

CLINICAL DENTISTRY

Practical. Progressive. Educational.

25 AESTHETIC DENTISTRY
Collaborative cosmetic dentistry –
Sam Jethwa

36 DIGITAL DENTISTRY
AI and periodontal diagnoses –
Makyle Khan

43 ENDODONTICS
Minimally invasive endodontics –
Massimo Giovarruscio

70 ORTHODONTICS
Treating rotations and crowding
– Neil Fearn

FMC
CONNECTING
DENTISTRY

September 2024
Vol 4 No 8



The interplay of modern dentistry

CONNECTED

HALEON
For Health. With Humanity.



SCAN CODE TO
FIND OUT MORE

SENSODYNE

CORSODYL

**SENSODYNE
PRONAMEL**

SUPPORTED WITH AN
EDUCATIONAL GRANT

Be inspired...

Be Practice Plan



Letitia McElmurray, Treatment Coordinator,
at a Practice Plan event.

At Practice Plan, we believe that when you're enjoying yourself and having fun, you're taking more in. That's why our events are a little different. We work with many of dentistry's most inspirational speakers to deliver practical and relevant content in an engaging and entertaining way.

Be inspired, get in touch...

Practiceplan
The business of dentistry

**The leading provider of
practice-branded plans**



Scan the QR Code to find out what being part of Practice Plan could mean for you.

www.practiceplan.co.uk

CLINICAL DENTISTRY

Practical. Progressive. Educational.

September 2024 ■ Vol 4 No 8

MISSION STATEMENT

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.

Group Managing Editor

Siobhan Hiscott siobhan.hiscott@fmc.co.uk

Tel: 01923 851758

Content Director

Guy Hiscott guy.hiscott@fmc.co.uk

Tel: 01923 851754

Designer

Glenn Baxter glenn.baxter@fmc.co.uk

Head of Production

Laurent Cabache laurent.cabache@fmc.co.uk

Production Manager

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

Chief Commercial Officer

Tim Molony tim.molony@fmc.co.uk

Tel: 01923 851733

Classified advertising

Nick Caruana nick.caruana@fmc.co.uk

Tel: 01923 851732

The publisher's written consent must be obtained before any part of this publication may be reproduced in any form whatsoever, including photocopies and information retrieval systems.

While every care has been taken in the preparation of this journal, the publisher cannot be held responsible for the accuracy of the information printed herein, or any consequence arising from it.

The views expressed herein are those of the author(s) and not necessarily the opinion of either *Clinical Dentistry* or the publisher.

All rights reserved. Copyright Finlayson Media Communications Ltd 2024.

Complete this issue's CPD online at

CPD.DENTISTRY.CO.UK

Paying subscribers, please email
cpdsupport@fmc.co.uk for support.



SCAN ME



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

CONNECT WITH US

Printed by: Buxton Press
ISSN: 2752-3969

JOIN US ON SOCIAL MEDIA

FACEBOOK [dentistryonlineuk](https://www.facebook.com/dentistryonlineuk)

X [@dentistry](https://twitter.com/dentistry)

INSTAGRAM [dentistry.co.uk](https://www.instagram.com/dentistry.co.uk)



CONTACT

PHONE +44 (0) 1923 851777

EMAIL hello@clinicaldentistry.co.uk

WEB www.fmc.co.uk



COME TOGETHER



Welcome to the September issue of *Clinical Dentistry*!

The much-anticipated 2024 Clinical Dentistry Awards are just around the corner, and excitement is building at the FMC offices. Set for Friday 11 October at the Royal Garden Hotel in London, this year's event is well on track to be the largest and most impressive yet.

As I'm sure you're already aware, these awards have been designed to recognise clinical excellence, and they've steadily grown in stature within the profession. Since their inception, we've seen both the number and quality of entries soar (presenting our esteemed judging panel with ever-greater challenges in the process).

But one constant throughout the years has been the way these awards unite various dental disciplines – whether it's aesthetic dentistry, orthodontics, periodontics, endodontics or implant dentistry – to highlight the exceptional work being undertaken in across the UK and Ireland.

The trend towards interdisciplinary treatment has never been more evident, with more and more cases now demanding a multidisciplinary approach. Indeed, this symphony of multidisciplinary care is something we see highlighted time and time again in this very journal.

Dentistry, so long labelled as a solitary profession, has evolved into a collaborative endeavour. Collaboration among dentists, dental care professionals, specialists and other healthcare providers has become key to delivering comprehensive care. An interdisciplinary approach is essential: working together shares knowledge, enhances treatment plans and, ultimately, improves outcomes for patients.

Remember too that collaboration isn't simply defined by the clinical aspects of dentistry. The ability to seek advice and support is crucial too. Sharing concerns with others can improve many a situation – the saying 'a problem shared is a problem halved' sums it up nicely.

Events like the Clinical Dentistry Awards offer the perfect opportunity to expand your network and connect with leading clinicians who are shaping the future of UK dentistry. Tickets are selling like hot cakes – so if want to join the celebrations, call Nick on 01923 851732 to get your tickets to the ceremony. We can't wait to see you there!



Siobhan Hiscott

Group Managing Editor

siobhan.hiscott@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 DiplImpDent

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.

**Chaw-Su Kyi**

BDS MOrth (RCS Eng) MSc
Specialist in orthodontics and clinical director of West London Orthodontist.

**Jonathan Lack**

DDS Cert Perio FCDS(BC)
Specialist in periodontics.

**Emma Laing**

BDS MFDS (RCS Eng) MSc MOrth (RCS Eng)
Specialist in orthodontics.

**Edward Lynch**

BDentSc FDS (RCS Ed) PhD
Specialist in endodontics, prosthodontics and restorative dentistry. Principal director of biomedical and clinical research at the University of Nevada.

**Sarah MacDonald**

DipOrthTher (RCS Ed)
Orthodontic therapist and director of Hillyard MacDonald.

**Alif Moosajee**

BDS
Principal dentist and author of *The Smiling Dentist*.

**Adam Nulty**

BChD MJDF (RCS Eng) PGCert MSc MacadMed
Professor of digital dentistry, College of Medicine and Dentistry, Birmingham and president of the IDDA.

**Mide Ojo**

BDS MFDS (RCS Eng)
General dental practitioner and principal of Refresh Dental Health.

**Christopher Orr**

BSc BDS
General dental practitioner and course director of Advanced Dental Seminars.

**Nilesh Parmar**

BDS MSc (Prosth Dent) MSc (Imp Dent) Cert Ortho MFGDP (UK) MBA
Dental implant surgeon and principal of Parmar Dental.

**Amit Patel**

BDS MSc MClintDent FDS (RCS Ed) MRD (RCS Eng)
Specialist in periodontics, honorary lecturer at the University of Birmingham School of Dentistry.

**Kreena Patel**

BDS MJDF (RCS Eng) MClintDent MEndo (RCS Ed)
Specialist in endodontics and lecturer at King's College London.

**Neesha Patel**

BSc BDS MFGDP MClintDent MRD (RCS Ed)
Specialist in periodontics and clinical director of Pure Periodontics.

**Shivani Patel**

BDS MFDS MSc IMOrth FDS (RCS Eng) FICD
Specialist in orthodontics and a lead clinician at Eleven Dental.

**Wilhelm Pertot**

DCD DEA PhD
Practice limited to endodontics in Paris.

**Shameek Popat**

BDS MFGDP(UK)
Principal at Rosebank Dental and instructor for CCADS UK.

**Manrina Rhode**

BDS
Cosmetic dentist and director of Designing Smiles.

**John Rhodes**

BDS FDS (RCS Ed) MSc MFGDP(UK) MRD (RCS Ed)
Specialist in endodontics and principal of The Endodontic Practice.

**Affan Saghir**

BChD MJDF (RCS Eng)
General dental practitioner and BDA West Yorkshire vice chairman.

**Nigel Saynor**

BDS MSc
Principal clinician of Bramcote Dental Practice, and honorary clinical tutor at the University of Manchester.

**Thomas Sealey**

BChD
Cosmetic dentist and joint owner of StartSmiling.

**Edwin Scher**

BDS LDS (RCS Eng) MFGDP
Specialist in oral surgery and prosthodontics, and visiting professor at Temple University, Philadelphia.

**Milad Shadrooh**

BDS
General dental practitioner widely known as The Singing Dentist.

**Jason Smithson**

BDS DipResDent (RCS Eng)
General dental practitioner and past president of the British Association of Private Dentistry.

**Paul Tipton**

BDS MSc DGD(P(UK))
Specialist in prosthodontics, professor of cosmetic and restorative dentistry at the City of London Dental School.

**Komal Suri**

BChD
Implant, restorative and cosmetic dentist.

**Cemal Ucer**

BDS MSc PhD FDTF (Ed)
Specialist in oral surgery and professor of dental implantology at the University of Salford.

**Peet van der Vyver**

BChD MSc PhD (Pret)
Private practitioner and extra-ordinary professor at the University of Pretoria, South Africa.

**Monik Vasant**

BChD MFDGP MSc
Cosmetic dentist and principal of Fresh Dental Clinic.

**Reena Wadia**

BDS MJDF (RCS Eng) MClintDent MPerio (RCS Ed) FHEA
Specialist in periodontics and associate specialist at King's College Hospital.

**Julian Webber**

BDS MSc DGD(P(UK))
Specialist in endodontics and visiting professor at the University of Belgrade, Serbia and Montenegro.

**Moira Wong**

BDS LDS (RCS Eng) FDS (RCS Eng) MOrth (RCS Ed)
Specialist in orthodontics.

EDITORIAL ADVISORY BOARD

In addition to contributing articles, *Clinical Dentistry's* editorial board is called on to check submissions for accuracy and relevance to our readership.





Tokuyama

**Spherical composites
... restorative magic in
your hands.**

- Abrasion Resistance**
Ensures restoration longevity.
- Mirror Reflection**
Emulates natural aesthetics.
- Diffusion & Transmission**
No bevelling.. margins disappear.
- 10 Second Polish**
An unrivalled, lasting gloss.

**Scan to find
out more
& view the
catalogue!**



01274 88 55 44 **Trycare**

Meet the experts

Introducing some of the people who have shared their expertise in this issue of *Clinical Dentistry*



DR ALAN CLARKE

BDS MFDS (RCS ENG) LLM EDIN

Alan Clarke shares his 10 top tips for smile makeovers on page 32.

A highly qualified and experienced dentist with a passion for delivering dental excellence, Alan is clinical director of Paste Dental in Belfast, which he founded in 2020. He received his BDS from Queen's University Belfast and has since expanded his knowledge and expertise through studies in Los Angeles and Abu Dhabi.

Alan is a member of the Faculty of Dental Surgery at the Royal College of Surgeons, London, and holds a master's in medical law and ethics from the University of Edinburgh.

**AESTHETIC
DENTISTRY**

32



DR FEZAAN GATRADS

Fezaan shares his top tips to pass onto patients when considering All-On-4 dental implant treatment on page 60.

Having qualified as a dentist in 2010 from King's College London, Fezaan completed a diploma in implant dentistry in 2014. In 2016, graduated with a masters in clinical dentistry with distinction from BPP University, having received the outstanding achievement award while studying implant dentistry.

Fezaan performs varied implant treatments at Olive Tree Dental in Reading, from the replacement of single teeth, and bone and soft tissue regeneration, to full mouth rehabilitation. Fezaan is actively involved in Implant education and has lectured on implant dentistry.

**IMPLANT
DENTISTRY**

60

Eurus | S6

Compact. Accessible. Stylish.



Come & experience our **Eurus treatment centres**
on **Stand C15** at the **Dentistry Show London October 4th/5th**

Belmont
Perfecting the art of dentistry

belmontdental.co.uk



medenta
putting finance into practice

Supporting you to provide


0%

Interest-free credit

An affordable dental patient finance solution to enable patients to get the treatment they want or need.

Secure the best deal for your practice, call us on

01691 684175

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

Medenta Finance Limited, authorised and regulated by the Financial Conduct Authority No: 715523. Registered in Scotland, No: SC276679. Registered address: 50 Lothian Road, Festival Square, Edinburgh, EH3 9WJ. Tel: 01691 684175. Medenta act as a credit broker, not the lender and will introduce businesses to V12 Retail Finance Limited for which they will receive a commission. The amount of commission will vary depending on the product chosen and amount borrowed.

V12 Retail Finance Limited is authorised and regulated by the Financial Conduct Authority. Registration number: 679653. Registered office: Yorke House, Arleston Way, Solihull, B90 4LH. Correspondence address: 25-26 Neptune Court, Vanguard Way, Cardiff CF24 5PJ. V12 Retail Finance Limited act as a credit broker, not a lender, and only offers credit products from Secure Trust Bank PLC. Not all products provided by V12 Retail Finance are regulated by the Financial Conduct Authority. Secure Trust Bank PLC trading as V12 Retail Finance are authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registration number: 204550. Registered office: Yorke House, Arleston Way, Solihull, B90 4LH. Calls are recorded for training and compliance purposes.

CLINICAL DENTISTRY
INCORPORATES...Aesthetic
Dentistry
TODAYEndodontic
PRACTICEIMPLANT
DENTISTRY
TODAY

OralHealth

ORTHODONTIC
PRACTICESeptember 2024 ■
Vol 4 No 8

FEATURES

GENERAL
DENTISTRY
15

16 RESTORATIVE DENTISTRY: DENTURES

The winning denture case from the Dentistry Clinical Case Awards 2023 – Rupert Monkhouse and Dean Ward

AESTHETIC
DENTISTRY
23

25 MINIMALLY INVASIVE COSMETIC DENTISTRY

An align (and expand), bleach, ceramic case that highlights a collaborative approach to cosmetic dentistry – Sam Jethwa

30 POST-BLEACHING MAINTENANCE

A home bleaching protocol supplemented by meticulous maintenance using dental strips – Rim Bourgi

32 TOP TIPS: SMILE MAKEOVERS

Guidance on offering smile makeover treatment – Alan Clarke

DIGITAL
DENTISTRY
35

36 ARTIFICIAL INTELLIGENCE AND PERIODONTAL DIAGNOSES

The role artificial intelligence can play in periodontology – Makyle Khan



FEATURES

ENDODONTICS

41

43 MINIMALLY INVASIVE ENDODONTIC TREATMENT

Minimally invasive endodontic treatment using a new file with two heat treatments in a single file – Massimo Giovarruscio



IMPLANT DENTISTRY

51

53 COMPLEX FULL ARCH RECONSTRUCTION

A complex full arch case utilising a guided surgical approach to optimise surgical and prosthetic accuracy – Nikolas Vourakis



60 TOP TIPS: ALL-ON-4

Guidance on offering All-on-4 implant treatment – Fezaan Gatrads

ORAL HEALTH

63

65 ORAL HEALTH IN ELDERLY CARE

Utilising antibacterial light-activated treatment to enhance oral health in elderly care – Nina Garlo



ORTHODONTICS

69

70 TREATING ROTATIONS AND CROWDING

Treating mild crowding with rotated incisors with an effective, conservative solution to protect the long-term health of the dentition – Neil Fearn

75 COMPLEX OPEN BITE CASES: PART THREE

Utilising the airway-facially generated treatment planning pyramid for complex open bite cases – Christian Leonhardt

MARKETPLACE

80

INDUSTRY INNOVATIONS

The latest product, services and equipment news from the industry

ENHANCED CPD

82

Q&A: ECPD

Earn seven hours of enhanced CPD in this issue

Dentistry Compliance

POWERED BY



apolline

Benefits include:

- **Compliance** management software
- A document vault of all the **essential policies** required to be compliant
- **Automated** clinical audits
- Patient and staff **satisfaction** surveys
- Realtime compliance status **dashboard**
- Task **delegation** and acknowledgement tracker
- Includes **Dentistry CPD** licenses
- **Easy to use**, intuitive software
- **NEW** **Secure** employee document storage
- **NEW** Employment **contracts**
- **NEW** Staff **handbook**



**BOOK YOUR
DEMO NOW.**

For more **information** call 01923 851 771

www.dentistry.co.uk/compliance

CLINICAL DENTISTRY AWARDS 2024

WITH THANKS TO OUR SPONSORS



CHARITY PARTNER



CLINICAL DENTISTRY AWARDS SPONSORS

CLINICAL DENTISTRY AWARDS

The Clinical Dentistry Awards aim to acknowledge clinical excellence in practice. This year's ceremony takes place at Royal Garden Hotel in London on Friday 11 October. To book your tickets, and more information, call **01923 851732**, visit dentistry.co.uk/awards, or scan the QR code.



With the shortlist announced and plans well under way for the ceremony, it's time to introduce the companies supporting this year's Clinical Dentistry Awards!

The aim of the Clinical Dentistry Awards is to acknowledge clinical excellence in practice. Tickets are currently available for this year's ceremony, which takes place at Royal Garden Hotel in London on Friday 11 October, but be quick if you want to attend, as it's normally a sell-out event! Get in touch with the team on 01923 851732 for further details.

Without further ado, presenting the 2024 Clinical Dentistry Awards sponsors.

ADI



The Association for Dental Implantology (ADI) is an independent network and membership organisation for implant dentistry in the UK, connecting you to expert education, mentoring and research to support you at all stages of your career.

The charity's mission is to advance education in the field of dental implantology for the benefit of the public.

Founded in 1987 as a professional, non-profit organisation, the ADI has developed into one of the largest dental bodies in the UK with over 2,400 members.

It is an unbiased membership association with membership options for the whole dental team and industry.

The ADI is administered by an office based in Amersham and governed by a voluntary elected committee from across the UK.

For further information, visit www.adi.org.uk.

BIOHORIZONS CAMLOG



Biohorizons Camlog is a leading supplier of premium value dental implant systems, restorative components, and offering a comprehensive line of biologics products and digital solutions. It is committed to developing evidence-based and scientifically proven products, as well as continuing education adhering to highest standards.

This year, Biohorizons Camlog is

delighted to celebrate a combined 55 years of making connections. With Biohorizons' 30th and Camlog's 25th anniversary, Biohorizons Camlog can look back on a successful journey of making dental connections and consistently gaining influence in dental implantology through high-quality solutions. Since its humble beginnings in 1994, Biohorizons Camlog has consistently pushed the boundaries of innovation, transforming the implantology landscape.

Headquartered in the US (Biohorizons Inc and associates) and Europe (Camlog Biotechnologies GmbH and associates), Biohorizons Camlog's geographic positions allow it to efficiently serve direct subsidiaries in the Americas, Europe and Asia, as well as its entire distribution network in more than 90 countries around the world.

Biohorizons Camlog is part of Henry Schein Inc, a solutions company for healthcare professionals powered by a network of people and technology. With more than 25,000 Team Schein Members worldwide, Henry Schein's network of trusted advisers provides over one million customers globally with more than 300 valued solutions that help improve operational success and clinical outcomes.

For more information, visit www.biohorizonscamlog.com

BUPA DENTAL CARE



Bupa Dental Care's aim is simple: to deliver world-class care at a local level. Providing exceptional dental care is its passion, and with many ways to pay and even a subscription plan available, Bupa Dental Care believes that everyone deserves a happy and healthy smile.

Bupa Dental Care delivers quality dentistry at more than 325 practices around the UK, offering both private and NHS services. Always looking forward, its focus on the future means Bupa Dental Care continues to invest in its practices and the development of its teams. This ensures Bupa Dental Care can meet demand while remaining at the forefront of dentistry.

As part of this, Bupa Dental Care gives you access to the latest digital technologies and innovations available

within the sector. As a business, it continues to deliver high quality care with cutting edge equipment, with you and your wellbeing at the heart of everything it does.

To find out more and search Bupa Dental Care's latest vacancies, visit jobs.bupadentalcare.co.uk.

CHRISTIE & CO



CHRISTIE & CO
Dental

Christie & Co is one of the largest specialist firms of business agents in the UK dealing with the valuation and sale of dental practices. Christie & Co offers a full range of professional services to clients buying, selling or raising finance in the dental sector. Dealing across the whole market and all price ranges and practice types, Christie & Co dental specialists have an in-depth knowledge of the area in which they live and work. Christie & Co is regulated by the Royal Institution of Chartered Surveyors (RICS), so its clients can proceed with confidence that its advice is both accurate and trustworthy.

Visit www.christie.com for more information.

DENTSPLY SIRONA



Dentsply Sirona is focused on empowering dental professionals to provide better, safer, faster dental care. It leads the way in digital dentistry and provides comprehensive digital workflows so you can treat cases in less time, treat more complex cases with confidence and improve the predictability of treatment.

Visit Dentsply Sirona at a dental show, event or online at dentsplysirona.com to discover the new digital universe of solutions including DS Core; its cloud-based platform connecting clinicians with their equipment, partners and patients, 3D printing with Primeprint and portable intraoral scanning with Primescan Connect.

With innovative solutions to support the whole range of dental workflows including implant dentistry with DS Primetaper EV and Atlantis, orthodontics with Suresmile clear aligners, endodontics with Protaper Ultimate and Trunatomy, Dentsply Sirona is your trusted partner to ensure the continuous evolution and growth of your practice.

For further information, visit www.dentsplysirona.com.

PHILIPS

PHILIPS

Philips is a leading health technology company focused on improving people's health and wellbeing and enabling better outcomes across the health continuum – from healthy living and prevention to diagnosis, treatment, and home care.

Philips brings a century of healthcare expertise to oral care innovation and creates solutions that help your patients live their healthiest life and shine on.

Philips offers a complete oral healthcare solution to always get it right. Clinically superior clean teeth with Sonicare, floss like a professional at home with the cordless power flosser, and whiten with a full range of safe and easy whitening solutions for any patient with Relief ACP (amorphous calcium phosphate) built into every solution.

Get in touch with Philips Electronics UK Ltd at dental.sales.support@philips.com.

PORTMANDENTEX



portman
dentex

Portmandentex provides dental care to over a million patients every year. Today, it supports more than 370 practices across the UK and Ireland, partnering with more than 2,400 passionate clinicians and empowering over 4,500 dedicated colleagues.

Portmandentex's purpose is to enable better health and happiness over lifetimes. Its practices are integral parts of their local communities and Portmandentex supports its clinicians and practice teams to deliver the best possible patient care – every day.

Portmandentex knows that every community and every patient is unique: and as a dental group, it strives to balance celebrating the individuality of its people and practices, with the benefits of its scale and commitment.

To find out more, visit www.portmandentex.com.

RPA DENTAL

RPA DENTAL

With over 50 years of supplying first-class equipment, products, and engineering services to the dental profession, RPA Dental is proud of the legacy it has created. Providing some of the most stylish and innovative equipment available on the market, continually working with its European partners, RPA Dental has catered to the ever-evolving needs of the dental profession. RPA Dental is passionate about the products and service that it stands for.

RPA Dental has developed a broad wealth of experience and expertise working with a large number of the UK's pioneering clinicians, dental influencers, corporate dental groups and acute UK NHS facilities/teaching institutions

As a team, it works closely and holistically with all its clients to ensure the team fully understands their requirements and ultimately their dreams. RPA Dental can also provide all

the key information and advice you may need to implement a smooth and efficient daily workflow, while maximising the return on your investment.

So, if you are looking to create something unique, need new clinical equipment, are looking to completely refurbish your dental working environment, or simply needs some professional advice and services, RPA Dental has the team to offer you the bespoke package to tailor to all of your professional needs.

For further information, visit www.dental-equipment.co.uk.

CHARITY PARTNER: DENTAID THE DENTAL CHARITY



Dentaid
The Dental
Charity

Dentaid The Dental Charity provides dental care for people experiencing homelessness, abuse, poverty, and harm. Its nine charity dental units visit hostels, community centres, soup kitchens and support services with volunteer dental professionals providing dental treatment and oral health programmes for the most vulnerable people in our communities.

Dentaid The Dental Charity's approach helps to break down barriers and gives hard-to-reach patients the best possible chance of accessing dental care. The charity knows that dentistry can play a key part in helping someone move on to a new chapter in their lives. Dentaid The Dental Charity is growing fast, and this year will deliver almost 1000 mobile dental clinics across the UK. Its patients include people experiencing homelessness, survivors of domestic abuse, cancer patients, fishing communities, families experiencing poverty and health inequalities, refugees and asylum seekers and those facing addiction, substance misuse and harm.

