona, Spain.

DR MARGA ACHÚTEGUI
Marga is a dentist from Donostia-San Sebastián in Spain.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Digital dentistry

Educational aims and objectives: To discuss definitive and minimally invasive trauma restoration with characterised hybrid ceramic.

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

When dealing with the loss of crown fragments following a crown fracture in juvenile mixed dentition, practitioners face the challenging question of how such a defect should best be treated.

It has become possible to treat smaller defects effectively using direct composite, however, for larger fractures, this approach is not feasible in the long-term.

The ideal indirect restoration material should allow for an entirely minimally invasive approach to avoid further weakening the already severely damaged tooth, and to prevent iatrogenic damage to the pulp by the dentist.

Furthermore, post-traumatic restorations, particularly in the case of mixed dentition, should function in harmony with the natural tooth substance and be adaptable at any time.

In the following report, dental technician Sergio Ruiz, and dentist Marga Achútegui demonstrate how they resolved such a case using the polychromatic hybrid ceramic Vita Enamic Multicolor and the composite stain system Vita Akzent LC.

CASE REPORT

An 11-year-old patient presented at the dental practice due to trauma to the UR1 and UL1.

The alveolus was intact on both sides, and despite the traumatic force of the impact, the teeth did not show any looseness or displacement.

Sulcus probing also provided no evidence of root fracture.

Percussion tests were negative for both teeth. Both teeth showed crown fractures involving enamel and dentine, entirely within the supragingival or isogingival region.

FIGURE 1: *The initial clinical situation with crown fractures (UR1 and UL1)*

FIGURE 2: *The minimally invasive enamel preparation was scanned intraorally*

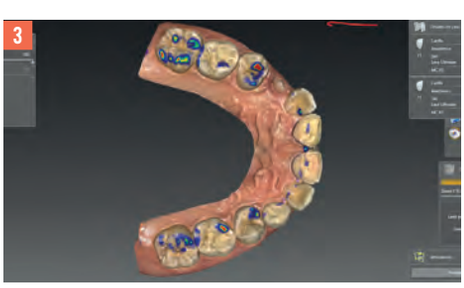


FIGURE 3: *The virtual model in the occlusal view*

Utilising a digital workflow, Sergio Ruiz and Marga Achútegui discuss definitive and minimally invasive trauma restoration of the upper central incisors with characterised hybrid ceramic

Minimally invasive trauma restoration

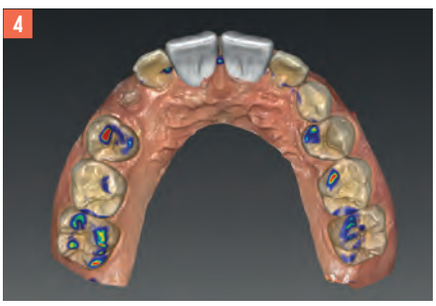


FIGURE 4: *The biogeneric database suggested 360-degree veneers*

FIGURE 5: *The biogeneric suggestions were morphologically adapted*

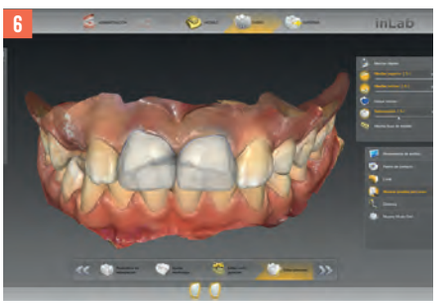


FIGURE 6: *Preparation and final design in the virtual overlay*

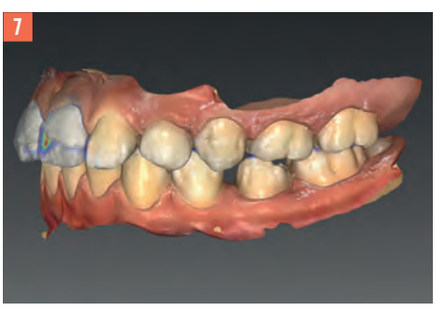


FIGURE 7: *The virtual designs of the 360-degree veneers (UR1 and UL1) in the lateral view*

FIGURE 8: *Both restorations following finishing, characterisation, glazing and polishing*

FIGURE 9: *The highly aesthetic and minimally invasive hybrid ceramic restorations of the UR1 and UL1*

The UR1 had suffered a complicated crown fracture with wide exposure of the pulp.

Due to the long duration of exposure and a negative cold test, root canal treatment was performed on this tooth.

As the pulp in the UL1 was not exposed, the wound areas of the tooth were cleaned during the first emergency session and covered using the adhesive technique with 3M Scotchbond Universal and Relyx Ultimate composite cement. This allowed the vitality of the tooth to be retained. The fracture fragments had been lost, which was why they could not be adhesively repositioned.

HYBRID CERAMIC MATERIAL SELECTION

However, the defects were too extensive for direct composite restoration, which is why an appropriate indirect material needed to be identified.

The Vita Enamic hybrid ceramic is comprised a porous, pre-sintered feldspar ceramic block (86% by weight), which is then infiltrated with a polymer under pressure and heat (Coldea, Swain and Thiel, 2013).

This dual interlocking network results in material properties that are ideal for definitive, minimally invasive trauma restoration.

Since restorations made from Vita Enamic can be fabricated extremely thin, patients benefit from a minimally invasive (Alghauli et al, 2023) and reliable treatment option (Ohse et al, 2021).

Microscopic cracks in the ceramic are stopped at the boundaries interfacing with the polymer (Dirxen, Blunck and Preissner, 2013).

Thanks to its reliable adhesive bonding, this material does not require retentive preparation (Conejo et al, 2021).

The hybrid ceramic can be easily supplemented with composite at any time or simply milled and polished, offering morphological and functional versatility, particularly in mixed dentition (Al-Turki et al, 2020; Jurado et al, 2021).

Offering abrasion similar to that of enamel, the material facilitates harmonious functional integration in long-term clinical outcomes and prevents premature contacts and parafunction (Ludovichetti et al, 2018).

The characteristics of the hybrid ceramic that absorb masticatory force – similar to natural dentition – reduce the impact of force in the system (Furtado de Mendonca et al, 2019).

The patient's fluorosis was replicated in the incisal third

DIGITAL WORKFLOW AND CHARACTERISATION

In a separate session, following application of local anaesthetic, only the enamel of the UR1 and UL1 was minimally reduced for 360-degree veneers, taking into account the original tooth morphology, and creating minimal chamfers.

The dental arches and habitual occlusion were then digitised using Primescan.

The 360-degree veneers were designed virtually in the Inlab software and then milled from Vita Enamic Multicolor HT 1M2, using the Cerec MC XL milling unit.

After finishing, the fit was checked on an additively manufactured control model. The hybrid ceramic surfaces were then etched with hydrofluoric acid and silanised so that they could be characterised to suit the patient using the versatile Vita Akzent LC composite stain system.

The patient's fluorosis was replicated in the incisal third using Vita Akzent LC in white and cream. A touch of khaki was applied with a brush in the cervical area, and some orange in the proximal area.

A homogeneous gloss was achieved using Vita Akzent LC Glaze. High-gloss polishing was carried out following final UV light curing at a wavelength below 430nm.

INTEGRATION AND CONCLUSION

After etching the lumen with hydrofluoric acid and silanisation, it was possible to integrate the two 360-degree veneers using the full adhesive

technique. Thanks to the integrated shade gradient and patient-specific characterisation, the two restorations blended seamlessly into the aesthetic zone.

The combination of the polychromatic hybrid ceramic Vita Enamic Multicolor and the Vita Akzent LC composite stains enabled a highly aesthetic, minimally invasive restoration of the traumatic defects, in a manner that was appropriate to the indication and benefitted the patient.

Several clinical studies have demonstrated the long-term aesthetic and functional potential of minimal or non-invasive restorations made from Vita Enamic (Coldea, Swain and Thiel, 2013; Alghauli et al, 2023; Ohse et al, 2021; Dirxen, Blunck and Preissner, 2013).

Despite the changes due to tooth eruption, it was possible to provide the patient with final restorations that offered abrasion behaviour similar to enamel, and restorations that could be morphologically and functionally adapted at any time.

The young patient was very pleased with the final result and her new smile. CD

REFERENCES

Al-Turki L, Merdad Y, Abuhaimed TA, Sabbahi D, Almarshadi M, Aldabbagh R (2020) Repair bond strength of dental computer-aided design/computer-aided manufactured ceramics after different surface treatments. *J Esthet Restor Dent* 32(7): 726-733

Alghauli M, Alqutaibi AY, Wille S, Kern M (2023) Clinical outcomes and influence of material parameters on the behavior and survival rate of thin and ultrathin occlusal veneers: a systematic review. *J Prosthodont Res* 67(1): 45-54

Coldea A, Swain MV, Thiel N (2013) Mechanical properties of polymer-infiltrated-ceramic-network materials. *Dent Mater* 29(4): 419-26

Conejo J, Ozer F, Mante F, Atria PJ, Blatz MB (2021) Effect of surface treatment and cleaning on the bond strength to polymer-infiltrated ceramic network CAD-CAM material. *J Prosthet Dent* 126(5): 698-702

Dirxen C, Blunck U, Preissner S (2013) Clinical performance of a new biomimetic double network material. *Open Dent J* 7: 118-22

Furtado de Mendonca A, Shahmoradi M, Gouvêa CVD, De Souza GM, Ellakwa A (2019) Microstructural and Mechanical Characterization of CAD/CAM Materials for Monolithic Dental Restorations. *J Prosthodont* 28(2): e587-e594

Jurado CA, Tsujimoto A, Watanabe H, Fischer NG, Hasslen JA, Tomeh H, Baruth AG, Barkmeier WW, Garcia-Godoy F (2021) Evaluation of polishing systems for CAD/CAM polymer-infiltrated ceramic-network restorations. *Oper Dent* 46(2): 219-225

Ludovichetti FS, Trindade FZ, Werner A, Kleverlaan CJ, Fonseca RG (2018) Wear resistance and abrasiveness of CAD-CAM monolithic materials. *J Prosthet Dent* 120(2): 318.e1-318.e8

Ohse L, Stona D, Sly MM, Burnett Júnior LH, Spohr AM (2021) Fracture strength of teeth restored with milled ultrathin occlusal veneers made of polymer-infiltrated ceramic. *Braz Dent J* 32(5): 105-113

PRODUCTS USED

Vita Enamic Multicolor, Vita Akzent LC Vita Zahnfabrik
Scotchbond Universal, Relyx Ultimate 3M
Primescan, Inlab, Cerec MC XL Dentsply Sirona

Think your complex restorative procedures can't be simplified? **Think again.**

The **new iTero Lumina™ scanner,** powered by iTero Multi-Direct Capture™ technology, is designed to quickly and accurately capture a wide range of restorative procedures in a single pass.

Discover how you can unlock outstanding simplicity and **schedule your demo today.**

iTero lumina™

ALIGN TECHNOLOGY REVEALS RESTORATIVE CAPABILITIES ON ITS NEXT GENERATION ITERO LUMINA® INTRAORAL SCANNER

NEXT-GENERATION SOLUTIONS

Align Technology has announced the addition of restorative capabilities to its next generation iTero Lumina™ intraoral scanner, to enable efficient restorative and multidisciplinary ortho-restorative workflows and support diagnostic of interproximal caries above the gingiva, helping dentists reach new levels of practice efficiency and growth while delivering exceptional clinical outcomes.

Initially launched in February 2024, the iTero Lumina™ intraoral scanner delivers faster scanning speed[2], higher accuracy[3], superior visualization[8], and a more comfortable scanning experience[9].

The enhanced capabilities of the iTero Lumina solutions provide outstanding scanning experience and performance, optimal for the simplest to the most challenging restorative cases.

These capabilities are complemented by simplified restorative workflows that include the capture of single unit dental crowns to full dental arch with multiple preparations in a single pass, with a wave of an iTero Lumina wand.

BENEFITS

Practice efficiency and growth

- Capture simple to complex cases and extraoral appliances and material in one uninterrupted movement and without the need to scan each individual preparation from multiple preparation cases
- Experience versatility and efficiency with up to five capabilities in one device for less footprint in the practice, designed to reduce maintenance time and cost and enable the full automation of daily tasks from scanning to patient communication and lab collaboration:
  1. Photorealistic 3D models
  2. HD intraoral camera
  3. Aid in interproximal caries detection
  4. Photorealistic scans that eliminate the need for intraoral photos for Invisalign® case submission[8]
  5. That are within comparable thresholds of photogrammetry[11], all in one single scan
- Simplify multiple treatment planning by using previous patient scans for all procedures within the treatment plan. No need to re-scan the patient and add chair time to your workflow.

Exceptional clinical outcomes: superior clinical accuracy

- Achieve predictable and repeatable first-time restoration fit[5] from single unit crowns to removable prosthetics, thanks to superior full-jaw accuracy compared to tested intraoral scanners[3] and scans that are within accuracy threshold of photogrammetry for full-arch implant restorations[4] – the highest standard for prosthetic planning captured in one single scan
- Provide comprehensive patient data to your lab at once, including multi-bite and articulation information, to enable the design of optimal restorations and appliances.

Elevated staff and patient experience

- Offer a quick and comfortable experience[9] for patients
- Increase patient engagement and understanding with a modern and customized experience based on patient-centric views of their oral health condition[10].

Current iTero Lumina™ scanner owners will receive the new software that includes restorative and diagnostic support capabilities via direct software update, following regulatory clearance in their countries.

Dr Karla Soto, dentist and Align® Faculty member, said: 'The iTero Lumina scanner excels in the traditionally challenging scans with long spans, like full arch implant restorations or even edentulous areas. The amount of data and tissue it can capture is outstanding, making what was once a challenge, an easy, fast and comfortable procedure for all.' CD

References available upon request.

ORDER NOW FOR DISCOUNTS

UP TO 15% OFF

Up to 15% discount on Dentsply Sirona & VDW Rotary and Reciprocating files.

Brands also included ProGlider, Pathfile, Wave One Gold Glider.

Purchase 15 packets to receive the maximum discount.

SCAN ME TO FIND OUT MORE

ORDER ONLINE

www.qedendo.com

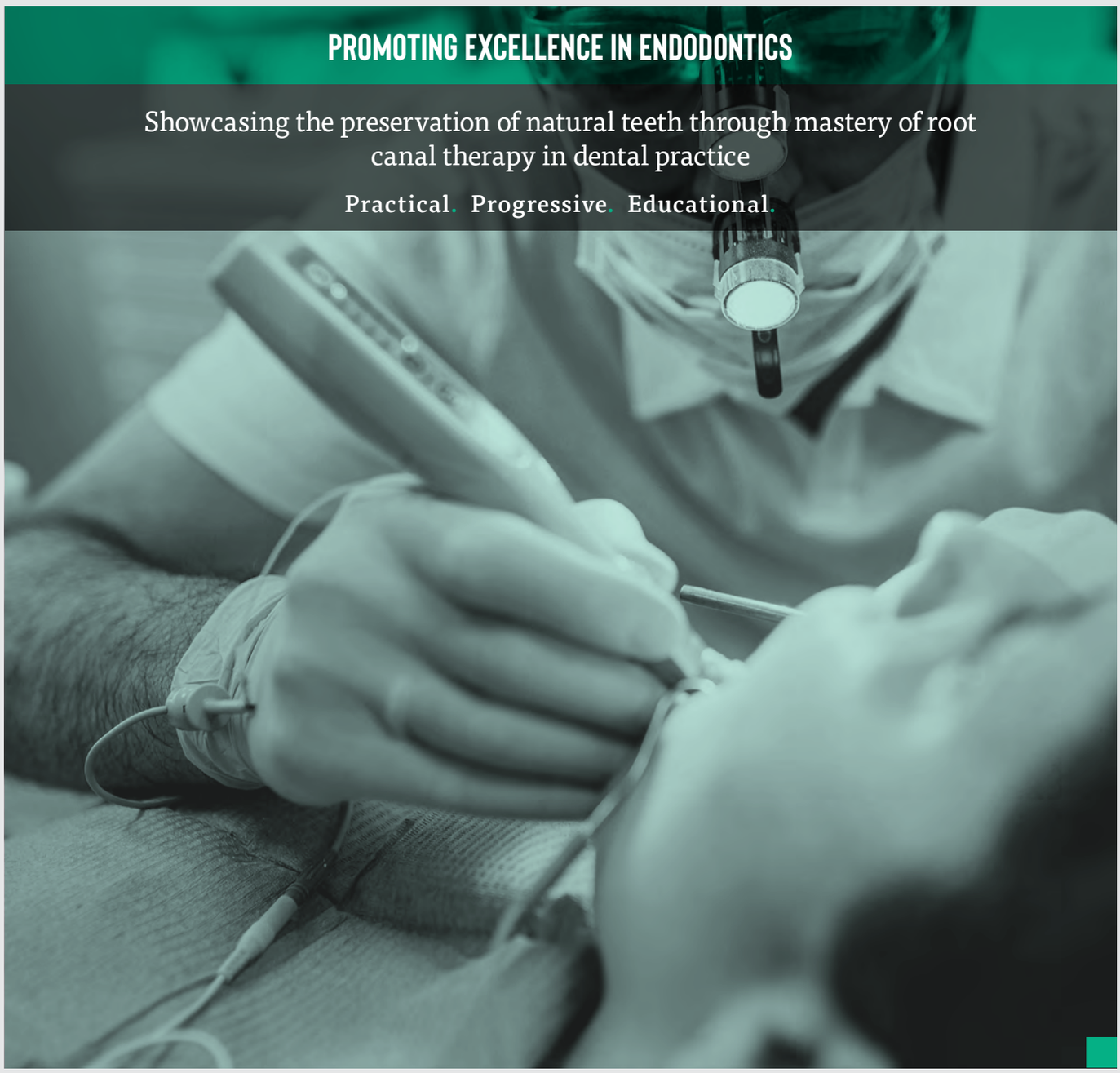
or CALL **01733 404 999**

QED Quality Endodontic Distributors Ltd

Limited availability on special offers.
For full terms and conditions see website www.qedendo.co.uk

ENDODONTICS

Access isn't just about drilling a hole – it's about designing the right entry for each tooth. Can you achieve straightline access while preserving dentine and maintaining structural integrity? One size does not fit all. Ignoring anatomy, restorations, or case complexity invites avoidable errors that can compromise treatment outcomes – John Barclay, p36



DR JOHN BARCLAY
BSC (HONS) BDS (HONS) DIP ENDO
John practises at Kandy Lodge Dental Practice in Wrexham and runs endodontic hands-on courses. For more details, visit endodonticcourses.com.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Endodontics

Educational aims and objectives:
To explore endodontic access: anatomy, depth and tools for success.

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

Access isn't just about drilling a hole – it's about designing the right entry for each tooth. Can you achieve straightline access while preserving dentine and maintaining structural integrity?

One size does not fit all. Ignoring anatomy, restorations, or case complexity invites avoidable errors that can compromise treatment outcomes.

Endodontic success starts with the right access. It dictates how effectively you can locate, clean and shape the canal system.

When access is planned and executed well, it allows for:

- Straightline entry for efficient instrumentation
- Thorough disinfection without unnecessary dentine removal
- Lower risk of procedural errors like perforations or missed canals.

However, when access is compromised – by poor angulation, over-preparation or missed anatomy – it increases the likelihood of failure. Many retreatments and iatrogenic mishaps stem from errors in access design rather than canal instrumentation.

Despite its critical role, access preparation is often rushed or overlooked, especially in time-sensitive clinical settings. This article will help you refine your approach, ensuring that every access cavity is precise, predictable and preserves structural integrity.

RE-EVALUATING YOUR ACCESS APPROACH: A CASE REFLECTION

Consider the three lower first molars in Figures 1a to 1c – they were all diagnosed with irreversible pulpitis (hypothetically all in patients the same age, say 35 years old).

As Table 1 highlights, although the diagnosis is identical, the clinical complexity and access challenges vary significantly.

