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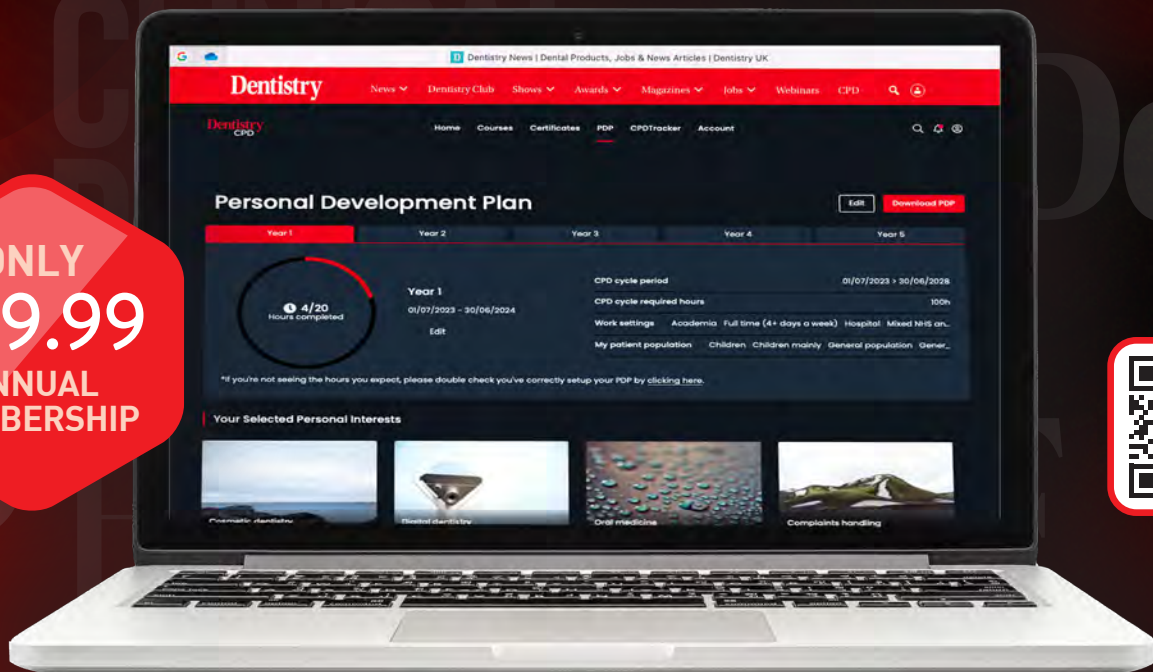
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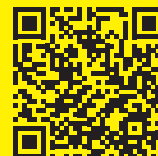
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Clinical Dentistry is committed to the advancement of practical clinical skills in dentistry. Through its focus on inspirational clinical casework, its sole aim is to help general dental practitioners enhance their skills and techniques across every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

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AT THE TOP OF YOUR GAME



Welcome to the June/July issue of *Clinical Dentistry*!

An interesting article came across my desk recently, written by general dentist and wellbeing expert Maria Papavergos.

In it, Maria – who is also the founder of the wellness and oral health platform The Lifestyle Dentist – discussed the value of nutrition to the dental profession. She drew parallels between dental professionals and professional athletes, pointing out how both groups rely on traits such as precision, focus and stamina to enhance their performance.

While Maria was underlining the importance of nutrition to meet these demands, the article got me thinking about the broader similarities of the two careers.

There are the obvious physical attributes – like strength, endurance, agility, and flexibility – that professional sportspeople need. But it goes beyond this; they must also have a profound understanding of their bodies to maximise output while minimising the risk of injury.

On top of their physical capabilities, things like mental resilience, interpersonal skills, and ethical behaviour come into play.

So, when you stop and think about it, the skills of professional sportspeople and dental professionals feel very familiar, don't you think?