By offering a regular, sustainable dental service, Dentaid The Dental Charity helps patients re-engage with dental services, resulting in a significant improvement in their oral health and self-esteem.

This work is supported by an oral programme including its Brightbites scheme delivered at schools and family support services, particularly in areas facing social deprivation.

For further information, visit www.dentaid.org or call 01794 324249.

G-ænial™ A'CHORD

Advanced universal composite with unishade simplicity



Simplified unishades

Five core shades that replace all 16 classic VITA shades with ease

Beautiful aesthetics

Natural fluorescence and high gloss level and gloss retention

Revolutionary technology

Proprietary filler and coating, high stain and wear resistance and excellent radiopacity

Additional shades for extreme challenges

Cervical, opaque, enamel and bleach shades available as well

Optimal handling

Easy to manipulate with an instrument or a brush



GENERAL DENTISTRY

RUPERT MONKHOUSE & DEAN WARD
Restorative dentistry: dentures

16



Reflecting on the case, I was really happy with how it ended up. Not only the aesthetics but also how smoothly the whole process went. This was a complex case, but through clear communication between myself and Dean, as well as trusting each other's opinions and abilities, we were able to manage this case with minimal fuss – Rupert Monkhouse and Dean Ward, p16

ESSENTIAL READING FOR THE MODERN DENTAL PROFESSIONAL

Giving dentists the confidence to work and thrive in the full spectrum of general dental practice

Practical. Progressive. Educational.



**RUPERT MONKHOUSE**

BDS
Rupert graduated from King's College London in 2017. Since graduating, he has developed a keen interest in removable prosthodontics, which he pursues at Woodborough House alongside Dr Nick Fahey.

**DEAN WARD**

Dean founded Innovate Dental Laboratory in 2014 and has led the business as a director since then.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: General dentistry

Educational aims and objectives:

To present a denture case that showcases a collaborative approach between dentist and technician. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



In this article, dentist Rupert Monkhouse and dental technician Dean Ward present their winning Dentistry Clinical Case Award entry, highlighting the various treatment stages of replacing a lower denture from their own perspectives.

CASE REPORT**Rupert Monkhouse**

A 74-year-old female patient was referred internally from a colleague within the practice for a new lower denture. Her current lower chrome was aided by an implant in the position of the LR3 and an old post-retained custom abutment in the LL3. The denture was extremely worn and had worn through the two abutments (Figures 1a and 1b).

In this case, the bilateral free end saddle had not been regularly relined, causing a lack of posterior support. This meant, during loading, the posterior region would sink down, pivoting on the two abutments, and eventually breaking through.

The patient did not want further implant surgery and so a new removable option was the only way forwards.

Radiographic findings showed good levels of bone around both the lower implant and post core custom abutment (Figure 2). The root canal status was also excellent. The upper dentition was heavily restored but stable.

Dean Ward

As a dental technician, when you receive a Kennedy class 1 case it can cause stress during the planning phase as there aren't many options to make the denture stable and preserve what bone is left from previous wear.

TREATMENT PLANNING**Rupert Monkhouse**

In the consultation appointment, I took a scan to allow some initial planning of potential designs and identifying the abutment systems, which proved



FIGURES 1A and 1B: Initial situation

**Dentistry
CLINICAL
CASEAWARDS
2023
WINNER**
Restorative: Dentures
(full/partial)

Rupert Monkhouse and Dean Ward won the Restorative: Dentures category at the Dentistry Clinical Case Awards 2023.

Rupert Monkhouse and dental technician Dean Ward present their winning denture case from the Dentistry Clinical Case Awards 2023

Restorative dentistry: dentures

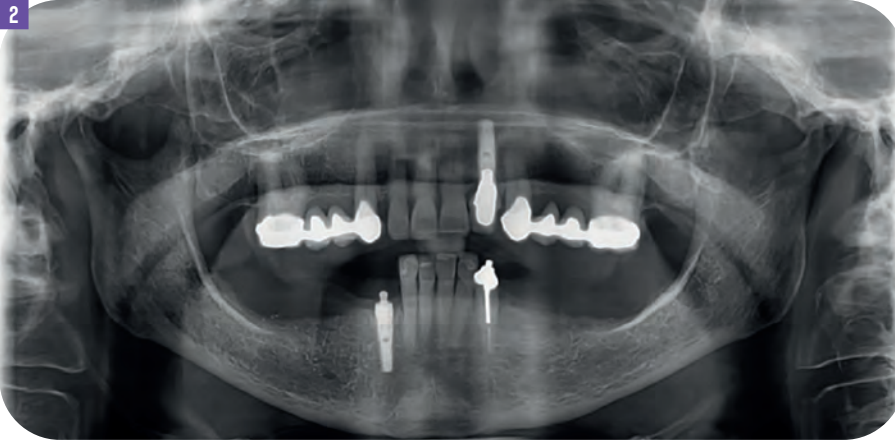


FIGURE 2: Radiograph showed good bone levels around both the lower implant and post core custom abutment

a challenge given the age of the denture and wear over that time to the abutments. During the second appointment, we took primary impressions. This case was quite challenging due to the long but narrow arch form and severe resorption. The impression was built with putty

in the posteriors and heavy and light body wash on top. The upper scan model was used as the opposing and an Occlufast bite was taken (Figure 3). This was then returned to Dean to produce special trays, but we also had to decide what we would do with the custom abutment.

Dean Ward

The main question I had to answer was how can we make this denture stable? The RPI system is notoriously outdated and proven to cause more harm than good. So where could we get the stability from?

We opted to place composite rest hooks on the cingulum and the custom abutment on the LL3 was useful if it was trimmed down or replaced.

I ran the design past our chrome technician Chris Hesketh, which he approved.

That left us with the small problem of the abutment. We couldn't replace it, but we had to utilise it!

Rupert requested me to design my ideal abutment shape and produce a guide so he could adjust it prior to impressions.

TREATMENT PREPARATION

Rupert Monkhouse

The next visit was probably the busiest of the treatment plan. I had to prepare the incisors with the cingulum composites, as well as reduce the abutment of the LL3 as per Dean's plan, before taking the all-important secondary impression.

restoration



'Swann-Morton' and the 'Ring Pattern Logo' are the registered trade marks of Swann-Morton Limited and related companies.

With Dental and Facial aesthetics in mind, Swann-Morton have produced a versatile range of handles and blades.

The cutting edge expertise embodied within the Swann-Morton Range meet the most demanding and complex requirements presented by modern day Periodontal, Cosmetic, Oral Implantology, and Maxillofacial procedures.

Whether it's a 15c or 12d scalpel blade being used for Periodontal surgery, an SM69 Fine blade for Implants or one of our Safety Scalpels to assist in the implementation of cross infection controls within the Practice, the choice is yours.

Where only Swann-Morton will do.

For more information on the Swann-Morton range of products designed for Dentistry, including the lightweight Fine Range, please go to our website

Swann-Morton®
SHEFFIELD ENGLAND



Swann-Morton Ltd. Penn Works,
Owlerton Green, Sheffield S6 2BJ

Telephone: +44 (0)114 2344231
Email: info@swann-morton.com



www.swann-morton.com

Using the prep guide, I reduced the LL3 both labially and occlusally, essentially making a crown prep similar to a telescopic attachment. The old abutment remained stable, so we decided to leave it as it was rather than making a true telescoping coping, as this would require us to reduce even further.

I then added the lingual composite ledges as per the Scandinavian design principle to maximise the support from the teeth and to balance the pressure on the two abutments, which led to the initial failure. The Scandinavian design aims to reduce gingival coverage, allowing good hygiene, while maximising the support through the long axis of the tooth (Figure 4).

Once this was completed, I took the secondary impressions. Again, I used putty over the free end saddle areas first before using various viscosities of silicone to pick up the implant and the details (Figure 5).

This was then sent to Dean to cast up and we decided to produce a pattern resin try-in to confirm the accuracy of the definitive cast.



FIGURE 3: Primary impression

Dean Ward

The beautiful impression was cast and duplicated with silicone. Figure 6 shows a disposable duplicate cast, as pattern resin is a messy material.

The reason we decided on a pattern resin try-in was so the patient got an overall feel of the prosthesis and it helped to manage her expectations before the costly chrome work was made. It also allowed us to ensure we had the accuracy in the model that we needed for such an intricate framework.

Rupert Monkhouse

The try-in was successful, but an alteration needed to the shade, so the work was returned to Dean to have the framework made.

For the next step, we decided to use the altered cast technique, so Dean had to add the impression trays once the framework was made.

Given increasing support was the primary aim for our improvement of this case, we felt this additional step was worthwhile.

Time is a precious, finite resource.

Don't waste it.

We can't make more time, but we can help you **make more of your time.**

A crucial part of your patient-excellence toolbox, loupes are **clinically proven** to increase productivity.

See clearly, see more patients.

ORASCOPTIC™

Book a meeting and see more!



FIGURE 4: Jig



FIGURE 5: Secondary impressions



FIGURE 6: The impression was cast and duplicated with silicone



FIGURE 7: Chrome framework



FIGURE 8: Light body fit check

FRAMEWORK AND ALTERED CAST TECHNIQUE**Dean Ward**

With pre-planning all approved, the next stage was to speak to Chris Hesketh regarding the final points of the design.

Rupert and I opted to build a composite crown on the LL3, so this had to have the correct substructure. The reason for this was room. With the small amount of room we had, even with reductions, the composite is considerably better at disguising metal telescopics than acrylic.

The chrome arrived three weeks later and had been executed to perfection.

Then I had to add acrylic special tray material to the free end saddles so that there was enough room for Rupert to border mould and get that final impression for the altered cast technique (Figure 7).

Rupert Monkhouse

The framework was tried-in to ensure it was accurate. Thanks to Chris Hesketh's impeccable work, it clicked right into place!

I then did a light body fit check on the trays to ensure a passive fit of the trays.

The impression was taken with medium bodied silicone. The framework was placed with finger pressure on the framework and rests to simulate the patient in occlusion.

Functional border movements can then also be done to ensure an accurate fit. The work was sent back to Dean for the fiddly part of this case. Not many technicians do this technique, so we were really stretching ourselves here (Figure 9).

Dean Ward

The altered cast technique is something you don't see very often but is proven to work well if executed correctly. I knew Rupert had used this technique before and we had discussed what can go wrong if not done correctly before we started, so I was confident.

Firstly, the secondary model is sectioned 2-3mm from the teeth and the chrome is seated so is sat perfectly onto the supporting teeth (Figure 10).

The model is then cast using the same type four stone, remembering to preserve the moulded borders. The wax try-in was added so the stability, bite, fit and aesthetics can be given the green light for finish (Figures 11 and 12).

TRY-IN APPOINTMENT**Rupert Monkhouse**

The try-in appointment went very smoothly. The patient noted how comfortable this try-in was compared to the extensions of the pattern try, which confirmed the bonus benefit of the altered cast, double checking the functional extensions.

We felt the shade was still a touch off, so we





FIGURE 9: Medium bodied silicone impression



FIGURE 12: Wax try-in added

planned to go half a shade down but go straight to processing. I also took photos with the gingival shade guide to allow Dean to characterise correctly (Figure 13).

Dean Ward

I had to process first before the composite crown was made. I normally injection mould almost all dentures, however this was too precise and needed a different approach, so I processed in pouring acrylic.

This allowed more control as well as peace of mind this would be a perfect fit, which was important in such a complex case with so much work going into it!

Then I had a discussion with Oliver Wade, a friend at Beaver Dental, who was building up the composite crown over the telescopic LL3. We shared pictures and had a discussion about how we could get the composite and acrylic to match as best we could.

Once this was all finished, I added a little bit of age-appropriate pink to the gums and a small amount of staining to the teeth for a natural appearance, based on the pictures.

FINAL RESULT

Rupert Monkhouse

It then came to the big day – the fit. The denture

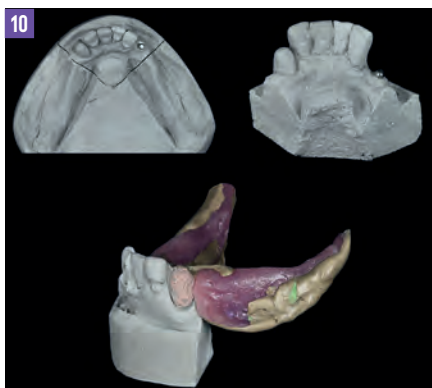


FIGURE 10: Altered cast technique



FIGURE 13: Shade alteration



FIGURE 15: Lab work

fitted beautifully with no adjustments required (Figure 14). The longest part of the appointment was teaching the patient the path of insertion and withdrawal (Figure 15).

The patient was extremely happy with the comfort and aesthetics (Figure 16). Technically, I was thrilled with the stability, it was extremely solid in occlusion and pressing on the free end saddles. Our plans to maximise and balance support were successful!

REFLECTIONS

Rupert Monkhouse

Reflecting on the case, I was really happy with how it ended up. Not only the aesthetics but also how smoothly the whole process went.

This was a complex case, but through clear communication between myself and Dean, as well as trusting each other's opinions and abilities, we were able to manage this case with minimal fuss.



FIGURE 11: Altered cast pour



FIGURE 14: Fit



FIGURE 16: Final result

Dean Ward

I enjoyed this case all the way through. The denture will always get praise for how it looks, but for me, to take this situation and turn it into something that works very well and will last for years is the biggest achievement. [📄](#)

Acknowledgement

The authors would like to thank dental technicians Chris Hesketh and Oliver Wade for their additional support in this case.

PRODUCTS USED

Occlufast Zhermack



DR SAM JETHWA, FOUNDER OF BESPOKE SMILE ADVANCED DENTISTRY & ACADEMY, EXPLAINS HOW TO MAKE VENEERS SAFE, BEAUTIFUL AND PREDICTABLE



FIGURES 1A and 1B: Before and after



FIGURES 2A and 2B: Before and after

BESPOKE SMILE ACADEMY

For further information, Whatsapp the team on 07765290773 or visit www.bespokesmileacademy.co.uk.



PREDICTABILITY WITH CERAMIC VENEERS

Claire works as an editor-in-chief of a well-known health/lifestyle magazine, so when it came to discussing treatment options, she was conscious of longevity, minimal intervention, but she was also attuned to function and aesthetics working in harmony.

Claire wanted to maintain character and a natural aesthetic, as speaking in front of large groups where she is the focus would mean teeth could be distracting if design, texture, colour, size, shape etc were not facially driven. She did not want a short-term treatment.

As orthodontics would not achieve anything for the patient, we looked into restorative options. After discussing whitening and bonding (already present), we settled on a treatment plan of upper 10 porcelain veneers, as minimally as possible (Figures 1 and 2).

At Bespoke Smile Academy, I believe that the two areas of failure with any cosmetic indirect work that involves multiple teeth are:

1. Aesthetics – either we or the patient (or both) are left with more to desire from the smile
2. Function – debonding, fractures, sensitivity, and unidentifiable discomfort – all bite related factors.

How do we avoid this? Especially when the stakes are high, with expectation and price point, when it comes to veneers.

A PREDICTABLE WORKFLOW

When we started to see high expectation patients, and patients who travelled from long distances or abroad, we developed formulas to bring predictability. We had one chance to get things right, and there are no other options other than success.

Bespoke Smile Academy has been teaching our secrets, learned the real-life way through thousands of teeth, to dentists of any experience level, through in-person hands-on courses with live patients, online courses, a diploma, and 1:1 mentorship for three dentists per year. Through our community, our dentists are supported throughout, given case advice long term, and put in touch with our approved laboratory ceramists.

To join the academy and choose a course, visit www.bespokesmileacademy.co.uk and take the next step towards predictable occlusion and aesthetics by joining like-minded dentists pushing themselves to do more high value dentistry, without keeping themselves up at night! [📞](#)



FIGURE 3: Creating lifelike results



FIGURE 4: Dr Sam Jethwa, founder of Bespoke Smile Advanced Dentistry & Academy



The treatment patients are asking for!

ivoclar



SprintRay

MediForm

align
invisalign | itero

FirstFit



www.avantgardedentistry.co.uk

Same Day Smile, the future for all dental professionals!

Future proof your practice by becoming a **Same Day Smile provider**. Learn the techniques, workflows, and strategies to keep your business thriving and your patients smiling!

2024 Courses Include:

- ▶ Same Day Smile Residency
FirstFit Veneers, No Prep Veneers & Injection Mould techniques
- ▶ Injection Mould
- ▶ Guided Surgery
- ▶ Same Day Sprint
- ▶ Patient Experience
- ▶ Photography Masterclass



Limited Spaces
Don't miss out

Book your
course today



SCAN ME

AESTHETIC DENTISTRY

SAM JETHWA

Minimally invasive cosmetic dentistry

25



RIM BOURGI

Post-bleaching maintenance

30



ALAN CLARKE

Top tips: smile makeovers

32



ESSENTIAL READING FOR TODAY'S DENTAL PROFESSIONAL

Exploring all aspects of aesthetic and cosmetic treatment – including facial aesthetics – to help deliver winning smiles

Practical. Progressive. Educational.



1000 Shades of White ... all in 1 Syringe!

Paste

Flow

Flow Bulk

3 Viscosities – unlimited possibilities

The patented Smart Chromatic Technology in OMNICHROMA ensures continuous shade adjustment from A1 to D4 due to its structural colour. Add to this 3 different viscosities for all preferences and areas of application. The OMNICHROMA family thus offers the user every conceivable option with a minimum of materials.

OMNICHROMA –
is all you need for
state-of-the-art
filling therapy.

More
information:



tokuyama-dental.eu/en/omnichroma

Tokuyama Dental
omniCHROMA



without artificial colour pigments
"automatically" adapts to the tooth shade



Bis-GMA-free formulation
for better biocompatibility



sustainable stocking
only order 1 shade & no expired special shades

 **Tokuyama**

**SAM JETHWA**

BDS MFDS RCS (EDIN) PGDIP CLINED
Sam is the founder of Bespoke Smile Advanced Dentistry and Academy, and president elect of the British Academy of Cosmetic Dentistry.

CONTACT

 @dr.samjethwa

ENHANCED CPD

GDC anticipated outcome: C
CPD hours: one

Topic: Aesthetic dentistry

Educational aims and objectives:

To present a case showcasing the expand, align, bleach, ceramic protocol. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



The patient attended the practice after being referred by family members – and as we all know, nothing is stronger than a word-of-mouth referral!

During the initial consultation, the patient stated he wanted ‘the perfect smile, whatever it takes... I have a wedding in 12 months’. (At least it was 12 months, and not two months!)

We are not always graced with the above request. Often, there is a strict list of requirements from the patient: time, budget, some treatments that are off limits no matter what etc. So, hearing ‘whatever it takes’ was a pleasant surprise.

With that in mind, if we receive cart blanche to carry out any treatment we like, how would we go about it? We are so used to leaving it up to the patient, that in situations like this, we often become stumped.

FIRST STAGE – CONSULTATION

The first step was to break it down, not only for ourselves but also for the patient.

My focus during the consultation is to work backwards from the end goal, rather than working from the existing and see where we end up.

This method allows the patient to understand the treatment suggestions, or options in terms of how close to the ‘ideal’ we will end up. It also allows the patient to start to appreciate limitations. As all cosmetic or restorative dentists know, managing expectations can be the make or break for a case, regardless of clinical effectiveness.

Consultation factors included:

1. Idealistic – cosmetics:
 - Smile design principles (smile line, proportions, buccal corridors, gum contour, inclinations and tooth shape, midline)
 - Colour (expected final shades, the consequence on design that very bright shades will bring in terms of thickness of a veneer, or reflective properties, therefore perception of size etc)
 - Upper versus lower (differences at the end of

treatment to be considered if treating one arch, or acceptance of limitations based on treating one arch, versus treating both upper and lower)

2. Practical:

- Compliance factors (ie will the patient wear removable appliance for orthodontics, or retention long-term?). In this case, the patient was not confident in his compliance with removable aligners
- Time frame for treatment (the patient had 12 months for treatment, as his wedding was scheduled for June 2024)
- Financial (initially a patient may request the ideal plan, however once financial considerations are made, the plan may need to be scaled back, as was the case here)

3. Health:

- Existing dentition (caries, periodontal, root health, tooth wear, missing teeth and consequences along with contributing factors). Once an in-depth discussion and consultation regarding the above had been concluded, we had arrived at realistic treatment options for the patient.

TREATMENT OPTIONS

In this case, the treatment options we discussed were:

- Orthodontic – upper and lower fixed orthodontics to align the arches, with use of an expander to create room. Treatment time was approximately nine months, after which reassessment would be needed for cosmetic treatment in the form of:
 1. No further treatment
 2. Whitening
 3. Whitening and bonding (edge, or composite veneer)
 4. Whitening and porcelain veneers (ultra minimal preparation)
- Restorative – avoiding orthodontics and moving to cosmetic restorations purely restoratively, such as porcelain veneers was deemed by us to be too destructive due to tooth positions and crowding, and a likely aesthetic compromise based on the

As easy as A, B, C! **Sam Jethwa** presents an align (and expand), bleach, ceramic case, highlighting a collaborative approach to cosmetic dentistry

Minimally invasive cosmetic dentistry





FIGURES 1 to 7: Initial situation

masking of mal positioned teeth affecting thickness of ceramic, and difficulty disguising tooth sizes. This option was not only not recommended, it was also advised against. The patient was, after an explanation, in full agreement with this, and the patient was aware that there will be limitations to tooth shape, a resultant midline black triangle, and some further enhancements that he may wish to pursue, in which case ultra-thin ceramic veneers will be placed on the upper 10 teeth, to provide him with his 'perfect' result. Knowing this before embarking on orthodontics is extremely helpful, as it allows the restorative end goal to be considered through the process, to limit preparation of teeth, and set tooth positions up to receive restorative treatment more aesthetically, minimally, and predictably.

Let's explore a scenario with a hypothetical patient. The hypothetical patient has Invisalign treatment, but didn't anticipate black triangles, uneven edges, residual space, shade discrepancies on completion of treatment. The patient opts for ceramic veneers to correct the above, and all teeth now require preparation to avoid bulky final positions. Had this been considered prior to orthodontics, the final tooth positions would be set back slightly, for example to allow additive treatment over reductive.

The conclusion of consultation? The patient was referred for fixed orthodontics, with expansion device prior to this with Dr Biju Krishnan.

ADVANCED LIGHT FORCE

For those of us familiar with carrying out tooth alignment prior to the restorative phase of smile design, the go-to modality for the majority of dentists has always been aligners.

While aligners can develop arches to give a wider smile, there are a significant number of patients who would prefer a fixed alternative due a number of factors – such as time, costs and compliance. Compliance is by far the most common consideration for those patients wishing to avoid aligners.

In this case, after discussion with the patient, we both felt that he could benefit from a wider smile as well as a straighter one. The patient wanted to avoid aligners as he felt he would not be diligent enough to wear them.

Using a fixed appliance to straighten teeth is a common procedure, with Dr Krishnan having pioneered some of these techniques over the past 15 years. However, in using a fixed brace, such as the Cfast device familiar to many, we often miss the opportunity to widen the smile as well as deprive ourselves of the benefit of reducing the amount of IPR required to align the anterior teeth.

Although there are many techniques available to widen dental arches, in this instance, we adopted to use the Advanced Light Force (ALF) appliance to aid us in this endeavour (Figure 8).

The ALF appliance, developed Dr Darick Nordstrom in the 1980s, is a device used in orthodontics and craniofacial therapy. It is designed to provide gentle, continuous pressure

to guide the growth and development of the dental arches and jaw.

Its lightweight, flexible design allows for subtle adjustments and, as it is generally fixed in place, with the dentist removing it intermittently for adjustments, patient compliance is not an issue. Also, its minimalistic design does not interfere with speech and is generally very well tolerated by patients. Only one ALF appliance is required per arch to enable significant arch form development, having the advantage over aligners, which would require significantly increased numbers to achieve the same result with potentially increased time and costs.

Once initial arch development was achieved, a Cfast brace was added so both tooth alignment and arch development could continue concurrently, allowing the process of expansion and alignment to be completed in a quicker timeframe (Figures 9 and 10).

In this instance, only very minimal IPR was required in the upper arch to align the teeth. In the lower, not only was there no IPR required, we actually had to close excess spacing created by the ALF!