There had been minimal restoration of the lower first molar shown in Figure 1a and the pulp chamber had a normal depth. Access was deemed straightforward and typical anatomical landmarks were intact.

The lower first molar shown in Figure 1b had a large occlusal amalgam restoration and potential pulp chamber shrinkage. While the landmarks were useable as references, there were thin marginal ridges.

While the lower first molar shown in Figure 1c had been heavily restored, with a reduced pulp chamber and possible pulp calcification. In addition, the cementoenamel junction (CEJ) landmarks were obscured, and the chamber depth was deemed unpredictable. This could mean multiple radiographs would be required.

Each of these cases requires immediate treatment, but their clinical complexity varies. Would you approach access the same way in all three? Probably not.

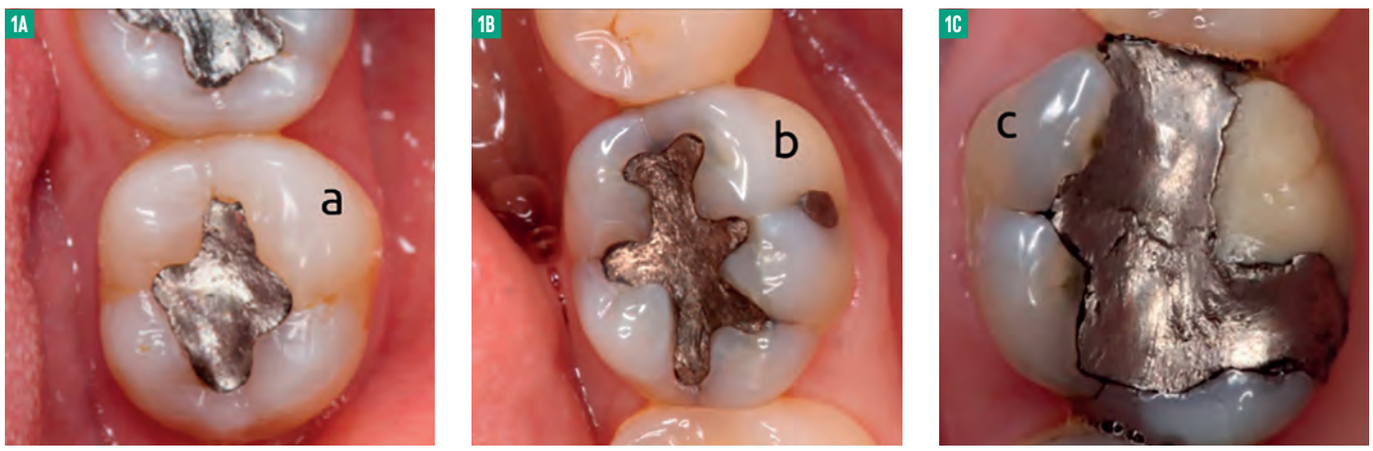
Before you drill: key questions to ask

1. What's my depth reference? If occlusal landmarks are unreliable due to restorations or wear, how will you estimate pulp chamber location?
2. How will I modify my access based on the case? Will you adjust for deep restorations, pulp calcifications, or atypical anatomy?
3. Can I complete this efficiently? If a patient is in pain and treatment needs to be swift, how do you balance speed with precision?
4. What's my back-up plan? If the pulp chamber is shallower or deeper than expected, or if canals aren't where you thought they'd be, what's your next move?

By critically evaluating your access approach before drilling, you minimise the risk of missed canals, perforations or excessive weakening of the tooth.

In the first part of a two-part series on endodontic access – the critical first step in endodontics – John Barclay explores anatomy, depth and tools for success

Endodontic access and beyond: part one



FIGURES 1A *to* **1C:** *Three lower first molars all diagnosed with irreversible pulpitis but different clinical complexity and access challenges*

LOCATING ACCESS: UNDERSTANDING THE BLACK DOTS

When you begin your access procedure and are faced with what often looks like nothing but 'black dots', it can be challenging to locate the exact number and position of the canal orifices, especially in complex cases.

Krasner and Rankow (2004) shed light on this challenge with their study of 500 pulp chambers, which identified key anatomical patterns that can guide clinicians in locating pulp chambers and root canal orifices.

Their research is a pivotal resource, highlighting two primary categories of anatomical relationships:

- Relationships of the pulp chamber to the clinical crown
- Relationships of orifices on the pulp-chamber floor.

Let's explore some of the key findings from Krasner and Rankow (2004) study.

Relationships of the pulp chamber to the clinical crown

- Law of centrality: the floor of the pulp chamber is always located in the centre of the tooth at the level of the cementoenamel junction (CEJ)
- Law of concentricity: the walls of the pulp chamber are always concentric to the external surface of the tooth at the CEJ
- Law of the CEJ: the CEJ is the most consistent and repeatable landmark for locating the pulp chamber position.

Relationships of orifices on the pulp-chamber floor:

- Law of symmetry: except for maxillary molars, the orifices of the canals are equidistant from a line drawn in a mesial-distal direction across the pulp-chamber floor
- Law of colour change: the pulp-chamber floor is always darker than the walls, helping to distinguish the floor from surrounding dentine
- Law of orifice location: the orifices of the root canals are located at the junction of the walls and the floor, at the angles formed by the floor-wall junction, and at the terminus of the root developmental fusion lines.

These anatomical laws, especially the law of the CEJ, provide a clear blueprint for locating the pulp chamber in any tooth, making it a reliable reference point when you begin your access preparation.

Figure	Diagnosis	Clinical complexity	Additional considerations
1A	Irreversible pulpitis without apical periodontitis	Minimal restoration, normal pulp chamber depth	Straightforward access, typical anatomical landmarks intact
1B	Irreversible pulpitis without apical periodontitis	Large occlusal amalgam restoration, potential pulp chamber shrinkage	Landmarks useable as references, but thin marginal ridges
1C	Irreversible pulpitis without apical periodontitis	Heavily restored, reduced pulp chamber and possible pulp calcification	CEJ landmarks obscured, chamber depth unpredictable, multiple radiographs may be required

TABLE 1: *Diagnosis and difference in clinical complexity and additional considerations*

THE CEMENTOENAMEL JUNCTION (CEJ): THE NORTH STAR OF ACCESS PREPARATION

Among all anatomical landmarks, the CEJ is the most reliable and consistent reference point for locating the pulp chamber.

Unlike occlusal landmarks – that can be altered by restorations, wear or attrition – the CEJ remains stable. While cusp tips or restoration margins can vary, the CEJ maintains a predictable relationship to pulp chamber depth, making it an essential guide for accurate access.

Why the CEJ matters in access preparation

- Restorative modifications? The CEJ stays the same – in cases where extensive restorations, caries, or coronal fractures obscure occlusal landmarks, the CEJ provides an objective and stable depth references
- Crowns and bridgework – even when artificial restorations mask natural tooth contours, the underlying CEJ position remains unchanged, allowing for accurate depth estimation
- Tooth wear and ageing – over time, attrition and erosion may alter occlusal surfaces, but the CEJ-pulp relationship remains predictable.

Using the CEJ for depth control

Studies suggest that, in most cases, the distance from the CEJ to the pulpal floor is consistent, allowing clinicians to estimate the depth of penetration safely (Figure 2; Table 2).

For reference, in Figures 3 and 4, the total shank length to the head of the handpiece is 8mm, but use the blue band/line, which is 6mm, as your depth reference to the floor of the pulp from an intact cusp tip.

This measurement is crucial for depth control, as it aligns closely with the total depth from the cusp tip to the pulpal floor.

2

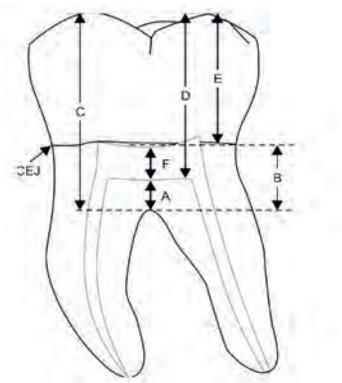


FIGURE 2: *Distance of pulp chamber from various anatomical landmarks*

Measurement (mm)	A	B	C	D	E	F
Mean	2.32 ± 0.47	3.80 ± 0.77	9.08 ± 1.03	6.83 ± 0.96	5.37 ± 0.79	1.48 ± 0.66
% CV	20.31%	20.33%	11.35%	14.16%	15.07%	44.61%

TABLE 2: *Measurements of mandibular molars in relation to pulp chamber (Lokade, Baheti and Chandak, 2011)*

Proper use ensures penetration is controlled, minimising unnecessary dentine removal and preventing the risk of perforation.

Understanding this relationship allows clinicians to anticipate when to stop drilling based on tactile feedback and radiographic planning. This aligns closely with the total depth from the cusp tip to the pulpal floor, reinforcing the need for careful depth control to avoid unnecessary dentine removal or perforation.

ARMAMENTARIUM

Essential tools for every access cavity include:

- 541 diamond bur – ideal for initial penetration and depth control (8mm). This bur is particularly useful when dealing with heavily restored teeth, as its cutting efficiency allows for precise entry through composite or crown materials. It also provides predictable depth control, minimising the risk of over-preparation or under-preparation when accessing the pulp chamber
- Endo-Z bur – refinement without overcutting
- DG16 explorer – essential for confirming canal orifices
- Magnification (loupes or microscope) – crucial for complex cases
- Ultrasonic tips – ideal for troughing calcified canals
- CBCT imaging (if needed) – when standard radiographs are insufficient.

The right armamentarium is crucial for efficient and predictable access cavity preparation. Incorrect tool selection can lead to over-preparation, missed canals or inadequate straightline access, all of which compromise treatment success.

THE KEY TO SUCCESSFUL ACCESS

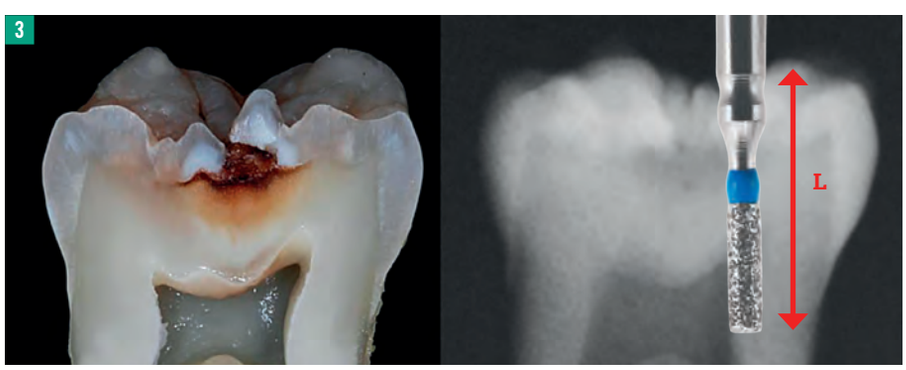
Mastering endodontic access requires more than technical skill – it demands preparation, anatomical knowledge and a structured approach.

The case reflection at the beginning of this article highlights how every tooth presents its own challenges, reinforcing the need for a thoughtful, case-by-case approach.

After reading this article, what will you change? The best clinicians refine their technique with every case – because in endodontics, every millimetre counts.

In part two of this series, we will delve into alternative access designs – such as TEC, CEC, Truss and Ninja access – before addressing how to approach weakened teeth. CD

3



4

FIGURES 3 *and* **4:** *You can feel the drop when the height of the pulp chamber is larger enough. You cannot feel the drop when the height of the chamber is shallow (L=6mm)*

KEY TAKEAWAYS

- Use the cementoenamel junction as your guide, particularly in heavily restored or worn teeth
- Customise access based on case complexity, adjusting for restorations, calcifications and variations in pulp chamber depth
- Employ magnification and digital imaging to enhance precision
- Select the right instruments for each step, from initial penetration to refinement.

REFERENCES

Krasner P, Rankow HJ (2004) Anatomy of the pulp-chamber floor. *J Endod* 30(1): 5-16

Lokade R, Baheti R, Chandak L (2011) Morphological measurements of anatomic landmarks in human mandibular molar pulp chambers – an in vivo study *J Kor Dent Sci* 4(1): 1-5

ARE YOU ON A QUEST FOR GOOD SURGICAL COURSES, ASKS TRYCARE

TRYCARE

For further information, visit **www.trycare.co.uk**, contact your local Trycare representative, email **events@trycare.co.uk** or call **01274 885540**.

SURGICAL COURSES FOR 2025

Trycare, in association with Dr Girish Bharadwaj from Quest Education, are delivering a range of surgical courses in 2025.

All the Quest courses have learning and development at the heart of their ethos, but understand that learning needs to be fun and rewarding professionally too. Feedback from previous delegates highlights Girish's knowledgeable, engaging and informative approach, plus the opportunity to ask questions at any time and not to leave without being certain about the answer.

IMPLANTOLOGY COURSE — EDINBURGH, STARTS SEPTEMBER 2025

The Quest Implantology Course is a three-part modular course, with each module lasting two days. It teaches delegates everything they need to know to start implementing simple implant treatment plans plus 39 hours of CPD!

Royal College of Surgeons of Edinburgh accredited and presented by Girish Bharadwaj, the course gives delegates knowledge of implantology including an overall perspective with an evidence-based approach; necessary surgical and restorative skills to implement simple treatment plans; an understanding of the challenges involved in the surgical and prosthetic phases of treatment; and an understanding of when to refer based upon their skill levels.

Completion of the course will enable participants to diagnose and carry out implant treatment planning; carry out initial risk assessment and consent the patient appropriately; insert and restore implants under supervision in a simulated environment; identify the complexity of individual cases and place implants in simple cases under supervision; and know when to refer for additional support.

Held in Edinburgh, the course fee is £7,500. To help enhance teamwork, one nurse or hygienist can attend Module 2 free of charge. Additional nurses can attend for £125 each.

IV SEDATION UPDATE COURSE — EDINBURGH, 6 JUNE 2025

NES CPDA Approved, this one-day course is designed as an update for dental professionals involved in the use of intravenous conscious sedation in general practice and public dental services.

After attending the course, delegates will be able to describe the indications for conscious sedation; define the patient assessment format and the selection process for patient cases in primary care; explain the anatomy, physiology and pharmacology in relation to conscious sedation; identify suitable drugs and appropriate methods of administration; demonstrate cannulation techniques; define the roles of the dental team including during a medical emergency; explain the management of medical emergencies and complications during sedation; and specify the consent and record keeping requirements for sedation.

It offers 6.5 hours of enhanced CPD (outcomes A & C), for just £395. Early bird before 30 April is £325!

ORAL SURGERY COURSE WITH HANDS-ON TRAINING — EDINBURGH, 27 JUNE 2025

NES CPDA Approved, this one-day course is designed to deliver the principles and practice of oral surgery for the GDP and those placing implants.

The aim of this course is to help delegates understand the essential principles of oral surgery including flap design, how to carry out routine surgical extractions, gain knowledge of the range of minor oral surgical procedures that can be carried out in the dental practice, and to learn about complications and ways to manage them.

It offers 6.5 hours of enhanced CPD (outcomes A & C), for just £395. Early bird before 30 April is £325!

Trycare are also running an Implant Supported Overdenture Course in Edinburgh on 7 November 2025, and a Single Tooth Immediate Loading Course in Edinburgh on 5 December 2025. CD

Zirkonzahn®

LEARN MORE ABOUT OUR DIGITAL WORKFLOW!

TALK WITH OUR EXPERTS AT THE FOLLOWING EVENTS:
ADI TEAM CONGRESS, 01 – 03/05/2025
DENTAL TECHNOLOGY SHOWCASE, 16 – 17/05/2025
OUR UPCOMING LECTURE TOURS – STAY TUNED FOR NEW DATES!

PRETTAU® 3 DISPERSIVE®

THE ZIRKONZAHN CULTURE

Mastering complex patient cases with intermediate control steps

Follow us on Facebook and Instagram!

MORE INFO ABOUT
PRETTAU® 3 DISPERSIVE®

r.zirkonzahn.com/bf0

Dr. med. dent. David McReynolds – Dublin Dental University Hospital, Ireland
MDT Alexander Lichtmannegger – Zirkonzahn Education Center Brunico, South Tyrol, Italy

PRETTAU® 3 DISPERSIVE®

COMPLETE RESTORATION OF UPPER AND LOWER JAW WITH ZIRCONIA SINGLE CROWNS

- *Digital articulation with the PlaneFinder® in the Zirkonzahn.Modifier software*
- *Design of a gingival guide in Zirkonzahn.Modifier for gingivectomy; minimally invasive tangential preparation by the dentist*
- *Fabrication of a temporary restoration made of Temp Premium Flexible resin for the final check of occlusion and to assess the aesthetics*
- *Production of the 28 single crowns in Prettau® 3 Dispersive® zirconia using the new M6 Teleskoper Blank Changer milling unit. Finalisation by applying Colour Liquid Prettau® Aquarell Intensive, ICE Stains 3D by Enrico Steger and Fresco Ceramics*

Zirkonzahn Worldwide – South Tyrol (Italy) – T +39 0474 066 680 – info@zirkonzahn.com – www.zirkonzahn.com

vVARDIS
SWITZERLAND

BIOMIMETIC DENTAL SCIENCE

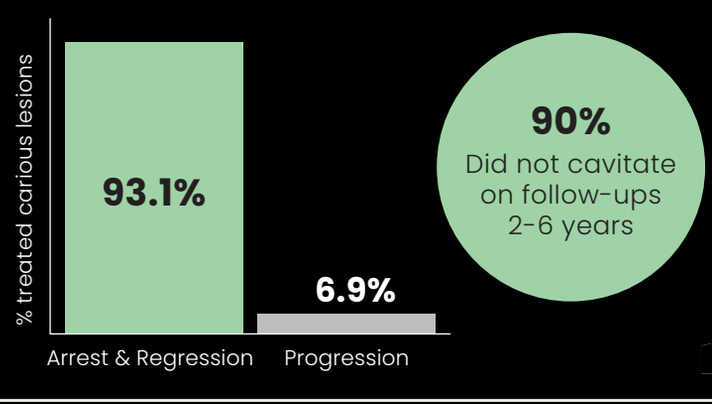
No More "Watch and Wait"

with Curodont™ Repair

- Arrests and reverses 93% of early caries, through enamel regeneration, up to the dentine[1]
- The only technology that works until the depth of the lesion[2,3]
- Significantly superior compared to fluoride varnish alone[4,5,6,7]
- Non-invasive, quick and pain-free application
- For all surfaces, including interproximal
- Suitable for all patients, including children
- Applicable also by dental hygienists and dental therapists

93% Clinical success rate: Arrest and regression of initial caries[1]

Changes at last follow up compared to baseline*



90%
Did not cavitate on follow-ups 2-6 years

Scan the QR code to visit vVARDIS Clinical Case Gallery

1. Godenzi D et al. J Am Dent Assoc. 2023:S0002-8177 (23)00416-6 | 2. Keeper et al. J Am Dent Assoc. 2023 Jul;154(7):580-591.e11 | 3. Kind L et al. J Dent Res 2017; 96:790-797
4. Bröseler F et al. Clin Oral Investig 2020;24:123-132 | 5. Welk A et al. Sci Rep 2020;10:6819 | 6. Alkilzy M et al. J Dent Res 2018;97:148-154 | 7. Doberdoli D et al. Sci Rep 2020;10:4195
*Long-term clinical study in public pediatric dental clinic in Chur, Switzerland

VVARDIS HIGHLIGHTS A MEDICAL APPROACH TO ENAMEL CARIES TREATMENT WITH A CASE COURTESY OF KATARZYNA OSTROWSKA, POLAND

GUIDED ENAMEL REGENERATION WITH CURODONT REPAIR

FIGURE 1A: *Before: post-orthodontic white spot lesion on the buccal surface of the maxillary left central incisor (21)*

FIGURE 1B: *After: significant reduction in size of the lesion seen at two-month follow up*

Caries treatment is often equated with the treatment of cavitated lesions that necessitate a restorative approach. However, the initial, non-cavitated stages of caries, when the lesions are still in the enamel, are often left untreated the so-called 'wait-and-watch' approach (Shah et al, 2023). This is because, on the one hand, there is lack of a tailored solution for such incipient lesions, and on the other, a restoration would lead to the sacrifice of a significant amount of healthy tooth structure.