When it comes to clinical practice, dental professionals need to maintain focus and composure under pressure: much like a professional athlete out on the field.

To be a successful dental practitioner, you must be able to set goals, maintain motivation, and manage stress effectively. Resilience is crucial, and strategic thinking and decision-making are critical.

But it doesn't stop there – there's also the requirement for strong teamwork and excellent communication skills. While professional sportspeople have to collaborate effectively with coaches, teammates and support staff, dental professionals must often exhibit the leadership qualities that will ensure the practice is performing at the top of its game season after season.

Get all this in alignment and your patients will become your biggest fans. And then maybe it'll be time to print your name on the back of your dental scrubs – or is that a step too far?



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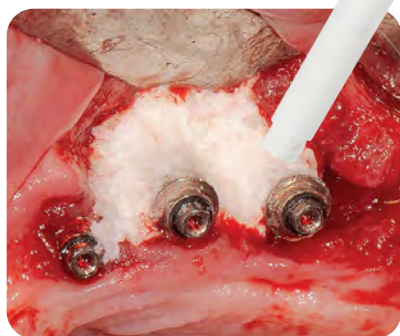
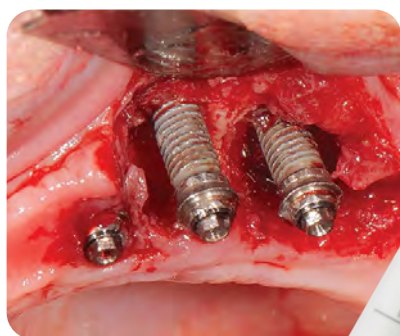
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Meet the experts

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



DR KIRAN SHANKLA

BDS MFDS (RCS Ed) MSc

From taking before and after photographs to asking the right questions to initiate patient conversations, Kiran Shankla shares her 10 top tips for making your tooth whitening business more profitable on page 36.

Kiran is a renowned dentist with years of experience and a passion for creating beautiful smiles. She offers a wide range of dental services to help patients achieve optimal oral health and confidence.

After graduating from the University of Birmingham in 2013, she worked for two years in general practice before moving to Australia. She returned to the UK in 2016 and embarked on a part-time master's in restorative dentistry, which she successfully completed with a merit.

With an interest in restorative and minimally invasive dentistry, Kiran now practises at Kendrick View Dental Practice in Reading. Follow her on Instagram @shanklasmiles for her latest case studies.

AESTHETIC DENTISTRY

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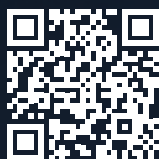
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GENERAL DENTISTRY

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Presenting the 2024
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NELSON Y HOWARD
Considerations for treating
transgender patients

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ALESSANDRO COLELLA
Deep white dyschromia

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CLINICAL DENTISTRY AWARDS CATEGORIES

CLINICAL DENTISTRY AWARDS

The Clinical Dentistry Awards aim to acknowledge clinical excellence in practice. The ceremony takes place at Royal Garden Hotel in London on Friday 11 October. The closing date for entries is Wednesday 10 July. For the full list of categories and more information, visit dentistry.co.uk/clinical-awards, or scan the QR code to enter.



To acknowledge clinical excellence in practice, the Clinical Dentistry Awards bring together aesthetic dentistry, orthodontics, periodontics, endodontics, implant dentistry and oral health, showcasing the outstanding work being undertaken in dentistry.

The Clinical Dentistry Awards ceremony will take place at the Royal Garden Hotel in London on Friday 11 October 2024 and promises to be a prestigious and well-respected event for the UK and Ireland.