TOOTH WHITENING

Before debonding, we agreed on the final position, after which the patient whitened. The goal is to brighten the underlying tooth structure as much as possible, prior to veneer placement, to ensure my ceramist can layer translucent/transparent ceramic rather than anything opaque.



FIGURE 8: Advanced Light Force appliance

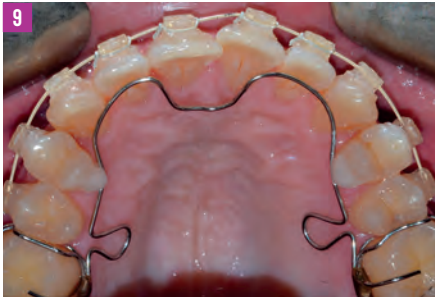


FIGURE 9: Upper arch: Advanced Light Force appliance with Cfast



FIGURE 10: Lower arch with Cfast



FIGURES 11 and 12: Tooth whitening



FIGURE 13: Preparation



FIGURES 14 to 16: Temporisation



It is extremely important to me that the results mimic nature, and do not strip the smile of that. We are known for 'have they, haven't they?' results. Whitening was carried out with 16% night-time gel from Boutique Whitening (Figures 11 and 12).

PREP STAGE

Next, we move forward with the prep visit, where we envisage the end result and rediscuss the design with the patient.

I prep with the end goal in mind. We have two options, to place a mock-up and prep through this, to ensure no over preparation. After many years of special interest in such treatments, I go direct to the preparation holding in my mind the end goal (Figure 13).

Minimal prep will focus on incisal edge reduction, for thin incisal edges, and sufficient thickness of ceramic to layer for effect, along with a bevelled wrap of the incisal edge to allow free function for the mandible. The buccal prep will involve purely reduction of tooth where undercuts are present, or where shape dictates to us that the end goal will appear bulbous without it.



FIGURE 17: Verification that ceramic is an exact copy of handmade trial smile

Following this, interproximal reduction, where black triangles are to be closed, and path of insertion needs attention.

Once prepared, retraction and/or cord is used, depending on how subgingival margins may sit. In this case, margins are all equigingival, which is always my preference unless there is a reason to prepare otherwise (such as dark roots).

Single stage putty and wash impressions are taken, all products for this step (and the upcoming temporisation steps) are from DMG.

TEMPORISATION

We then temporise, after spot etching, desensitizing with Gluma from Kulzer, and bonding our Luxatemp temporaries as a copy of the prep using the preop alginate.

This is then reverting us back the starting point, which is what our smile design plan was drawn from. This means we are sticking to the plan, rather than placing a wax-up that does not resemble the prep, and then is more difficult to adapt.



FIGURES 18 to 20: Final result

Next, I place Luxaflow from DMG over the Luxatemp to shape things using the Bespoke Smile Academy handmade trial smile protocol, clear margins, interproximal areas and clear excess. This is the most challenging yet game changing step in this process, as the design is in my hands.

Once I am satisfied with the design, we will show the patient, preparing them for the change and how this might be a difficult psychological process (Figures 14 to 16). We will measure lengths, and take impressions of the temps, forming records for the eventual lab prescription.

KEY STEPS FOR PREDICTABILITY

Copying the handmade trial smile

There are various methods in which ceramic

veneers are now made, with the use of digital technology both in clinic and lab. For me, the fully digital workflow comes with a number of compromises, which are too plentiful to discuss in this article.

In this case, analogue impressions (using DMG Honigum) are cast, and trimmed, in the lab. The Emax ingots are selected, in this case, higher translucency due to limited thickness, and a bridge core shade. A putty matrix is then made from the temporary model and skilfully trimmed to seat against the working model, within which the pressed ceramic has been made to fit. Any hand layering is done, only if the end results will accept it (for example, patients with low-risk vertical chewing patterns and minimal stresses at the incisal edges).

After years solely treating veneer cases, what is evident is there is no one size fits all when it comes to material.

Cementation

When we speak to new delegates at Bespoke Smile Academy, we often find that cementation of multiple units is one of the most stressful aspects for them. Combine this with ultra-thin materials and high expectations and the stress levels multiply.

We have a tried and tested formula to prepare veneers, and cement veneers without surprises.

The Bespoke Smile Academy six-day hands-on course exists to provide predictability for dentists carrying out smile makeovers. We teach complete workflows, polished protocols and reliable techniques to ensure that time and time again the outcome of treatment is predictable.

From the technique of trial smile removal to fit checks, patient approval/communication to preferred materials, clean up techniques and light curing protocol, no stone is left unturned as the flagship course focuses on real treatment on live patients.

A cementation visit in a case like this will be two hours from start to finish, without anaesthetic in the majority of cases, due to such minimal preparation (Figures 18 to 20).

Final occlusal schemes will be balanced, with usually minimal adjustment required, as the handmade trial smile will have verified the bite. Removable retainers will be provided, and fixed if the occlusion allows. [CD](#)



FIGURE 21: Treatment stages

ADVANCED DENTAL COURSES

Visit bespokesmileacademy.co.uk for online and hands-on courses and mentorship, and visit drbijkrishnan.co.uk for orthodontic training.

PRODUCTS USED

Gluma Kulzer
Cfast Cfast
By Night 16% Boutique Whitening
Luxatemp, Luxaflow, Honigum DMG

ZIRKONZAHN DETAILS ITS LECTURE TOUR COMING TO SOUTHAMPTON, MANCHESTER AND CARDIFF

ZIRKONZAHN'S LECTURE TOUR

The dental company Zirkonzahn (South Tyrol, Italy) has announced its 2024 'Predictable and Consistent Results – Common Mistakes and Solutions to Overcome them Successfully' lecture tour will be coming to Southampton, Manchester and Cardiff from 23 to 26 September, answering some common questions that may arise when dealing with complex zirconia restorations, including:

- How can I achieve a good predictable outcome when working with zirconia?
- What do I have to pay attention to to avoid common errors in the dental workflow?

LECTURE DETAILS

MDT Alessandro Cucchiaro (CAD/CAM expert, Zirkonzahn course instructor and lecturer at various events worldwide) will draw attention to technical aspects and factors that influence the final result of a zirconia restoration.

By showing a real complex case restoration, he will illustrate the challenges faced during each workflow step, from patient diagnostics to characterisation, providing keys to overcome them successfully. Attention will be given to impression-taking, occlusion registration, passivity check and correct material selection. The process of creating high-end, predictable zirconia solutions also involves a well-established communication between dental technicians and dentists. For this reason, the lecturer will also focus on the latest digital diagnostic devices – a key aspect for improving communication within the treatment team. [🔗](#)



FIGURE 1: The lecture will focus on a complex restoration 100% digitally created, starting from diagnostic analysis and complete 3D virtual reproduction of the patient's oral and extraoral anatomy without loss in information: initial situation (left) and first digital tooth setup (right)



FIGURES 2 and 3: Digital planning of the gingivectomy in the Zirkonzahn.Modifier software, definition of the new occlusion and design of the temporary mock-up which is the key tool for checking and reproducing all workflow steps up to the final restoration

ZIRKONZAHN

For details and to register, email carmen.ausserhofer@zirkonzahn.com, call +39 0474 066 662 or scan the QR code.

Zirkonzahn®
Human Zirconium Technology



Special attention will be given to impression-taking, occlusion registration, passivity check and correct material selection

Post-bleaching maintenance

Rim Bourgi presents a home bleaching protocol supplemented by meticulous maintenance using dental strips, tailored to manage the challenges presented by tooth discolouration

Bleaching serves as a powerful tool in modern dentistry, offering patients a non-invasive approach by utilising agents like hydrogen peroxide (HP), carbamide peroxide (CP), and sodium perborate to address tooth discolouration.

Numerous devices and techniques are employed for colour assessment, including colour scales, colorimeters, spectrophotometers, and digital photography.

But, how can dentists ensure their patients maintain white teeth and a confident smile? One promising solution lies in the use of Professional Dissolving Whitening Strips P3 (White Dental Beauty, Optident) as a maintaining agent after a precise home bleaching protocol.

These strips, containing 6% HP along with two phosphates, are designed to preserve tooth colour post-bleaching while sustaining a bright smile. The inclusion of P3 in the product name signifies this formulation. By incorporating such innovative products into their practice, dentists can empower patients to maintain the aesthetic results of their treatment, boosting confidence and satisfaction.

The main emphasis of this article is on a comprehensive home bleaching protocol supplemented by meticulous maintenance using dental strips, tailored to manage the challenges presented by teeth discolouration, which can significantly impact patients' aesthetic concerns.

Additionally, a key objective is to

demonstrate the impact of a non-white diet on teeth maintenance following bleaching, thereby providing supplementary insights into the patient's dental transformation.

CASE STUDY

A frontal photograph captures the patient smiling, showcasing their upper and lower teeth. The patient's lips are gently parted, revealing a natural and relaxed smile. The teeth appear aligned and healthy overall, yet there is noticeable discolouration present on anterior teeth (Figure 1).

In this case, home bleaching was administered, with the patient receiving

instruction on the application of the bleaching agent. By employing a custom fit tray, a 16% CP gel from White Dental Beauty (Optident) was applied for two to four hours daily over a four-week period. The CP gel, equivalent to a drop per tooth (about half the size of a rice grain), was dispensed to the patient in eight gel syringes.

Notably, the use of Novon technology resulted in no reported sensitivity during the bleaching process.

It is worth mentioning that custom fit trays can be obtained through conventional methods or digitally using an intraoral scanner like the Helios 500 (Eighteeth).



RIM BOURGI
Rim graduated dentistry in 2018 at Saint Joseph University of Beirut, Lebanon, and pursued her master's degree in aesthetic and prosthetic dentistry in 2021. She is a community member of Styleitaliano.



FIGURE 1: Initial situation



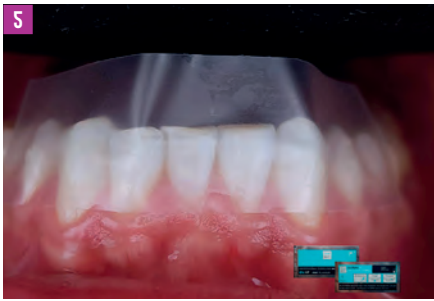
FIGURE 3: MDP2 handle



FIGURE 2: Before and after



FIGURE 4: Final situation of the lower arch



FIGURES 5 and 6: White Dental Beauty P3 Strips application on the mandibular



FIGURE 7: Final result

PHOTOGRAPHY

A comprehensive edge-to-edge photograph, captured with the Smile Lite MDP2 (Smile Line), was utilised to show colour disparities between the teeth and the shade guide. The initial shade recorded for this case was A2 on the Vita classical scale. After four weeks of bleaching, the shade was assessed as B1 based on the shade guide. This outcome is visually satisfactory, as depicted in Figure 2.

Recently introduced, the MDP2 now features a convenient handle that simplifies the process of capturing photographs (Figure 3).

With this handle, clinicians can easily take pictures with a simple click of a button, enhancing workflow efficiency.

In this instance, photographs were taken by holding the shade guide in one hand and the MDP handle in the other, allowing for seamless and precise image capture.

The Smile Lite MDP2 is a handy tool in modern dentistry, allowing for clear and precise intraoral and extraoral photos. It ensures accurate colour depiction and helps document dental conditions effectively.

With its easy-to-use design and portability, the Smile Lite MDP2 streamlines clinical processes, making it easier for dentists to incorporate photography into their routines. Plus, it enhances patient understanding and improves case presentations, leading to better treatment results and happier patients.

Figure 4 illustrates the bright and shiny appearance of the lower teeth.

Home bleaching has emerged as a valuable method for enhancing the aesthetics of discoloured teeth

The maintenance protocol commenced with the application of P3 strips, which were documented on the lower arch to facilitate ease of use for the patient at home.

The P3 Professional Dissolving Whitening Strips (White Dental Beauty, Optident), come in a pack of 28 strips, each infused with a mint flavour. To use, first, peel the strip from the corner and carefully remove it. Next, apply the strip to the teeth according to the instructions (the strips were applied to the buccal side).

Subsequently, the strips were flipped to the lingual side for the mandibular (Figures 5 and 6).

The patient has been able to monitor the progress step-by-step by taking photographs and using both the whitening agent and strips in combination.

TREATMENT RECOMMENDATIONS

Professional guidelines for tooth bleaching recommend that patients cease smoking and avoid foods and beverages rich in colouring agents, such as wine, soft drinks, tea and coffee, to adhere to a 'white diet' (Hardan et al, 2024).

Research shows that tooth whitening can cause the enamel to develop irregularities, making it more prone to staining. Consuming coloured foods and drinks can further alter the structure of bleached enamel, leading to additional staining.

Acidic foods and beverages may also erode enamel, exposing dentine and increasing the risk of discolouration. Thus, diet can significantly impact the longevity of bleaching results.

Clinicians typically advise patients to reduce the intake of staining agents, refrain from smoking, and avoid habits that cause tooth staining, particularly after whitening, as bleaching products may change enamel texture and morphology, making it more absorbent to dyes. However, some studies suggest that the diet may not directly affect whitening effectiveness.

To date, there is no standardised post-bleaching diet. Therefore, in 2024, Hardan and colleagues conducted a systematic review and meta-analysis to evaluate the necessity of a

white diet during or after bleaching treatments. It was acknowledged that maintaining the results of the bleaching treatment does not require a white diet. Implementing recommended home-care maintenance approaches is essential for preserving the outcome of the bleaching treatment.

Thus, in this case, the patient chose not to follow any dietary restrictions during and after the bleaching procedure based on the findings of the previous meta-analysis, which indicated that such restrictions are unnecessary. Therefore, the patient was advised to consume food and beverages without limitation.

All in all, the patient expressed immense satisfaction and delight with the outcome, showcasing a newfound confidence in his smile. He can now enjoy eating and drinking without worry, thanks to a good maintenance regimen using the P3 strips.

CONCLUSION

Home bleaching has emerged as a valuable method for enhancing the aesthetics of discoloured teeth. Alongside the use of bleaching agents like HP, CP and sodium perborate, this approach incorporates various practices to optimise outcomes.

Capturing comprehensive photographic documentation (MDP2), implementing a maintenance regimen (P3 strips), and adhering to a non-white diet are integral components that contribute to the success of home bleaching procedures. [📄](#)

REFERENCES

siobhan.hiscott@fmc.co.uk

PRODUCTS USED

Professional Dissolving
Whitening Strips P3 White Dental
Beauty – Optident
Helios 500 Eighteenth
Smile Lite MDP2 Optident

TOP TIPS...

WITH
ALAN CLARKE

TEN TIPS FOR SMILE MAKEOVERS

1 Listen to your patient. Listen carefully to your patient's concerns, goals and preferences before proposing any treatment plan. You are here to translate their vision into a reality, act as their guide, bring your dental knowledge, safety and wisdom and fully understand their objectives. Remember, if you don't know your patient and take the time to learn about them as a person, you will never meet their dental aesthetic goals!

2 Thorough examination. Conduct a comprehensive oral examination including assessing dental health, occlusion, gum health and facial aesthetics. Address any underlying dental issues before proceeding with cosmetic treatments. It's key you look at these factors before moving teeth, working with anterior composite, or indeed ceramics.

3 Digital smile design and photography. Technology, photography and digital smile design all help you visualise and plan the desired outcome with your patient. These tools help you communicate and align expectations. We don't want nasty surprises at fit! Photograph everything at every stage. This back catalogue is essential to let your patients know what the materials and work are like in your own hands.

4 Communication is key. Clearly communicate the proposed treatment plan, including the procedures involved, the timeline, and the cost. Ensure your patient understands the expected outcomes and any potential risks. Financial estimates, treatment plan letters and consent are key and new technology, animations and AI can make this more robust than ever.

5 Customised treatment plan. Tailor the treatment plan according to the patient's dental anatomy, facial features and preferences. Personalised bespoke treatment ensures natural-looking and harmonious results. My key tip here is gingival heights! Nuanced learning on this comes with time, but understanding this really takes your dentistry to new heights.

6 Collaboration with specialists. If necessary, collaborate with specialists such as orthodontists, periodontists or prosthodontists to achieve optimal results, especially in complex cases involving multiple disciplines. Ask questions, be humble and work within your competencies. Ask for help – other dentists are usually happy to share their knowledge and a collaborative atmosphere is essential for growth.

7 Trial smile. Offer a trial smile using temporary restorations or digital mock-ups to allow the patient to preview the proposed changes before committing to the final treatment. Test drive complex occlusion or aesthetics. I love this stage and use it for most ceramic and composite cases. It helps fine-tune the design according to the patient's feedback and ensures accurate assessment of occlusion and possibilities.

8 Use high-quality materials. Invest in high-quality materials and technology for long-lasting and aesthetically pleasing results. Educate patients about the benefits of using premium materials for their restorations. If you want to charge higher prices, you need to back it up with the best materials, best labs and best processes.

9 Continual education and training. Get great cosmetic foundations before you try to run. I trained at Spear Education in Arizona, a big investment in terms of time and finances, however it changed my dental process in facially generated treatment planning and occlusion. In the UK, we have fantastic courses, dental educators, memberships and learning. Invest in yourself first.

10 Aftercare/patient retention and reputation. Provide thorough post-treatment instructions and follow-up care to ensure the longevity of the smile makeover. Educate patients on proper oral hygiene practices and schedule regular check-ups. We want these patients for the long term rather than a quick fix. Remember, honesty with outcomes is key! [CD](#)



P R O F E S S I O N A L

D E N T A L

S Y S T E M S

THE PERFECT COMPLEMENT

FROM WHITE DENTAL BEAUTY



6%

HYDROGEN PEROXIDE
PROFESSIONAL **WHITENING STRIPS**



**SCAN TO
BOOK YOUR
PRACTICE VISIT**

DELIGHT YOUR PATIENTS WITH WHITE DENTAL BEAUTY,
A GLOBALLY RECOGNISED BRAND WHICH PROVIDES INNOVATIVE,
HIGH QUALITY, CLINICALLY REINFORCED DENTAL PRODUCTS.

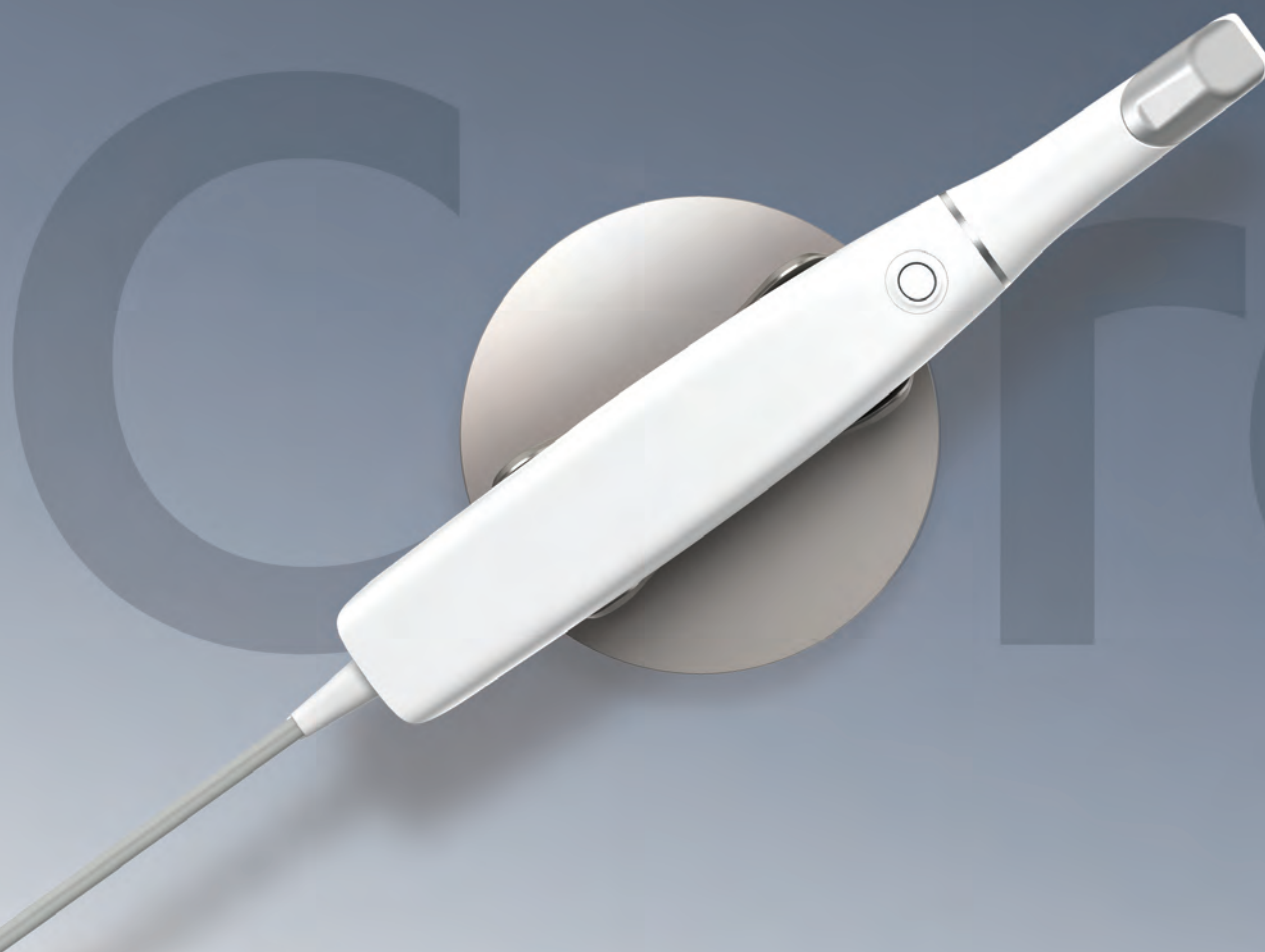
DISCOVER MORE AT: **WHITEDENTALBEAUTY.COM**



ACCREDITED BY
STYLE ITALIANO
SHADE GUIDES

EDUCATED & ACCREDITED BY STYLE ITALIANO

Accurate. Fast. Easy. *As always!*



Award-winning TRIOS technology distilled down to its most essential and affordable form. That's **TRIOS Core**. Accurate, fast and easy, for a great send-to-lab experience.

No compromises

Contact us or ask your reseller regarding availability of 3Shape products in your region.



**TRIOS
CORE**

DIGITAL DENTISTRY

MAKYLE KHAN

Artificial intelligence and periodontal diagnoses

36



Incorporating AI into your dental practice may seem expensive as you must account for staff training as well as maintenance. Before deciding, you must review all the options and ask yourself will it help you as a clinician to provide better care and service to your patients. AI is becoming more accessible and cost-effective and perhaps in the very near future will be seen in many UK practices – Makyle Khan, p36

A WINDOW ON THE WORLD OF DIGITAL DENTAL WORKFLOWS

Helping dentists stay ahead of the curve and embrace the benefits of technology in all walks of practice

Practical. Progressive. Educational.





MAKYLE KHAN
Makyle is a first-year dental student at the University of Liverpool. He has a passion for periodontology and a keen interest in artificial intelligence.

ENHANCED CPD

GDC anticipated outcome: C
CPD hours: one

Topic: Digital dentistry

Educational aims and objectives:

To explore the role artificial intelligence can play in periodontology. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



Periodontitis is the sixth most prevalent disease globally and has a huge impact on an individual's quality of life (Scott et al, 2023). It causes pain and discomfort and can result in the loss of mouth function.

Alongside the physical effects of periodontitis, there is the vast impact it can have on an individual's mental health.

Oasis Dental Care carried out research in 2012 that found that 5.4 million people with bad teeth try to hide their smiles or avoid smiling. In the same research, a further 4.4 million people said having bad teeth made them less confident in public. This can result in fewer social interactions, consequently affecting a person's mental health.

Challenges that arise in periodontal diagnoses for clinicians include accuracy and recognising changes in tissue. Current best practice includes probing using a basic periodontal examination (BPE) and assessing hard tissue radiographically, but these have their drawbacks. Probing has poor inter/intra-operator reliability, as there are variations in probe pressure between clinicians. Also, radiographic angulations vary depending on the individual taking the radiograph. In a study, it was found that, in detecting caries and periodontal bone loss, the inter-rater/ratee agreement was poor lending analysis to convolutional neural network (CNN) assistance (Scott et al, 2023). Artificial intelligence (AI) can help us diagnose periodontal diseases in time to avoid such consequences.