The self-assembling peptide technology, incorporated in Curodont Repair, and working through 'Guided Enamel Regeneration' fills the gap between preventive and restorative strategies. It is based on a short, 'intelligent' peptide, P11-4, which self-assembles into a 3D biomimetic matrix within the subsurface body of initial carious lesions. This matrix serves as a platform for calcium and phosphate ions from patients' own saliva for in-depth *de novo* hydroxyapatite formation, mimicking the natural biomineralization process (Kind, 2017). Curodont Repair is a patented, fluoride-free formulation that is applied in a short in-office procedure by dentists or hygienists. In most cases, only one application is required for treating a lesion. The procedure is non-invasive, pain-free, and non-staining. The efficacy of Curodont Repair has been proven in several studies, including randomized controlled clinical trials. It enables not just a significantly superior rate of caries arrest than fluorides but in fact caries regression through in-depth enamel regeneration (Bröseler et al, 2020; Welk et al, 2020; Godenzi et al, 2023; Alkilzy et al, 2018).

CASE REPORT

Chief complaint: An 18-year-old male patient arrived with the chief complaint of multiple white discolorations on his front teeth, which led to embarrassment in social interactions. The patient gave a history of undergoing fixed orthodontic therapy during which he experienced difficulty in oral hygiene maintenance.
Intraoral examination: White discolourations of varying sizes were noted along the gingival margins of multiple maxillary and mandibular anterior teeth. These areas, which had rough surfaces and were chalky in appearance, were visible both when the surfaces were wet and dry. In particular, the maxillary left central incisor (21) presented a large white discolouration covering almost the entire cervical third of the labial surface of the crown (Figure 1a).
Diagnosis: Early-stage caries (ICDAS Score 2), as a result of improper oral hygiene maintenance during the fixed orthodontic therapy, were diagnosed, including for 21.
Treatment plan: Taking into account the oral findings, the patient's young age and his unsatisfactory experience with the past dental treatment, a decision was made to treat the lesions with Curodont Repair non-invasively and painlessly.
Treatment procedure: Thorough oral prophylaxis was performed to eliminate all deposits. Next, the affected teeth were cleaned with 2% sodium hypochlorite saturated in a cotton pellet. The teeth were then rinsed and dried. Next, 35% phosphoric acid was used to etch the lesion surfaces for 20 seconds, followed by rinsing. The treatment site was isolated using cotton rolls and dried gently.
One applicator of Curodont Repair was activated and the saturated sponge was squeezed well on the surface of the lesion. The patient was discharged 5 minutes later with routine oral hygiene instructions.
Follow up: Within 2 months of treatment, the early carious lesion demonstrated a reduction in size and appearance, indicating caries regression (Figure 1b). The patient remains under follow up. CD

References available upon request.

New program & New pricing

NOW AVAILABLE!

Premium or standard service repairs offering unparalleled customer care, quality & precision repairs on most makes & models including Acteon, Bien Air, Dentsply SIrona, Kavo, NSK, SciCan & W&H.

PREMIUM REPAIR		
Bearing Change	Starting at £64.99	6 month Warranty
Cartridge Change	Starting at £139.99	12 month Warranty

STANDARD REPAIR		
Bearing Change	Starting at £45.99	3month Warranty
Cartridge Change	Starting at £109.99	3month Warranty

WE OFFER

- Free pre-paid repair pack for dental handpieces
- No obligation, FREE quotation
- 24-hour turnaround on dental handpiece repairs*
- Warranties up to 12 months on parts replaced
- Guaranteed work on all repairs to the highest standard

*Subject to quotation approval and parts in stock

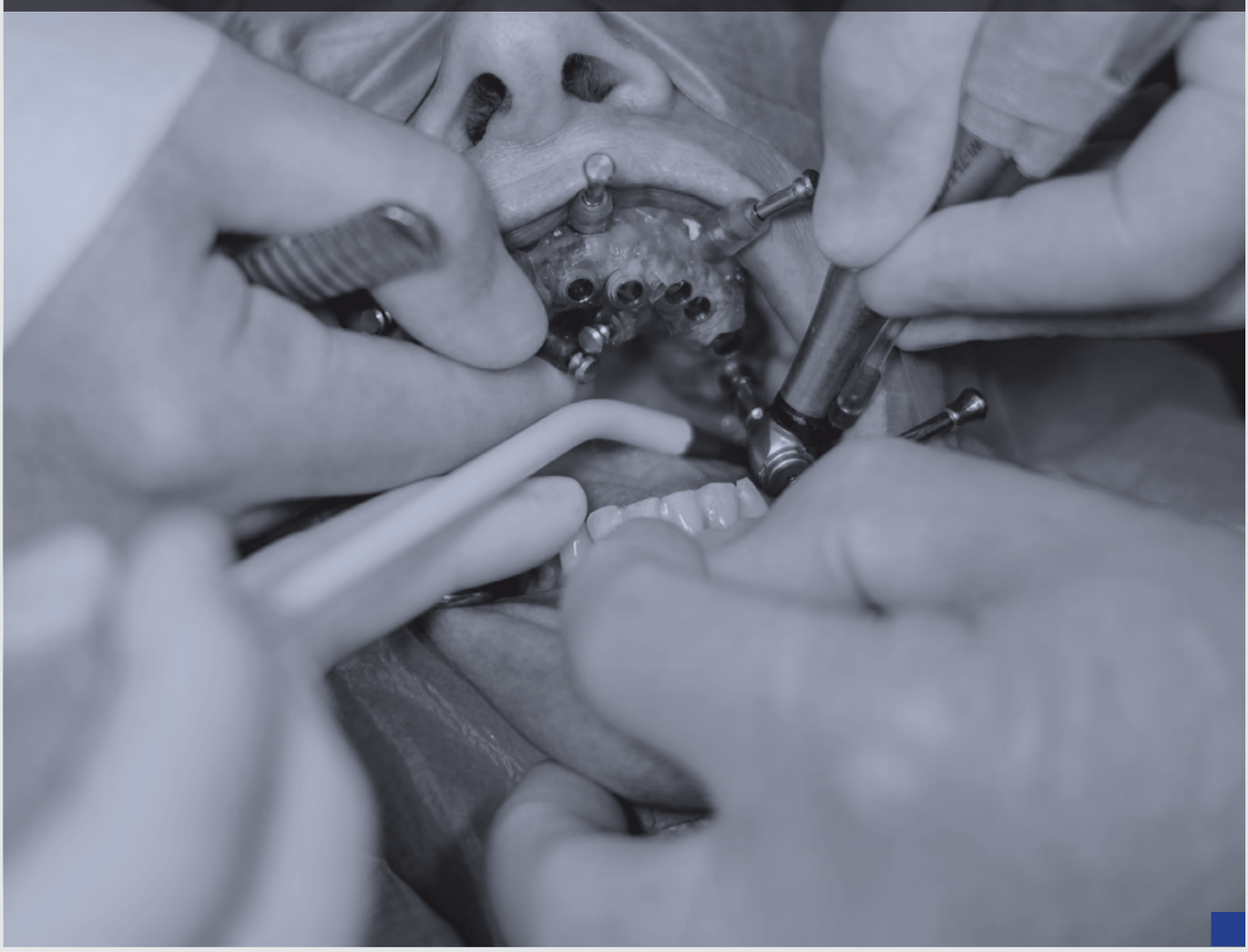
To request a freepost repair bag scan the QR code

OR email or call us at:
info@bainternational.com
01604 777700

Call: 01604 777700 Visit: bainternational.co.uk

ISO 13485 certified – Highest degree of repair standard professionalises the domain of medical device repair, we are committed to the safety and quality of your devices with a thoroughly documented quality management system in accordance with medical device directives.

IMPLANTDENTISTRY



PRESENTED BY

FMC CONNECTING DENTISTRY

Dental Industry Awards 2025

In association with the

BDIA

WEMBLEY STADIUM

CEREMONY
11 DECEMBER

DEADLINE
19 SEPTEMBER

REGISTRATION OPEN!

www.dentistry.co.uk/dental-industry-awards

SUPPORTED BY

B·PR

Full-arch treatment: combining precision, aesthetics and speed

Abdul Osman reflects on a recent case in which he treated a patient with a plan to provide fixed, implant-supported prostheses for her upper and lower arches

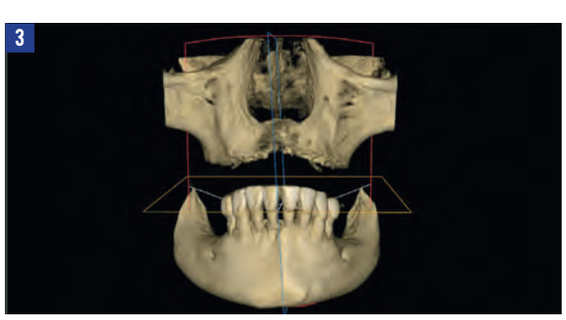
Patient expectations are rising. It is no longer sufficient to be able to offer implants as an alternative to dentures or conventional bridges. Nowadays, people with gaps or failing teeth want an option that satisfies their need for speed, function and aesthetics from day one of treatment. This is none more apparent than with edentulous patients who wish to walk out of the practice on the day of surgery with a full set of fixed, temporary teeth.

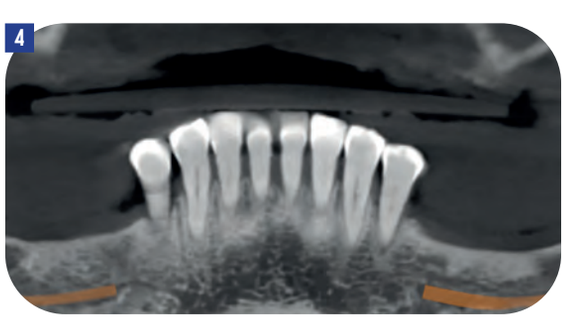
Procedures such as immediate implant placement, immediate loading and 'teeth-in-a-day' respond to such growing demand. As dentists, we are constantly seeking ways to provide implant treatment more precisely and efficiently. We strive to optimise chair time, reduce the number of surgery visits, minimise the risk of errors and complications and, above all, enhance the entire patient experience.

Along with mastering the art of teeth-in-a-day procedures and careful selection of the implants and associated systems, photogrammetry comes to the implant dentist's aid. The technology offers a transfer system capable of accurately calculating the position and orientation of implant interfaces.

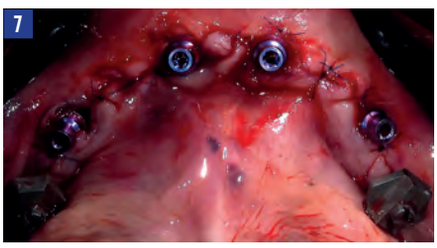
ABDUL OSMAN
DMD MSC PGDIP PGCERT MINSTLM
Abdul is the principal dentist and director at Face Dental and The Smile Centre in Coventry. He holds a postgraduate Certificate in Implantology, a postgraduate Diploma in Leadership and Management, and a master's degree in dental implants. He has also completed the Advanced Surgical Master Curriculum with Professor Istvan Urban. Abdul is a key opinion leader for several dental products including Bredent's Sky implants.

FIGURES 1 *and* **2:** *Initial situation – the patient had a loose upper denture that rubbed against the gums and several of her lower teeth were mobile*





FIGURES 3 *and* **4:** *A CT scan was taken*



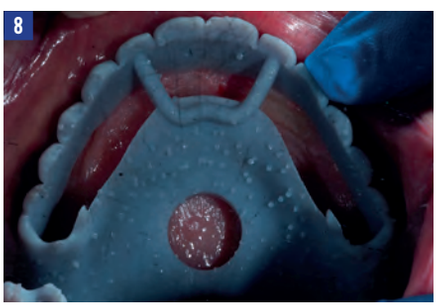
FIGURES 5 *to* **7:** *Preoperative scans were taken with an arch tracer, the lower teeth extracted, a flap raised and four Copasky implants placed*

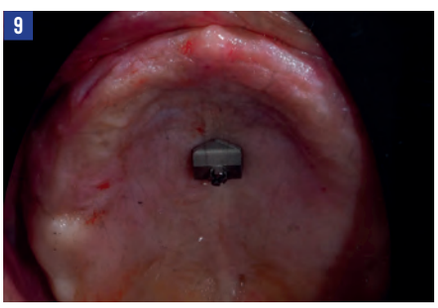
Extraoral scans enable the clinician to capture precise data about implants with photographs of the patient's dentition and other structures, to create an accurate three-dimensional model of the mouth.

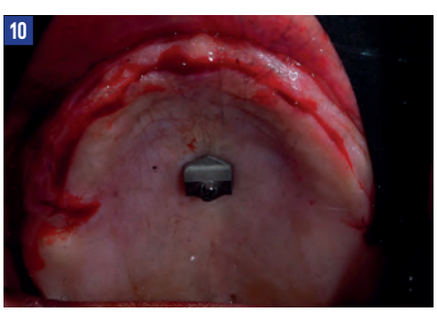
Integration of photogrammetry into the workflow for full-arch rehabilitation avoids the need for a verification jig, which is traditionally used to check that a master model is correct before fabrication of the framework.

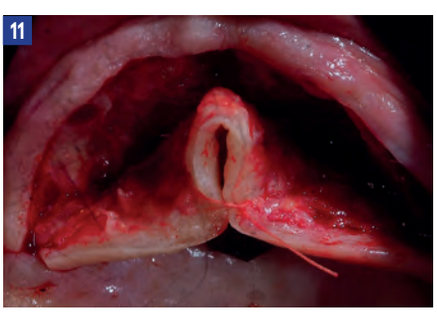
The following case describes full-arch upper and lower implant treatment with Bredent Medical Copasky implants, multi-unit abutments and abutment screws, and Bredent Medical Sky Fast & Fixed same-day-teeth therapy.

Treatment planning was aided with an Itero intraoral scanner and Tupel 3D photogrammetry extraoral scanner, for which Bredent Medical provides scan bodies. The case was supported by London-based dental laboratory Biterite, and lead technician Michael Joseph.









FIGURES 8 *to* **11:** *The edentulous upper arch was treated following the same method*

CASE STUDY

A 52-year-old female presented at Face Dental in Coventry. Her main complaint was that she had a loose upper denture that rubbed against the gums and several of her lower teeth were mobile (Figures 1 and 2).

She was a non-smoker, did not suffer from bruxism and had a clear medical history. Upon assessment, the lower premolars were found to be grade 2 mobile, and the lower anterior teeth were grade 1 mobile.

The patient had no temporomandibular joint clicking, and relatively good mouth opening and access. Occlusion was satisfactory and there were no contraindications for implant therapy.

The patient's ridge was one or two on the Cawood and Howell classification system for edentulous jaws. I therefore concluded that it would be adequate in height and width for implant placement.

TREATMENT OPTIONS

Alternatives to implants were initially discussed with the patient. The first option was to continue with the status quo. The second option would be to provide a better-fitting conventional upper denture and carry out periodontal treatment on the lower teeth. The patient's third option would be to remove the mobile lower teeth and transition to new upper and lower conventional dentures.

Treatments including dental implants were also considered. The patient was offered the choice of bridges supported by implants on locators, or Sky Fast & Fixed with Copasky implants to provide immediately loaded temporary bridges, transitioning to zirconia full-arch bridges at the end of treatment.

Since the patient's ridge was adequate, there was no need to consider pterygoid or zygomatic implants.

The patient expressed a strong preference for a fixed, full-arch option. The only choices available, therefore, were an implant-supported overdenture, or Sky Fast & Fixed with Copasky implants. She opted for the latter as she did not want to wait or suffer the embarrassment of having no fixed teeth during the treatment period. We also wanted to achieve an outcome with the best possible success rate.

INITIAL PLANNING AND IMAGING

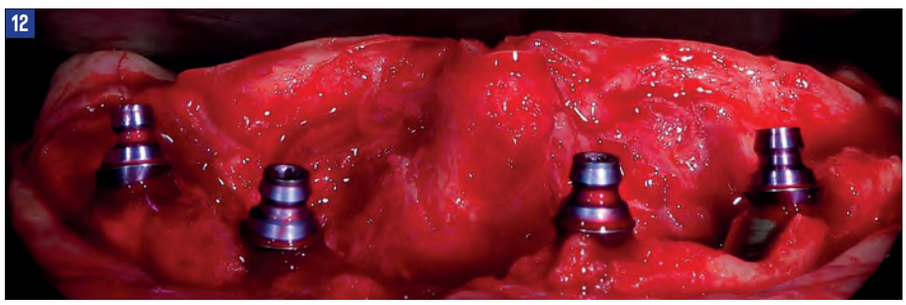
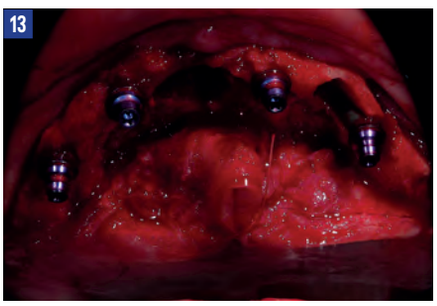
An intraoral scan was taken by our treatment coordinator, followed by extraoral photographs and a CT scan (Figures 3 and 4). They were sent to the laboratory for creation of the wax-up to enable me and the patient to visualise what her new implant-supported teeth would look like.

In partnership with the laboratory, several discussions then took place with the patient about what would best suit her in terms of teeth size, shape and colour.

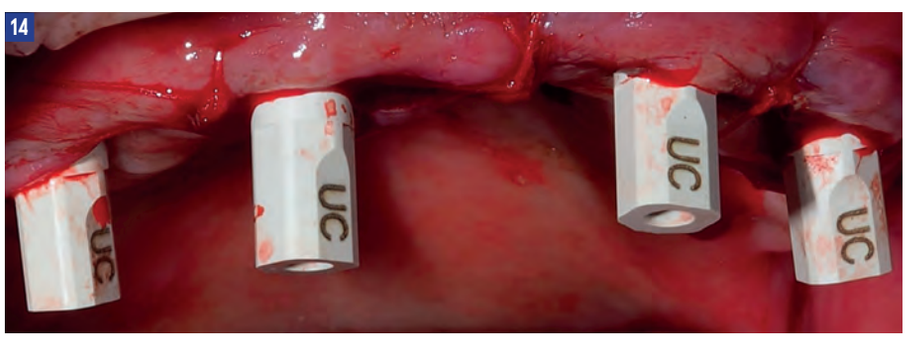
Before and after images were shown to the patient. Time and care were taken to assess the chosen position of her new teeth and check for adequate bone density and height in these areas. This was essential if we were to achieve a restoratively driven outcome, approaching the case with the endpoint in mind. Following the patient's consent for the chosen treatment plan, we proceeded to the surgical phase.

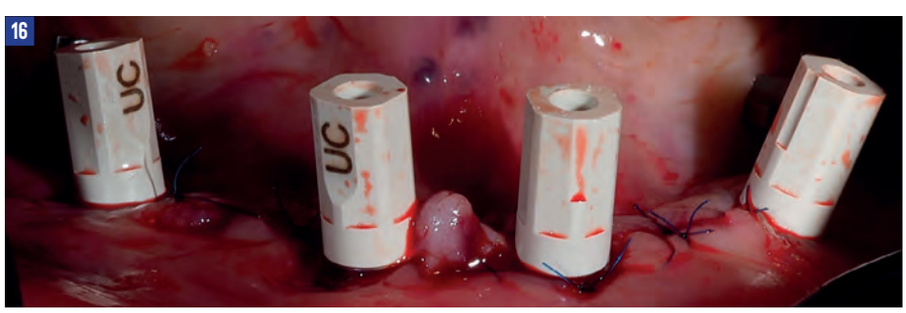
I selected Bredent Medical Copasky implants for this case as they have consistently provided me with high degrees of predictability and stability. The implant's backtaper helps prevent bone loss and the narrow multi-units facilitate a much more aesthetic-looking prosthesis.