HOW TO ENTER

Throughout this issue of *Clinical Dentistry*, you will find the criteria for the various categories, including:

- Aesthetic Treatment Practice
- Young Aesthetic Dentist
- Aesthetic Laboratory
- Facial Aesthetics Practice
- Orthodontic Practice
- Young Orthodontic Dentist
- Orthodontic Therapist
- Periodontic Practice
- Endodontic Practice
- Implant Dentistry Practice
- Young Implant Dentist
- Implant: Single Tooth
- Implant: Multiple Teeth
- Implant: Interdisciplinary Team
- Local Oral Health Initiative
- Hygienist of the Year
- Therapist of the Year
- Recently-Qualified Hygienist
- Recently-Qualified Therapist
- Philips Shine-On
- Multidisciplinary Practice.

Once you have decided which categories to enter, simply visit dentistry.co.uk/clinical-dentistry-awards to register your entry.

Next, it's time to start compiling your entries! Follow the guidelines in the category's criteria and include all of what is asked of you – if you don't include all the points and someone else does, then your entry is already at a disadvantage.

Think about getting the judges' attention, and making them want to read your submission. Your entry needs to be clear, creative and concise.

Entry is free and there is no limit to the number of categories you can enter. The closing date for entries is Wednesday 10 July. If you need any guidance, email awards@fmc.co.uk or call 01923 851777 – we're here to help!

MULTIDISCIPLINARY PRACTICE

This category recognises the efforts of an entire team offering more than one discipline, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction.

To enter Multidisciplinary Practice, you must have entered at least one other category.

Entries will be accepted from practices only (not individuals) and judges will be looking at the submission in its entirety.

Entries should consist of a portfolio of information, including submission of at least one case and supporting notes.

Send up to 1,200 words explaining why your practice is a contender for Multidisciplinary Practice. Focus on the following:

The practice: tell the judges about the history, the location, the appearance, the feel and the branding. How is a practice culture of excellence attained, both clinically and organisationally? What technology do you use?

The staff: who makes up your team? Tell the judges who there is, what their area of interest is, what their training and experience is? How has practice investment in training and equipment benefited patients and outcomes?

The marketing: how do you attract patients? (Examples of marketing materials should be included if available)

The patient experience: what does your practice do to make the patient experience unique, from start to finish? How are people put at ease? How are treatment options explained?

The team: how does everyone work together to make sure that the patient receives the best results as efficiently as possible?

Clinical before and after photos: provide high-resolution before and after photographs to show excellent clinical results

Additional photography: the practice, the team etc.

Please also provide one exemplary case report (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

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**NELSON Y HOWARD**

DDS AAACD

Nelson graduated from the UCLA School of Dentistry in 1986 and completed a General Practice Residency at the VA Medical Center in West Los Angeles, California. He presently maintains two practices limited to cosmetic, functional, implant, restorative, and transgender enhancement dentistry at his Centers for Advanced Cosmetic & Smile Transformation Dentistry in San Marcos and Rancho Bernardo, California.

CONTACT
www.transgenderdentistry.com

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ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Restorative dentistry

Educational aims and objectives:

To discuss considerations of treatment and care for transgender patients seeking cosmetic dental treatments. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



Dental care has been around for thousands of years. Scientific evidence of caries control in human teeth has been discovered in teeth between 6,500 and 13,000 years ago (Bernardini et al, 2012; Oxilia et al, 2017).

The ancient Egyptians are well-known for their advanced knowledge in the human body, and ways to treat a variety of conditions, both in health and dentistry (Thekkaniyil et al, 2000; Forshaw, 2009).

Since then, the art, science, evolution and advancements in dentistry have been profound in all disciplines – to the point where any dental condition can be addressed with expertise and the utilisation of the most current treatment methods to produce the most optimal end result.

Dentistry is not just a male or female restricted profession in who we treat. The techniques used today and advanced knowledge in all clinical areas within the profession are used equally between men and women.

Sexual preference in individuals in no way affects the most ideal treatment modalities used to care for that person and the manner in which that individual is treated. The desired outcome is always dependent upon five conditions:

1. The condition of the tooth at the time of treatment
2. The realistic treatment options for that particular dental condition
3. The clinical skills of the dentist to treat the dental problem
4. The expectations by the patient
5. The goals of the treating clinician.