Author/year	Study	Findings
Lee et al, 2018	Deep CNN-based computer-assisted detection system in the diagnosis and prediction of PCT.	PCT were diagnosed with an accuracy of 76.7% for molars and 81% for premolars. Extraction was predicted with an accuracy of 73.4% for molars and 82.8% for premolars in severely compromised teeth. The diagnosis and prediction of PCT was successfully performed using the deep CNN algorithm.
Aberin et al, 2018	Differentiation between periodontitis-affected and healthy dental plaque using microscopic images of dental plaque and the Alexnet architectural model based on CNNs.	The model showed an accuracy of 75.5% and a mean square error of 0.05348436995.
Balaei et al, 2017	Detection of periodontitis for people with limited access to dental personnel and facilities in any healthcare setting considering pretreatment intraoral photos as diseased individuals, and the posttreatment photos as healthy individuals.	Pre- and post-treatment have been classified as healthy or diseased individuals with an accuracy of 91.6%. The algorithm is useful as a smartphone application for people with limited access to dental clinics to be screened for periodontitis by health professionals in any healthcare setting, and to monitor the progress of periodontal treatment.

TABLE 1: Use of AI in the detection of periodontal disease (AI, artificial intelligence; CNN, convolutional neural network; PCT, periodontally compromised teeth) (Moosa et al, 2023)

Makyle Khan explores the role artificial intelligence can play in periodontology

Artificial intelligence and periodontal diagnoses

Author/year	Study	Findings
Feres et al, 2018	Classification of patients into generalized ChP, generalized AgP, and PH by ML using 40 bacterial species.	A support vector classifier using a panel of 40 bacterial species was useful to differentiate between PH, ChP, and AgP. The relative bacterial load could distinguish between AgP and ChP.
Rana et al, 2017	A ML classifier trained with annotations from dentists that gives pixel-wise inflammation segmentations of color-augmented intraoral photos.	The classifier differentiates successfully between healthy and inflamed gingiva with precision and recall of 0.347 and 0.621, respectively. The early diagnosis of periodontal diseases given by this classifier using photos acquired by intraoral imaging devices can be advantageous for dentists and patients.
Ozden et al, 2015	Classification of periodontal diseases using ANNs, SVM, and DT.	OT and SVM showed the best accuracy of 98% in the classification of periodontal diseases with a computational time of 19.91 and 7.00 s, respectively. SVM and DT are simple enough to comprehend; they reflect all the factors associated with periodontal status and are useful as a tool for decision-making and prediction of periodontal disease.

TABLE 2: Use of AI in the classification of periodontal disease (AI, artificial intelligence; ChP, chronic periodontitis; AgP, aggressive periodontitis; PH, periodontal health; ML, machine learning; ANN, artificial neural network; SVM, support vector machine; DT, decision tree) (Moosa et al, 2023)

Author/year	Study	Findings
Moosa et al, 2023	ML model to study the association between patient demographics, smoking, treatment received, and severity of periodontal disease before and after treatment.	The ML model, random forest regressor, showed less potential for prediction of post-treatment severity. However, it can reflect the associations between patient demographics and disease-specific factors in periodontal disease.
Patel et al, 2022	Comparison of patient's risk factors in five PRA tools (PRA, Previser, Sonicare, Cigna, and PRSS developed using ML).	The most precise prediction was given by PRSS (70%), followed by Previser (55%), PRA (35%/0), Phillips (35%), and Cigna (25%).
Yauney et al, 2019	Correlation of periodontal disease with systemic health conditions using a combination of ML, clinical examination, and intraoral fluorescent porphyrin biomarker imaging.	The results indicate a positive correlation between systemic health conditions and poor periodontal health. The screening analysis method using ML and images can be used for diagnoses and screening of other systemic diseases.
Shankarapillai et al, 2010	Prediction of periodontal risk using two ANN algorithms namely: Levenberg Marquardt and Scaled Conjugate Gradient algorithms.	The Levenberg Marquardt algorithm outperformed the Scaled Conjugate Gradient algorithm with fewer repetitions, faster convergence, and producing the smallest mean square error in both the training and testing phases. Levenberg Marquardt algorithm can effectively be used as a well-trained neural network for the prediction of the risk for periodontitis.

TABLE 3: Use of AI in PRA (Moosa et al, 2023)

Author/year	Study	Findings
Alotaibi et al, 2022	Detection of alveolar bone loss and classification of the severity of bone loss due to periodontal disease in periapical radiographs in the anterior region of the dental arches using a computer-assisted detection system based on a deep CNN algorithm.	Alveolar bone loss was detected with an accuracy of 73%, and the accuracy of classification of the level of severity of the bone loss was 59%. Alveolar bone loss was effectively detected in periapical radiographs using the deep CNN algorithm (VGG-16). Also, the severity of bone loss was detected satisfactorily. Periodontal disease can be detected and staged efficiently using a computer-aided CNN algorithm-based detection system.
Chang et al, 2020	DL hybrid method for the diagnosis of periodontal bone loss and staging of periodontitis on dental panoramic radiographs.	Diagnosis and staging of periodontitis were performed with good reliability and excellent accuracy using the combination of DL and the conventional CAD method.
Krois et al, 2019	Detection of PBL on panoramic radiographs using deep CNNs.	The mean accuracy for classification by CNN was 0.81, and that of the dentists was 0.76. There was no statistically significant difference between CNN and the examiners. The CNN showed comparable ability as dentists in the detection of PBL on panoramic radiographs. Technologies based on ML may help reduce the dentist's efforts.

TABLE 4: Use of AI in the assessment of periodontal bone level (AI, artificial intelligence; CNN, convolutional neural network; DL, deep learning; CAD, computer-aided design; PBL, periodontal bone loss; ML, machine learning) (Moosa et al, 2023)



Why use adin adinguide™?

Simple,
effortless, predictable
implant surgery & placement



**ActiveFlow™
Irrigation**



Built-in Depth Stops



**Keyless
Procedure**



**Self-Centering
Precision**



Scan
for
more
info!


Trycare

DIGITAL DENTISTRY

38

WHAT IS ARTIFICIAL INTELLIGENCE?

Artificial intelligence (AI) is a simulation of human intelligence within machines designed to learn and think like humans. AI is fast growing and in dentistry specifically, it is expanding quickly and revolutionising the industry. It is helping to streamline procedures and save time, which we do not have a lot of as clinicians.

The focal advantages of AI are:

- Precision
- Reduced errors
- Reduced staffing.

AI IN PERIODONTOLOGY


AI is in its infancy and has not been wholly applied to periodontology, however, it can help to indicate various factors that are crucial for an accurate diagnosis. These factors consist of being able to analyse radiographs and assess periodontium and the basic periodontal examination (BPE). AI can assist by establishing a timely diagnosis of periodontitis due to its ability to evaluate radiographs/detect changes in periodontium. AI can detect changes in periodontium via the use of intraoral photos and microscopic images of dental plaque (Moosa et al, 2023).

The classification of periodontal diseases can also be achieved via AI by distinguishing whether they are chronic or aggressive by evaluating if the gingiva is inflamed or healthy (Moosa et al, 2023). Furthermore, when using AI to conduct a periodontal risk assessment, it looks at various factors, making a more holistic judgement and prediction.


CONSIDERATIONS

Incorporating AI into your dental practice may seem expensive as you must account for staff training as well as maintenance.

Before deciding, you must review all the options and ask yourself will it help you as a clinician to provide better care and service to your patients. An additional benefit of AI is the element of time efficiency when conducting consultations (Sowing, 2023). AI is becoming more accessible and cost-effective and perhaps in the very near future will be seen in many UK practices.

Overall, AI helps to improve the effectiveness of decision-making and will help improve accuracy when coming to a diagnosis with reduced errors (Khan et al, 2024). However, we must remember that it cannot be used independently and must be overseen by a clinician, as errors can still occur. Furthermore, as patient information is stored within a system, this can pose a security risk. AI needs to be regularly reviewed. Despite it being in its infancy when it comes to periodontology, it will help revolutionise this aspect of dentistry (Sowing, 2023, Khan et al, 2024). 

REFERENCES

- 
- Khan SF, Siddique A, Khan AM, Shetty B, Fazal I (2024) Artificial intelligence in periodontology and implantology – a narrative review. *Journal of Medical Artificial Intelligence* 7:6
- Moosa Y, Bacha SH, Raza SA, Zia MH, Fatima A, Shaikh AA (2023) Role of artificial intelligence in periodontology. *Pakistan Journal of Medical & Health Sciences* 17(05): 363-363
- Scott J, Biancardi AM, Jones O, Andrew D (2023) Artificial intelligence in periodontology: a scoping review. *Dentistry Journal* 11(2): 43
- Sowing (2023) What does AI mean for your Dental Practice? [online] Available at: <https://sowing.com/blog/practice-management/what-does-ai-mean-for-your-dental-practice/#:~:text=Despite%20the%20potential%20cost%20of> [accessed 12 August 2024]

FULL HD INTRAORAL CAMERA

C50

ONE CAMERA FOR ALL MODES:
MACRO, INTRAORAL, SMILE,
PORTRAIT, CARIES AND
PERIO DETECTION

**INCREASE TREATMENT ACCEPTANCE
BY YOUR PATIENTS**

Better understanding of the suggested treatment plan.

INCREASE TRUST AND PATIENT CONFIDENCE

Communicate any changes from visit to visit.

**ENHANCE THE VISIBILITY OF INFLAMMATION
& DISEASE**

Detect plaque, gingival inflammation and caries.

**You'll see,
what others can
only imagine.**

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

 **acteon**

© Acteon UK Ltd., 2023



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



Prophylaxis
Workflow



Caries detection
Workflow



Orthodontic
Workflow

Enhancing
your workflows
through
innovation

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.

PROTAPER•GOLD™

RECIPROC®
one file endo

R-PILOT™

PICK & MIX

PROTAPER•NEXT™

RECIPROC® blue

VDW.ROTATE™



SCAN ME
TO FIND
OUT
MORE

ORDER ONLINE
www.qedendo.com
or CALL 01733 404 999



Quality Endodontic
Distributors Ltd

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

ENDODONTICS

SPONSORED BY



MASSIMO GIOVARRUSCIO

Minimally invasive endodontic treatment

43



The concept of minimally invasive endodontics (MIE) calls for the treatment and prevention of pulpal disease and apical periodontitis, while causing the least amount of change to the dental hard tissues. This preserves the strength and function of the endodontically treated tooth with the intent that it will last the patient's lifetime – Massimo Giovarruscio, p43

PROMOTING EXCELLENCE IN ENDODONTICS

Showcasing the preservation of natural teeth through mastery of root canal therapy in dental practice

Practical. Progressive. Educational.



TICKETS ARE
SELLING FAST!

CLINICAL DENTISTRY AWARDS 2024

Ceremony
Friday 11
October 2024

Venue
Royal Garden Hotel,
London W8 4PT

JOIN THE PARTY
CALL 01923 851732 EMAIL AWARDS@FMC.CO.UK

DON'T MISS OUT



WITH THANKS TO OUR SPONSORS



CHARITY SPONSOR

To get your tickets today call 01923 851 732
Email awards@fmc.co.uk

PRESENTED BY



**DR MASSIMO GIOVARRUSCIO**

Massimo is a highly skilled professional, with extensive experience in endodontics, restorative and aesthetic dentistry. With over 19 years' experience in dentistry, he has developed his reputation within the profession as an excellent clinician, endodontist and postgraduate specialist teacher. He is an active member of the European Society of Endodontology and the Italian Society of Endodontics. Massimo teaches at Delta Dental Academy, Bristol, and guest lectures in the UK and internationally.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Endodontics

Educational aims and objectives:

To discuss minimally invasive endodontic treatment using a new file with two heat treatments in a single file. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



Instrumentation has changed a lot in recent years. Nowadays, we prepare less canal while preserving much more pericervical dentine.

The concept of minimally invasive endodontics (MIE) calls for the treatment and prevention of pulpal disease and apical periodontitis, while causing the least amount of change to the dental hard tissues. This preserves the strength and function of the endodontically treated tooth with the intent that it will last the patient's lifetime.

MIE is a must in dentistry today – new materials lead us to work fast, secure and minimally invasive. The development of equipment and instrumentation techniques has made it possible to solve difficult clinical cases in endodontics.

The latest files with high cutting capacity and great flexibility (two different heat treatments in the same file) make instrumentation techniques faster and safer, significantly reducing deformation and transport within the canal.

Rotary systems are made up of a series of instruments, the first of which is generally the one that does 80% of the work.

This instrument should be used with the pecking motion technique and not 'brushing' as previously proposed. With this, we will significantly reduce the wear of the pericervical dentine.

MAXILLARY FIRST PREMOLAR WITH THREE ROOT CANALS

The numerous difficulties found during root canal treatments are due to anatomical variations in the radicular morphology. Maxillary premolars have highly varied root canal systems and shapes.

This article details an endodontic treatment case of the maxillary first premolar with three canals, a summary of the anatomical forms and describes the diagnosis and clinical management of this tooth.

A main goal of root canal treatment is the elimination of periapical inflammation. It is well



FIGURE 1A: Slimshaper Pro ZS1. MFD: 0.80. Taper: 2-6%. Diameter: 15



FIGURE 1B: Slimshaper Pro ZS2. MFD: 0.80. Taper: 4-3%. Diameter: 20



FIGURE 1C: Slimshaper Pro ZS3. MFD: 0.84. Taper: 4-3%. Diameter: 25



FIGURE 2: Dualwire technology improves cutting efficiency

Massimo Giovarruscio discusses minimally invasive endodontic treatment using a new file with two heat treatments in a single file

Minimally invasive endodontic treatment ➤



FIGURE 3: Initial radiograph of UR4 showing two vague canals and apical radiolucency

established that ingress of microorganisms is the cause of pulpal and, consequentially, periapical disease.

Biomechanical cleaning and shaping in order to facilitate irrigation, disinfection and ultimately canal obturation are crucial elements in eliminating apical periodontitis.

Preservation of the original canal anatomy and position and size of the apical foramen are also important when performing contemporary root canal treatment.

The roots of maxillary first premolars often have two conical roots, one buccal and one palatal, which may present root fusion. The buccal root may be further subdivided into two, causing the tooth to have three canals:

1. A palatal canal
2. A distobuccal canal
3. A mesiobuccal canal.

In maxillary first premolars, the incidence of type I canals (one canal) is 8.66%, whereas 89.64% of the total samples demonstrated two canals (from type II to type VII). Only 1.66% of the maxillary first premolars were type VIII or type IX (three canals). The incidence of one root canal does not exceed 31%; two root canals varies from 67% to 72%. Three canals in maxillary first premolars represent 6%, all of which is present one canal in each root

It is worth mentioning that visualisation of three-caballed maxillary premolars on operative radiographs can often be difficult. The use of CBCT scan is very useful to detect this anatomical variations.

The other difficulty is to manage the depth of the mesiobuccal and distobuccal splitting. Two separate canals leave the pulp chamber, merge in the body of the root and redivide prior to the apex to exit as two distinct canals. The splitting depth is variable, increasing the difficulties of the root canal treatment.

One of the main factors related to these failures is that the lack of thorough knowledge of the morphological and anatomical variations of root canal system, which can result in either

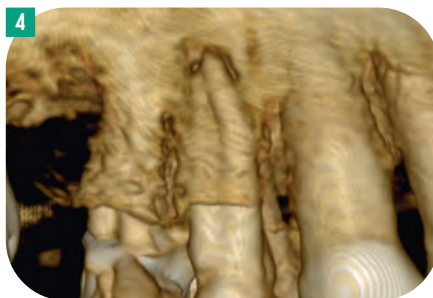


FIGURE 4: 3D CBCT scan shows the presence of two separated roots (mesiobuccal and distobuccal)



FIGURE 6: The mesiobuccal and distobuccal splitting depth is very deep

failure to identify all root canals or the use of inadequate instrumentation, leading to endodontic treatment failure. Therefore, the first step in achieving a successful endodontic outcome is an exact evaluation of the root canal system and its anatomical variations.

To help facilitate locating canals and approaching them correctly, an operative microscope and ultrasonic tips are important aids.

SLIMSHAPER PRO FILES

This case report discusses the endodontic treatment of a first upper premolar using Slimshaper Pro files for the shaping protocol (Figures 1a to 1c). Slimshaper Pro features three alloys:

1. Gold
2. Pink
3. Blue.

Slimshaper Pro is fast, effective, ultra-flexible and conservative for complex anatomies (Figure 2). Thanks to their 4% taper, the files allow very fast canal preparation while maintaining the anatomy of the canal very close to the original.

The movement of Slimshaper Pro is continuous rotary. The files are extremely flexible and have been specially designed for complex, sclerosed or abruptly curved canals.

This article reviews and illustrates the use of the Slimshaper Pro system in complex and challenging endodontic cases. It's a conservative

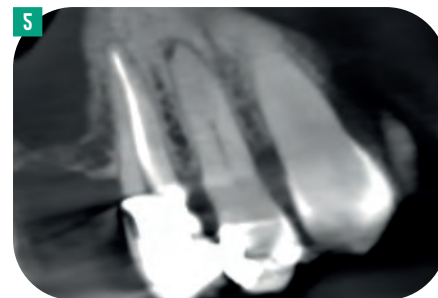


FIGURE 5: Sagittal view shows the presence of two separated canals (mesiobuccal and distobuccal)

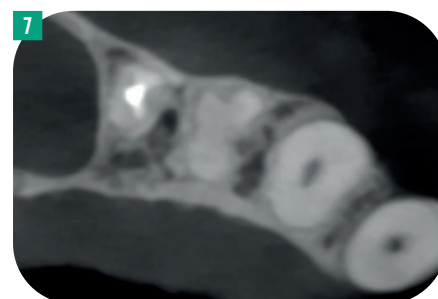


FIGURE 7: Three separated roots visible on axial CBCT slice

system due to the instrument's characteristics, thanks to the reduction in taper, preserving the pericervical third tissue as much as possible; the perfect combination for a minimally invasive approach.

Thanks to Dualwire technology, the cutting efficiency of Slimshaper Pro system has improved, increasing torsional stress resistance and penetration into the canals. The perfect balance between cutting and flexibility, allowing work with any type of complex anatomies. Especially designed for complex anatomies (curved, narrow, double curvature) or those with high levels of complexity.

CASE REPORT

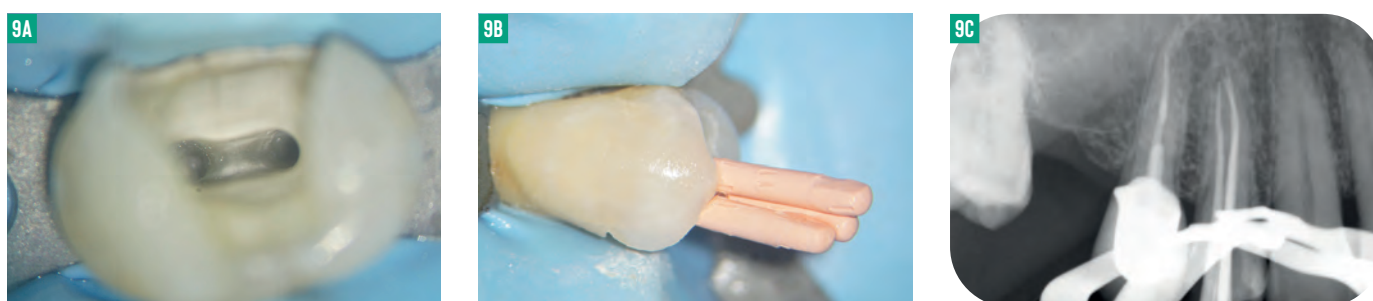
A 32-year-old male patient with no history of any systemic diseases. He was referred to the specialist endodontic clinic with severe cold-sensitivity in the upper right quadrant.

Radiographic examination revealed deep carious lesions on the UR4 (Figure 3). It was also observed that the mesiodistal width of the midroot was equal to or greater than that of the crown, increasing the possibility of having three roots.

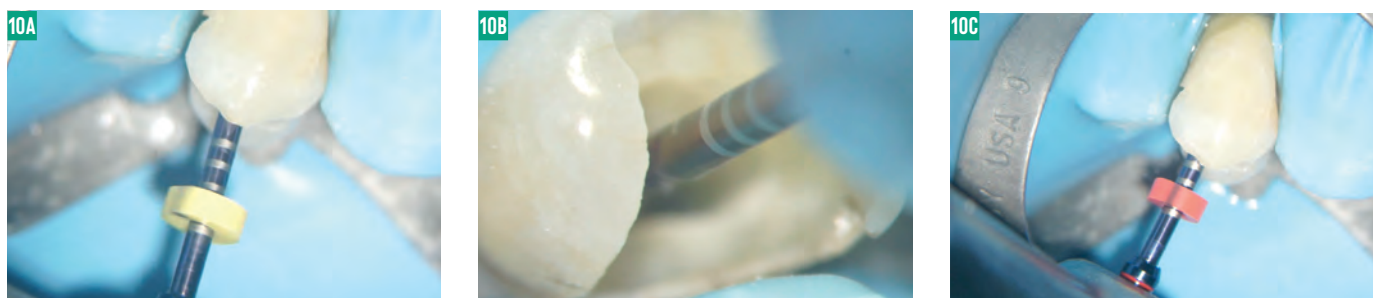
The periodontal status was normal (probing depth <3mm) with physiologic mobility. Responses of sensibility/sensitivity tests (thermal and electric pulp tests [EPT]) revealed irreversible pulpitis for the UR4 (long-lasting severe pain while thermal testing).



FIGURES 8A to 8C: The access cavity procedure. Minimal invasive approach for a conservative result



FIGURES 9A to 9C: Master GP cones of three canals. PA shows the three independent canals



FIGURES 10A to 10C: The access cavity procedure. Minimal invasive approach for a conservative result

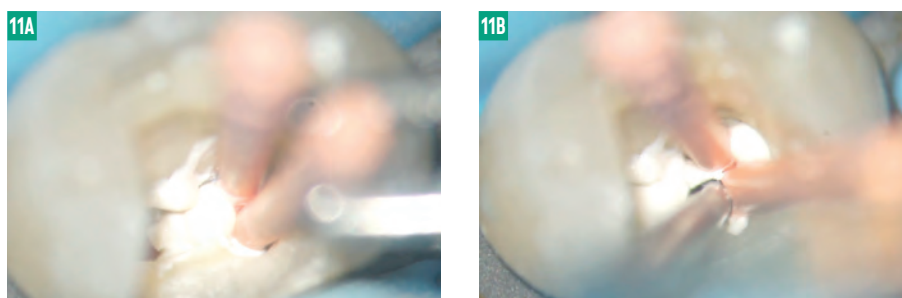
The periapical tissues of UR₄ were moderately tender on vertical percussion, which indicated chronic apical periodontitis.

A CBCT scan was taken (Figure 4), and images showed the presence of three separated canals: palatal, distobuccal and mesiobuccal canals. The buccal root was divided into two: MB root and DB root (Figure 5). The splitting was very deep, which increased the difficulties of the root canal treatment (Figure 6). Thus, non-surgical root canal therapy was scheduled.

The treatment plan was explained to the patient, and informed consent was obtained for endodontic treatment of the involved teeth.

TREATMENT

After receiving infiltration with local anaesthesia using 2% lidocaine and 1:100,000 epinephrine, the tooth was isolated with rubber dam, caries was removed and endodontic access cavity was prepared and canal orifices were identified using magnification (operative microscope) (Figures 8a to 8c).



FIGURES 11A and 11B: GP cones are introducing into the canal with Neosealer Flo

After finding the orifices, the patency of the root canals was determined using a number 10 K-File.

The working length (WL) was confirmed using the Z-Apex electronic apex locator. A glide path in each canal with number 10 K-Files was confirmed.

The final irrigation protocol was done with 5.25% of sodium hypochlorite, and 17% ethylenediaminetetraacetic acid (EDTA) with Eddy tip (passive ultrasonic irrigation).