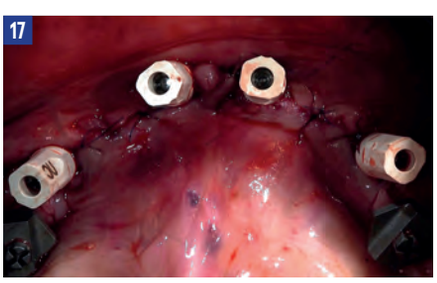
The implants and Sky Fast & Fixed system, combined with accurate and time-saving

FIGURES 12 *and* **13:** *Upper arch posterior placement was carried out with two 3.5mm by 10mm implants along the sinus wall and two 3.5mm by 12mm implants placed in the anterior zone*





FIGURES 14 *to* **17:** *Digital intraoral scans were taken with the Bredent Medical Sky Uni.cone scan bodies on each multi-unit abutment*

photogrammetry, have benefitted our practice in so many ways.

Adoption of photogrammetry in the planning of immediately loaded full-arch cases enables a fast, precise and efficient procedure, with good integration with other aspects of the digital workflow.

The patient can be offered the very latest in cost-effective, innovative dental technology with speed of treatment, reduced waiting time, minimised risk of errors and complications, and a more streamlined pathway of care.

SAME-DAY SURGERY

On the day of surgery, preoperative scans of the patient's mouth were taken with an arch tracer. The arch tracer allows the laboratory to stitch all scans together after they are produced.

The patient's lower mobile teeth were extracted, the arch was exposed, the flap raised and four Copasky implants placed subcrestally (Figures 5 to 7).

Two 3mm by 10mm implants were placed in the anterior zone. Two 3.5mm by 12mm units were used for the angled implants.

Placement was carried out with a restoratively driven approach, avoiding any critical anatomy. I used a prosthetic guide to show the final tooth position to help avoid excessive buccal placement.

The edentulous upper arch was then treated following the same method (Figures 8 to 11), with posterior placement of two 3.5mm by 10mm implants along the sinus wall and two 3.5mm by 12mm implants placed in the anterior zone. These needed to be longer to anchor into the floor of the nose (Figures 12 and 13).

All implants were placed at 45Ncm or higher, achieving a cumulative torque value of more than 200Ncm. My implant placement technique was freehand but in order to achieve high primary stability, particularly in the posterior maxilla, the osteotomy was under-prepared and a larger implant diameter was placed into each site.

Autogenous bone grafting, which in my experience gives the optimum healing response, was performed by harvesting material from the ridge reduction. After suturing with a simple interrupted technique, digital intraoral scans were taken with the Bredent Medical Sky Uni.cone scan bodies on each multi-unit abutment (Figures 14 to 17).

Photogrammetry scanning with the Tupel 3D machine was then carried out (Figure 18). The entire procedure is incredibly fast, taking around 15 seconds for the calibration and 15 to 20 seconds for scanning.

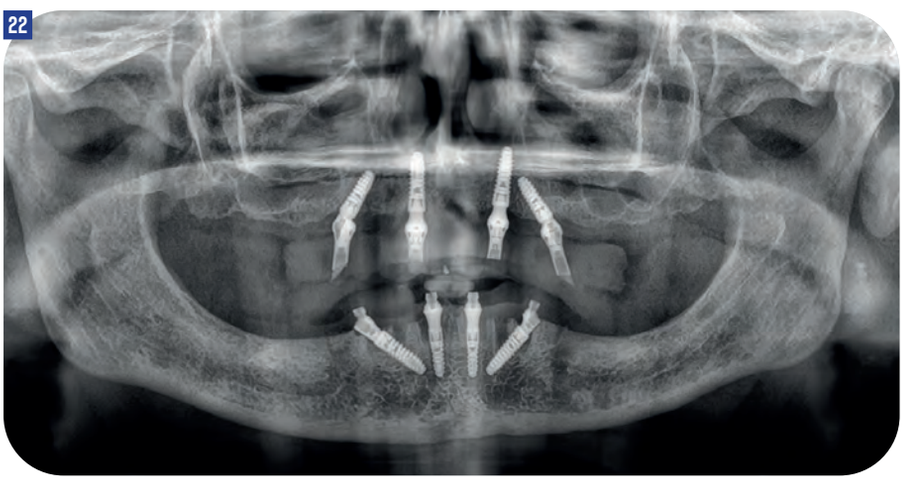
BRIDGE FABRICATION AND RESTORATION

The laboratory's preoperative wax-up was used to guide the location and design of the patient's new teeth.

The scans were imported into Exocad, and the two prostheses were designed. The intraoral scans were stitched together with the photogrammetry scans and the wax-up was

FIGURE 18: *Photogrammetry scanning was carried out*

FIGURES 19 *and* **20:** *The intraoral scans were stitched together with the photogrammetry scans and the wax-up was placed over them, allowing fabrication of the bridges*



FIGURES 21 *and* **22:** *The treatment was truly life changing; this was evident in the patient's smile after the temporary bridges were fitted*

placed over them, allowing fabrication of the fully fixed, immediately loaded bridges (Figures 19 and 20).

The precision offered by the photogrammetry system acts like a jig for the full-arch bridge and reduces the steps in the restorative process. In this case, the passivity of the bridges was perfect.

When the patient returned for the fitting later that day, the bridges were placed over the exposed multi-unit abutments and torqued down according to the manufacturer's recommendations. The bridges were then sealed with polytetrafluoroethylene (PTFE) and composite, and the patient was sent home to get accustomed to her new bite and interim prostheses.

For the temporary bridges, our lead technician, Michael Joseph, selected G-CAM, a polymethyl methacrylate (PMMA) base reinforced with graphene, which helps to minimise the risk of breakages. This softer material would also enable the patient to get used to the prostheses.

The patient will return to us two months after surgery, when I will be able to adjust the prostheses and alter the occlusion if necessary.

A total healing period of four months will be allowed, during which the patient's expectations for function and aesthetics will be carefully managed. Following the healing period, the temporary bridges will be replaced with metal and zirconia frameworks.

CASE REFLECTION

The treatment that was performed was truly life changing for this patient; this was evident in her eyes and her wide smile after we fitted the temporary bridges (Figures 21 and 22).

She was able to leave the practice with her fixed teeth and smile restored in the most efficient and cost-effective way possible. I was very pleased with the result as well.

The entire procedure went very smoothly, although I might consider offering sedation in the future, to further reduce any anxiety before treatment.

The only slight challenge of the case was the minimal bone in the upper left quadrant, in which I decided to place the implants following a palatal approach, with some thread exposure.

PLANNING FOR IMPLANT SUCCESS

For dental practitioners familiar with the art of immediate implants and bone grafting, full-arch teeth-in-a-day treatments are the next logical step of progression. Despite common myths, this doesn't have to be a daunting prospect, with the right training and mentoring. The key is to base our approach on a restoratively driven outcome, working back from the desired end result.

With meticulous planning, scanning and lab support, we can improve predictability and reduce the risk of errors and complications. Once the procedure has been mastered, the same approach can be applied each and every time.

In addition to our choice of products, techniques and technology, it is my belief that as a clinician, a healthy body and healthy mind are essential to complete the recipe for success. We are standing over patients for several hours during the surgical procedure and this requires core strength and stability. We also need to have a healthy state of mind to be in the best possible place to look after our patients at each step of the way. CD

CONTACT

dr-ahosman@hotmail.com

PRODUCTS USED

Copasky, Sky Fast & Fixed, Uni.cone Bredent Medical
Itero, Exocad Align Technology
3D photogrammetry scanner Tupel

bredent medical

360° IMPLANTOLOGY
–MORE THAN IMPLANTS–

SKY fast & fixed

Place your practice in pole position

with fast, affordable, life-changing teeth-in-a-day procedures

Accelerate patient satisfaction with optimised treatment times; drive improved clinical and commercial success.

Full-arch, immediate loading restorations with SKY fast & fixed

- rapid osseointegration
- unrivalled primary stability
- easy-to-adopt, standardised procedures
- reduced risk of errors and complications
- lateral and occlusal access to restoration

Your first SKY fast & fixed case is on us:

T: 01246 559599
E: service@bredent.co.uk
or scan the QR code

DENTAL INNOVATIONS
SINCE 1974

bredent uk

bredent UK Ltd · Tapton Park Innovation Centre · Brimington Road · Chesterfield S41 0TZ · T: +44 1246 559599 · www.bredent.co.uk · @: enquiries@bredent.co.uk

Introducing the NEW Tapered Pro Conical

Based on the proven CONELOG® connection and the Tapered Pro body, the **NEW Tapered Pro Conical** implant is designed for surgical efficiency with a best-in-class conical connection[1].

It delivers **streamlined clinical performance** with its two prosthetic platforms, enhancing restorative workflow efficiency and simplifying inventory management. This design offers clinical versatility for all indications, from single unit to full arch.

Unleash Precision with Tapered Pro Conical. Book a demo today!

www.theimplanthub.com/taperedproconical

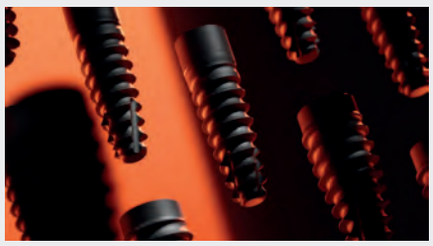
[1] Semper-Hogg, W et al. Analytical and experimental position stability of the abutment in different dental implant systems with a conical implant–abutment connection. Clinical Oral Investigation (2013) 17: 1017.

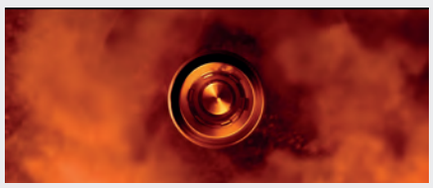
SPMP25003 REV A MAR 2025

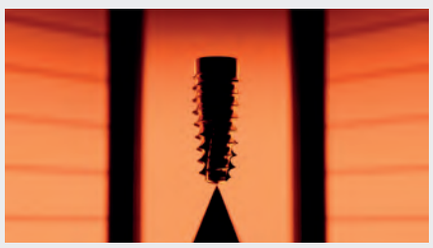
biohorizons camlog

BIOHORIZONS CAMLOG INTRODUCES THE NEW TAPERED PRO CONICAL

THE NEW BEST-IN-CLASS IS HERE







BIOHORIZONS CAMLOG

For more information on the innovative Tapered Pro Conical implant from BioHorizons Camlog, visit **theimplanthub.com/taperedproconical**.

An immediate implant protocol affords several advantages for patients and clinicians alike. Not only is treatment delivered faster, but bone volume can be better maintained. The literature[i] also supports immediacy as a viable alternative to a delayed implant placement approach.

To fully utilise the benefits available, it is vital to select an implant system designed to facilitate immediate placement.

THE NEW TAPERED PRO CONICAL

With a heritage of over three decades in implant dentistry, BioHorizons Camlog has launched a new product to optimise outcomes with immediate protocols. The Tapered Pro Conical implant provides the best of both worlds, leveraging the successful macro design of BioHorizons' Tapered Pro and the proven and patented CONELOG® connection. The result is a predictable implant solution designed for efficient immediate implant treatment with a best-in-class conical connection[ii]. Features include:

- Long conus conical connection to reduce micromovements
- 7.5º angulation that is proven to provide superior positional stability in comparison to other conical systems[ii]
- Deep, aggressive, buttress threads to ensure superior primary stability
- 6-cam connection for flexible abutment orientation and simple placement
- Platform-switching to preserve the crestal bone and aid aesthetic outcomes
- Flat implant shoulder to reduce vertical discrepancies by facilitating flat seating of restorative components
- Laser-Lok® surface for soft tissue attachment[iii iv] and preserve crestal bone
- End cutting, self-tapping, helical cutting flutes ensure controlled placement

Dr Duncan Park, principal of Green Square Dental & Implant Centre, said: 'The Tapered Pro Conical implant achieves excellent stability in a range of situations. The connection is based on the proven CONELOG® design, which has been available for over 13 years and is among the best available.[ii] The emergence profile lends itself to create a very nice curvature of the gingiva, improving the soft tissue adaptation for exceptional aesthetics and cleansability.

'The design and material of the implant as a titanium alloy also means it affords the strength required to ensure implant stability even when used in a smaller diameter, should the case demand it. In effect, it is the best of both companies – BioHorizons and Camlog.'

Dr Omal Iqbal, postgraduate supervisor with Bristol University, commented: 'The new Tapered Pro Conical implant from BioHorizons Camlog is based on the thread design and body shape of a previous generation of implant, which has proven to achieve high primary stability. This makes the new implant especially advantageous for immediate loading, though it is just as suitable for placement in healed sites too.

'Importantly, the new conical connection, adapted from the evidenced, long-term CONELOG® connection, achieves an enhanced emergence profile, which is crucial for soft tissue healing and aesthetics.'

STREAMLINED PERFORMANCE AND FLEXIBILITY

While designed to optimise outcomes using immediate protocols, the Tapered Pro Conical is suitable for delayed techniques as well. Further affording flexibility for the practitioner, the implant is available with a Pro Freehand Surgical Kit and a Pro Guided Surgery Kit. These facilitate guided and freehand surgery respectively, allowing the clinician to select the most appropriate approach for each individual case.

Furthermore, the Pro Guided Surgical kit has an innovative, patent-pending guide adapter to convert freehand drills to guided drills. This adaptability allows further intraoperative flexibility and surgical efficiency by offering freehand and guided surgery within a single kit solution. CD

References available upon request.

bti®
Biotechnology Institute

EXTRACTION KIT
KEXIM

UNIVERSAL · EASY TO USE · ATRAUMATIC

Compatible with more than 35 implant systems

Your solution for implant re-treatment

CONTACT

Cathy.padmore@bti-implant.co.uk // TEL.: +44 (0) 7795 682358

EDUARDO ANITUA
DDS MD PHD
Eduardo is in private practice at Eduardo Anitua Institute in Spain. He is also the director of the University Institute of Regenerative Medicine and Oral Implantology of the University of the Basque Country, and scientific director of BTI Biotechnology Institute. He is the president of the Eduardo Anitua Foundation for Biomedical Research.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Implant dentistry

Educational aims and objectives: To present a case with severe mandibular atrophy rehabilitated with an implant-supported fixed prosthesis on four extra-short (5.5mm length) narrow platform implants (3mm).

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

The loss of teeth generates bone resorption of the alveolar bone that is irremediably lost if treatments such as dental implants are not used to transmit tension to the residual bone (Mays, 2014; Bodic et al, 2005).

Resorption in the maxillary and mandibular alveolar bone is different, mainly due to the type of bone (greater bone density in the mandible), the presence of anatomical structures and the insertion of muscles and the transmission of forces from the perioral soft tissues (Bodic et al, 2005).

The amount of bone lost through the resorption process after tooth loss has been estimated at 21% at three months, 36% at six months and 44% at 12 months in patients without any alveolar preservation process and with removable prostheses (Carlsson and Persson, 1967; 1970).

Over 25 years, the alveolar ridge can lose up to 10-12mm in height in the mandible, which means superficialisation of the dental nerve in the posterior areas.

Generally, when considering implant placement in these areas with extreme horizontal atrophy, complex regenerative or surgical techniques must be used first. In the case of the mandible, there are fewer options than for maxillary height atrophy, with the possibility of using block grafts, guided bone regeneration or lateralisation of the dental nerve, the latter procedure being considered highly invasive and with a greater likelihood of subsequent neurological complications (Ra and Wo, 2021; Buser et al, 1990; Abayev and Juodzbalys, 2015).

In addition to all the procedures to achieve the recovery of lost bone volume, we have the option of short, extra-short and 'ultra-short' implants (with

FIGURES 1 *and* **2:** *Initial situation – the patient presented with a class III intermaxillary relationship*

FIGURES 3 *and* **4:** *Without the prosthesis we can see the large prosthetic space to be rehabilitated and the ulcerated epulis fissuratum in the lower arch*

Eduardo Anitua shares a minimally invasive rehabilitation of a mandible with extreme height atrophy using an implant-supported fixed prosthesis on four extra short, narrow platform implants

Treating severe mandibular atrophy

lengths of 4.5mm) (Tonetti et al, 2008; Esposito et al, 2010; Anitua et al, 2022; Tutak et al, 2013).

With them, we can often rehabilitate edentulous sectors lacking in bone height without regenerating the lost bone volume, with excellent results, presenting survival figures depending on the follow-up time and the length of the implants studied of between 86.7% and 100% for implants of up to 6mm with a follow-up of five years (Tutak et al, 2013; Barausse et al, 2023; Srinivasan et al, 2012; Rossi et al, 2016; Gulje et al, 2013; Esposito et al, 2014).

In cases of extreme atrophy, where there is a bone deficit in height and width, we can resort to the placement of short, narrow implants to resolve the case with minimal intervention.

Our study group has produced a prospective study in which these short, narrow implants were compared with conventional length and width implants and the results revealed that there was no failure of the short, narrow implant and no statistically significant differences in terms of marginal bone loss between the two groups (Antiua, Escuer and Alkhraisat, 2022).

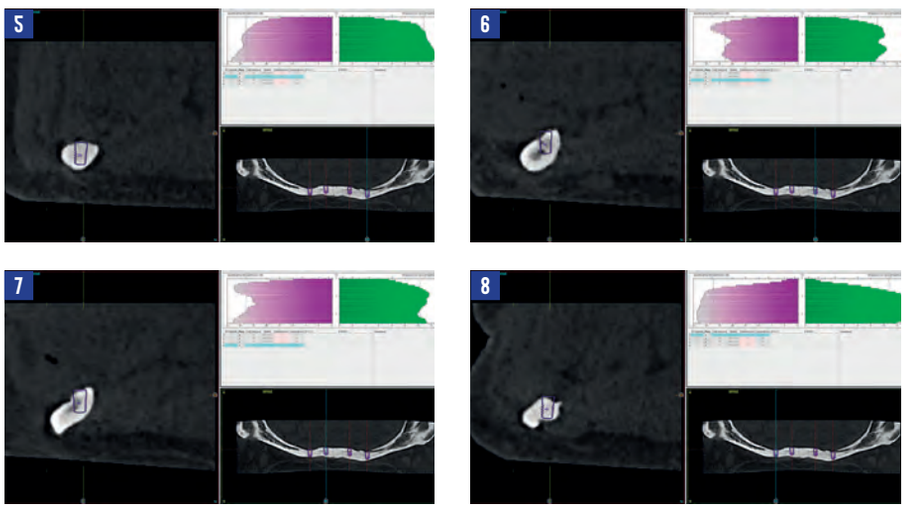
In the following case, we show a patient with severe mandibular atrophy who has been rehabilitated with an implant-supported fixed prosthesis on four extra-short (5.5mm length) narrow platform implants (3mm) and the follow-up of the case over three years where the implants, their loading behaviour and possible associated bone loss are monitored.

CASE REPORT

A 75-year-old female patient came to the dental surgery requesting an improvement in her prosthetic rehabilitation. At the time of the consultation, the patient was wearing two complete removable prostheses (upper and lower) that, in addition to having pronounced wear, did not have a correct maxillomandibular relationship.

The lower prosthesis, due to the low residual bone volume, was causing discomfort in the mucosa and an epulis fissuratum, as can be seen in the images, which caused constant pain during mastication (Figures 1 to 4).