It has been estimated that between 0.5 and 0.6% of the US and Canadian population are transgender (Bauer et al, 2015; Bauer et al, 2017).

These individuals continue to experience discrimination and often avoid both dental and

general healthcare due to these fears (Bauer et al, 2015; Scheim and Bauer, 2015; Bauer et al, 2009; Bauer et al, 2014; Grant et al, 2011; Socias et al, 2014).

TRANS INDIVIDUALS

Trans (transgender, transsexual, or transitioned) persons are those whose gender identity or lived gender varies from their sex assigned at birth (Bauer et al, 2015; Bauer et al, 2009).



FIGURE 1: Smile demonstrating more masculine features for this individual



FIGURE 2: Smile demonstrating more feminine features for this individual

Nelson Y Howard shares considerations in evaluation and the care and treatment of cosmetic dentistry transformations for transgender patients

Considerations for treating transgender patients



Trans people have been identified as a medically underserved population that faces stigma within and outside of healthcare settings (Bauer et al, 2015; Shired and Jaffee, 2015).

Factors such as age, gender, medical transition status, race and socioeconomic status affect the varying degrees of healthcare discrimination or avoidance to trans individuals (Bauer et al, 2015; Bauer et al, 2015; Socias et al, 2014; Shired and Jaffee, 2015; Kattari and Hasche, 2015).

It is unknown whether trans individuals also feel the same with trying to obtain or in receiving dental care or dental transformations as part of their transition process.

It is this author's opinion, based on his experience treating trans people, that they do not feel reluctant to seek out dental care nor feel they are being discriminated against or viewed as different when they come in for a consultation and/or proceed with their treatment, either on a routine basis or when they are wanting changes to complement their transition. Rather, most are outgoing, enthusiastic, happy and self-confident individuals and proud to be who they are, regardless of what level or stage of trans they are presently in.

DENTAL CONCERNS

There are significant differences in the overall appearance of the anterior teeth between men

and women. Some of these differences are in the anatomical shape of the teeth, the design of the incisal embrasures between the teeth, the nature of the surface texture of the teeth, the facial gingival contours and design of the centrals to laterals to cuspids, the thickness of the incisal edges, and the general size of the teeth and arch form space (Figures 1 to 6).

These differences and more are significantly important factors that the clinician needs to be aware of when redesigning a smile for a trans patient considering making changes as part of their transition process.

Understanding what expectations are desired and wanted by the patient is another area of consideration when making dental cosmetic and aesthetic trans changes.

When trying to show a prospective patient – trans or otherwise – what the differences are that can be achieved with the modern cosmetic and aesthetic techniques, utilisation of photographic visualisation with other patients who have undergone similar procedures is paramount.

Dentistry that reflects the necessary changes to support the final outcome can help enhance and ultimately improve one's facial appearance, with the ultimate goal to exceed the patient's expectations.

Personality traits of the prospective trans patient are also essential to know in advance of restorative changes, as some people have a

There are significant differences in the overall appearance of the anterior teeth between men and women

stronger personality versus those that are more subdued.

Another important trait to equate into any changes is whether a person has a more masculine versus feminine side to them.

Masculine people tend to have straighter and more angled incisal edges to their teeth (Figure 7), whereas feminine people tend to have softer and rounder edges to their incisal edges (Figure 8).

Masculine teeth tend to have straighter and longer mesial and distal contact zones (Figure 9), whereas feminine teeth tend to have more curved and shorter mesial and distal contact zones (Figure 10). Masculine teeth tend to have facial (mesial and distal) line angles wider set



FIGURE 3: Smile illustrating more texture in the patient's central incisors



FIGURE 6: Feminine smile with normal centrals to fit the given arch form space



FIGURE 4: Smile illustrating ideal facial gingival contours and design of the centrals to cuspids



FIGURE 7: Masculine smile demonstrating straighter incisal edge form with more angled distal incisal edges into the contact zone



FIGURE 5: Masculine smile with larger centrals to fit the given arch form space



FIGURE 8: Feminine smile demonstrating softer incisal edge form with more rounded mesial and distal incisal edges into the contact zone

(Figure 11) than feminine teeth, which tend to have facial line angles closer set (Figure 12).