The pulp chamber was irrigated by following the standardised irrigation regimen of 5.25% of NaOCl.

The shaping protocol was done with Slimshaper ZS1, ZS2 and ZS3 rotary files (Figures 10a to 10c). After copious irrigation with 5.25% of sodium hypochlorite, it was used with the nickel titanium 25 up to the WL to check the gauging of the apex.

The hydraulic condensation technique was performed using bioceramic sealer (Neosealer





FIGURE 12: The access cavity is cleaned using Aquacare

Flo) with 25.04 master cones (Figures 11a and 11b). The pulp chamber was cleaned using burs protocols and Aquacare machine (Figure 12).

The access cavity has been restored using a three-step adhesive material and dual composite (Figure 13).

The final postoperative radiograph shows a minimal invasive treatment in respect of the complex anatomy (Figure 14).

The patient was referred to her dentist for the permanent coronal restoration.

CONCLUSION

Due to the complexity of internal root canal anatomy, the development of new instruments, which are more flexible, more resistant to fracture, and effective in the shaping of root canals, is extremely important.

It has been reported that the maintenance of the original canal shape and lack of canal aberrations are associated with the preservation of tooth structure and higher clinical success rates.

Ongoing development in instrumentation techniques is making endodontics easier, and operators can now achieve the desired canal shape more quickly. Furthermore, with various root canal preparation systems now available, canals that may once have been deemed too



FIGURE 13: The access cavity after primer and bonding application

difficult to negotiate and prepare are now more manageable.

The appropriate root canal instrumentation techniques need to be selected based on the root canal anatomy, calcifications and economic factors. The Slimshaper Pro rotary files have shown an efficient and time-saving biomechanical preparation in this clinical case and thus are indicated for safe and efficient biomechanical preparations in complex and constricted root canal systems.

Shaping procedure has changed so much in the last few years, minimal invasive endodontics is a must in dentistry today. [C](#)

PRODUCTS USED

Eddy VDW
Neosealer Flo Avalon Biomed
Slimshaper Pro, Z-Apex Zarc4endo

REFERENCES

- Aazzouzi K, Ramirez A, Mendez P, Vieira G, Aranguren J, Perez A (2023) Effects of conservative access and apical enlargement on shaping and dentin preservation with traditional and modern instruments: a micro-computed tomographic study. *J Endod* 49(4): 430-437
- Bhuva B, Giovarruscio M, Rahim N, Bitter K, Mannocci F (2021) The restoration of root filled teeth: a review of the clinical literature. *Int Endod J* 54(4): 509-535
- Celikten B, Koohnavard M, Oncu A, Sevimay FS, Orhan AI, Orhan K (2021) A new perspective on minimally invasive endodontics: a systematic review. *Biotechnol Biotechnol Equip* 35: 1758-1767
- Chan MYC, Cheung V, Lee AH, Zhang C (2022) A literature review of minimally invasive endodontic access cavities – past, present and future. *Eur Endod J* 7(1): 1-10
- Chethan M, Revathi K, Natesan R, Rashmi M, Soubhagya M, Nair VS (2021) Preserved for

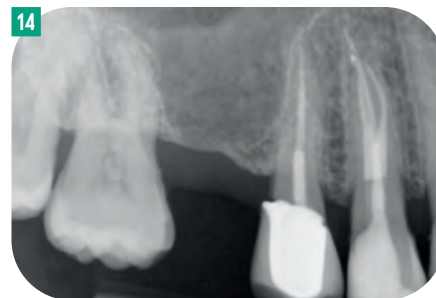


FIGURE 14: Postoperative showing the root canal completed and core restoration

endurance: minimal invasive endodontics. *IP Indian J Conserv Endod* 6(2): 88-91

Gambarini G, Galli M, Morese A, Abduljabbar F, Seracchiani M, Stefanelli L, Giovarruscio M, Di Nardo D, Testarelli L (2020) Digital design of minimally invasive endodontic access cavity. *Appl Sci* 10: 3513

Gluskin AH, Peters CI, Peters OA (2014) Minimally invasive endodontics: challenging prevailing paradigms. *Br Dent J* 216: 347-353

Kapetanaki I, Dimopoulos F, Gogos C (2021) Traditional and minimally invasive access cavities in endodontics: a literature review. *Restor Dent Endod* 46(3): e46

Mahalaxmi S (2019) Minimally invasive endodontics and endo-endorestorative-prosthodontic continuum: the right balance? *J Oper Dent Endod* 4(1): 42-53

Plotino G, Grande NM, Tocci L, Testarelli L, Gambarini G (2014) Influence of different apical preparations on root canal cleanliness in human molars: a SEM study. *J Oral Maxillofac Res* 5(2): e4

Shibu TM, Julie SR (2014) Minimally invasive endodontics. *J Dent Oral Hyg* 6(4): 36-38

Taneja S (2021) Minimally invasive endodontics: saving the precious dentin. *Journal of Dental Specialities* 9(2): 44-45

Silva EJ, Pinto KP, Ajuz NC, Sassone LM (2021) Ten years of minimally invasive access cavities in Endodontics: a bibliometric analysis of the 25 most-cited studies. *Restor Dent Endod* 46(3): e42

Silva EJ, Versiani MA, Souza EM, De-Deus G (2021) Minimally invasive access cavities: does size really matter? *Int Endod J* 54: 153-155

Soares CJ, Rodrigues MP, Faria-E-Silva AL, Santos-Filho PC, Veríssimo C, Kim HC, Versluis A (2018) How biomechanics can affect the endodontic treated teeth and their restorative procedures? *Braz Oral Res* 32(suppl 1): e76

KEY TAKEAWAYS

- The minimally invasive procedure depends on smaller files (less taper), less time the files in the canal ('kiss and goodbye') and eliminates 'brushing' motion
- The compensatory failing is not needed when we are using martensitic files
- Plastic needles are needed in minimally invasive procedures to penetrate close to working length
- When it comes to minimally invasive endodontic treatment, the hydraulic qualities of bioceramic sealers help create a solid 3D bond, and the root canal is shaped to match the canal's morphology.

Coming Soon

Success made easy for everyone



Your Bioceramic Root Canal Sealer



- Hydraulic bioactive sealer in syringe
- No Shrinkage - Bioactive - Biocompatible - High pH
- Whatever your technique, cold or warm



www.septodont.co.uk



Zirkonzahn®

LET'S MEET US!

23 – 26 SEPTEMBER 2024 | LECTURE TOUR
SOUTHAMPTON, MANCHESTER AND CARDIFF

4 – 5 OCTOBER 2024 | DENTISTRY SHOW LONDON
LONDON, STAND A32



PRETTAU® 3 DISPERSIVE®

THE ZIRKONZAHN CULTURE

100% monolithic design with only minimal aesthetic layering



Follow us on Facebook and Instagram!



Dr. med. dent. Clara Zanini – South Tyrol, Italy
MDT Alexander Lichtmannegger – Zirkonzahn Education Center Brunico, South Tyrol, Italy

PRETTAU® 3 DISPERSIVE®

COMPLETE RESTORATION OF UPPER AND LOWER JAW

- 3D patient digitisation with the Face Hunter 3D facial scanner; virtual articulation using the PlaneFinder®; in the Zirkonzahn.Modifier software, digital tooth set-up and individualisation of the DEMI tooth set from the Heroes Collection virtual library
- Production of mock-ups in Multistratum® Flexible resin and design of 27 single crowns in radiopaque Exmon® Basic X-Ray resin; insertion in the patient's mouth and fit check via X-ray
- Milling single and partial crowns as well as a palatal veneer in Prettau® 3 Dispersive® zirconia; sintering in the Zirkonofen 600/V4; characterisation with ICE Stains 3D by Enrico Steger and Fresco Enamel Fluo
- Cementation of the restorations in the patient's mouth and subsequent fine polishing



Confidence in

Implant Dentistry

FOR GDPS, DENTAL HYGIENISTS & DENTAL THERAPISTS

Hosted by Dr Barry Oulton
The Confident Dentist →

BROUGHT TO YOU BY

EMS⁺

PLANMECA

Bien Air⁺
Dental

A day to support you with everything you need to effortlessly increase implant numbers and associated profits, regardless of your current implant numbers or your chosen implant system.

For GDP's who:

- › Offer implants and want to do more
- › Are just starting their implant journey

Dental Hygienists & Therapists who:

- › Are identifying potential implant patients
- › Supporting the long term maintenance of implants

Teams:

- › Looking at how implants can support practice growth.

Helping delegates with sales, systems and processes to streamline workflow.

Our Speakers



Lousie Warden

Identifying an Implant Patient.



Jolene Pinder

The Importance of Implant Maintenance.



Dr Emanuele Clozza

DDS, Cert. Perio

A Paradigm Shift Using Photogrammetry to Record the Position of a Complete Arch of Implants in a Digital Workflow.



Dr Aly Virani

A single implant case with Ultra-low -dose diagnosis and planning: How Romexis can create your workflow and lab communication no matter what implant system you use.



01 NOV
8.30AM-5PM



**ROYAL COLLEGE
OF PHYSICIANS**

ST ANDREWS PLACE, LONDON,
NW1 4LE



125.00
PLUS
ADMIN FEE
£11.14

Find
out
more →



IMPLANT DENTISTRY

NIKOLAS VOURAKIS
Complex full arch
reconstruction

53



FEZAAN GATRAD
Top tips: All-on-4 treatment

60



Computer guided implant surgery can be valuable for ensuring implants are placed in an ideal position during full arch rehabilitation, allowing a soft tissue emergence with a natural-looking FP1 fixed dental prosthesis – Nikolas Vourakis, p53

ACCURACY AND EXCELLENCE IN IMPLANT DENTISTRY

Developing a deeper understanding of placing, restoring and maintaining dental implants for all practice teams

Practical Progressive Educational



30|25
years of
making
connections

Implants as iconic as the decade...

Looking ahead since the 90s

Just like the most famous Ferris wheel in London!



“Great results that have
stood the test of time”

Paul Swanson, Rose Lane Dental Practice

With a combined market experience of over 55 years, we've used our knowledge to develop evidence-based, clinically proven solutions to support differing patient's needs, including the premium **Tapered Pro** and **CONELOG® Progressive-Line** implant systems.

Switch
once
**change
forever**



biohorizons
camlog

**DR NIKOLAS VOURAKIS**

Nikolas is a dental implant expert at the One to One Dental Clinic in Harley Street, and is also a lecturer and tutor at One to One Implant Education. He supports clinicians of all experiences throughout their implant dentistry journeys on a range of informative, hands-on courses. Nikolas graduated in 2005 from the Military Academy Medical School at the University of Thessaloniki, Greece, and spent time as a military dental surgeon in Afghanistan, from 2006-07. He received his MSc degree in oral surgery and implantology from Goethe University of Frankfurt Germany.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Implant dentistry

Educational aims and objectives:

To present a complex full arch case, using a guided surgical approach to optimise surgical and prosthetic accuracy. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.

**A**

60-year-old male patient presented with major concerns about unsatisfactory smile appearance, limited masticatory function and pain while chewing.

The patient was in good general health. The clinical and radiographic examination revealed failing ceramic restorations, rampant caries, non-restorable teeth, soft tissue inflammation, residual roots and missing teeth.

Comprehensive digital records, including extraoral and intraoral clinical photographs, were collected as part of the initial assessment.

The case was deemed suitable for full arch implant-retained restoration.

TREATMENT PLANNING

As in all cases, the patient was presented with all options and their related benefits, risks and limitations. These included no treatment, extraction of the remaining teeth and fitting of a removable denture, or extraction with an implant-retained full arch prosthesis.

The latter was the professional recommendation and the patient's preferred option, despite it presenting the most advanced procedure. Full arch reconstruction is always a complex treatment solution, but it can substantially increase many patients' quality of life.

Comprehensive treatment planning is crucial to mitigate the risks and minimise the chance of complications for the smoothest patient experience and most predictable clinical results.

Some of the most common complications include biological issues due to implant malposition like peri-implantitis (Gonzalez-Gonzalez et al, 2020), or mechanical/prosthetic problems such as fracture of the provisional and the final prosthesis (Lemos-Gulinelli et al, 2020).

Computer guided implant surgery can be valuable for ensuring implants are placed in an ideal position during full arch rehabilitation, allowing a soft tissue

emergence with a natural-looking FP1 fixed dental prosthesis (FDP) (Carosi et al, 2022; Misch, 1990).

Ensuring the clinician is prepared for these risks, and they have been adequately communicated with the patient, treatment can be highly successful with diligent planning and patient compliance with excellent oral hygiene.

This patient underwent extensive hygiene courses to improve the health of the periodontal tissues and was motivated to improve his cleaning routine.



FIGURE 1: Initial situation, frontal view



FIGURE 2: Left lateral view at presentation



FIGURE 3: Right lateral view at presentation

Nikolas Vourakis presents a complex full arch case, using a guided surgical approach to optimise surgical and prosthetic accuracy

Complex full arch reconstruction



When ready, the surgical planning involved a fully digital, prosthetically-driven workflow, with full dentist and dental technician collaboration. I worked with clinical dental technician Gosia Ciepiela for this case.

Intraoral scans (IOS) were merged with the Dicom data from the CBCT to optimise data capture and facilitate an accurate digital plan for implant placement and prosthesis design. The digital files and photographs were imported into a digital design software (Exocad) and a personalised, facially-driven tooth library was used to perform an initial virtual wax-up.

The use of a surgical guide for the accurate and precise placement of the dental implants was chosen in this case. The positions and angulations of the implants were planned according to the ideal virtual wax-up that was produced.

We decided to create a tooth-supported acrylic guide for fully guided surgery, supplemented by bone-fixed anchor pins for enhanced stability. The most appropriate teeth for this were identified during this planning phase.

SURGICAL TREATMENT DELIVERY

The plan was followed meticulously on the day of surgery. The canines, left and right premolars and a right molar were used to support the surgical guide together with three bone anchor pins.

Following the digital plan, all other teeth were extracted and thorough degranulation of the sockets was performed. No bone reduction was performed for both the provisional and final prosthesis in accordance with the Misch classification for an FP1 approach (Misch, 1990).

The implant beds were then prepared with the surgical guide in situ. Six Conelog Progressive-Line implants (Biohorizons Camlog) were placed in accordance with the predetermined positions, depths and angulations.

These implants were selected for this case because they feature an optimal thread design and tapered figure, promoting high primary stability – which is essential in full arch reconstruction cases.

The implants were placed through the guide for better accuracy and precision. A surgical primary stability of greater-than 35Ncm was achieved for each implant.

Once the implants were placed, the surgical guide was removed, and the extraction of the remaining teeth was completed.

In preparation for the provisional prosthesis, straight multi-unit abutments were fitted onto the implants and torqued to 25Ncm, followed by titanium cylinders. For the anterior implants in the areas of the central incisors, the Comfour straight bar abutments were used.

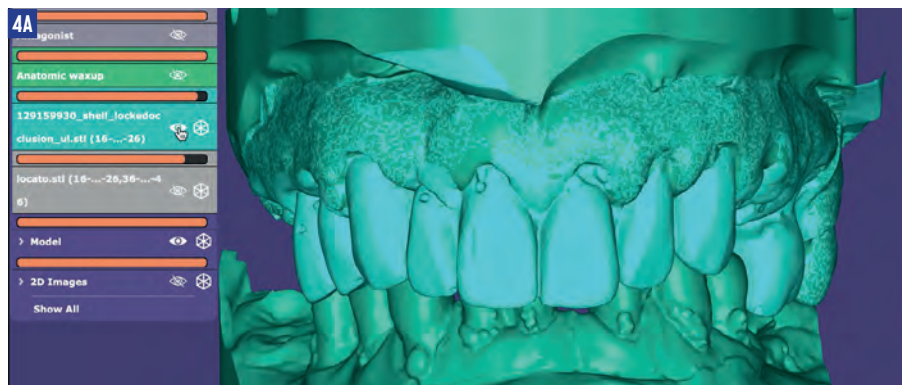


FIGURE 4A: Digital planning initial situation



FIGURE 4B: Digital extraction of teeth

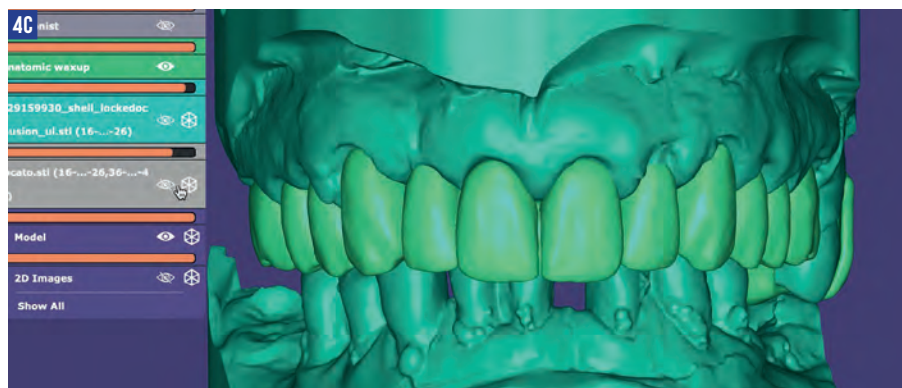


FIGURE 4C: Exocad digital smile design

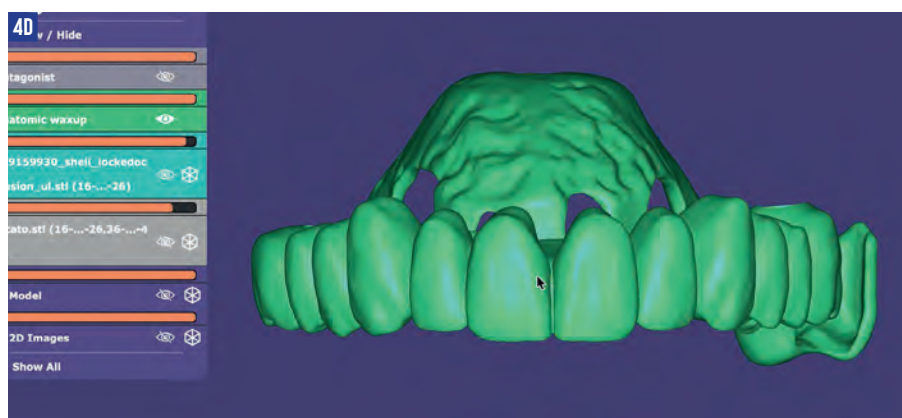


FIGURE 4D: Digital design of provisional restoration

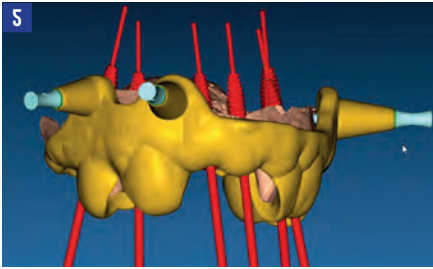


FIGURE 5: Teeth and bone supported surgical guide planning for accurate implant placement



FIGURE 6: 3D printed composite provisional prosthesis with palatal support



FIGURE 7: Surgical guide



FIGURE 8: Remaining teeth to support surgical guide



FIGURE 9: Teeth supported surgical guide secured with anchor pins



FIGURE 10: Implants placed



FIGURE 11: Provisional restoration located in the mouth using the hard palate

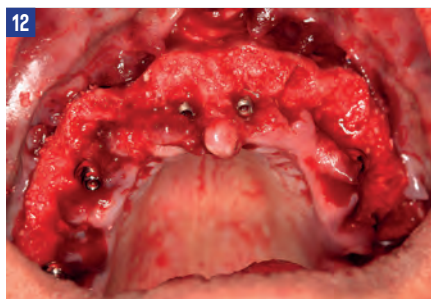


FIGURE 12: Allograft in the sockets and around the implants



FIGURE 13: L-PRF for improved healing and soft tissue quality



FIGURE 14A: Provisional restoration ovate pontics design



FIGURE 14B: Provisional restoration reinforced with bended titanium wire



FIGURE 15: Provisional restoration in situ

The narrow prosthetic platform of these Comfour abutments (4.3mm) compared to the wider prosthetic platform of the standard multi-unit abutments is advantageous, as it provides more space for soft tissue thickness and stability of the therapeutic outcome in the long-run.

The design of the provisional prosthesis followed the Gallucci prosthetic guide protocol (Gallucci et al, 2015), providing a 3D printed





FIGURE 16: Coronal advancement of the buccal flap



FIGURE 17: OPG of the provisional restoration in situ

composite bridge with palatal support. The palatal support sits below the fitting surface of the bridge and is only used to locate the bridge in centric occlusion using the hard palate of the patient. This bridge is an exact copy of the digital wax-up used to plan the implant positions.

The use of guided surgery guarantees that the implants are placed precisely according to the plan.

The provisional restoration in this case had prefabricated prosthetic channels to match the same planned implant positions and angulations. This provisional was located in the mouth using the hard palate and attached on the titanium cylinders that penetrate through the bridge, with the use of a composite based light cured material.

The provisional prosthesis was then modified; the palatal part was removed and the bridge was relined with the use of a composite based flowable material, making sure that mechanically polished deep ovate pontics were designed for adequate sculpturing and adaptation of the soft tissue.

A titanium wire 2mm in diameter was inserted into the bridge improving its rigidity and strength.

A full thickness flap was reflected buccally up to the mucogingival junction followed by a split thickness flap with periosteal relieving incisions. Bone grafting materials were inserted into the sockets following socket preservation techniques.

We used mineralised bone allograft (Mineross, Biohorizons) mixed with autogenous bone particles collected during the drilling protocol, both inside the sockets and around the dental implants to fill the jumping gaps to the residual bone. Six 10ml tubes of blood were collected and L-PRF membranes were placed buccally to improve soft tissue healing and quality.

The finished and polished provisional restoration was screwed on the multi-unit abutments at 15Ncm. The buccal flap was coronally advanced and closed with sling sutures using resorbable monofilament Glycolon 5/0 sutures.

This phase of treatment concluded with radiographs to confirm accurate implant



FIGURE 18: Healing after two weeks



FIGURE 19: Healing after three months



FIGURE 20: Soft tissue sculpturing during digital impressions



FIGURE 21A: Digital smile design of the final prosthesis

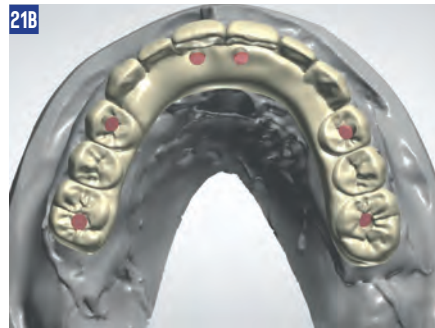


FIGURE 21B: Final prosthesis digital design, occlusal view

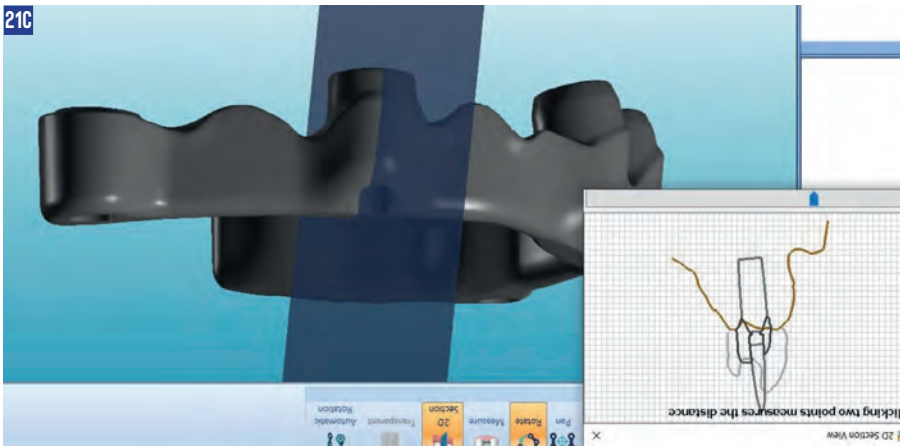


FIGURE 21C: Anatomically shaped titanium substructure trans mucosal surface mirroring the tissue scalloping



FIGURE 21D: Zirconia superstructure digital design

It is crucial to work with products that will support both functional and aesthetic outcomes



FIGURE 22A: Final zirconia titanium supported FP1 prosthesis



FIGURE 22B: Final zirconia titanium-supported FP1 prosthesis

placement. The patient was also given standard postoperative oral hygiene and care instructions. He reported no complications or concerns during the review appointment a week later.