The upper jaw will also be rehabilitated using dental implants with a fixed prosthesis



FIGURES 5 *to* **8:** *Planning slices of the mandibular cone beam showing the low residual bone volume available and the implants planned to be short and narrow. The planning shows extremely basal bone due to alveolar bone resorption. The implants will be placed respecting the lower cortex of the mandible. As can be seen, four implants of 3mm in diameter and 5.5mm in length are planned*

FIGURES 9 *and* **10:** *Waxing and fabrication of immediately loaded lower and removable upper prosthesis while integrating the maxillary implants, which due to low density and expansion techniques are not loaded at this time*

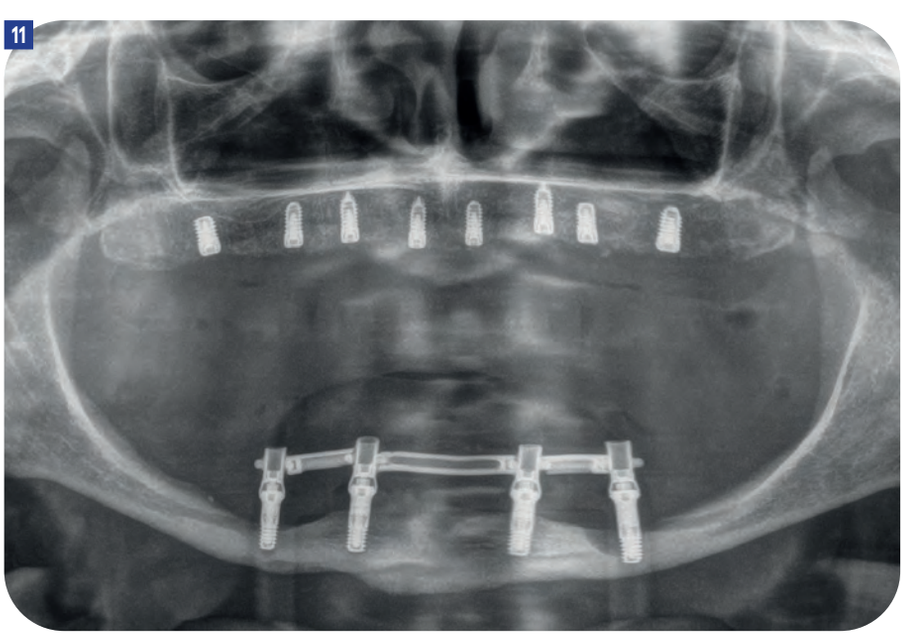


FIGURE 11: *Post-surgical X-ray with the newly positioned lower immediate load prosthesis. In the more distal implants, the proximity to the dental foramen is observed in order to reduce the distal overhangs*

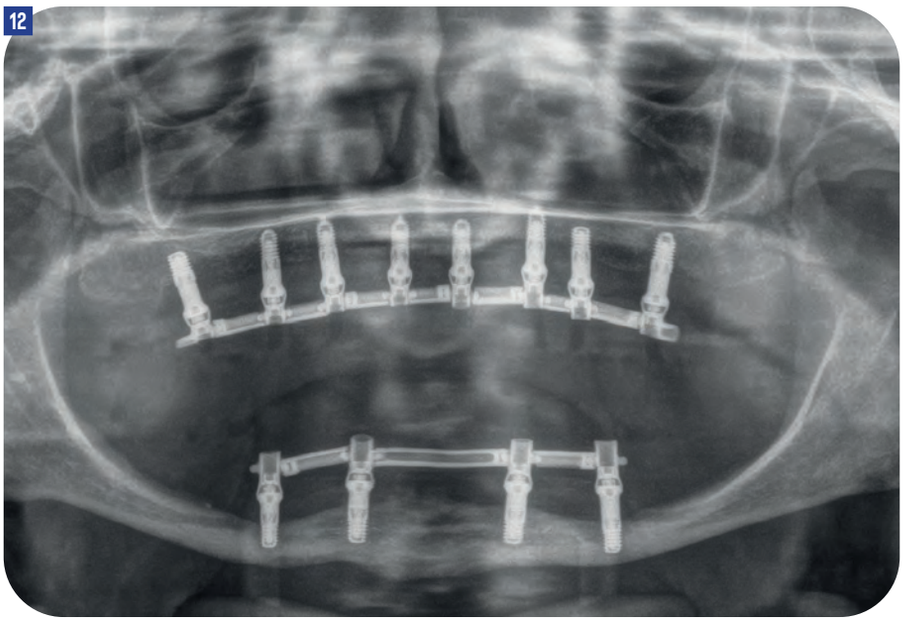
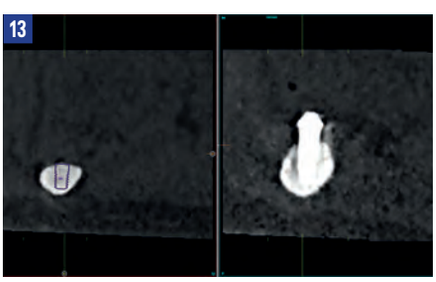
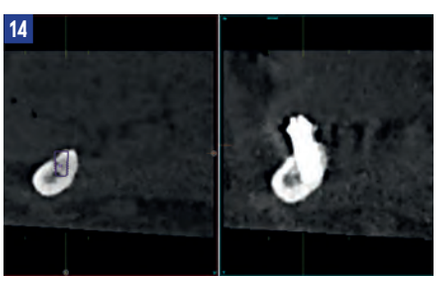
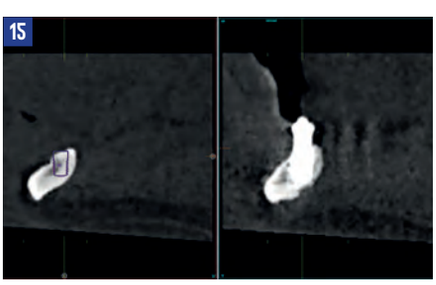
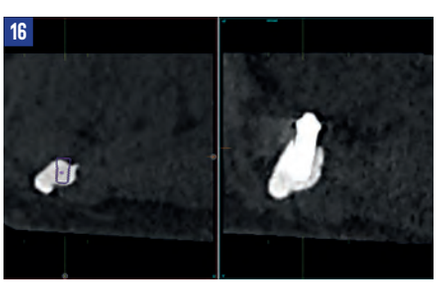


FIGURE 12: *Loading of the upper implants and prostheses with progressive therapeutic loading that will be left for two months until the definitive prostheses are made*









FIGURES 13 *to* **16:** *Comparisons before and after provisional loading for one year of residual mandibular bone. In the control sections when the definitive prosthesis was made, we observed bone stability in all the implants, which allows us to generate a small distal overhang in the definitive prosthesis*

FIGURES 17 *and* **18:** *Intraoral aspect of the finished definitive hybrid prostheses*

The wax-up is also used to obtain surgical guides

First phase

The first step to be able to approach this case with extreme atrophy will be to carry out a diagnostic cone beam. This will allow us to know the residual bone height and the presence and exact location of the anatomical structures of interest, which in the case of the mandible is mainly the dental nerve.

In this clinical case, we describe the approach to the mandible, but the upper jaw will also be rehabilitated using dental implants with a fixed prosthesis, ensuring that both arches benefit from this treatment.

In the mandibular planning sections of the CT scan, we can see that there is very little residual bone volume in both height and width, leaving practically the mandibular basal, with a dental nerve that is very close to the alveolar ridge and that emerges at the height of the second premolars approximately at their submucosal emergence.

Four implants of reduced diameter and length and with a narrow platform (3mm – 3.0 BTI implants) are therefore planned, the two most distal implants being placed as close as possible to the dental foramen, in order to generate the smallest possible distal overhang with the prosthesis (Figures 5 to 8).

A diagnostic wax-up is also made with the occlusal positions of all the teeth and the aesthetic changes we wish to make, such as restoring the patient's class intermaxillary relationship.

This wax-up is also used to obtain surgical guides that we can use during the insertion of the implants and from which we will make the immediate lower load prosthesis, which can be made quickly as we have all the pre-established parameters.

In this way, hours after surgery, the patient can have her fixed prosthesis screwed in.

The manufacture of this type of prosthesis with pre-formed bars provides versatility and speed, as well as the necessary strength to make it a fully functional prosthesis (Figures 9 to 11).

The upper implants are not loaded in this first phase as they are placed using expansion techniques in low-density bone, but a provisional prosthesis is made to generate the occlusion sought with the immediately loaded lower prosthesis.

19

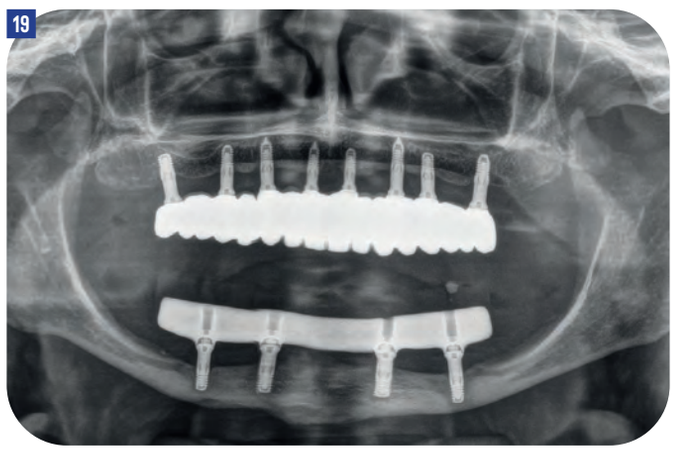


FIGURE 19: *X-ray of the placement of both prostheses. We can see how, in the lower arch, a small distal extension of the structure has been made*

Progressive implant loading

Six months later, the upper implants are loaded and a complete set of upper and lower therapeutic progressive load prostheses is generated (Figure 12).

These prostheses are left in place for a few months until the patient is comfortable with their new occlusion. Subsequently, the definitive prostheses are fabricated, following the occlusal scheme achieved in the provisional prosthesis.

Six months later, the final prosthesis is fitted, with the parameters obtained in the provisional prostheses during the time of use. In this way, the occlusion is perfectly accommodated and the desired aesthetics are transferred to the final prosthesis.

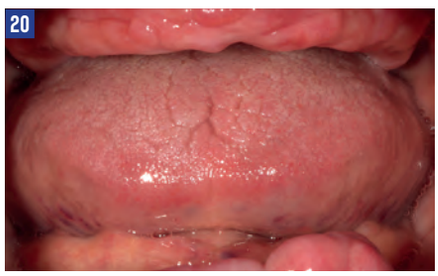
In this case, two small distal extensions are made in the mandible, as with the passage of time and the progressive loading of the implants, we have been able to observe (by means of a control cone beam) that the crestal bone around the implants is stable, which allows us to generate these small extensions (Figures 13 to 16).

The final prosthesis is a hybrid prosthesis, screw-retained using multiple transepithelials (Multi-Im, BTI), like all previous temporaries, finished in resin, with a CAD/CAM micro-milled structure (Figures 17 to 19).

The use of the transepithelials throughout the process has allowed us to preserve and even thicken the peri-implant soft tissues, removing the initial epulis fissuratum.

The patient continues to be followed up and three years later, we can observe the total stability of the treatment and the comparison between the beginning and the finished case, as well as a reinforcement of the mandibular body, as a result of the progressive loading of the implants and the gradual increase of the prosthesis overhang (Figures 22 to 26).

The appearance of extra-short and ultra-short implants has improved the approach to atrophic maxilla and mandible




FIGURES 20 *to* **23:** *Initial and final comparison of the baseline situation with and without prostheses and the maintenance of occlusion achieved after three years of follow-up*

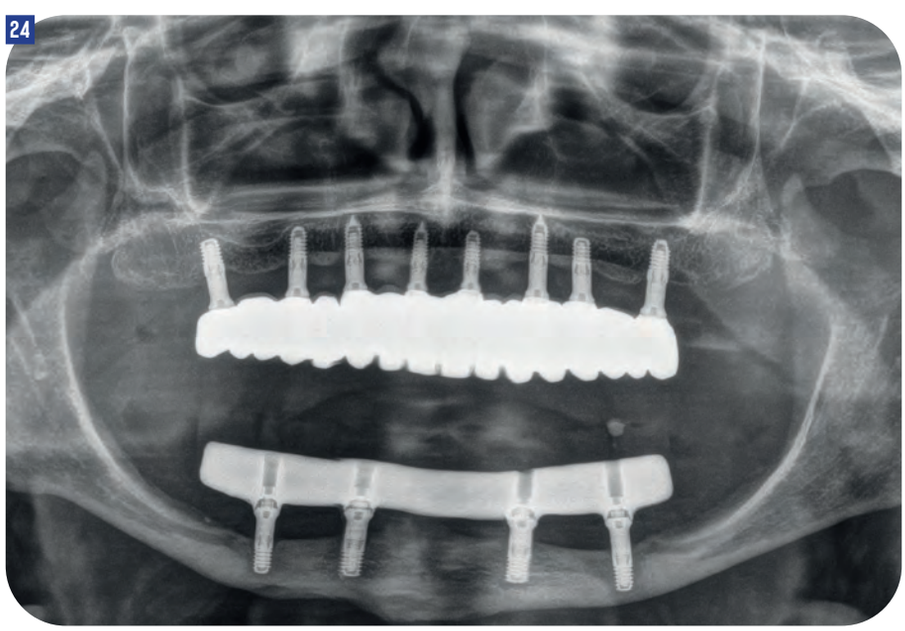


FIGURE 24: *Final X-ray after three years of loading the definitive prosthesis, showing the stability of the treatment without associated bone loss*

DISCUSSION

Implant dentistry, both in its surgical and prosthetic facets, is constantly evolving, with modifications being made to procedures in an attempt to achieve the best long-term results (Darcey and Eldridge, 2016).

Extreme atrophies such as those shown in this clinical case are difficult to resolve, but they are becoming increasingly frequent in the dental practice, either due to the failure of other previous implant treatments or due to the demand of longstanding edentulous patients who want to benefit from implants (Darcey and Eldridge, 2016; Di Gianfilippo et al, 2022; Torrella et al, 1998). The appearance of extra-short and ultra-short implants has improved the approach to atrophic maxilla and mandible, and at the time the case was treated, the shortest length implants available would be those that today we would consider almost of 'conventional' length (Darcey and Eldridge, 2016; Di Gianfilippo et al, 2022; Torrella et al, 1998; Moraschini, 2021).

Today, we know that a longer implant length in our rehabilitation does not bring biomechanical advantages and that the smaller the diameter and length of our implants, the more conservative we will be with the recipient bed. This is because we will have to carry out smaller and more conservative drilling.

In addition, we will have more possibilities in case we need a retreatment if one of our implants, in the course of time, should have to be replaced (Anitua, 2022; Anitua, Eguia and Alkhraisat, 2023; Anitua et al, 2010).

This 'less is more' approach is part of our philosophy today and that we implement in all our cases.

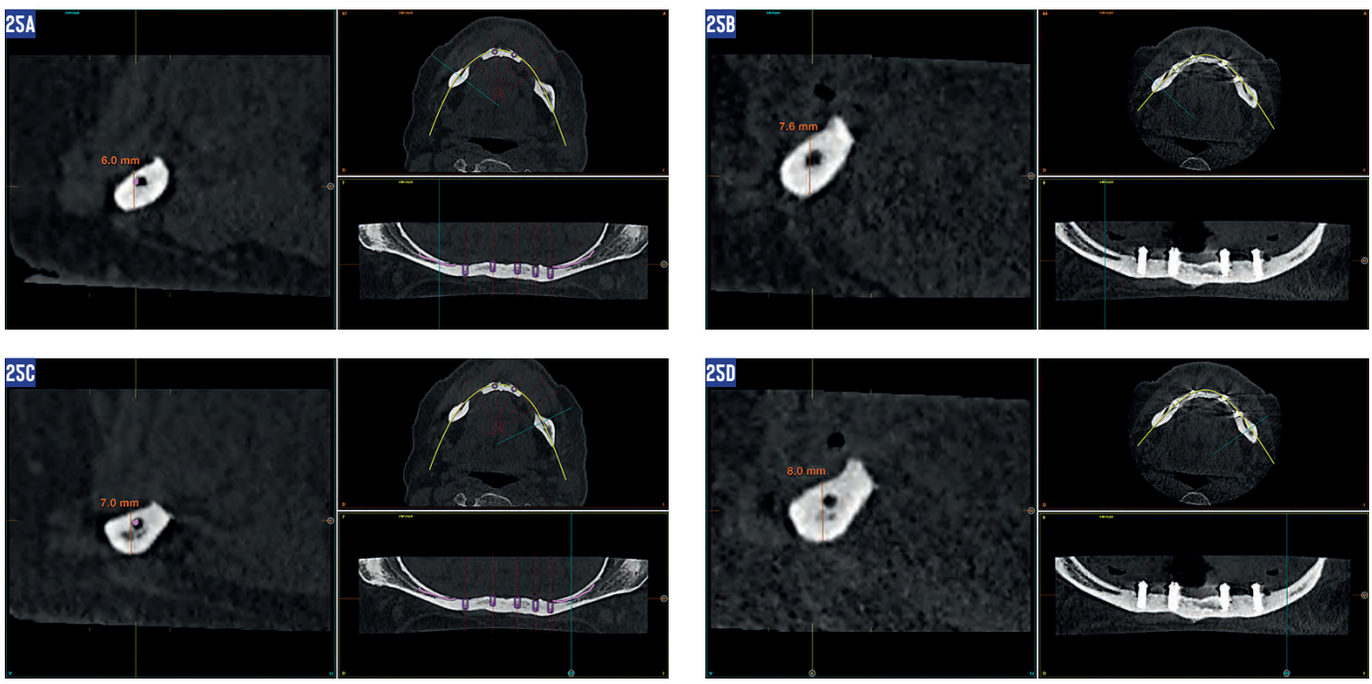
Dental implants – through the transmission of axial stress in the load – dissipate a load in the bone bed that can stimulate bone neoformation and densification of pre-existing bone, as has happened in this case. This has increased only by the load the residual bone volume around the implants, without performing any other bone augmentation procedure (Carter, Orr and Fyhrie, 1969; Carter, Blenman and Beaupti, 1988).

In the international literature, we find theoretical investigations using finite element models that demonstrate that mechanical loading can direct the development and differentiation of the tissues of the musculoskeletal system (Carter, Orr and Fyhrie, 1969; Carter, Blenman and Beaupti, 1988; Wong and Carter,1990; Goodman and Aspenberg, 1993).

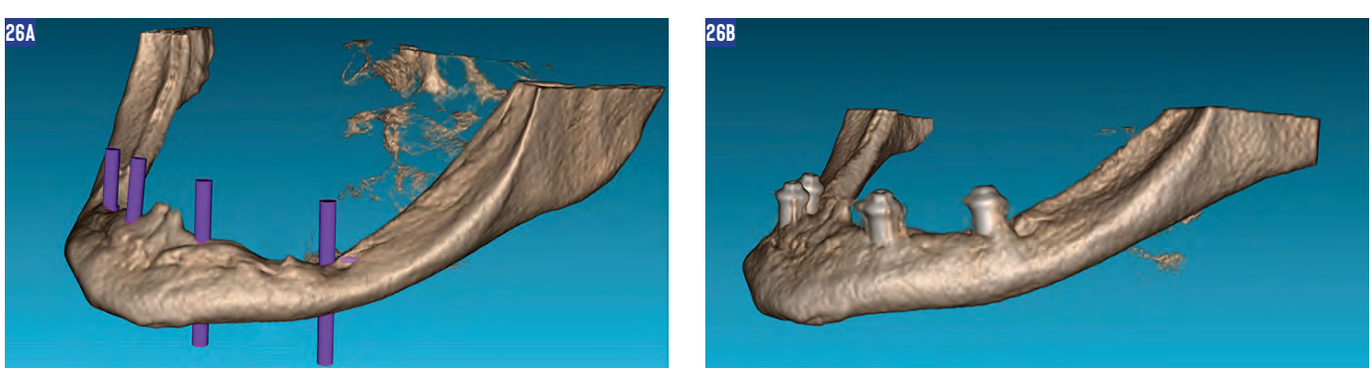
This fact is of vital importance in cases such as the one presented, since a follow-up of the implants and progressive loading through resin prostheses with simple structures such as those shown in the initial phase will transmit an adequate load to the implants. This generates an increase in the residual bone volume that allows us to make more reinforced metal structures in a second time and even slightly increase the distal overhang of the prosthesis without associated bone loss or risk of mandibular fracture (Romanos, Gupta and Eckert, 2012).