Placing a disproportionately shaped tooth in an individual that does not reflect those qualities can lead to negative effects in the patient and further add emotional issues to what would already be a psychologically difficult time for the trans patient, or even the patient who expected one result but received something other than what they expected.

EVALUATION FOR TREATMENT

As with any patient, a comprehensive examination – that includes dental radiographs, occlusion evaluation, temporomandibular joint (TMJ) screening, and a thorough periodontal documentation to include full-mouth probing, recession charting, and mobility detection – is key to formulate an accurate treatment plan.

This examination is non-discriminatory in nature and should never be biased towards any person – trans of any type – or based on their lifestyle preferences.

As a healthcare profession, we have an obligation to serve our patients to the highest standards possible and to the utmost of our abilities. The manner of care given to every patient should be the same.

The patient's gender preferences or degree of transition should never be a factor in how they are cared for or considered for treatment. Any level of personal bias by a dental professional of these issues would be considered unethical and discriminatory.

Treatment presented to any patient should always be what is in the patient's best interest to have to maximise optimal health.

Comprehensive treatment planning is essential for every patient so that each person knows the full extent of any dental conditions present and the most ideal ways to correct them.

To not fully disclose to a patient a known condition present and a way to treat it with the goal to eliminate the problem and improve the quality of the condition would further be considered unethical.

In the same manner, a trans patient looking to make a cosmetic change to complement their transition or maintain their preferential gender should also be given equal consideration in their desire to improve their appearance, improve their self-esteem, and improve the quality of their life by cosmetic dentistry.

Some of the challenges that can be present when making these changes can be related to making smaller teeth wider, making wider teeth narrower, making longer teeth shorter, making short teeth longer, and addressing tooth size-arch width issues as it pertains to creating a new smile and tooth design to fit within the dimensions the patient presently has.

This can be done utilising the following methods and techniques:

- Full diagnostic mounted models using facebow transfer articulation
- Full diagnostic photographs as described by the AACD Accreditation Protocol Guidelines
- Tooth size measurements present at the time of evaluation



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TOOTH SIZE FACTORS

One of the most challenging clinical dental situations is to make a wide tooth coronally narrower when the root base starting at the cemento-enamel junction is a greater diameter than the resulting restoration that is placed on it.

When modifying a smile where multiple teeth are going to be reduced in size mesial to distal, a diagnostic wax-up is absolutely needed prior to the initiation of treatment, along with a clear tooth preparation stint made from the wax-up design, in order to enable the clinician to properly prepare the tooth form to the final restorative design. This step is critical to help transform a smile to the more desired result.

Whether performing smile changes in a trans patient or a non-trans patient, proper pre-treatment planning and case preparation is



FIGURE 9: Masculine teeth with longer mesial and distal contact zones

necessary to assure the patient's final outcome complements their facial appearance and envisioned result.

When done in this fashion, the patient's aesthetic transformation will further improve their confidence and, in trans individuals, help to transition them to the degree they seek for their personal growth and development.



FIGURE 10: Feminine teeth with shorter mesial and distal contact zones

DISCUSSION AND CONCLUSION

The transgender and transsexual communities that seek dental care are no different than any other group of people.