FINAL RESTORATION

After four months, an IOS impression was executed and a digital dataset created superimposing the soft tissue, implant scan bodies, antagonist and temporary prosthesis scanning files.

To avoid any inaccuracy in scalloped interface reproduction due to quick collapse of the gingival tissue, the provisional prosthesis was scanned both intraorally and extraorally, capturing its overall contour and, in particular, the transmucosal surface at the pontic sites and emerging profiles.

A titanium substructure was digitally designed (Atlantis Bridgebase) taking into consideration the functional and aesthetic virtual wax-up and emergence profile as it was shaped by the FP1 provisional prosthesis.

This metal substructure was anatomically shaped at the gingival and occlusal sides in order to tightly adhere at the soft tissue interface leaving at least 2mm of clearance for the zirconia superstructure.

Based on the digital design and copying the approved provisional prosthesis, a zirconia overlay was milled. The overlaying zirconia superstructure was digitally designed to fit the metal substructure, accomplish a flawless finish line, avoid any undercuts and verify the path of insertion, thus facilitating the bonding procedures.

The zirconia superstructure was bonded with the titanium substructure using a self-curing luting composite. The final polished screw-retained prosthesis was delivered and torqued to 30Ncm and the radiographic assessment was executed.

After the follow-up appointments at one and four weeks, the patient was scheduled for periodic maintenance every three months. The retrievability of the final screw-retained zirconia-titanium supported prosthesis allowed management of the interface over time.

At the one-year review, further growth and maturation of the soft tissue as well as the health of the keratinised peri-implant tissues were evident, without signs of bleeding on probing.

OUTCOME AND REFLECTIONS

The patient was thrilled with the final outcomes achieved in this case, as was I. The failing dentition was replaced by a fixed, long-term – with patient oral hygiene compliance – and cleansable solution, which will restore the patient's quality of life.





FIGURE 23A: Final restoration in situ



FIGURE 23B: Final restoration side view



FIGURE 25A: One-year follow-up



FIGURE 25B: Side view one-year follow-up

Particularly in FP1 cases where a correct emergence profile has to be formed through the implant-supported immediate temporary prosthesis, a digital treatment plan and guided surgery offer a comprehensive workflow to achieve predictable high-end prosthetic results that mimic the natural dentition.

The translucent zirconia supported by titanium framework fulfils the aesthetic and mechanical requirements of an FP1 full arch prosthesis, while minimising the risk of fracture by providing a rigid yet passive joint to support the implants (Pelekanos et al, 2024). The zirconia and titanium transmucosal surface characteristics (otherwise known as biocompatibility) create a highly polished interface for high cell adhesion and optimised gingival architecture.


The implant system chosen is just as important for full arch cases. It is crucial to work with products that will support both functional and aesthetic outcomes, while helping the clinician to minimise potential complications associated with this type of treatment. 



FIGURE 24: OPG, final prosthesis

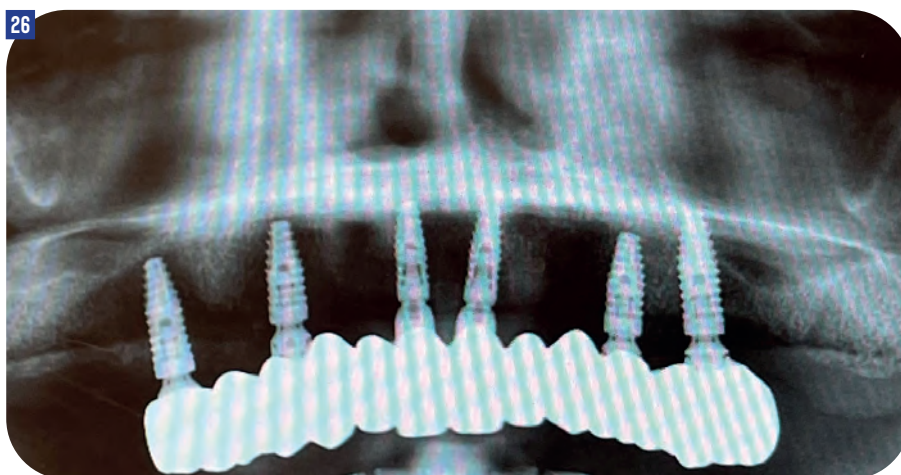


FIGURE 26: OPG one-year follow-up

PRODUCTS USED

Atlantis Bridgebase Dentsply Sirona
Conelog Progressive-Line,
Mineross, Comfour Biohorizons Camlog

REFERENCES

- Carosi P, Lorenzi C, Lio F, Cardelli P, Pinto A, Laureti A, Pozzi A (2022) Accuracy of computer-assisted flapless implant placement by means of mucosa-supported templates in complete-arch restorations: a systematic review. *Materials (Basel)* 15(4): 1462
- Gallucci GO, Finelle G, Papadimitriou DE, Lee SJ (2015) Innovative approach to computer-guided surgery and fixed provisionalization assisted by screw-retained transitional implants. *Int J Oral Maxillofac Implants* 30(2): 403-10
- Gonzalez-Gonzalez I, deLlanos-Lanchares H,

- Brizuela-Velasco A, Alvarez-Riesgo JA, Llorente-Pendas S, Herrero-Climent M, Alvarez-Arenal A (2020) Complications of fixed full-arch implant-supported metal-ceramic prostheses. *Int J Environ Res Public Health* 17(12): 4250
- Lemos-Gulinelli J, Pavani R, Nary-Filho H, Alves-Pesqueira A, Pessoa J, Santos PL (2020) Incidence of surgical and prosthetic complications in total edentulous patients rehabilitated by the All-on-Four technique: a retrospective study. *Int J Interdiscip Dent* 13(2): 76-79
- Misch C (1990) Classifications and treatment options of the completely edentulous arch in implant dentistry. *Dent Today* 9(8): 26, 28-30
- Pelekanos S, Ntovas P, Rizou V, Pozzi A (2024) Translucent monolithic zirconia titanium-supported FP1 full-arch prosthesis: a novel proof of concept to address esthetic, functional, and biologic challenges. *J Esthet Restor Dent* 36(1): 197-206

TRYCARE LTD EXPLORES THE KEY FEATURES OF ADINGUIDE™



FIGURE 1: Keyless guided surgery aids faster, easier, more intuitive placement



FIGURE 2: ActiveFlow™ Irrigation helps maintain healthy bone

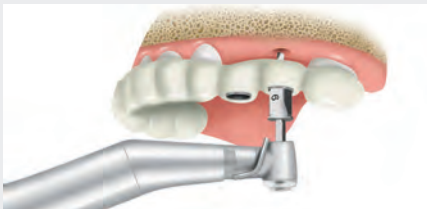


FIGURE 3: Self-centring drills and tools ensure correct placement



FIGURE 4: Everything you need in a guided surgery system!

TRYCARE LTD

For further information visit www.trycare.co.uk/adin. To request one of Trycare's Surgical Essentials and Adin Catalogues, contact your local representative or call 01274 885544.



HASSLE-FREE, PREDICTABLE PLACEMENT

Using guided surgery for implant placement has become increasingly popular because it offers many benefits for the clinician and their patients.

For the patient there is dramatically reduced surgical time, which helps to improve patient comfort and reduce their apprehension. Plus, because it utilises flapless surgery it significantly improves the healing process and healing time in the majority of cases. It also minimises the risk of surgical complications.

For the implant dentist it significantly improves implant placement accuracy, reduces the risk of complications and minimises chair time leading to greater efficiency and cost savings.

WHY CHOOSE ADINGUIDE™?

The adinguide™ guided surgery system has been designed to deliver effortless procedures plus accurate and predictable implant placement. Consequently, it delivers everything you need in a guided surgery system. It offers many advantages compared to other guided surgery systems.

Keyless procedure

Unlike other systems, which require the use of keys to hold the stent in place, adinguide™ is a keyless system, which helps to save surgery time whilst still ensuring accurate and predictable implant placement.

ActiveFlow™ Irrigation Technology

The adinguide™ ActiveFlow™ Irrigation Technology is a unique design that forces coolant through the guide to ensure that the irrigation reaches the bone. Within each cylinder, channels allow the coolant to stream through the sleeve while drilling. As the drill starts to spin, ActiveFlow™ starts to operate and delivers the coolant from the handpiece directly to the surgical site and thereby helps to

prevent the bone heating, which helps to maintain healthy bone for optimum osteointegration and minimised risks of post-operative complications.

Self-centring drills & tools

The keyless, self-centring drills and tools are designed to enable implant dentists to perform faster, easier and more intuitive implant surgeries. Organised in a way that enhances safety and ease of use, Adin sleeves are embedded within the 3D printed surgical guide and precisely centre and guide the drills and insertion tools. Self-centring drills, controlled by a main diameter cylinder at the top of each drill centres the drill in the guide's sleeve. In order to ensure correct positioning of the drill, the surgical guide and drilling procedure are designed so that the self-centring cylinder engages the sleeve before the drill touches the bone.


Built-in stoppers enhance safety

Built-in stoppers ensure precise and accurate drilling to the desired depth. The fixed value of the offset between the top of the implant and sleeve allows Clinicians to choose to use shorter drills when they want or need to. This provides another safety measure and facilitates another layer of verification before reaching the final drilling depth.

Simplicity

The adinguide™ kits are intuitive, simple and effortless to use. There is no need for keys or any other assisting tools. They help ensure a hassle-free, logical and straightforward procedure that saves the Clinician time and worry.

Minimal number of tools

The adinguide™ kit is organized into six areas. Each area representing a specific function during implant placement and insertion. 

TOP TIPS...

WITH
FEZAAN GATRAD

ALL-ON-4 IMPLANT TREATMENT

With an average survival rate of 95.4% after 10 years, dental implants are a reliable choice for effective tooth replacement.

All-On-4 dental implant treatment offers a fixed, efficient and transformative alternative to traditional dentures, enabling patients to receive a full set of teeth supported by implants, often in just one day.

As dental professionals, it is crucial to be well-versed in the intricacies of this procedure to provide the best care for patients. Close collaboration with experienced colleagues and a commitment to thorough postoperative care will contribute to the longevity and success of All-On-4 implants, ultimately enhancing patient satisfaction and wellbeing.

1 Comprehensive consultation and evaluation. Conduct a thorough consultation and evaluation, including detailed X-rays and scans, to determine the patient's eligibility for the All-On-4 procedure. Assess bone density, gum health, and overall oral condition to ensure optimal outcomes.

2 Emphasise experience and expertise. Highlight your experience and expertise in implant dentistry, specifically in All-On-4 procedures. Showcase before-and-after photos and share testimonials to build trust with your patients. Ensure your team is well-trained and proficient in all aspects of the treatment.

3 Educate patients on the treatment process. Provide a detailed explanation of the All-On-4 treatment process, from initial surgery to final restoration. Help patients understand the stages of the procedure, the placement of implants, and the healing timeline to alleviate anxiety and set realistic expectations.

4 Set realistic expectations. Manage patient expectations by discussing the potential adjustment period and any discomfort during the initial healing phase. Outline the recovery timeline and the gradual improvement in oral function and aesthetics, ensuring patients are well-prepared for the journey ahead.


5 Transparent financial discussions. Clearly communicate the overall cost of the All-On-4 treatment, including surgical fees, implant costs and final restoration expenses. Discuss financing options, insurance coverage and any additional costs for post-treatment care to help patients plan accordingly.

6 Stress the importance of postoperative care. Provide detailed postoperative care instructions to ensure the long-term success of the implants. Emphasise the importance of maintaining oral hygiene, adhering to dietary restrictions and attending regular check-ups to minimise complications and prolong the lifespan of the implants.

7 Address risks and complications. Discuss potential risks and complications associated with the All-On-4 procedure, such as infection, implant failure or discomfort. Ensuring patients are aware of these possibilities allows for informed decision-making and vigilant monitoring of oral health post-treatment.

8 Advise on necessary lifestyle adjustments. Counsel patients on lifestyle changes that may be needed to ensure the success of their All-On-4 implants. Discuss the impact of habits such as smoking or bruxism and provide strategies to mitigate these risks.

9 Present alternative treatment options. Offer information on alternative treatments, such as traditional dentures or other implant-supported prosthetics, tailored to the patient's specific needs and preferences. This ensures patients are fully informed and can choose the best option for their situation.

10 Utilise patient testimonials. Leverage patient testimonials and reviews to provide prospective patients with insights into the experiences of those who have undergone the treatment. Honest feedback can build confidence and assist in the decision-making process. 

BEYOND PLATFORM-SWITCH

Bone Growth Concept

The right combination of shape, surface characteristics and positioning of an implant leads to the growth of bone on the backtaper, as scientific research and daily clinical practice have shown.



Bone Growth Concept



Backtaper -

The evolution of Platform-Switch

The platform-switch has proven itself in modern implant systems. The Backtaper is now an additional element which gives the hard and soft tissue more space for attachment than the cylindrical and conical implant shapes as the following illustration clearly demonstrates.

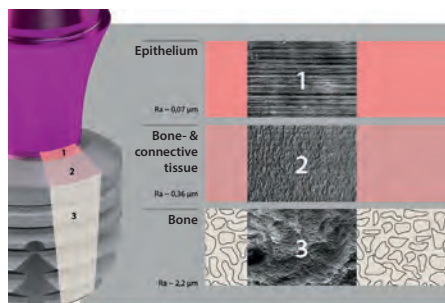


Subcrestal positioning

Clinical experience has shown that the additional space created by the backtaper, could be increased by subcrestal positioning of the copaSKY implant. The slim concave-shaped abutments provide more space for soft tissue attachment and bone growth on the backtaper. This has been confirmed in a recent multicenter clinical study.

Microstructured surface

The microstructured surface of the backtaper supports the attachment of bone and connective tissue. When the edge of the backtaper is positioned subcrestally, there is the possibility of depositing bone chips on it, thereby preventing the ingrowth of soft tissue and offering additional support for osseointegration. Thanks to the minimalist design of the cover screw, the peri-implant tissue around the backtaper is not irritated during re-opening. Any new bone formed on the anodized cover screw can be easily removed with a sharp excavator.



Impressive clinical results

The results observed by the clinicians are persuasive. Regardless of the clinical indication, new bone formation can be observed, from single-tooth restoration to the rehabilitation of edentulous jaws according to the SKY fast & fixed therapy. The vertical dimension of the alveolar ridge is preserved through the newly formed bone on the backtaper because there is reduced indica-

tion for bone levelling.

The Bone Growth Concept is precisely the further development of the Platform-Switch: the implant and abutment design, the microstructured backtaper and the subcrestal positioning of the copaSKY implants, synergistically not only prevent bone resorption but also reliably support the formation of new bone which completely encloses the implant.

Contact us today to find out more about the Bone Growth Concept.



Bone Growth Concept

- **Backtaper** – gives more space to the bone and soft tissue
- **Microstructured surface** – supports osseointegration and the attachment of connective tissue
- **Subcrestal positioning** – promotes bone growth



Scan QR Code
for more information!



PHILIPS

Zoom!

Healthy whitening. Lasting confidence.

Philips Zoom Take Home Kit



Philips Zoom Take Home Kit will give your patients their best-looking smile within two weeks. Our unique dentist-developed DayWhite and NiteWhite formulas are specially formulated to deliver brilliant results, are safe on enamel and reduced sensitivity.

Over 10 million patients achieved a beautiful, whitened smile with Philips Zoom Take Home Kit.

Brighten your patients' confidence with the No.1 patient-requested professional whitening brand, Philips Zoom.*

 DayWhite 6% HP
(30–90 min/day)



 NiteWhite 16% CP
(2–4 hrs/overnight)



 NiteWhite 10% CP
(2–4 hrs/overnight)



DayWhite and NiteWhite deliver a noticeably whiter smile in just 7 days***



Before

After**

Visit philips.com to learn more

innovation  you

*Among U.S. dentists who have patients requesting specific brands of whitening. **These results are typical but not guaranteed; individual results will vary. ***Li, Lee, Cartwright, Wilson. Comparison of Clinical Efficacy and Safety of Three Professional At-Home Tooth Whitening Systems. Comp Vol 24, May 2003.

ORALHEALTH

SPONSORED BY
PHILIPS

NINA GARLO
Oral health in elderly care

65



An increasing number of older adults retain their natural teeth and are at a heightened risk of oral diseases, primarily caused by the accumulation of oral bacteria on teeth surfaces and in interdental spaces. Dental plaque accumulation, tooth decay and attachment tissue diseases are widespread issues in this demographic - Nina Garlo, p65

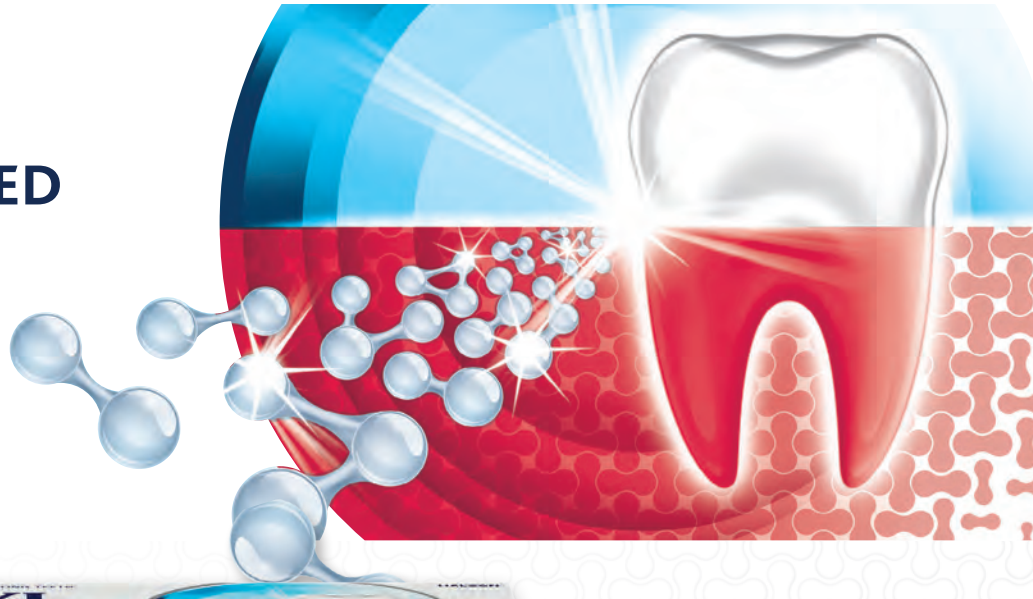
PREVENTIVE DENTISTRY IN GENERAL PRACTICE

Celebrating all aspects of preventive dentistry and helping practices promote good oral health amongst patients

Practical. Progressive. Educational.



**CORSODYL
TOOTHPASTE IS
SPECIALLY DESIGNED
TO HELP ENHANCE
YOUR PATIENTS'
DAILY BRUSHING
EFFORTS**

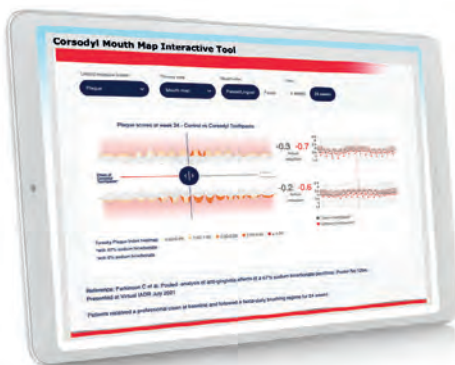


**WITH FLAVOUR
ENHANCING
TECHNOLOGY**

Corsodyl Active Gum Repair toothpaste contains 67% sodium bicarbonate. It penetrates the plaque matrix where it disrupts and breaks bonds in the biofilm to loosen plaque.

It is specially designed to help enhance your patients' brushing efforts[†]

- Softens plaque on the tooth surface for easier removal^{1,2}
- Proven to be 4x more effective at removing plaque than brushing alone¹¹
- Clinically significant improvements in plaque, bleeding and inflammation¹³



**THE NO.1 DENTIST RECOMMENDED
TOOTHPASTE BRAND FOR GUM PROBLEMS****

**SEE THE CLINICAL EVIDENCE FOR 67% SODIUM
BICARBONATE AND HOW YOU CAN SUPERCHARGE
YOUR PATIENTS' BRUSHING ROUTINE BY VISITING OUR
INTERACTIVE MOUTH MAP HERE:**



[†]Compared to a regular toothpaste with twice daily brushing.

^{*}Compared to regular toothpaste, with twice daily brushing over 6 month period.

^{**}Dentist surveys, 2023. For verification contact: mystory.gb@haleon.com

1. Jose et al. J Clin Dent 2018;29:33-39. 2. Pratten J et al. Int J Dent Hygiene. 2016;14:209-214.

3. Akwagyriam I et al. Oral Health Prev Dent. 2018;16(5):401-407.

Trade marks are owned by or licensed to the Haleon group of companies. PM-GB-CSYL-23-00140.

**NINA GARLO**

Nina is a health journalist at Koite Health.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Oral health

Educational aims and objectives:

To discuss antibacterial treatment to enhance oral health in elderly care.

This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



Maintaining oral health is vital for overall wellbeing, especially as individuals age and particularly for those residing in 24-hour care facilities.

New research proposes using antibacterial light-activated Lumoral treatment could help to address common oral health issues, like gingivitis and periodontitis. This approach could enhance oral health and improve the general wellbeing of older populations living in elderly care homes.

The Finnish scientists behind the study – Effects of regular antibacterial photodynamic therapy on oral hygiene in elderly 24-hour care residents – observed a decline in the number of individuals without teeth in institutional care. However, the condition of the teeth is often poor.

The results from this study were presented at this year's American Association of Oral and Maxillofacial Surgeons (AAOMS) annual meeting in Orlando, Florida.

Dental problems, including dental caries and periodontal diseases, remain common among residents of 24-hour care facilities, especially those aged 75 and older. This finding motivated the team of scientists to delve deeper into the topic to search for new ways to enhance the oral health of older populations.

ELDERLY CARE

In Finland, the oral health of elderly individuals requires significant improvement, especially among those in long-term or residential care, states Jaana Helenius-Hietala, deputy chief dentist at the Helsinki University Hospital (HUS), Finland.

According to Dr Helenius-Hietala, similar challenges are observed in Western countries overall. Several studies highlight significant deficiencies in oral hygiene maintenance among individuals in 24-hour care settings.

According to Julkunen and colleagues (2021), an increasing number of older adults retain their natural teeth and are at a heightened risk of oral diseases, primarily caused by the accumulation of oral bacteria on teeth surfaces and in interdental spaces. Dental plaque accumulation, tooth decay and attachment tissue diseases are widespread issues in this demographic.

Poor oral health elevates the risk of many chronic diseases and diminishes overall quality of life. It can also potentially exacerbate the onset or progression of many severe illnesses, including dementia (Julkunen et al, 2021; Lauritano et al, 2019).

ADJUNCT THERAPY

Dr Helenius-Hietala is part of a study group examining the effect of a novel antibacterial oral hygiene method, Lumoral, on the health of elderly individuals living in 24-hour facilities.

The study was conducted in the Laajasalo and Roihuvuori units of Helsinki's round-the-clock inpatient care in autumn 2022 and spring 2023. A scientific publication detailing the findings is currently in the process of being published.

Thirty-one residents participated in the study, all with a minimum of 10 teeth in their mouths. For the study, the subjects were randomised to receive either self-care guidance (control group n=y) or, in addition to guidance, antibacterial light-activated Lumoral therapy implemented twice a week (treatment group n=x) as an additional treatment alongside regular oral hygiene practices, tooth brushing and flossing.

Throughout the trial period, the oral health status of the study participants was regularly monitored by a dentist/dental hygienist using manual examination and the aMMP-8 (Active MMP-8) chairside diagnostic tool. This tool, known as the Periosafe test, detects and quantifies matrix metalloproteinase-8 (MMP-8) levels in saliva.