According to Chakraborty and colleagues (2022), the presence of a distal overhang in the prosthesis structure is the most influential design factor on bone stresses. The stresses received by the bone vary widely – from 28% to 32% – depending on its density and volume. Therefore, gradual monitored augmentation should be the option in these situations, to ensure the long-term success of the treatment and avoid complications due to bone stress.

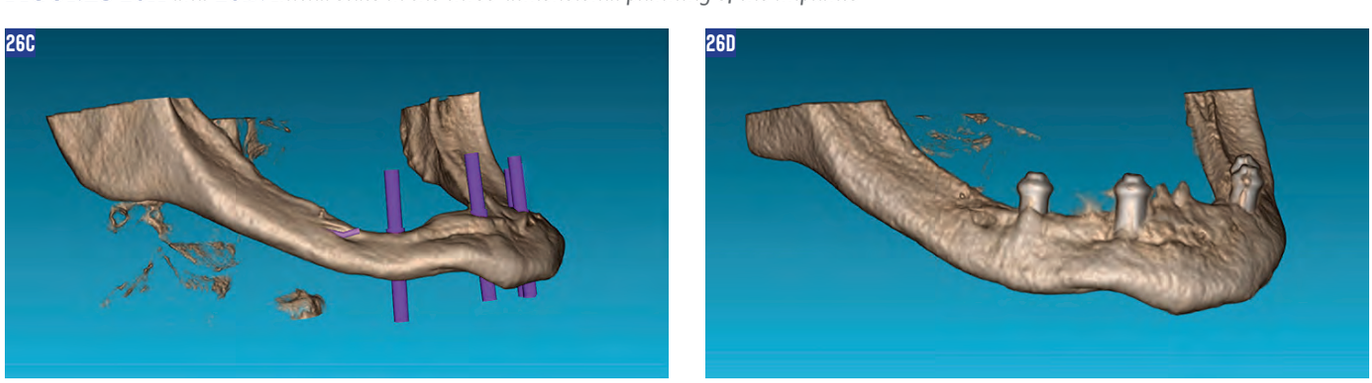
This 'less is more' approach is part of our philosophy



FIGURES 25A *to* **25D:** *Initial state of the mandible showing the measurement of the mandibular ramus thickness*



FIGURES 26A *and* **26B:** *Initial state in the three-dimensional planning of the implants*



FIGURES 26C *and* **26D:** *Bone growth in the three-dimensional reconstruction at the end of the follow-up*

CONCLUSION

The use of minimally invasive techniques for situations of high bone resorption, as shown in this jaw, is possible.

Short, narrow, reduced platform implants may be an excellent option as an alternative to regenerative procedures in order to place longer implants.

Progressive and controlled loading of the implants can produce stress-mediated bone growth, as we have shown in this case, without the need for other accessory techniques, achieving reinforcement of jaws that are at risk of fracture due to low residual bone volume. CD

REFERENCES

siobhan.hiscott@fmc.co.uk

University of Central Lancashire
UCLan

In collaboration with

straumann

botiss

SWALLOW

Prestige Dental
Technically first class

VSSACADEMY®
Unlock your potential

MSc Clinical Implantology

2 Years, Part-time | England & Wales | September 2025

- 15 days of supervised patient treatment with patients provided
- Hybrid part-time learning allows minimal disruption to your practice
- Hands-on surgical training on fresh cadaver heads
- Focus on contemporary practice, evidence-based principles and systems to ensure an optimal outcome for both the patient and practitioner

Course Overview

Module DX4016 Clinical Implantology Year 1

MSc course introduction followed by 13 days of lectures and hands-on tutorials

September: MSc Course Induction. Remote.

Sat. 11th Oct.: Treatment planning and case selection. Face to face contact day with hands-on workshops.

Sat. 1st Nov.: Basic sciences for Implant dentistry. End of Module Assessment. Pre-recorded lectures; live webinar discussions.

Sat. 15th Nov.: Implant Design. Pre-recorded lectures; live webinar discussions. End of Module Assessment.

Sat. 6th Dec.: Surgical skills for Implant dentistry. Face to face contact day with hands-on workshops.

Sat. 10th Jan.: Occlusion. Pre-recorded lectures; live webinar discussions. End of Module Assessment.

Sat. 24th Feb.: Restoring Implants. Pre-recorded lectures; face to face contact day with hands-on workshops.

Sat. 14th Mar.: Digital Workflow in Implant Dentistry. Pre-recorded lectures; face to face contact day with hands-on workshops.

Sat. 11th Apr.: Bone Defects. Pre-recorded lectures; live webinar discussions. End of module assessment.

Sat. 25th Apr.: Complications and their management & revision. Pre-recorded lectures; live webinar discussions. End of Module Assessment.

27th Apr. - 4th May: Formative Written Exam. Online using Maxinity.

Sat. 16th May: Cadaver course. Face to face contact day with hands-on surgical skills workshops. West Midlands Surgical Training Centre Coventry.

24th May: Case Report Presentations covering case selection & treatment planning – each delegate to present one case.

2nd - 3rd June: End of Year Exam. Written Exam and Unseen Case oral presentation.

CBCT Masterclass: 2 days, consecutive to be completed before Feb. 28th 2025. Choose from a selection of dates.

Module DX4017 Utilising the evidence base – completed online

Module DX4016 End of year Assessment

Complete 5 Clinical days - supervised clinical practice
You will assess and plan appropriate treatment for patients. Includes: case assessment and treatment planning, including use of radiographic stents and CBCT.

Module DX4026 Clinical Implantology Year 2

Complete 10 Clinical days - supervised clinical practice. Includes: case consultation, implant placement, GBR procedures, restoration, follow up.

Module DX4027 Research Strategy. Prepare and submit a 8,000-word clinically orientated research project, which may take the form of a mini systematic review.

Final examinations.

PLEASE NOTE that all webinars are preceded by recorded lectures and long questions for discussion.

courses@vssacademy.co.uk | 020 8012 8400 | vssacademy.co.uk

PRIVATE

DENTISTRY AWARDS 2025

GROSVENOR HOUSE HOTEL, LONDON

REGISTRATION OPEN!

WWW.DENTISTRY.CO.UK/AWARDS

ENTRY DEADLINE

12 SEPTEMBER 2025

CEREMONY

21 NOVEMBER 2025

WITH THANKS TO OUR SPONSORS

align
Transforming smiles, changing lives.
apollo
AVANT GARDE DENTISTRY
BARCLAYS
Belmont
BLACK SWAN TAX ADVISERS
Bremadent Dental Laboratory
DIGIMAX DENTAL clinics
Dentistry Compliance
ivoclar
KENT.
portman dentex
Practiceplan The business of dentistry
RPADENTAL
SprintRay
WESLEYAN

ORALHEALTH

WILLIE FP VAN HEERDEN
Willie is Professor emeritus at the University of Pretoria, South Africa.

LIAM ROBINSON
Liam works at the school of dentistry, department of oral and maxillofacial pathology at the University of Pretoria, South Africa.

ANDRE VAN ZYL
Andre is in private practice in Hermanus, South Africa.

WYNAND DREYER
Wynand is Professor emeritus of oral medicine and periodontics at Stellenbosch University.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Oral health

Educational aims and objectives:
To discuss pigmented oral lesions.

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

Oral pigmentation is a commonly seen phenomenon and can be due to exogenous implantation of pigmented material such as amalgam (iatrogenic trauma), or endogenous pigmentation due to an increase in melanocytes and/or melanin deposition.

Pigmentation may also be due to oral manifestations of systemic conditions, malignancies, drugs or due to physiological changes (Sreeja et al, 2015; Lambertini et al, 2018; Tavares et al, 2018; Gondak et al, 2012).

Some authors recommend that all oral pigmented lesions should be regarded as oral melanoma until proven otherwise (O'Hana et al, 2017).

Pigmentation or colour of the normal oral mucosa varies from shades of pink to red, depending on various factors such as keratinisation, melanocytes and melanin deposition, blood vessels and the nature/composition of the submucosal tissues.

Excessive melanin deposition may be due to underlying physiological or pathological reasons and may be found as single, multiple or diffuse lesions (Aguirre, Alawi and Tapia, 2021). Haemosiderin pigment linked to previous episodes of haemorrhage is another cause of endogenous pigmentation.

Pigmentation of the oral mucosa may vary from brown, black, blue, or grey depending on the underlying causes. Superficial lesions of melanin may be brown, with deeper lesions appearing dark blue or black (Gondak et al, 2012).

This article cannot deal with a topic as complex as oral pigmentation in detail, and we will therefore approach this through providing a clinical guide to oral pigmentation.

Oral pigmented lesions are easy to identify and although often difficult to diagnose, should never be ignored.

Pigmented oral lesions are associated with a wide range of conditions, and to achieve a logical approach to the management of this group of lesions, it is important to understand the possible reasons for lesion occurrence.

A brief description will be provided of the most common oral pigmented lesions.

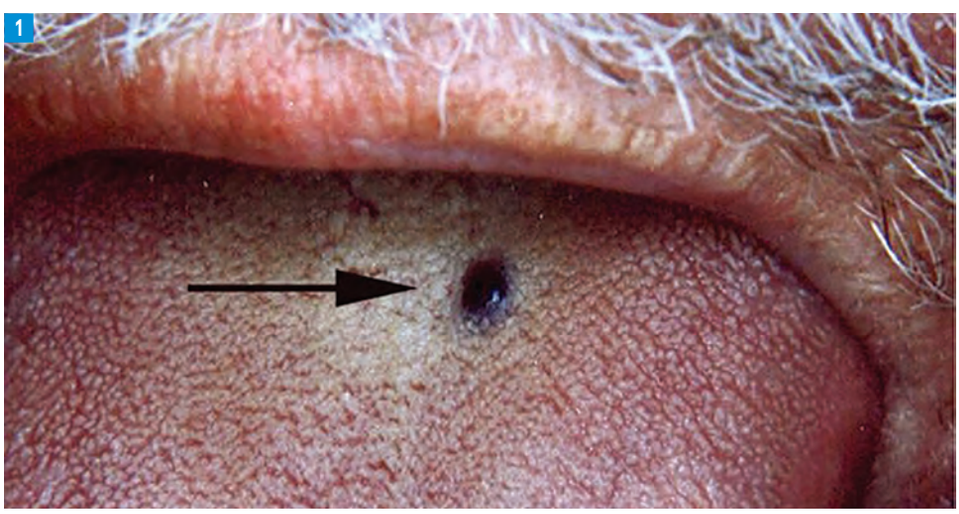


FIGURE 1: *Early melanoma on the tongue dorsum*

Willie van Heerden, Liam Robinson, Andre W van Zyl and Wynand Dreyer
present a clinical guide to pigmented oral lesions

Pigmented oral lesions

ENDOGENOUS PIGMENTATION: LOCALISED LESIONS

Malignant melanoma

The most important pigmented lesion is malignant melanoma. In contrast to melanoma of the skin that is UV-related, the aetiology of mucosal melanoma is still unknown. Evaluation of the depth of infiltration in all melanomas is important to predict the prognosis.

Early detection is crucial in the outcome of melanomas. Mucosal melanomas start as small pigmented, painless tumours (Figure 1). Patients with larger lesions (Figure 2), frequently present with metastatic disease. Melanoma may also present without clear pigmentation (Figure 3).

The most commonly affected oral sites are the palate and maxillary gingiva, although it may be found anywhere in the oral cavity.

Most oral melanomas arise de novo but almost 30% are preceded by oral pigmentations of several months or years in duration. This obviously has important management implications (Meleti et al, 2008).

Oral melanotic macule

Oral melanotic macules are relatively common lesions characterised as well-defined lesions usually found on the lip, gingiva, buccal mucosa, or palate. They are typically less than 6mm in diameter and do not increase in size (Figure 4).

These lesions are asymptomatic and result from an increase in melanin production. No treatment is necessary, but a biopsy is often indicated to confirm the diagnosis and rule out an early mucosal melanoma.

Pigmented nevus

Pigmented nevus are benign tumours of melanocytes and are rare in the oral cavity. The palate, buccal mucosa and lips are most affected. Different clinical types of oral nevus are found on the skin, although the blue nevus is more commonly found in the oral cavity compared to the skin (Figure 5).

There is no proof that oral nevus are markers of the development of malignant melanoma, but they should be biopsied as it is difficult to distinguish them clinically from an early melanoma.

The blue nevus is more commonly found in the oral cavity compared to the skin

FIGURE 2: *Advanced mucosal melanoma of the gingiva*

FIGURE 3: *Oral melanoma without clear pigmentation*

FIGURE 4: *Oral melanotic macule on border of soft/hard palate. The oral melanotic macule is normally a brown to black discreet pigmentation and found in descending order of frequency on lips, gingiva, palate, and the buccal mucosa. This must be biopsied to rule out melanoma*

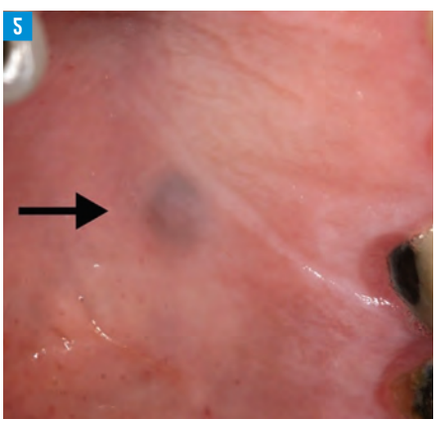


FIGURE 5: *Blue nevus on the palate*

FIGURE 6: *Symmetrical pigmentation in a patient with physiological pigmentation*

FIGURE 7: *Patient with lichen planus with post-inflammatory pigmentation*

FIGURE 8: *Pigmentation on the tongue in a patient with Addison's disease*

FIGURE 9: *Pigmented lesions on the lower lip following minocycline use*

DIFFUSE LESIONS

Physiologic pigmentation

Physiologic pigmentation is more frequently observed in dark skin populations and is characterised by diffuse and symmetrical pigmentations (Figure 6). The gingiva, buccal mucosa and tongue are the most frequently involved sites.

No treatment is required, and the diagnosis can be made on clinical grounds. Treatment options for aesthetic reasons are available.

Post-inflammatory pigmentation

This is also referred to as pigment incontinence. This is frequently seen in chronic inflammatory conditions such as lichen planus. It is caused by melanin pigment that is displaced due to basal cell degeneration as seen in lichen planus (Figure 7).

This pigment is phagocytosed in the lamina propria. It is more frequently seen in dark skinned individuals. No treatment is necessary.

Addison's disease

This is caused by bilateral destruction of the adrenal cortices leading to increased production of adrenocorticotropic hormone (ACTH), secondary to a decrease in cortisol secretion.

Patients present with bronzing of the skin and oral pigmentations involving the cheek, tongue and gingiva (Figure 8).

Drug associated pigmentation

Several drugs have been implicated, including drugs for malaria prophylaxis, azidothymidine (AZT) used for HIV/AIDS patients and minocycline used for acne.

A good clinical history will facilitate the diagnosis. The pigmentation is reversible (Figure 9).

EXOGENOUS PIGMENTATION

Amalgam tattoo

The cause of amalgam displacement in oral soft tissues may be iatrogenic or traumatic. A detailed clinical examination and history is important to confirm such a diagnosis.

Amalgam tattoos can be solitary or multifocal and may have a grey, blue or black appearance. The gingiva and alveolar mucosa are the most common sites involved. A radiograph should be taken to confirm the diagnosis (Figure 10).

Unfortunately, not all amalgam tattoos show localised radiopacities (Figure 11). Biopsy is then indicated to rule out oral melanoma.

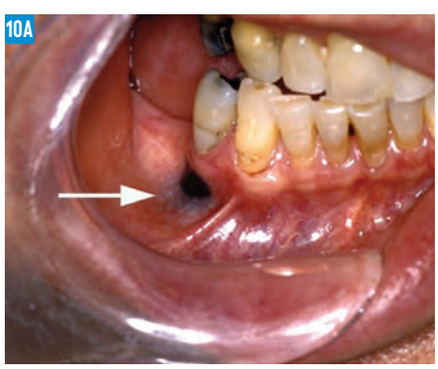
No treatment is necessary once the diagnosis has been confirmed, either through radiograph or histology.

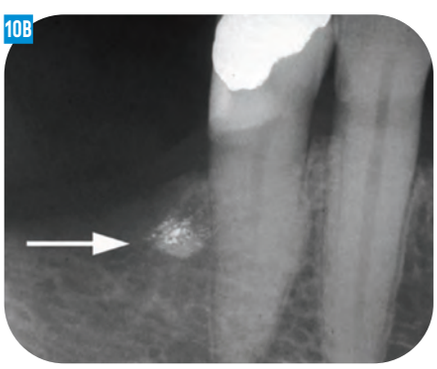
CONCLUSION

Mucosal melanomas may initially have a relatively innocent appearance, it is therefore compulsory that a biopsy be performed of all pigmented lesions where a clinical diagnosis can't be established using clinical features. CD

Acknowledgement

This article was first published in International Dentistry – African Edition and has been republished with permission. van Heerden W, Robinson L, van Zyl AW, Dreyer WP (2024) Masterclass in oral diseases: oral lesions. Int Dent Afr Ed 14(1): 10-12





FIGURES 10A *and* **10B:** *Pigmented lesion suspicious of an amalgam tattoo and radiograph of the same patient showing radiopacities thereby confirming an amalgam tattoo*

FIGURES 11A *and* **11B:** *Amalgam tattoo that was diagnosed histologically after biopsy. Radiograph of lesion showed no amalgam fragments. All lesions like this should be biopsied to rule out oral melanoma*

REFERENCES

Aguirre A, Alawi F, Tapia JL (2021) Pigmented lesions of the oral mucosa. *Burket's Oral Medicine* 139-69

Gondak RO, da Silva-Jorge R, Jorge J, Lopes MA, Vargas PA (2012) Oral pigmented lesions: clinicopathologic features and review of the literature. *Med Oral Patol Oral Cir Bucal* 17(6): e919-24

Lambertini M, Patrizi A, Ravaioli GM, Dika E (2018) Oral pigmentation in physiologic conditions, post-inflammatory affections and systemic diseases. *G Ital Dermatol Venereol* 153(5): 666-71

Meleti M, Vescovi P, Mooi WJ, van der Waal I (2008) Pigmented lesions of the oral mucosa and perioral tissues: a flow-chart for the diagnosis and some recommendations for the management. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 105(5): 606-16

O'Hana D, Barthélémy I, Baudet-Pommel M, Pham-Dang N, Devoize L (2017) Differential diagnosis of an oral mucosal pigmented lesion: a case of essential melanosis. *Med Buccale Chir Buccale* 23(3): 156-9

Sreeja C, Ramakrishnan K, Vijayalakshmi D, Devi M, Aesha I, Vijayabanu B (2015) Oral pigmentation: a review. *J Pharm Bioallied Sci* 7(Suppl 2): S403-8

Tavares TS, Meirelles DP, de Aguiar MCF, Caldeira PC (2018) Pigmented lesions of the oral mucosa: a cross-sectional study of 458 histopathological specimens. *Oral Dis* 24(8): 1484-91

NEXT-GENERATION PROPHYLAXIS: DISCOVER THE GBT MACHINE® BY EMS

THE FUTURE OF GUIDED BIOFILM THERAPY IS HERE

EMS has unveiled the next generation of dental prophylaxis at IDS 2025 with the launch of the GBT Machine® – the long-anticipated successor to the AIRFLOW® Prophylaxis Master. With over four decades of Swiss innovation behind it, the new GBT Machine is designed to redefine the hygiene workflow with unrivalled ease, comfort and clinical precision.