The same assessment, cancer screening, examination, radiographic, occlusal, periodontal, temporomandibular joint and treatment planning protocols are implemented regardless

restoration



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FIGURE 11: Masculine teeth with wider set mesial and distal facial lines

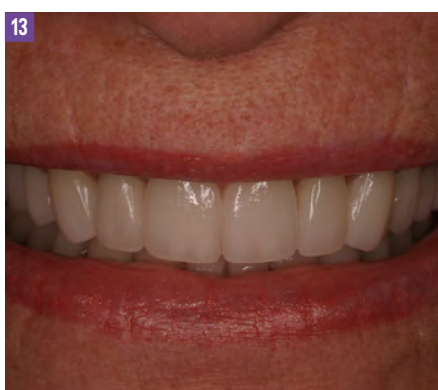


FIGURE 13: Feminine teeth with closer set mesial and distal facial line angles



FIGURE 12: Retracted view of masculine teeth with wider set mesial and distal facial lines



FIGURE 14: Retracted view of feminine teeth with closer set mesial and distal facial line angles

of a person's gender, sexual preference, or transitional status.

Treatment procedures also are identical between trans and non-trans individuals. What differs, though, are certain treatment techniques and design planning steps when it comes to cosmetically and aesthetically modifying anterior teeth to fit into a transgender or transitioned person.

The final result ultimately is the same with any patient, to exceed all their expectations and deliver the finest quality of care for any treatment that the patients seek.

Unfortunately, this is not always the norm in the healthcare field; although the actual percentage of inequality between trans and non-trans people is unmeasured, one would like to think the percentage amount is so low that it is estimated in the hundredths of a percentage point. At least, that is the opinion of this author.

Reducing transgender health inequities globally necessitate focusing on gender affirmation in healthcare service delivery (Reisner et al, 2015).

Once this is achieved and recognised throughout the world, inequality amongst everyone will hopefully be eliminated in all manners of life and healthcare to all. [📄](#)

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Deep white dyschromia

Alessandro Colella considers if a bur is always needed for treating deep white dyschromia

Although resin infiltration techniques are not the first choice for treating most molar incisor hypomineralisation (MIH) lesions, many patients refuse to have their teeth drilled, while seeking for a solution to this aesthetic issue.

CASE REPORT

A 46-year-old patient came to my practice asking me to solve her aesthetic problem (Figure 1).

Whenever I have to treat white spots on dark teeth, or when I approach treatments with a high aesthetic impact, I usually recommend bleaching to improve the base we work on.

For this case, a 16% carbamide peroxide-based home whitening gel (White Dental Beauty Professional Tooth Whitening System) with custom trays without reservoirs was selected for bleaching.

After three weeks' whitening for four hours a day, and after an additional 20 days wait, the teeth were ready for treatment of the discolourations (Figure 2).

The white portion of the spots had faded but the orange portion was still evident (Figure 3). I used the K-Lite (Smileline), which allowed me to understand the actual depth of the stain due to MIH (Figure 4).

Although MIH is not the ideal condition to apply resin infiltration, I tried to apply this minimally invasive approach, but the position of the spot in the thickness of the enamel forced me to sandblast before letting the etching work (Figure 5).



FIGURE 1: Teeth with severe discolouration



FIGURE 2: White spots after whitening



FIGURE 3: Discolourations after tooth whitening

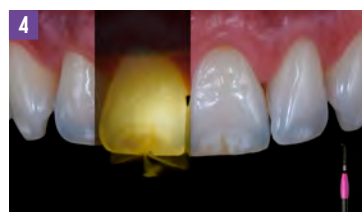


FIGURE 4: Transillumination of MIH lesion



FIGURE 5: Sandblasting discolourations



FIGURE 6: Etching of white spots for infiltration



FIGURE 7: Previsualisation of infiltration outcome



FIGURE 8: Second cycle of etching for infiltration



ALESSANDRO COLELLA

Alessandro graduated 'summa cum laude' from the University of Bari in 2014. In his clinical practice, Alessandro deals with conservative, prosthetics and periodontology with a predilection for total additive adhesive rehabilitations and aesthetics. He is a silver member of Styleitaliano.