Nina Garlo discusses antibacterial light-activated treatment to enhance oral health in elderly care

Oral health in elderly care



MMP-8 is an enzyme linked to the degradation of collagen, a crucial component of periodontal tissues. Research indicates that aMMP-8 rapid tests effectively differentiate between diseased and healthy tissues in cases of periodontal and peri-implant diseases.

A negative result on the aMMP-8 test is the desired outcome in patient care, indicating healthy tissue with minimal risk of attachment loss and disease progression. This negative result also serves as a biomarker of periodontal health (Räsänen et al, 2023; Sorsa et al, 2020; Lähteenmäki et al, 2021; Gupta et al, 2023).

According to Dr Helenius-Hietala, participants in both study groups received guidance on oral hygiene. The visible plaque index (VPI) improved during the follow-up period in both groups. Still, in the Lumoral group, there was also a statistically significant improvement in the Community Periodontal Index of Treatment Needs (CPITN) index. This index is a method used to assess periodontal health by examining specific indicators, including pocket depth and bleeding upon probing, on specific teeth in various sextants of the mouth.

The CPITN index categorises periodontal conditions into four main categories:

1. Healthy periodontal tissues
2. Gingival bleeding
3. Calculus
4. Pockets.

It is commonly used in dental assessments to determine the treatment needs for periodontal disease.

In the Periosafe test, positive results were present in 53% of participants in the control group at the beginning and 30% at the end. Meanwhile, in the Lumoral treatment group, the Periosafe test was positive in 80% at the beginning and 50% at the end.

Based on the findings, researchers are confident that regular antibacterial light-activated Lumoral treatment improves oral health in selected residents of 24-hour care facilities as an adjunct to regular oral hygiene.



FIGURE 1: Dr Janna Helenius-Hietala presenting the research

In addition to improving oral hygiene, Lumoral can increase oral moisture, as dry mouth is common in elderly individuals with multiple medications, explains Dr Helenius-Hietala, reminding that toothbrushing is still necessary.

While it is difficult to assess potential cost savings, it is generally acknowledged that good oral health can reduce infection complications in older adults (for example, aspiration pneumonia is linked to periodontitis).

EXPLORING NOVEL APPROACHES

Why is it crucial to explore novel approaches to addressing the oral health challenges of elderly individuals? As populations age, more older adults are retaining their natural teeth. This is increasing their susceptibility to oral diseases due to the build-up of oral bacteria.

Approximately 95% of all oral diseases stem from issues with oral hygiene, making it crucial to find ways to tackle the root cause – the dental plaque – with new oral hygiene methods.

Infections in the mouth are linked to overall health. When left untreated, gum infections can progress to more severe conditions such as periodontitis or peri-implantitis, which can have significant implications for oral and systemic health.

Timely detection and treatment of gum disease are essential to prevent further complications and maintain overall health (Cecoro et al, 2020; Petersen and Baehni, 2012).

Studies have demonstrated that regular antibacterial light-activated therapy improves oral hygiene and reduces inflammation in the surrounding dental tissues.

This treatment could be particularly advantageous for individuals with underlying health concerns, those more prone to dental diseases, and those who encounter significant challenges in maintaining effective oral hygiene habits due to limited functional capacity.

Regular cleaning to remove plaque remains the most critical aspect of maintaining oral health. Unfortunately, this is not always realised in 24-hour care settings.

Good oral hygiene practices could prevent chronic oral infections and the potentially fatal complications they cause. Dr Helenius-Hietala stresses that new approaches are needed to improve oral hygiene.

Limited functional capacity often leads to deficiencies in oral care practices, resulting in poor oral health outcomes. This affects individuals' physical health and quality of life, as evidenced by lower self-reported quality of life scores among those with poorer oral hygiene.

Innovative approaches are needed to address these challenges. Antibacterial light-activated therapy has emerged as a new solution for

reducing plaque levels in the mouth and combating dental plaque's harmful bacteria.

IMPROVING ORAL HEALTH

Lumoral is a CE-marked medical device designed to improve oral health by harnessing the power of dual-light therapy to effectively reduce dental plaque and bacterial load (Pakarinen et al, 2022).


The method combines a light-activated antibacterial agent (Lumoralinse mouth rinse) with a specific light source (Lumoral mouthpiece) to target and reduce harmful oral bacteria, especially those that brushing and flossing might miss (Pakarinen et al, 2022).

The invention of Lumoral was driven by recognising the limitations of traditional oral hygiene methods in controlling plaque and preventing diseases like periodontitis and dental caries. Researchers aimed to develop a method to provide a more thorough antibacterial effect. The device uses a technique where a photosensitising agent, typically in the form of a mouthwash, is applied to the teeth. This agent adheres to dental plaque and oral bacteria.

When illuminated by Lumoral's specific wavelength of light, the photosensitiser produces reactive oxygen species that have a local antibacterial effect without causing damage to the surrounding tissues (Pakarinen et al, 2022; Nikinmaa et al, 2020; Nikinmaa et al, 2021; Jao, Ding and Chen, 2023).

The device was developed by collaborating with dental professionals, microbiologists and photodynamic therapy experts who aimed to create a user-friendly, effective, and non-invasive treatment option for enhancing oral hygiene at home. This collaborative effort ensured that the technology was both practical for daily use and scientifically grounded to provide benefits in reducing oral bacterial loads, thereby helping prevent oral diseases.

Good oral hygiene benefits everyone, but its importance is especially emphasised in older age groups. Within elderly care settings, the effectiveness of implementing oral hygiene practices is often inadequate, with studies revealing significant room for improvement in seniors' oral hygiene levels.

Tommi Pätälä, one of the scientists behind developing the Lumoral method, and a cardiovascular and transplant surgeon, concludes by saying: 'Neglecting oral hygiene heightens the risk of comorbidities, underscoring the critical nature of prioritising hygiene'. 

REFERENCES

 siobhan.hiscott@fmc.co.uk



Assessment & Treatment of Patients with Snoring and Sleep Apnoea

Presented by

Dr Aditi Desai,
Dr Judith Husband,
Hans-Peter Kopp, DDS
& Mr Giles Bradley



This seminar aims to give dentists the knowledge and competence to assess the patient seeking treatment for snoring, refer them for medical investigation where required and **effectively and successfully treat their snoring** where appropriate.

Seminar places are limited so reserve your place(s) today.

Contact the Schottlander Education Coordinator Adele Gent directly on **01462 704 633**, e-mail: **courses@schottlander.co.uk**, **Freephone 0800 97 000 79** or scan the QR code opposite to complete the booking form online

£50 EARLY BOOKING DISCOUNT:

Book by end of September 2024 for only £199 + VAT

Normal Seminar Fee: £249 + VAT per person

Freephone 0800 97 000 79
www.schottlander.com

schottlander

**Saturday 16th
November in
London**

The Barbican Centre,
Silk Street, London
EC2Y 8DS



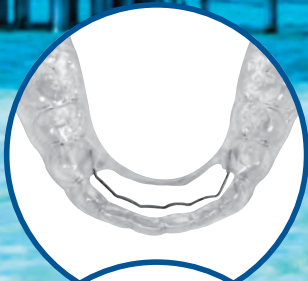
**SCAN THE QR CODE
TO COMPLETE YOUR
BOOKING ONLINE**



What would you
rather be doing?

MAINTAIN
ORTHODONTIC RETAINER

**Tired of bending wire
chairside?** With maintain,
you can do something else...



Dual Retention

Offers added protection
from relapse.



Low Profile

Has greater surface contact
than many competitors.



Additional Retainer

Each Maintain comes with an
extra removable retainer.

“



Maintain has solved all my fixed retainer problems! I am really
happy with this product, it's excellent! **Andy MacCallum. GDP**

FOR MORE INFORMATION
ON MAINTAIN SCAN HERE



db *
orthodontics

collaboration
precision
innovation



Freephone: 0800 7833 552
sales@dbortho.com | www.dbortho.com

ORTHODONTICS

NEIL FEARNS

Treating rotations and crowding

70



CHRISTIAN LEONHARDT

Complex open bite cases: part three

75



A steadfast commitment to long-term stability and the safeguarding of treatment outcomes epitomises contemporary orthodontic practice, ensuring that patients enjoy the enduring benefits of a functional and aesthetic smile – Christian Leonhardt, p75

THE FIRST POINT OF CALL FOR ALIGNMENT

Opening up the world of orthodontics for all practices looking to expand their practice through correcting bites, occlusion, and straightening teeth

Practical. Progressive. Educational.



**DR NEIL FEARN**

Neil is a dentist practising in the north west of England. He graduated from Leeds University in 1998 with a distinction in child dental health. Soon after, he successfully achieved his National Board Qualification of Canada. He has completed various postgraduate qualifications and is now undergoing the advanced orthodontic diploma at the IAS Academy.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Orthodontics

Educational aims and objectives:

To discuss treating rotations and crowding to protect the long-term health of the dentition. This article qualifies for one hour of enhanced CPD; answer the questions on page 82 or scan the QR code.



A 37-year-old male patient was referred to me as he was unhappy with the appearance of his smile. He was becoming increasingly concerned about the level of chipping and wear to his front teeth.

He explained he had undergone orthodontic treatment as a teenager, but had relapsed due to no long-term retention.

The patient presented with good oral hygiene, no caries and good periodontal support. He was medically fit and a regular dental attender at the practice.

He had mild to moderate wear, chipping and discolouration of the upper and lower central incisors, that involved classic 'butterfly' rotations. This was associated with a restricted envelope of function.

Several treatment options were discussed with the patient. These included:

1. Orthodontics
2. Restorative treatment with ceramic or composite veneers. However, due to the restricted envelope of function and the irreversible nature of these treatments, these were neither viable long-term stable options nor conducive to the patient's desires
3. No treatment and monitor, which was unfavourable.

The patient expressed a preference for a more conservative option, and so orthodontic options were explored.

We discussed the options of aligners, Inman Aligner and clear, fixed appliances and referral to a specialist.

The patient didn't wish to have fixed appliances and declined referral. He decided to proceed with an orthodontic assessment to explore what options were available.

TREATMENT PLAN

The orthodontic assessment revealed:

- Mild class 3 skeletal relationship with normal FMFA and high LFH
- Soft tissues normal
- Class III incisal relationship
- Overjet reduced to approximately 1mm and approximately 5% overbite
- Centre lines coincident
- Molar relationship L and R class 3 1/2 unit
- Canine relationship R class 1, L class 3 1/4 unit
- Well aligned buccal segments
- Crossbite LL6/UL5,6
- Mild upper and lower crowding
- Mild to moderate anterior incisal wear and chipping
- Heavily stained teeth, mainly caused by coffee consumption
- Patient was a habitual bruxist
- Good oral hygiene
- Good bone levels.

Full clinical photos were taken (Figures 1 to 6). An initial 2D analysis of his dentition with the Spacewize+ digital space calculator and a subsequent 3D analysis with Archwize displayed 1.7mm of crowding in the upper arch, and 1mm in the lower arch.

The 3D analysis demonstrated a potential result could be achieved using the Inman Aligner appliance for the upper and lower arches, and that a few refiners in the lower arch may be required. The Inman Aligner could give efficient movement over the incisor rotations, which are often difficult to manage, reducing treatment time and cost.

The patient was presented with 3D models of the proposed outcome, assisting informed consent.

I discussed the anticipated treatment and showed the patient the type of appliance we were going to use.

Neil Fearn presents a case of mild crowding with rotated incisors and discusses how he reached an effective, conservative solution to protect the long-term health of the dentition

Treating rotations and crowding



FIGURE 1: Patient presented with mild crowding, rotated incisors, wear and discolouration to his dentition



FIGURE 6: Rotated incisors and mild crowding in the lower arch



FIGURE 9: Final result of upper arch, occlusal view

In the upper arch, we also opted for an integrated combined expander, engaging temporary lateral expansion to create space for the incisors to move forwards. This enabled the case to progress more efficiently, and with controlled interproximal reduction (IPR) and predictive proximal reduction (PPR), to achieve an optimal aesthetic result.

A letter of quotation and consent was sent and approved.

PROVIDING EFFECTIVE CARE

We began with the upper arch, reducing possible



FIGURE 2: Pre-treatment, anterior view



FIGURE 4: Pre-treatment, left lateral view



FIGURE 7: Placement of the Inman Aligner in the upper arch



FIGURE 10: Following treatment in the upper arch, right lateral view

interferences with the anterior teeth. Since the patient's upper and lower central incisors were of a triangular shape, PPR was carried out to ensure even contact with the lateral incisors, reducing the chance of black triangles and improving aesthetics.

IPR was completed on the straight contacts, 0.3mm between the UR3 and UR4, 0.3mm between the UL3 and UL4, and 0.3mm between the UL1 and UR1. Half of the recommended IPR was performed at the other sites.

Composite button anchors were placed to engage the palatal bow on the most palatally



FIGURE 3: Pre-treatment, right lateral view



FIGURE 5: Rotated incisors and mild crowding in the upper arch



FIGURE 8: Progression of upper arch, mid-treatment, occlusal view



FIGURE 11: Following treatment in the upper arch, left lateral view

positioned teeth. The remaining IPR was completed as the case progressed. All of this was carried out as per the 3D Archwize planner guidance.

The patient was shown how to place and remove the aligner, correctly engage the bow with the composite buttons and how to turn the expander. Appliance maintenance instructions were given.

The patient was reviewed regularly and was exceptionally compliant throughout treatment. He initially had some concerns regarding speech clarity but adjusted quickly.





FIGURE 12: Custom fixed bonded retainer fitted to the upper arch, occlusal view



FIGURE 13: Lower arch at beginning of orthodontic treatment, occlusal view



FIGURE 14: Lower arch at the time of Inman Aligner placement



FIGURE 15: Final stage of orthodontic treatment in the lower arch, occlusal view



FIGURE 16: Fixed retainer bonded to the lower arch following treatment, occlusal view



FIGURE 17: Final result, smile view

After 12 weeks, the upper teeth were aligned. A customised fixed bonded retainer was fitted and a temporary removable vacuum formed retainer given.

The lower Inman Aligner was provided and the necessary PPR and IPR carried out, with composite buttons placed to anchor the bow. Alignment in the lower arch progressed as expected, with minimal complications.

Prior to the end of treatment, to reduce treatment time, the patient carried out some at-home tooth whitening using the Philips Zoom 6% hydrogen peroxide and bleaching trays provided by the IAS Laboratory.

With the planned movements accomplished, a second Archwire assessment was performed and three refiners were required for final movements and optimal aesthetics. After the refinements, a customised fixed bonded retainer was fitted.

Following the guidelines of the align, bleach, bond (ABB) concept, composite edge bonding was carried out with A2 and OL from Venus Pearl, wrapping slightly over the labial surfaces of the teeth using the IAS reverse triangle technique, developed by Tif Qureshi. It is a simple technique involving two layers of composite, one dentine and one enamel shade, and offering efficiency and great aesthetics.

Upper and lower removable vacuum formed retainers were provided for night-time wear and retention.

REFLECTION

The patient was thrilled with the results. The treatment exceeded his expectations and helped restore confidence in the ability to smile.

On reflection, I'm equally delighted with the outcome of the case. I was able to achieve a stable and aesthetic outcome in a conservative manner by using the techniques I have learnt through attending the IAS Academy.

In hindsight, it may have been an option to use the Inman Aligner in the upper arch and clear aligners in the lower arch to potentially reduce treatment time, or even upper and lower aligners.



FIGURE 18: Final result, anterior view



FIGURE 19: Final result, right lateral view




FIGURE 20: Final result, left lateral view

However, the benefits of the Inman Aligner providing efficient movements, especially of rotated incisors, at a low laboratory cost cannot be overlooked as a viable and successful treatment option.

A key factor to the success and efficiency of this case was the support and guidance received, specifically from Claudia Waddell and Kelly Toft, mentors at the IAS Academy.

The ongoing mentoring I receive throughout all my orthodontic cases at the academy is some of the most supportive I have experienced. The academy enables safe and continued

development and I recommend anyone interested in developing their restorative/orthodontic skills to use the IAS Academy. 

PRODUCTS USED

Spacewize+ IAS Academy
Archwize IAS Laboratory
Venus Pearl Kulzer
Inman Aligner Inman Orthodontics Laboratories
Zoom 6% hydrogen peroxide Philips



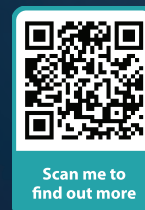
FluoroDose®

5% Sodium Fluoride Varnish with Xylitol

The **TOP**
Fluoride Varnish
Just Got **BETTER.**

Now in an easy peel tray
with Pop-up Benda® Brush.
Secure, comfortable finger
grip and a custom well for
the perfect mix every time.

centrix®
MAKING DENTISTRY EASIER



Scan me to
find out more

Trycare

**Exclusively available
from Trycare**

Call to order 01274 88 55 44

Visit www.trycare.co.uk/centrix



Essential Ortho equipment

———— IPR BUR KIT



Scan QR code
for Special offer

Confidence starts
with oral care



Our strength is our service

Tel: (00 44) 1274 533233 / Email: info@orthocare.co.uk / www.orthocare.co.uk

Complex open bite cases: part three

Christian Leonhardt concludes his series on airway-facially generated treatment planning by discussing comprehensive execution – a standardised protocol for anterior open bite sequence in modern orthodontic treatment

The successful treatment of anterior open bite cases demands a meticulous and standardised protocol, encompassing four

essential phases:

1. Planning phase
2. Orthodontic treatment
3. Soft tissue treatment and long-term stability in thin phenotypes
4. Retention.

This well-structured approach ensures that each step contributes synergistically to achieving functional and aesthetic harmony.



FIGURES 1A to 1C: Placement of temporary anchorage devices (TADs)

The following provides an overview of the standardised protocol for managing anterior open bite cases in modern orthodontic treatment.

1. PLANNING PHASE

The foundation of any successful treatment lies in meticulous planning. In the context of anterior open bite cases, the planning phase is particularly crucial. It begins with a comprehensive assessment, incorporating elements of the airway-facially generated treatment planning (AFGTP) technique, to gain insights into the patient's unique craniofacial, dentofacial and airway characteristics.

During this phase, considerations such as airway evaluation, dentofacial analysis and functional assessments are paramount. Precise diagnosis guides treatment planning, including the determination of posterior intrusion, cranial repositioning, and derotation requirements. The planning phase also involves assessing the need for temporary anchorage devices (TADs) to support orthodontic mechanics.

2. ORTHODONTIC TREATMENT WITH ALIGNERS AND TADS

With a comprehensive treatment plan in place, the orthodontic phase commences. Modern orthodontic treatment often incorporates aligners, which offer both aesthetic and functional advantages.

Aligners, customised to the patient's specific needs, facilitate controlled tooth

movement, including posterior intrusion and alignment adjustments.

TADs may be strategically deployed during this phase to enhance treatment precision. TADs serve as stable anchor points, allowing for targeted tooth movement and ensuring that posterior intrusion is executed with precision.

3. SOFT TISSUE TREATMENT AND LONG-TERM STABILITY IN THIN PHENOTYPES

In the context of the standardised protocol for managing anterior open bite cases, special attention is devoted to soft tissue treatment, particularly in individuals with a thin phenotype. Thin, soft tissue can be more susceptible to changes, and ensuring long-term stability is paramount.

Connective tissue grafts (CTGs) play a pivotal role in this phase, not only to augment and thicken soft tissues but also to fortify their stability over time. The goal is not merely to achieve immediate improvements in lip support and aesthetics but to safeguard these gains for the long term.

In patients with a thin phenotype, the thickness of the soft tissue becomes a crucial consideration. CTGs are meticulously selected and placed to provide adequate support and maintain the corrected lip position.

This approach is essential for achieving a balanced smile and preventing relapse, especially in individuals where thin, soft tissue may predispose them to greater susceptibility to changes.



DR CHRISTIAN LEONHARDT

Christian graduated from Julius Maximilian University of Würzburg in Germany. He prioritises achieving aesthetic, functional, biomechanical and periodontal outcomes, with a particular focus on airway health. As a mentor and leader in continuing dental education, Christian recognises the pivotal role of ongoing learning in delivering superior patient outcomes.





By prioritising long-term stability in the soft tissues, the protocol not only addresses the immediate aesthetic concerns associated with anterior open bite but also ensures that the treatment results endure over the years.

This consideration is particularly significant in individuals with a thin phenotype, where the preservation of soft tissue integrity is fundamental to achieving a harmonious and lasting outcome.

4. RETENTION

The final phase of the protocol is retention. Retention strategies may involve the use of fixed or removable appliances to maintain the corrected occlusion and prevent relapse. Compliance with the retention phase is vital for long-term stability.

In summary, the standardised protocol for managing anterior open bite cases begins with thorough planning, leverages orthodontic techniques with aligners and TADs, addresses soft tissue concerns with CTGs, and concludes with retention to safeguard treatment outcomes. This protocol ensures that patients achieve not only functional improvements but also aesthetic harmony, enhancing their overall quality of life.

ALIGNERS AND TADS

The procedure for intruding posterior teeth using aligners and temporary anchorage devices (TADs) is a systematic and coordinated process, designed to achieve precise results in the correction of anterior open bite. The following details a step-by-step overview of the procedure, which is illustrated in Figures 1a to 1c.

1. Digital AFGTP planning

The procedure begins with a comprehensive digital airway-facially generated treatment planning (AFGTP) assessment. Utilising advanced digital technology, the patient's craniofacial, dentofacial and airway characteristics are meticulously analysed. The digital AFGTP serves as the foundation for planning the precise intrusion of posterior teeth.

2. TAD placement

Before initiating orthodontic treatment, TADs are strategically placed to serve as skeletal anchorage points. This step is critical for achieving the planned intrusion of posterior teeth. TAD placement requires careful consideration of the following:



FIGURE 2A: Initial intraoral photograph

- CBCT evaluation: a cone-beam computed tomography (CBCT) scan is utilised to assess the available space between the roots of the teeth, ensuring sufficient room for TAD insertion
- Anaesthesia: local anaesthesia is administered to ensure patient comfort during the TAD placement procedure
- Buccal and palatal placement: TADs are inserted on both the buccal (cheek side) and palatal (roof of the mouth side) aspects of the dental arch, between the second premolar and the first molar. This placement location provides stable anchorage
- Gingival positioning: it is crucial that the TADs are positioned within the gingival tissue rather than the mucosa on the buccal side, ensuring optimal stability
- Specialised hand-screwdriver: a specialised hand-screwdriver is employed for the precise and controlled insertion of TADs, avoiding any potential damage to surrounding structures.

3. Aligner placement with attachments

Following the successful placement of TADs, the next step involves the insertion of customised aligners. Attachments, small tooth-coloured buttons, may be affixed to certain teeth to enhance aligner effectiveness. Attachments provide additional grip points for the aligners to exert force on the teeth.

4. Force application for intrusion

To initiate the intrusion of posterior teeth, a combination of aligners and elastics or a power chain is employed. The aligners are designed with built-in features for the intrusion process. Elastics or a power chain are utilised to apply the necessary force in the cranial (upward) direction to facilitate the planned intrusion.

5. Aligner wear and elastic usage

The patient is instructed to wear the aligners for approximately 22 hours a day, ensuring consistent force application. Elastics are worn in conjunction with the aligners and are an integral part of the treatment plan. They aid in directing the force needed for the intrusion of posterior teeth.



FIGURE 2B: Intraoral final result after 15 months of orthodontics with TADs

Throughout the treatment period, the patient's progress is regularly monitored. Adjustments to the aligners, elastics or TADs may be made as needed to achieve the desired intrusion while maintaining patient comfort.

6. Retention

Upon achieving the desired posterior intrusion and overall treatment goals, a retention phase is initiated. Retention measures, such as fixed or removable appliances, are employed to maintain the corrected tooth positions and ensure long-term stability.

In conclusion, the procedure for intruding posterior teeth in anterior open bite correction involves meticulous planning, precise TAD placement, aligner-based force application, and vigilant monitoring. This comprehensive approach leverages advanced technology and orthodontic expertise to achieve functional and esthetic improvements while preserving long-term stability for the patient.

TREATMENT JOURNEY

In the journey from the initial presentation to the final outcome of this anterior open bite case, the transformation is nothing short of remarkable (Figures 2a and 2b).