Optimised for Guided Biofilm Therapy (GBT), this next-generation device builds on EMS's reputation for clinical excellence and is optimised for performing high-level Guided Biofilm Therapy (GBT) treatments, providing exceptional comfort for both patients and clinicians while enhancing the efficiency and profitability of the hygiene department. The intuitive interface, automatic handpiece recognition, and an automated GBT mode offer seamless operation, an enhanced workflow, optimised efficiency, and minimally invasive treatment. Thanks to a smart connectivity feature, clinicians stay informed on treatment and device data on their MyEMS dashboard.

SUSTAINABILITY, USABILITY, CONNECTIVITY

Connectivity, sustainability and usability are core pillars of the new system. A redesigned GBT Machine station includes a single water bottle supplying both handpieces, streamlining the workflow, while the unit itself is made using 30% less plastic and sleek, durable materials like aluminium and tempered glass.

GBT Certified Practices benefit from another unique touch: the GBT letters on the machine light up in pink, signalling the high standards of care and training they've achieved through the Swiss Dental Academy (SDA).

94.1% OF PATIENTS PREFER IT

This isn't just about sleek design – it's science-led care that patients love. In a global survey of more than 400,000 patients, 94.1% said they preferred GBT to traditional prophylaxis methods.[1] Backed by studies from the University of Zurich,[2] it's clear that GBT is the gold standard in preventive care – and EMS is leading the charge.

SEE IT IN ACTION IN THE UK

Want to explore the GBT Machine for yourself?

- Book a live demo with UK-based GBT Experts by visiting: www.ems-dental.com/en/gbt-demo
- Visit EMS on stand B50 at the Dentistry Show in Birmingham on 17-18 May
- Watch GBT in action with Faye Donald during an exclusive Dentistry LIVE on 19 June.

Don't miss the chance to see the future of dental hygiene up close – discover how the GBT Machine is transforming practices and elevating patient care worldwide. CD

EMS
MAKE ME SMILE.

GUIDED BIOFILM THERAPY®

EMS
For more information, visit **www.ems-dental.com** or email **welcome@ems-ch.com**.

Dentatus

ORTHO CARE (UK) Limited

Calibrated system

For successful interproximal reduction

Scan me to view all features

The IPR™ Tips allow interproximal reduction safely and with optimal control:

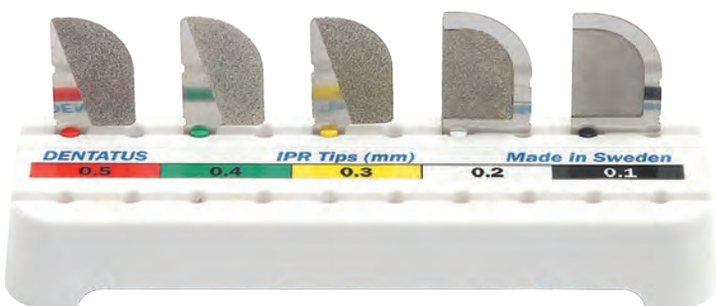
The tip thickness (0.5, 0.4, 0.3, 0.25, 0.2 or 0.1 mm) sets the prescribed amount of reduction.

They are double-sided except for the 0.25 mm tips which come with abrasive on left or right side.

Like all Profin tips, they do not harm soft (gingival) tissue.

The IPR tips have a grit of 50 microns except the 0.2 mm tips (40 microns) and the 0.1 mm tips (15 microns), which can also be used for polishing.

Colour coding corresponds to the thickness.



Contact office for intro offer

www.orthocare.co.uk / +44 (0) 1274 533233

ORTHODONTICS

DR WASEEM FAROOQ
Waseem is a dentist and mentor at Broxtowe Lane Dental Clinic, Colosseum Dental UK, Nottingham with an interest in orthodontics and restorative dentistry. Waseem qualified as a dentist in 2002 and has been providing orthodontic care since 2015. He has attended several courses in advanced restorative techniques and orthodontic treatments to keep his knowledge up to date.

ENHANCED CPD

CPD hours: one

GDC development outcome: C

Topic: Orthodontics

Educational aims and objectives: To present a case that demonstrates orthodontic treatment for a patient with coexisting hyperflexible joints that have previously impacted temporomandibular joint performance.

This article qualifies for one hour of enhanced CPD; answer the questions on page 80 or scan the QR code.

A 24-year-old female patient presented expressing concern about the appearance of her dentition. The prominent issues were incisal retroclination in the maxilla, and crowding in the mandible. As a result, she was extremely self-conscious, and felt treatment would be of benefit to her personal wellbeing.

This case was particularly noteworthy as the individual also experienced hyperflexibility of her joints and related temporomandibular joint (TMJ) disorder. Any treatment would need to consider how to work within the greater maxillofacial structure safely.

As the patient expressed interest in pursuing orthodontic treatment, an assessment of her dentition and TMJ health was carried out.

INITIAL ASSESSMENTS

The patient's oral hygiene required immediate improvement, and the need for an effective morning and night regimen was discussed. A dental hygienist referral was made for further support. Despite this, no teeth had a poor prognosis.

The lower arch presented 4mm of crowding, and retroclination in the labial segment. Rotations were observed on the LR3 to LR4, as well as lateral displacement of the LL5 by 2-4mm. The buccal segment featured 2mm of crowding.

In the upper arch, the patient was experiencing 2mm of crowding with rotations on the UR2 and UR3, and retroclination of the upper incisors.

She exhibited a class I incisal relationship, as well as an overjet of 1mm and a 50% overbite. Each canine relationship was class I, and her right-side molars followed suit, but the left molars were in a class II relationship by a quarter unit.

The patient displayed a class I skeletal pattern, with an average soft tissue biotype. Regarding her joint hyperflexiblity and TMJ disorder, she had a 40mm mouth opening and experienced clicking

FIGURE 1: *Crowding in the mandible, and retroclined incisors*

FIGURE 2: *Crowding in the mandible, and retroclined incisors, anterior view*

FIGURE 3: *Crowding and retroclined incisors, right lateral view*

Waseem Farooq presents orthodontic treatment for a patient with coexisting hyperflexible joints that have previously impacted temporomandibular joint (TMJ) performance

Orthodontic care alongside TMJ disorders

FIGURE 4: *Class II molar relationship between the LL5 and UL5, left lateral view*

FIGURE 5: *Retroclination of the upper incisors, occlusal view*

FIGURE 6: *Crowding in the mandible and misalignment of the LL5, occlusal view*

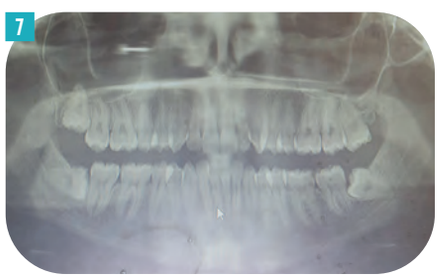


FIGURE 7: *Pre-treatment panoramic radiograph*

FIGURE 8: *Mid-treatment, clear aligners, attachments and buttons in place*

FIGURE 9: *Button on LR6, right lateral view*

FIGURE 10: *Button on LL6, left lateral view*

FIGURE 11: *Progress made in the maxilla midway through treatment, with corrections made to the incisal inclination*

FIGURE 12: *Progress midway through treatment in the mandible, occlusal view*

in both left and right TMJs with deviation on opening and closing of the mouth.

The necessary impressions were taken, as well as X-ray images to assess the patient's bone health, which was deemed adequate for treatment.

TREATMENT OPTIONS

The treatment options presented to the patient included:

- No treatment, monitor progression with regular dental hygienist visits
- Fixed orthodontic treatment to address alignment and overbite
- Removeable orthodontic treatment to solely address alignment.

The use of fixed brackets may have been preferable when looking to correct the 50% increased overbite and rotations in a predictable manner.

I had spoken with Dr Asif Chatoo, my IAS Academy mentor, who would support me on the case – and he agreed that this would be the optimal treatment approach. However, the patient had a preference towards clear aligners, citing the aesthetic advantages the solution provided.

It would be beneficial to her confidence, and though it may only be possible to align the teeth without addressing the overbite, it would still deliver a positive result.

A Suresmile treatment plan was created, which presented the range of movements expected of each tooth.

This was discussed with Dr Chatoo, and we were both confident in achieving a positive outcome.

The plan was amended to reduce the pressure put onto the dentition over a long-term treatment, in effect slowing down each stage to ensure progress could be closely monitored. This would allow for the hyperflexible joints to be monitored without unnecessary strain and unfavourable movements.

The final plan was approved by the patient who then provided informed consent.

ORTHODONTIC CARE

Interproximal reduction (IPR) was carried out on the straight contact points, using the Suresmile treatment plan as a guide – but not the rule.

Where the first step of IPR was carried out, a minimally invasive approach was taken, and only a proportion of the IPR completed. For example, if 0.3-0.4mm was recommended, then just 0.1mm of tissue would be removed, and movement monitored from there.

Additional engagers and buttons were placed in the first session, which would guide movement with the removable aligners. Engagers were placed on the UR3, UL3 and UL5 in the maxilla, and LR3 to LR5 and LL3 to LL4 in the mandible.

Buttons were also placed on the LR6 and LL6 to utilise elastics.

The patient was shown how to apply 3/16 medium 4.5oz elastics, as well as how to use and maintain the aligners. Minimum wear of 22 hours per day was recommended.

At four-week intervals, the patient returned

FIGURE 13: *Final result, with crowding and retroclined incisors corrected*

FIGURE 14: *Final result, right lateral view*

FIGURE 15: *Final result, left lateral view*

FIGURE 16: *Final result, retroclined incisors corrected in maxilla and fixed retainer placed*

FIGURE 17: *Final result, crowding treated in the mandible with a fixed retainer in place*

FIGURE 18: *Final result, smile view*

for new aligners and a progress review. IPR was carried out with the conservative approach over time. The need for an effective oral hygiene routine was observed and reinforced at each appointment.

For the most part, compliance was optimal. This meant that there were very few changes necessary to the engagers.

Dr Chatoo was consulted throughout the progression of treatment to ensure appropriate IPR was completed and that the case proceeded well.

No issues were experienced regarding the patient's existing hyperflexible joints and orthodontic care. This was assessed at each appointment, and the patient shared anecdotally that she had not experienced lockjaw since beginning treatment, though this may be coincidence rather than causation.

There is little evidence in the available literature to suggest that orthodontic care can reliably benefit TMJ disorders (Bora, Agrawal and Bagga, 2020).

Compliance with treatment waned momentarily near the end of care. This coincided with the observation that optimal right-side occlusion had been achieved, but left molar occlusion displayed a gap that was not completely settled.

The importance of elastics was reinforced, but still the occlusion did not settle by the next appointment.

The available options included the addition of more aligners, or trimming the current aligners at the left-side premolars to molar region, and letting the occlusion settle naturally. This was discussed with Dr Chatoo, who indicated the latter approach would deliver an optimal result.

The final aligner was trimmed at the premolar to molar region, and reviewed at six weeks. The targeted class I occlusion was achieved without further difficulty.

CASE REVIEW

With the desired outcome achieved, impressions were taken for a fixed and removable retainer from the IAS Laboratory. These were provided to the patient, who was instructed to wear the removable retainers daily, before progressing to night-time wear for life.

The patient was reviewed three months post-treatment, and was delighted with the final outcome.

I am equally happy with the result, especially in a case that required a slow and steady approach to adequately monitor for the hyperflexible joints and associated TMJ problems.

It's a case that I wouldn't have considered taking without the assistance of Dr Asif Chatoo, and my experience with the IAS Academy Advanced Diploma course. The support is paramount, and it gives you confidence in such a case. If there is the potential for difficulties to be encountered, a mentor can help you at each step, and any problems will be amended in a timely and patient-friendly manner.

I would recommend the IAS Academy to other clinicians, knowing how this support can continue to support patients in the future. CD

REFERENCE

Bora P, Agrawal P, Bagga DK (2020) Relationship between orthodontics and temporomandibular disorders. *European Journal of Molecular & Clinical Medicine* 7(8): 4177-4183

PRODUCTS USED

Suresmile Dentsply Sirona

TRIO CLEAR

Revolutionary Retention

ECODONT™ COMBI RETAINER

£109

Single Arch Jig

Jig = Fixed Wire + Removable Clear Retainer.

INCLUDES: *TWO SPARE REMOVABLE CLEAR RETAINERS!*

Dual Arch options available, pricing on request.

The Ecodont™ Combi-Retainer combines the functionality of a removable clear retainer and fixed retainer in a single, easy-to-place orthodontic appliance.

YOUR FIRST ORDER IS FREE!

Order an Ecodont™ Combi-Retainer before 25th April 2025 and it will be free of charge!
Online Ordering and Placement Video - details below.

HOW TO ORDER ONLINE

SCAN ME

Ordering Your **First Ecodont™ Combi-Retainer** is easy. Visit the below webpage, complete the form and remember to upload your patient's .stl intraoral scan files.

trioclearaligners.eu/order-the-ecodont-combi-retainer/

HOW TO PLACE

SCAN ME

We have designed the **Ecodont™ Combi-Retainer** to be incredibly easy to place in your patient's mouth and have created an **instructional video** to provide you with some helpful tips.

INFORMATION & CONTACT

SCAN ME

Hello, my name is Nathan. I am here as your direct point of contact to answer any queries you may have on the Ecodont™ Combi-Retainer and to ensure that your orders progress successfully from submission to delivery at your practice. I look forward to working with you."

READ MORE ABOUT THE ECODONT™ COMBI-RETAINER HERE

Please contact: Nathan Stewart, Ecodont™ Combi-Retainer Product Manager,
M. 07703 471 313 / E. nstewart@scdlab.co.uk

align™ | invisalign® | iTero™ | exocad™ | vivera™

Invisalign™ Live

20–21 June 2025 | Convene Sancroft, St. Paul's, London

During the two days, an exciting line up of 12 global speakers will share their expertise to help doctors achieve better outcomes and develop more efficient and profitable practices with Invisalign™ clear aligners, iTero™ and the Align™ Digital Platform.

The Friday evening will culminate in the announcement of the winners of the Invisalign Awards 2025 which recognise and celebrate the outstanding achievements of Invisalign providers and their teams across 5 categories at Nine Kings, Royal Lancaster.

Education

Dynamic mainstage sessions

Innovation

Innovation Hub

Transformation

Clinical breakout sessions

Limited tickets available, view the agenda and secure your ticket today.

REGISTER NOW

Managing orthodontic relapse

David Raickovic shares a complex case that presented several challenges. Here, he explains how treatment for complex dental issues changed a patient's life, which transformed her smile and her psychological outlook

A 34-year-old female patient presented a class II malocclusion, bilateral posterior open bite, and a severe rotation with a scissor bite of LR7 and 7mm overjet. She had collapsed V-shaped, upper and lower arches, both of which were severely crowded. These challenges were despite the patient undergoing previous orthodontic treatment, which included the extraction of all four first premolars, which has subsequently relapsed.

The extent of the relapse had impacted the patient's self-esteem and overall mental health, she was 'devastated' by the overall experience and had little hope that her smile could be changed. She admitted to giving up on her appearance (Figures 1 to 4).

TREATMENT PLAN

Harnessing the Align Digital Platform, I began the patient's Invisalign treatment journey with an Itero intraoral scan. I made several changes to the initial Clincheck treatment plan, including swapping the attachments for larger ones, especially on teeth with crucial anchorage values.

In addition, I decreased the amount of round tripping of her lower incisors, as I was concerned about gum and bone recession, I fine-tuned the final position of the teeth – repositioning the button cut-outs for class II elastics and enhancing the final shape of the dental arch.

I made further adjustments to the plan, with several corrections to the attachment placements and positioning, while enhancing their prominence. I also replaced the positions of the button cut-outs for class II mechanics and fine-tuned the final positions of the teeth.

I started with class II elastics at stage 13, as that was the moment UL5 (after UL7 and UL6) started distalisation. I stopped the class II elastics at the end of the first set of aligners, swapping them to vertical elastics for settling on the left side and cross elastics for correcting the cross bite of LR7 on the right side.

It was a particularly complex treatment because the patient had severe scissor bites on the lower right, six and seven. Her whole treatment comprised 47 initial aligners, plus three overcorrection aligners (that represent 'virtual C-chain') that I didn't use in this phase.

FIGURE 1A: *Before – frontal smiling*

FIGURE 1B: *Before – frontal repose*

FIGURE 1C: *Before – profile repose*

DAVID RAICKOVIC

David is a specialist orthodontist. He graduated from the University of Zagreb and completed specialisation training at New York University. He became one of the top Invisalign Diamond Providers globally in 2019. With experience in Manhattan's top clinics, he now co-leads Alpine Smiles in Lugano, Switzerland, and serves as an international speaker, teaching orthodontists worldwide.

FIGURE 2: *Before – anterior*

FIGURE 3A: *Before – buccal right*

FIGURE 3B: *Before – buccal left*

FIGURE 4A: *Before – occlusal maxillary*

FIGURE 4B: *Before – occlusal mandibular*

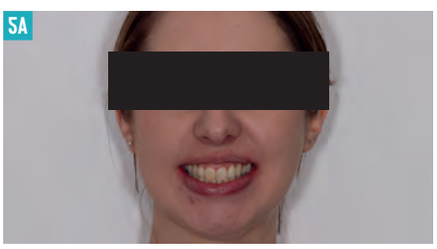


FIGURE 5A: *After – frontal smiling*

FIGURE 5B: *After – frontal repose*

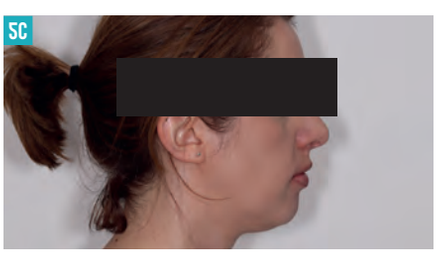


FIGURE 5C: *After – profile repose*

FIGURE 6: *After – anterior*

FIGURE 7A: *After – buccal right*

FIGURE 7B: *After – buccal left*

FIGURE 8A: *After – occlusal maxillary*

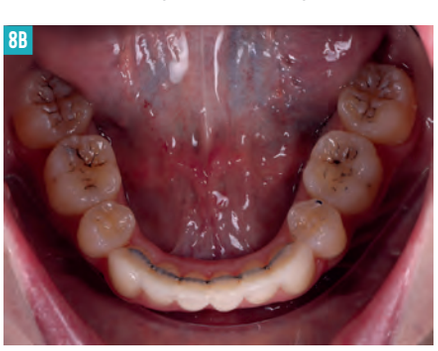


FIGURE 8B: *After – occlusal mandibular*

This was followed by one refinement set of 28 aligners plus three overcorrection aligners (that represent 'virtual C-chain') that I did use. The refinement aligners served to settle the bite on the left side and to correct the cross bite on the right side (Figures 5 to 8).

CASE REFLECTION

My patient was very compliant and motivated throughout the treatment. During the last three months of her treatment, I noticed a significant change in her; she'd begun to dress differently, and was taking more care of her hair and skin.

After 18 months of treatment, not only her teeth and smile changed, but her whole appearance and self-esteem. Her hair shone, her face and skin were glowing. She told me how her treatment had changed not only how she looked, but actually who she was.

This case perfectly illustrates that the Invisalign system, with its technology, materials and support, can produce excellent results in treating all malocclusions and all levels of complexity. The treatment was completed in 18 months, with one refinement. It shows how much can be achieved and the impact that can be made on a patient's life. The change was inspiring and mind-blowing at the same time – for both of us. CD

AWARD WINNING ORTHODONTICS

This treatment won the Best Orthodontic Case at Invisalign Live Awards 2024 (judged by an independent judging panel).