FIGURE 9: Third etching cycle before infiltration



FIGURE 12: Previsualisation of infiltration outcome



FIGURE 15: Teeth after infiltration and composite layering



FIGURE 18: Six-month follow-up after infiltration

Because of the depth of the lesions, I knew from the start that I would have to repeat the cycle several times.

Using Icon Dry after each erosion, I simulated the action of the infiltrant resin. The dyschromia was still evident after the first cycle (Figures 6 and 7) so I repeated the etching step (Figure 8). Figure 9 shows the third cycle.

Since the patient had two shallow white spots on the lateral incisors as well, I decided to extend the treatment involving them, as two erosion cycles should be enough to make them disappear (Figure 10). I repeated the etching step for the fifth and final time (Figure 11).



FIGURE 10: Etching of white spots

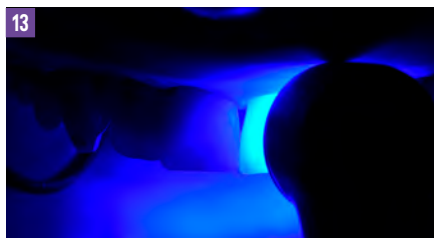


FIGURE 13: Light curing of infiltration resin



FIGURE 16: After resin infiltration before rehydration



FIGURE 19: 15-month follow-up

The action of Icon Dry revealed that the stains were ready to be infiltrated (Figure 12).

After infiltrating dyschromias and curing, I needed to restore the involved teeth (Figure 13). A thin layer of white enamel was applied on UR1 and UL1 to increase the value on the incisal third and to thicken it (Figure 14).

A greyish halo still remained, but for final evaluation we needed to wait for rehydration (Figure 15).

Figure 16 shows the final outcome after removing the rubber dam and Figure 17 shows the smile after finishing and polishing procedures two weeks later.



FIGURE 11: Fifth erosion cycle for resin infiltration



FIGURE 14: Composite layering on darker infiltrated areas



FIGURE 17: Teeth after infiltration and rehydration

Figure 18 shows the six-month oral hygiene recall, and Figure 19 is 15 months later.

CONCLUSION

An approach with a bur would have been faster and more performing, but certainly more destructive. If the patient does not consent to such kind of treatment, whitening and infiltration can be used to reduce the difference between the refractive index of the stain and healthy enamel, providing a basis for a minimal restoration.

Either way, bleaching can help to even out the colour and simplify the choice of the restorative material. [📄](#)

REFERENCES

✉ siobhan.hiscott@fmc.co.uk

PRODUCTS USED

K-Lite Smileline
Icon Dry DMG
White Dental Beauty Professional Tooth Whitening System Optident



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AESTHETIC TREATMENT PRACTICE

This category recognises the efforts of an entire team, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction. Entries in this category will be accepted from practices only. Send up to 1,200 words on:

The practice: the history, location, tech, the appearance, feel and branding

The staff: who is there, what is their area of interest, what is their training and experience? How has investment in training and equipment benefited patients and aesthetic outcomes?

The marketing: how do you attract patients?

The patient experience: what does your practice do to make the patient experience unique, from start to finish? How are people put at ease?

The team: how does everyone work together to ensure the best results?

Clinical before and after photos: provide high-resolution before and after clinical photographs

Additional photography: the practice, the team etc.

Please also provide one case report (up to 1,000 words), detailing the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and a discussion of how the case was treated.

YOUNG AESTHETIC DENTIST

This category is open to those born on or after 31 August 1988. Send up to 1,000 words covering the following:

- Demonstrate hard work and drive
- Explain how you set yourself apart from other young aesthetic dentists
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond regular duty of care
- Provide relevant supporting evidence
- Provide before and after photos.

Please also provide one case report (up to 1,000 words) detailing the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and a discussion of how the case was treated.