The treatment planning, meticulously executed with precision, has resulted in a significant improvement in both function and aesthetics. This outcome underscores the essence of treatment planning in orthodontics, which is all about decreasing risks and increasing the prognosis for the patient. The treatment goals have been:

- Closure of anterior open bite: the most prominent achievement of this treatment is the successful closure of the anterior open bite. What was initially a challenging and complex issue has been resolved through the strategic planning and execution of orthodontic movements
- Derotation and alignment of crowded teeth: the crowded teeth that contributed to the initial aesthetic and functional concerns have been expertly derotated and aligned. This has not only enhanced the overall smile but also improved occlusal function
- Uprighting of negative crown torque: negative



FIGURES 3A to 3G: Recession coverage and soft tissue thickening with a connective tissue graft

crown torque, which posed both aesthetic and functional challenges, has been addressed. The roots have been torqued into the bone envelope, resulting in a more harmonious tooth position within the arch

- Resolution of early black triangles: early beginnings of black triangles, often associated with anterior open bite cases, have been effectively closed. This aesthetic concern has been mitigated through precise orthodontic movements
- Enhancement of thin phenotype and biotype: the patient's thin phenotype and biotype have seen significant improvement. This has been achieved through the movement of teeth while maintaining a healthy periodontal ligament (PDL)
- Correction of posterior corridors: the previously asymmetric hanging posterior corridors have been rectified. This not only

contributes to the overall aesthetic balance but also enhances oral function

- Improved occlusal function: the bite now functions optimally with posterior equal simultaneous contacts. This not only ensures efficient chewing but also contributes to long-term oral health
- Aesthetic improvements: in the anterior region, a 2mm overjet has been achieved, and there is ample clearance for the functional envelope. This results in a balanced and harmonious smile.

In essence, the final outcome of this anterior open bite case represents the culmination of meticulous planning and skillful execution. It demonstrates the transformative power of orthodontics in improving both function and aesthetics. Through strategic treatment planning, risks were mitigated, and the prognosis for the patient was significantly enhanced.

The success of this case exemplifies the profound impact that orthodontic care can have on a patient's quality of life, oral health and self-esteem.

RECESSION COVERAGE AND SOFT TISSUE THICKENING

The final procedure for recession coverage and soft tissue thickening with a connective tissue graft (CTG) in this case is a delicate and precise surgical technique aimed at achieving optimal aesthetic and functional outcomes.

This procedure follows the principles of the Hürzeler/Zuhr technique and involves both donor and recipient sites (Figures 3a to 3g).

Donor site (palate)

- Semilunar incision: the procedure begins with a semilunar incision on the palate extending from the canine to the first molar. This incision allows access to the donor tissue required for grafting
- Envelop technique: the semilunar incision is designed to create an enveloped area of tissue. This technique involves preserving the periosteum and a small layer of connective tissue on the donor site. The goal is to ensure that the donor tissue can heal optimally while maintaining its vitality
- Donor tissue harvesting: a connective tissue graft (CTG) is carefully harvested from the donor site while preserving the enveloped tissue. The CTG is obtained with minimal invasiveness and precision.

Recipient site (recessions and thin biotype)

- Tunneling technique: at the recipient site, a tunneling technique is employed, extending from canine to canine. This technique involves creating a tunnel under the mucosa, ensuring minimal disruption to the surrounding tissues
- Mucosal mobilisation: the mucosa over the recipient site is gently mobilised to facilitate the placement of the connective tissue graft
- Enamel matrix proteins: areas of exposed root surfaces within the recessions are treated with enamel matrix proteins. These proteins play a crucial role in promoting periodontal tissue regeneration and attachment.

Suturing and closure

- Backpack suture: suturing is performed using a specialised backpack suture technique. This technique involves creating a secure suspension of the graft material. The suture passes through composite blocked approximal spaces, enhancing stability and graft integration
- Double loop technique: the sutures are meticulously placed in a double loop fashion





FIGURE 4A: Initial radiographs

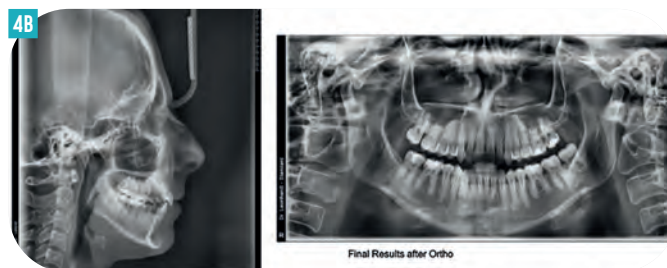


FIGURE 4B: Final result after ortho

to ensure precise tension control and secure graft fixation. This technique helps maintain graft position and stability during the initial healing phase.

The goal is to achieve complete coverage of the recession defects while simultaneously thickening the soft tissue for long-term stability and esthetic enhancement. The Hürzeler/Zuhr technique is chosen for its predictability and minimal invasiveness, which contribute to improved patient comfort and quicker recovery.

By following this surgical protocol, the procedure aims to provide the patient with a favorable aesthetic outcome, protect the exposed root surfaces, and ensure the long-term stability and health of the periodontal tissues.

RADIOLOGICAL EVALUATION

Radiological evaluation of the intrusion of posterior teeth using temporary anchorage devices (TADs) involves both panoramic and cephalometric images to assess the treatment's effectiveness and its impact on various dental and skeletal parameters (Figures 4a and 4b).

Pre-treatment radiology

- Panoramic radiograph (pano): the pre-treatment panoramic radiograph provides an overview of the dental and skeletal structures before the intrusion procedure. Key observations include:
 - Initial open bite and tooth angulation
 - Baseline position of the molars and premolars
 - Presence of the maxillary sinus and its position
- Cephalometric radiograph (ceph): the pre-treatment cephalometric radiograph captures the lateral view of the head and face. Key pre-treatment findings may include:
 - Skeletal relationships (SNB angle)
 - Lip profile and chin position
 - Dental and skeletal parameters relevant to the treatment plan.

Post-treatment radiology

- Panoramic radiograph (pano): after the intrusion procedure, the follow-up panoramic

radiograph is taken to assess changes in dental and skeletal structures. Notable post-treatment findings include:

- Evidence of posterior tooth intrusion, characterised by the movement of molars and premolars in a cranial direction toward the maxillary base
- Absence of root resorption or changes in the maxillary sinus, indicating the stability of the treatment outcome
- Preservation of attachment levels and horizontal and vertical bone in the areas of intrusion, confirming periodontal health
- Cephalometric radiograph (ceph): the post-treatment cephalometric radiograph provides a detailed view of the changes in facial and dental parameters. Notable post-treatment findings include:
 - Improved angulation of the front teeth relative to the dentoalveolar bone of the maxilla
 - Changes in the lip profile as planned, with a more retrusive lip position due to autorotation in a counterclockwise direction
 - Evidence of the desired SNB angle change and its impact on facial harmony.

These references provide evidence of the safety and effectiveness of TADs in posterior tooth intrusion, with minimal adverse effects on root resorption and favourable bone remodeling.

In the realm of orthodontics, adopting the mindset of a diligent investigator is paramount, as it compels us to delve into the fundamental 'why' behind each case. Success in orthodontic treatments hinges not only on addressing the visible concerns but also on unraveling the underlying factors that contribute to the challenges presented by each patient.

One pivotal factor in this investigative process is the comprehensive assessment of airway issues, which can exert a profound influence on treatment outcomes. Recognising and addressing airway-related concerns is not a routine step; rather, it is a pivotal element in crafting an effective treatment plan.

The significance of tackling airway problems extends beyond the immediate correction of orthodontic issues, as it is intricately tied to

the prevention of potential relapses and the establishment of long-term stability.

In the specific case under consideration, the astute identification of airway issues played an instrumental role in the treatment plan. It's imperative to understand that addressing these concerns is not just about rectifying an anterior open bite or achieving tooth alignment; it is about preemptively managing risks and ensuring the enduring success of the achieved results.

Retention: a lifelong commitment

The preservation of orthodontic outcomes necessitates a rigorous commitment to retention strategies. Utilising thin thermoplastic splints is an effective means to maintain the corrected tooth positions. However, the retention strategy transcends the physical devices.

Myofunctional therapy, in conjunction with monitoring, assumes a pivotal role. Patients must be empowered with the knowledge and skills required to perpetuate proper oral function, encompassing muscle equilibrium and tongue posture. Myofunctional therapy, coupled with regular follow-ups, is an indispensable facet of lifelong retention.

Triumphant orthodontic treatment extends beyond immediate achievements. It revolves around comprehending the 'why' intrinsic to each case, addressing foundational aspects like airway concerns, and employing retention techniques that extend over a lifetime. A steadfast commitment to long-term stability and the safeguarding of treatment outcomes epitomises contemporary orthodontic practice, ensuring that patients enjoy the enduring benefits of a healthy, functional, and aesthetically pleasing smile for years to come. [📄](#)

REFERENCES

siobhan.hiscott@fmc.co.uk

COURSE INFORMATION

For details on courses by the Orthodontic Specialist Academy, visit theorthodonticspecialist.co.uk/courses.

effer-ves®

TABLETS FOR CLEANING REMOVABLE DENTAL APPLIANCES

Suitable for aligners, retainers and other removable appliances

Help your patients keep their appliances clean and bright with Effer-ves. Specially formulated to kill bacteria that can build up as well as reducing odours.

Effer-ves is easy to use and removes common stains caused by tea, coffee and some foods.



**Call us to receive
a free sample box**
Quote CLINICAL DENTISTRY

Effer-ves is suitable for all removable dental appliances

- Aligners
- Orthodontic retainers
- URA's (incorporating acrylic and s/s wire)
- Functional appliances
- Mouthguards
- Bruxing Appliances
- TMJ Appliances

**Independently tested
by Invisalign®**



Scan here
for more
aligner related
products

NEW Aligner
Accessories Brochure
available - call us to
receive a copy.



Invisalign® is a registered trademark of Align™ Technology Switzerland GmbH

T: 0117 975 5533 / E: info@tocdental.com / W: tocdental.com

TOC
The Orthodontic Company

HASSLE-FREE, PREDICTABLE PLACEMENT Trycare

Using guided surgery for implant placement has become increasingly popular among implant dentists. Dramatically reduced surgical time helps improve patient comfort. Plus, flapless surgery significantly improves the healing process and time.

For the implant dentist, it significantly improves placement accuracy, reduces the risk of complications and minimises chair time, leading to greater efficiency and cost savings.

The Aidinguide guided surgery system delivers effortless procedures plus accurate and predictable implant placement. It delivers everything you need in a guided surgery system.

It is a keyless system, which helps save surgery time, while ensuring accurate and predictable implant placement.

Activeflow irrigation technology delivers coolant directly to the surgical site. This helps prevent bone overheating, thereby maintaining healthy bone for optimum osteointegration and minimised risks of complications.

Built-in stoppers ensure precise and accurate drilling to the desired depth, while keyless, self-centring drills and tools enable implant dentists to perform faster, easier and more intuitive surgeries.

01274 885544

www.trycare.co.uk/adin



ZIRKONZAHN PREPARATION COURSE Zirkonzahn

A new course has been launched within 'The Zirkonzahn School', the extensive educational programme for dentists and dental technicians developed by the Italian company Zirkonzahn (South Tyrol).

It focuses on the importance of a minimally invasive approach to dental treatments, combining digital and analogue workflow steps. It is conceived for all dentists willing to practise and improve skills on minimally invasive tooth preparation for different clinical situations.

Day one – from 9am to 6pm:

- Explanation of the importance of minimally invasive preparation
 - Step-by-step demonstration of the five tooth preparation phases to produce zirconia crowns which each participant will re-apply on their own models.
- Day two – from 9am to 6pm:
- Finalisation of the preparations
 - Digital scanning of the final models with the new Detection Eye intraoral scanner
 - Verifying the accuracy of the preparations in the software
 - Introduction to the cementation technique and demonstration
 - Crown cementation on the prepared models.

The course will be held on 26-27 September and on 13-14 February 2025 by a qualified dentist at Zirkonzahn Klinik Demedici and allows a maximum of six participants.

+39 0474 066 650

education@zirkonzahn.com

www.zirkonzahn-education.com



Zirkonzahn
Human Zirconium Technology



Bond Apatite[®]
CALCIUM SULPHATE BASED
BONE GRAFT

Augma[®]
BIOMATERIALS

**Mixes,
places
& sets
in
30
seconds**

Bond Apatite is a **synthetic bone graft** cement consisting of **2/3 Biphasic Calcium Sulphate** and **1/3 slow resorbing Hydroxyapatite granules** presented in a **1.0cc ready to use syringe**.

TEMPIT: STILL GOING STRONG!

Trycare

Just as permanent restorations demand specific materials for different applications, temporary restorations have different requirements for different indications.

Available exclusively from Trycare, Centrix offers three specific and proven temporary filling material formulas providing optimal results.

For endodontic access cavity sealing and short-term temporary restorations, use original Tempit, which is moisture activated and expands slightly to completely seal any cavity. Tempit-E offers all the benefits of Tempit plus it contains eugenol. It offers an anti-inflammatory and local anaesthetic effect, which helps facilitate pulpal healing. For indirect inlay and onlay restorations, Tempit L/C sets firm but remains flexible so that it can be easily removed with an instrument without the need for drilling.

Setting in minutes and easy to remove when required, they are supplied in single unit dose capsules. Whichever option you use, simply dispense Tempit into the cavity and adapt it to shape. No mixing, no spatulation, no cross-contamination and no messy placement.

01274 885544

www.trycare.co.uk

Trycare



NATURAL MINERAL BONE MATERIAL

Augma

Augma's Bond Apatite is a natural mineral bone regeneration material that does not wash away even in the presence of blood and saliva. Its all-in-one syringe enables immediate dispensing directly into the bone defect. Depress the plunger to activate the ingredients, dispense it into the defect and apply pressure using a sterile gauze. Bond Apatite sets hard, and there is no need for a membrane and tension-free closure is not only unnecessary but contraindicated. Small dehiscences can be left exposed without any risk of infection or breakdown, while larger dehiscences can be protected with Augma Shield. Formed from a patented mixture of biphasic calcium sulphate and hydroxyapatite in a two to one ratio, Bond Apatite sets like a cement in the oral cavity. After a few weeks it transforms into a radiolucent matrix, before calcifying and becoming radiopaque new bone. According to the manufacturer, it produces 90% new bone after three months.

www.augmabio.co.uk



IN A SPHERE OF ITS OWN!

Trycare

Tokuyama uses patented spherical filler particles of different diameters within their composite materials to maximise their optical and physical properties for the desired indication. In addition to optimised optical properties, resulting in enhanced aesthetic restorations, Tokuyama's spherical filler particles offer other advantages. They are quick and easy to pack into undercuts, reducing the risk of voids; easier to sculpt and carve, producing enhanced morphology; and a much smoother surface finish, which has a natural high sheen that requires minimal if any polishing. Tokuyama's development of spherical filler particles has culminated in Omnichroma, a colourless universal composite that matches every tooth colour. Omnichroma Flow Bulk is a low viscosity composite that can be placed in 3.5mm increments. Like the other Omnichroma materials, it delivers unprecedented colour matching, high polishability and stain resistance, and has low polymerization shrinkage.

01274 885544

www.trycare.co.uk



MIRACLE SHADE MATCHING

Trycare

Trycare Ltd is UK distributors of Tokuyama Dental's range of spherical composites including Estelite Sigma Quick.

Featuring Tokuyama's patented RAP monomer and aesthetic spherical filler technology, Estelite Sigma Quick delivers an extended working time in ambient light yet cures in only 10 seconds!

In addition, Estelite Sigma Quick offers miracle shade matching! Because of its spherical filler particles, in most cases just one shade will blend perfectly with the natural teeth, leaving invisible margins and undetectable restorations.

These spherical fillers also facilitate outstanding polishing and a lustre that lasts, allied to high wear resistance and very low abrasion of the opposing teeth.

Estelite Sigma Quick is ideally used in combination with Tokuyama's award-winning Universal Bond II, Garrison Sectional Matrix systems and for the ultimate aesthetic finish, Eve polishers!

If you prefer layering techniques, Tokuyama's Asteria delivers outstanding results that can be characterised using Estelite Color.

01274 885544

www.trycare.co.uk/estelite



CONTINUOUS 12-HOUR FLUORIDE PROTECTION!

Trycare

Conventional 1450ppm and above fluoride toothpastes only deliver fluoride for a maximum of 90 minutes. Despite its lower 530ppm fluoride content, Biomin F remains active for up to 12 hours, continuously releasing fluoride to strengthen teeth and protect against decay. Available from Trycare, Biomin F contains tiny bioglass particles made up of fluoro calcium phosphosilicate bioactive glass that bond to teeth and enter the dentinal tubules, where they gradually dissolve for up to 12 hours, releasing calcium, fluoride and phosphate ions. These combine with saliva to form fluorapatite, which strengthens teeth, aids remineralisation of enamel and provides effective treatment for hypersensitivity. Biomin F is approved by the Oral Health Foundation for sensitivity relief and remineralisation.

01274 885544

www.trycare.co.uk/biomin







Scientifically proven fluoride & mineral therapy...

...not just toothpaste.





01274 88 55 44



Scan for more info now!

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 subscriber 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/SEP/MONKHOUSE/PAGE 16

1. How old was the patient in this case study?
 - ☐ a. 62 years old
 - ☐ b. 67 years old
 - ☐ c. 74 years old
 - ☐ d. 79 years old
2. The patient's initial lower chrome was aided by an implant in which tooth position?
 - ☐ a. LR2
 - ☐ b. LR3
 - ☐ c. LL2
 - ☐ d. LL3
3. Why did the authors decide on a pattern resin try-in?
 - ☐ a. To give the patient an overall feel of the prosthesis
 - ☐ b. To manage the patient's expectations
 - ☐ c. To ensure the accuracy in the model
 - ☐ d. All of the above
4. For the altered cast technique in this case, at what distance from the tooth was the secondary model sectioned?
 - ☐ a. 0-1mm
 - ☐ b. 1-2mm
 - ☐ c. 2-3mm
 - ☐ d. 3-4mm

AESTHETIC DENTISTRY CD/SEP/JETHWA/PAGE 25

1. What occasion prompted the patient to attend the practice for a consultation in this case?
 - ☐ a. Wedding
 - ☐ b. Birthday
 - ☐ c. Graduation
 - ☐ d. Christening

2. According to the author, what can be the make or break for a case?

- ☐ a. The clinical result
- ☐ b. Achieving function
- ☐ c. Managing expectations
- ☐ d. Gaining testimonials

3. Why do some patients wish to avoid aligners?

- ☐ a. Cost factors
- ☐ b. Time factors
- ☐ c. Compliance factors
- ☐ d. All of the above

4. How long does the author quote a cementation visit in a case like this will take from start to finish?

- ☐ a. Half an hour
- ☐ b. One hour
- ☐ c. Two hours
- ☐ d. Three hours

DIGITAL DENTISTRY CD/SEP/KHAN/PAGE 36

1. Where does periodontitis rank in terms of global prevalence?

- ☐ a. First
- ☐ b. Third
- ☐ c. Fifth
- ☐ d. Sixth

2. According to research from Oasis Dental Care, how many people with bad teeth try to hide their smiles or avoid smiling?

- ☐ a. 3.4 million
- ☐ b. 4.4 million
- ☐ c. 5.4 million
- ☐ d. 6.4 million

3. What does CNN stand for within the context of the article?

- ☐ a. Convolutional neural network
- ☐ b. Common numeral numbers
- ☐ c. Complex navigation network
- ☐ d. Clinical note notifications

4. According to the author, what is a focal advantage of artificial intelligence?

- ☐ a. Precision
- ☐ b. Reduced errors
- ☐ c. Reduced staffing
- ☐ d. All of the above

ENDODONTICS CD/SEP/GIOVARRUSCIO/PAGE 43

1. In maxillary first premolars, what is the incidence of type I canals (one canal)?

- ☐ a. 1.66%
- ☐ b. 6%
- ☐ c. 8.66%
- ☐ d. 89.64%

2. How many alloys does Slimshaper Pro feature?

- ☐ a. Two
- ☐ b. Three
- ☐ c. Four
- ☐ d. None

3. Radiographic examination in the case report revealed deep carious lesions on which tooth?

- ☐ a. UR4
- ☐ b. UR3
- ☐ c. UR2
- ☐ d. UR1

4. In the case report, the shaping protocol was done with which Slimshaper rotary file?

- ☐ a. ZS1
- ☐ b. ZS2
- ☐ c. ZS3
- ☐ d. All of the above

IMPLANT DENTISTRY CD/SEP/VOURAKIS/PAGE 53

- How old was the patient in this case?
 - ☐ a. 53 years old
 - ☐ b. 57 years old
 - ☐ c. 60 years old
 - ☐ d. 64 years old
- In this case, the canines, left and right premolars and a right molar were used to support the surgical guide together with how many bone anchor pins?
 - ☐ a. Zero
 - ☐ b. Two
 - ☐ c. Three
 - ☐ d. Four
- How many Conelog Progressive-Line implants were placed in accordance with the predetermined positions, depths and angulations?
 - ☐ a. Three
 - ☐ b. Four
 - ☐ c. Five
 - ☐ d. Six
- What was the diameter of the titanium wire that was inserted into the bridge to improve its rigidity and strength?
 - ☐ a. 1mm
 - ☐ b. 2mm
 - ☐ c. 3mm
 - ☐ d. 4mm

ORAL HEALTH CD/SEP/GARLO/PAGE 65

- How many residents participated in the study examining the effect of a novel antibacterial oral hygiene method on the health of elderly individuals living in 24-hour facilities?
 - ☐ a. 16
 - ☐ b. 23
 - ☐ c. 31
 - ☐ d. 47
- What does the Periosafe test detect and quantify?
 - ☐ a. Matrix metalloproteinase-8 (MMP-8) levels in saliva
 - ☐ b. Plaque scores
 - ☐ c. Tongue cancer
 - ☐ d. Bleeding scores
- Regarding the index, what does CPITN stand for?
 - ☐ a. Common Progression In Tooth Notations
 - ☐ b. Community Periodontal Index of Treatment Needs
 - ☐ c. Common Periodontal Indicators of Tissue Neglect
 - ☐ d. Complex Pathology Index of Treatment Needs
- The CPITN categorises periodontal conditions into how many main categories?
 - ☐ a. Two
 - ☐ b. Three
 - ☐ c. Four
 - ☐ d. Five

ORTHODONTICS CD/SEP/FEARNS/70

- In this case study, what treatment options were discussed with the patient?
 - ☐ a. Orthodontics
 - ☐ b. Restorative treatment with veneers
 - ☐ c. No treatment and monitor
 - ☐ d. All of the above
- Following an initial 2D analysis of the patient's dentition, how much crowding in the upper arch did the 3D analysis find?
 - ☐ a. 1mm
 - ☐ b. 1.2mm
 - ☐ c. 1.5mm
 - ☐ d. 1.7mm
- What does PPR stand for in this case?
 - ☐ a. Predictive proximal reduction
 - ☐ b. Periodontic pocket reduction
 - ☐ c. Periapical periodontitis radiograph
 - ☐ d. Private practice register
- How long did it take to align the upper teeth in this case?
 - ☐ a. Eight weeks
 - ☐ b. 12 weeks
 - ☐ c. 16 weeks
 - ☐ d. 20 weeks

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 please 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
- Title
- First name
- Surname
- GDC number
- Subscriber number
- Address (including postcode)
- Telephone number.





HELP ENHANCE YOUR PATIENTS' DAILY BRUSHING EFFORTS WITH CORSODYL ACTIVE GUM REPAIR





LEARN MORE AND ORDER SAMPLES:



WITH ENHANCED FLAVOUR TECHNOLOGY

Trade marks are owned by or licensed to the Haleon group of companies. PM-GB-CSYL-23-00285

It starts with a
chair... and builds
from there.



Scan the QR code to
book your showroom
appointment



WORK THE WAY YOU WANT.

Delivery options, instruments, colour and style... you deserve
to work your way, right down to the last stitch.

At A-dec, we believe in choice.

a|dec[®]

a-dec.co.uk/500EXPERIENCE

Ask your Territory Manager about our latest promotions.

For complete trademark information, visit a-dec.com/legal/trademarks.

© 2024 A-dec Inc. All rights reserved.