PRODUCTS USED

Invisalign, Itero, Align Digital Platform Align Technology

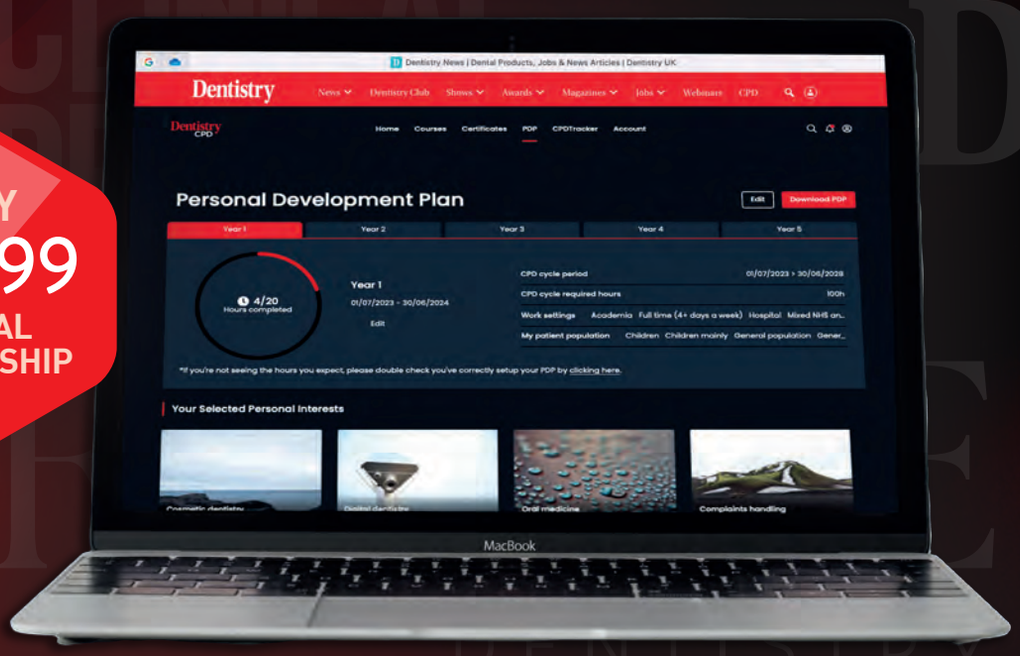
FMC CONNECTING DENTISTRY

Dentistry CPD PRO

THE STRESS-FREE CPD SOLUTION FOR DENTAL PROFESSIONALS

Dentistry CPD Pro benefits include:

- **600+** hours of CPD
- **100+** free webinars each year
- All **recommended topics** covered
- **Experience Dentistry Live:** earn CPD while watching live dental surgeries
- **Includes subcriptions** to *Clinical Dentistry*, *Private Dentistry* and *Laboratory*



ONLY £99.99 ANNUAL MEMBERSHIP

For more information call 01923 851771

www.dentistry.co.uk/cpd

DIAGNOSTIC EXCELLENCE
Carestream Dental

Inform your treatment plans with confidence by choosing a leading 3D imaging solution, the CS 9600 CBCT scanner from Carestream Dental, for your practice today.

The CS 9600 CBCT scanner was recognised as the best in class for 2024 by Cellerant and offers five different modalities for exceptionally confident diagnosis and treatment planning. These include panoramic, cephalometric and CBCT imaging, as well as 3D facial and model scanning.

Users have commended the 'never-before-achieved 2D and 3D imaging quality and the game-changing CS MAR feature'. The latter is an exceptional addition to the dental professional's diagnostic arsenal, as it reduces the impact of metal artifacts on radiographs and aids dynamic image comparison.

With radiation exposure an understandable concern for patients and clinicians alike, the CS 9600 CBCT scanner features a low-dose mode for both 2D and 3D examinations, even delivering 3D images at up to an 86% lower dose than 2D panoramic images.

www.carestreamdental.co.uk

THE PRETTAU ZIRCONIA LINE
Zirkonzahn

Zirkonzahn
Human Zirconium Technology

Zirkonzahn's zirconia range has grown over time into a material line consisting of six different types of Prettau zirconia.

- With a very wide range of applications – from partial crowns to full arches – Prettau solves common problems such as narrow spaces, bruxism or ceramic chipping for functional and aesthetic restorations
- Prettau 2 and Prettau 2 Dispersive are translucent with excellent flexural strength. Their aesthetic properties allow the design of monolithic restorations, preventing the risk of ceramic chipping. With Prettau 2 and Prettau 2 Dispersive, patients receive biocompatible, individual and stable dental restorations, from single crowns to full arches. Dispersive has a slight natural colour gradient
- With the new Prettau 3 Dispersive zirconia, the concept of Gradual-Triplex-Technology was introduced. In addition to the colouring, translucency and flexural strength levels change. In this way, while the incisally increasing translucency results in a highly translucent incisal edge, the cervically increasing flexural strength leads to an extremely high flexural strength at the tooth neck
- Prettau 4 Anterior and Prettau 4 Anterior Dispersive have been specially designed for the anterior region and are therefore characterised by a particularly high translucency. Both materials are suited for the posterior region. These two types of zirconia are suitable for the production of single crowns, inlays, onlays, veneers and three-unit bridges.

Zirkonzahn Shade Guides are composed of monolithic zirconia sample teeth in the shape of premolars, upper and lower incisors. They are available in Prettau 2 Dispersive, Prettau 3 Dispersive and Prettau 4 Anterior Dispersive zirconia.

www.zirkonzahn.com

CUSHIONED CONTROL
Total TMJ

Edentulous patients may be unable to enjoy the foods they love, impacting their happiness. When combined with problems in the temporomandibular joint (TMJ), the struggles of edentulism are worsened, limiting their quality of life. To assist patients with at-home therapy for the TMJ, recommend the Orastretch Press Rehab System from Total TMJ. It uses a mouthpiece and squeezable handles to open the oral cavity, mobilising the TMJ and stretching the orofacial tissues.

For edentulous patients, the system can have special foam pads added to the standard adult version. These cushion against the gingivae when using the system for a more comfortable rehabilitation protocol. With optimal comfort comes optimal compliance. Light and easily stored in a bag, the Orastretch Press can be used anywhere at any time. It is also available in a paediatric version, an anterior version for limited oral openings, and an extended add-on for patients with alignment issues.

info@totaltmj.co.uk

EXPAND YOUR HORIZONS THIS MAY
ASHA Club

The Advanced Horizontal & Vertical Augmentation course returns this May, providing an excellent opportunity for clinicians who provide dental implant treatment to expand their skill sets.

The ASHA Club prides itself on high-quality education, with the course provided by its founder, Dr Balaji, alongside the ASHA Club's expert faculty.

The course will teach clinicians how to improve their skills in horizontal and vertical bone augmentation and soft tissue work, enabling them to provide more advanced treatment types to patients.

Those who complete ASHA Club courses have the opportunity to be mentored by Dr Balaji, and gain access to the ASHA Club Whatsapp community for ongoing support. The course will take place on 9 and 10 May and again on 11 and 12 July 2025.

www.ashaclub.co.uk/courses
07974 304269
info@ashaclub.co.uk

CONFIDENCE IN GRAFTING AROUND IMPLANTS
Biohorizons Camlog

Dr Wail Girgis is the clinical director at Devonshire House and a specialist prosthodontist. He shares his experience of Mineross and other biomaterials he utilises from Biohorizons Camlog: 'I have been using Mineross for four or five years because the cortical component in the granules leads to very little bone resorption, while the cancellous particles promote revascularisation.

'It gives a much better tissue response with healing compared to other solutions – it does not get incorporated into the surrounding soft tissue and periostem, making second stage surgery neater as the mucosa lifts from the bone easily for effective soft tissue manipulation.

'Mineross also exhibits simple handling, especially when mixed with blood, and I use it confidently in any case that requires grafting. It is part of a broad biomaterials portfolio that I utilise to meet different patient needs and clinical scenarios, including Mem-Lok and Novomatrix, which facilitate accurate implant placement and efficient soft tissue thickening respectively.'

theimplanthub.com

OBTURATION THAT HEALS WHILE IT FILLS
Coltene

Roeko Guttaflow Bioseal from Coltene is an intelligent obturation material used for filling and sealing root canals. Nearly insoluble, Guttaflow Bioseal enables dense and dimensionally stable filling of the root canal that lasts.

Not only does Guttaflow Bioseal expand slightly as it cures to provide a tight seal, it contains bioactive properties that provide the tooth with natural repair constituents, such as calcium and silicates.

After curing, hydroxylapatite crystals are formed on contact with the body's own fluids, contributing to a natural healing process. Guttaflow Bioseal has the same curative properties as MTA or bioglass to improve tissue regeneration.

colteneuk.com/guttaflow | info.uk@coltene.com | 0800 254 5115

ADVANCED FACILITIES FOR YOUR PATIENTS
Ucer Clinic

The Centre for Oral, Maxillofacial & Dental Implant Reconstructive Surgery has all the state-of-the-art facilities needed when you have to refer a patient for complex treatment.

Led by world renowned specialist oral surgeon Professor Cemal Ucer, the centre offers advanced surgical treatments and high-quality clinical care, as well as a comprehensive suite of innovative digital dentistry solutions.

The clinic has a full spectrum of digital workflow equipment, including cone beam computed tomography (CBCT) scanners and the latest in intraoral optical scanning equipment.

The clinic has all the equipment needed for 3D printing and milling. Patients can be provided with customised implants, crowns and bridges, as well as individualised CAD/CAM bone grafting procedures.

The clinic has the means to create computer-aided surgical navigation using 3D printed surgical guides for improved accuracy and precision of implant placement.

All 3D assessment and virtual treatment planning software needed is at hand for a smooth workflow.

ucer@icedental.institute | mel@mdic.co
www.ucer-clinic.dental | 01612 371842

NEXT STEP

Enhanced CPD hours are only available to paying subscribers. Each article is equivalent to one hour of enhanced CPD.

Earning enhanced CPD hours with *Clinical Dentistry* is quick and easy:

- Scan the QR code or visit dentistry.co.uk/cpd and follow the instructions
- Complete the four-question test
- Upon successful completion of each article's questions, a certificate will be generated instantly and stored online in your Dentistry CPD account ready for you to print at any time.

Please do not post your answers for marking; this service is no longer available.

To provide feedback on these articles and enhanced CPD, email *Clinical Dentistry* at cpdsupport@fmc.co.uk.

GENERAL DENTISTRY
CD/APR/GIRGIS/PAGE 15

1. **In this case, the patient presented with a minimally retentive upper denture that was held in place by how many grade III mobile canine teeth?**
   - ☐ a. One
   - ☐ b. Two
   - ☐ c. Three
   - ☐ d. Four
2. **Which fractured tooth had recently been extracted, leaving a relatively fresh extraction socket at the site?**
   - ☐ a. UR1
   - ☐ b. UL1
   - ☐ c. UR2
   - ☐ d. UL2
3. **To prevent pressure on the grafted area, the patient was advised to not wear the denture for how long?**
   - ☐ a. One month
   - ☐ b. Two months
   - ☐ c. Three months
   - ☐ d. Four months
4. **How many sessions were the bilateral sinus lifts performed in?**
   - ☐ a. Single session
   - ☐ b. Two sessions, approximately two weeks apart
   - ☐ c. Three sessions, approximately three weeks apart
   - ☐ d. Four sessions, approximately four weeks apart

AESTHETIC DENTISTRY
CD/APR/VITALE/PAGE 23

1. **In the case presented, which tooth had a white spot lesion?**
   - ☐ a. UR1
   - ☐ b. UL1
   - ☐ c. LR1
   - ☐ d. LL1
2. **How many applications of etchant were performed in total in this case?**
   - ☐ a. Two
   - ☐ b. Three
   - ☐ c. Four
   - ☐ d. Five
3. **For light-curing, the author states it necessary for the intensity of the light to be at least equal to what?**
   - ☐ a. 400mW/cm2
   - ☐ b. 600mW/cm2
   - ☐ c. 800mW/cm2
   - ☐ d. 1,000mW/cm2
4. **In the case, rehydration of the teeth was complete after how long?**
   - ☐ a. Two days
   - ☐ b. Seven days
   - ☐ c. Two weeks
   - ☐ d. One month

DIGITAL DENTISTRY
CD/APR/RUIZ/PAGE 29

1. **How old was the patient at the start of treatment in this case?**
   - ☐ a. 10 years old
   - ☐ b. 11 years old
   - ☐ c. 12 years old
   - ☐ d. 13 years old
2. **Which tooth had suffered a complicated crown fracture with wide exposure of the pulp?**
   - ☐ a. UR1
   - ☐ b. UL1
   - ☐ c. UR2
   - ☐ d. UL2
3. **Which shade from the Vita Akzent LC composite stain system was applied with a brush in the cervical area?**
   - ☐ a. White
   - ☐ b. Cream
   - ☐ c. Khaki
   - ☐ d. Orange
4. **High-gloss polishing was carried out following final UV light curing at what wavelength?**
   - ☐ a. Below 430nm
   - ☐ b. 440nm
   - ☐ c. 450nm
   - ☐ d. More than 450nm

ENDODONTICS
CD/APR/BARCLAY/PAGE 36

1. **According to the author, ignoring what invites avoidable errors that can compromise treatment outcomes?**
   - ☐ a. Anatomy
   - ☐ b. Restorations
   - ☐ c. Case complexity
   - ☐ d. All of the above
2. **How many pulp chambers did Krasner and Rankow observe for their 2004 study?**
   - ☐ a. 250
   - ☐ b. 500
   - ☐ c. 750
   - ☐ d. 1,000
3. **What is the most consistent and repeatable landmark for locating the pulp chamber position?**
   - ☐ a. Cusp tips
   - ☐ b. Cementoenamel junction
   - ☐ c. Restoration margins
   - ☐ d. None of the above
4. **According to the author, what does mastering endodontic access demand?**
   - ☐ a. Preparation
   - ☐ b. Anatomical knowledge
   - ☐ c. A structured approach
   - ☐ d. All of the above

IMPLANT DENTISTRY CD/APR/ANITUA/PAGE 55

1. **The author states that resorption in the maxillary and mandibular alveolar bone is different, mainly due to...**
- ☐ a. The type of bone (greater bone density in the mandible)
- ☐ b. The presence of anatomical structures and the insertion of muscles
- ☐ c. The transmission of forces from the perioral soft tissues
- ☐ d. All of the above

2. **According to the author, 'ultra-short' implants have lengths of what?**
- ☐ a. 3.5mm
- ☐ b. 4.0mm
- ☐ c. 4.5mm
- ☐ d. 5.0mm

3. **How much height in the mandible can the alveolar ridge lose over 25 years?**
- ☐ a. 2-6mm
- ☐ b. 5-9mm
- ☐ c. 10-12mm
- ☐ d. 15-21mm

4. **In the case study presented, how old was the patient at the start of treatment?**
- ☐ a. 45 years old
- ☐ b. 55 years old
- ☐ c. 65 years old
- ☐ d. 75 years old

ORAL HEALTH CD/APR/VAN HEERDEN/PAGE 64

1. **According to the authors, what colour are superficial lesions of melanin?**
- ☐ a. Brown
- ☐ b. Black
- ☐ c. Blue
- ☐ d. Grey

2. **What do the authors consider to be the most important pigmented lesion?**
- ☐ a. Oral melanotic macule
- ☐ b. Pigmented nevus
- ☐ c. Malignant melanoma
- ☐ d. None of the above

3. **What is the most frequently involved site for physiologic pigmentation?**
- ☐ a. Gingiva
- ☐ b. Buccal mucosa
- ☐ c. Tongue
- ☐ d. All of the above

4. **What should be undertaken to confirm an amalgam tattoo diagnosis, according to the authors?**
- ☐ a. A detailed clinical examination
- ☐ b. A detailed history
- ☐ c. A radiograph
- ☐ d. All of the above

ORTHODONTICS CD/APR/FAROOQ/PAGE 70

1. **How old was the patient at the start of treatment in this case?**
- ☐ a. 17 years old
- ☐ b. 20 years old
- ☐ c. 24 years old
- ☐ d. 27 years old

2. **What was the patient's mouth opening?**
- ☐ a. 30mm
- ☐ b. 40mm
- ☐ c. 45mm
- ☐ d. 50mm

3. **To utilise elastics, which teeth were buttons placed on?**
- ☐ a. LR6 and LL6
- ☐ b. LR5 and LL5
- ☐ c. UR6 and UL6
- ☐ d. UR5 and UL5

4. **How long after treatment was the patient reviewed?**
- ☐ a. Two weeks
- ☐ b. One month
- ☐ c. Two months
- ☐ d. Three months

FEEDBACK OPPORTUNITY

Quality control

An essential part of continuing professional development is quality control. This gives you the chance to provide feedback on the quality of these articles. This is not essential, but feel to contact us on cpdsupport@fmc.co.uk.

When providing feedback, please include the following details in your email:

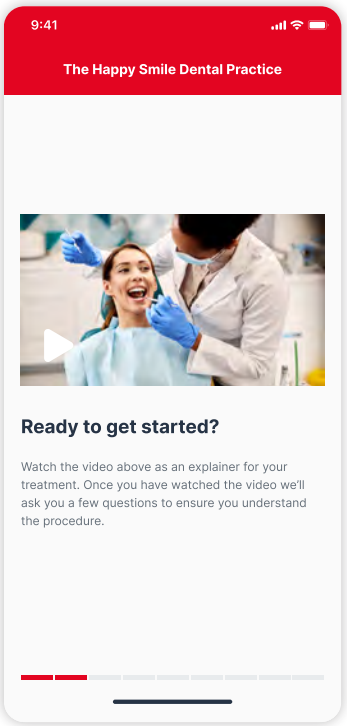
- ECPD article title and author
- Comments on the ECPD offered
- Your name (title, first name and surname)
- GDC number
- Address (including postcode)
- Telephone number.

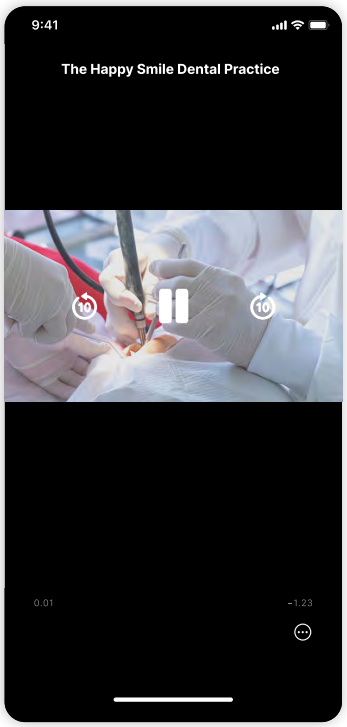
Dentistry Consent

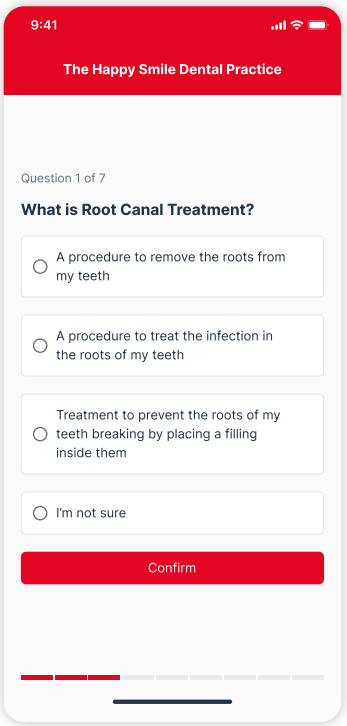
Introductory offer -

£1/month for your first 3 months

Consent done right.
Clear. Trackable. Fully understood.







Click **Watch** **Understand**

Dental claims have surged - and most aren't caused by poor treatment, but by poor communication.

Dentistry Consent helps you stay ahead with secure, trackable digital consent.

- Send digital consents in minutes
- Track patient understanding and status in real time
- Store a complete, secure audit trail
- Strengthen patient relationships.

Less paperwork.
Fewer grey areas.
More peace of mind.

Scan the QR code or visit www.dentistry.co.uk/consent

FMC CONNECTING DENTISTRY

For more information

Call 01923 851773 or visit dentistry.co.uk/consent