FACIAL AESTHETICS PRACTICE

To enter Facial Aesthetics Practice, the practice must have a strong interest in facial aesthetics and have adapted an element of the practice towards this

discipline. This category recognises the efforts of an entire team. Send up to 1,200 words focusing on:

The practice: the history, location, tech, the appearance, feel and branding

The staff: who is there, what is their area of interest, what is their training and experience? How has investment in training and equipment benefited patients and aesthetic outcomes?

The marketing: how do you attract patients?

The patient experience: what does your practice do to make the patient experience special, from start to finish?

The team: how does everyone work together to ensure the best results?

Clinical before and after photos: provide high-resolution before and after clinical photographs

Additional photography: the practice, the team etc.

Please also provide one case report (up to 1,000 words), detailing the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and include a discussion of how the case was treated as effectively as possible.

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This category recognises the efforts of an entire team. Entries in this category will be accepted from laboratories only (not individuals). Send up to 1,000 words on:

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The staff: who is there, what specialist skills do you have at the laboratory, what is their training and experience? How has lab investment in training and equipment benefited outcomes?

The marketing: how do you attract patients and dentists?

Customer satisfaction: what makes your lab so successful in its communication?

Additional photography: the lab, the team etc.

Please also provide one case report (up to 1,000 words) detailing the treatment carried out, and a discussion of how calibre materials and technology were used to maximise work quality. Submit photographs of stages of lab work if appropriate. Provide any relevant supporting documentation, marketing information and pictures. dentistry.co.uk



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SCAN ME

**DR NISHAN DIXIT**

BDS LDS RCS (ENG)

Nishan qualified from Guy's Dental Hospital in 1994. In 2000, he established Blue Court Dental in Harrow, Middlesex. He has a particular interest in minimally invasive aesthetic dentistry. He is a past president of the British Academy of Cosmetic Dentistry (BACD).

ENHANCED CPD**GDC anticipated outcome: C****CPD hours: one****Topic:** Aesthetic dentistry**Educational aims and objectives:**

To present a restorative and aesthetic case, from caries stabilisation and direct restoration to straightening, whitening and composite bonding. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.

This gentleman came to see me back in early 2021 because he was unhappy with his smile. His goal was to have straighter teeth with an improved smile.

DENTAL HISTORY

The patient reported that, prior to COVID-19, he had been a regular attender at his previous GDP.

He had no history of orthodontics and had a minimally restored dentition. However, he did mention that recently his gums were bleeding on brushing, and he had cracked a lower tooth a few weeks prior. Medically, he was fit and well with no allergies or conditions to note.

EXAMINATION

Examination of the extraoral tissues, temporomandibular joint (TMJ) and muscles of mastication revealed nothing abnormal. Intraorally, the soft tissues were normal. It was noted that his lower left second molar had fractured and there was also caries present on the lower left first molar.

His BPE scores were:

- 323 in the upper arch
- 323 in the lower arch
- Both of his bleeding and plaque scores were recorded as 30%.

After an in-depth consultation, which included a full set of intraoral X-rays and an Itero scan, the initial plan was to stabilise the caries at the LL6 and LL7 with composite restorations and for him to have a course of treatment with the hygienist.

From the Itero scan the patient saw a smile simulation, which showed the correction of his crossbite and realignment of his teeth. At this stage, we explained that after the alignment he would

require some further treatment to repair his worn teeth and tooth whitening to change the colour of his teeth.

After approving a Clincheck, he underwent a course of Invisalign clear aligners, which consisted of 18 aligners worn for 22 hours a day, changing them every 10 days.

He was happy with the outcome after alignment. We then went ahead with tooth whitening treatment using the Boutique home whitening system with 10% carbamide peroxide. Once whitening treatment had finished, we subsequently looked at the overall aesthetics of the mouth.

The patient was given an option of either porcelain veneers or composite bonding to further improve his smile. He decided on composite bonding on the upper arch (UR3 to UL3) with G-aenial Injectable A1 (GC), using the injection moulding technique.

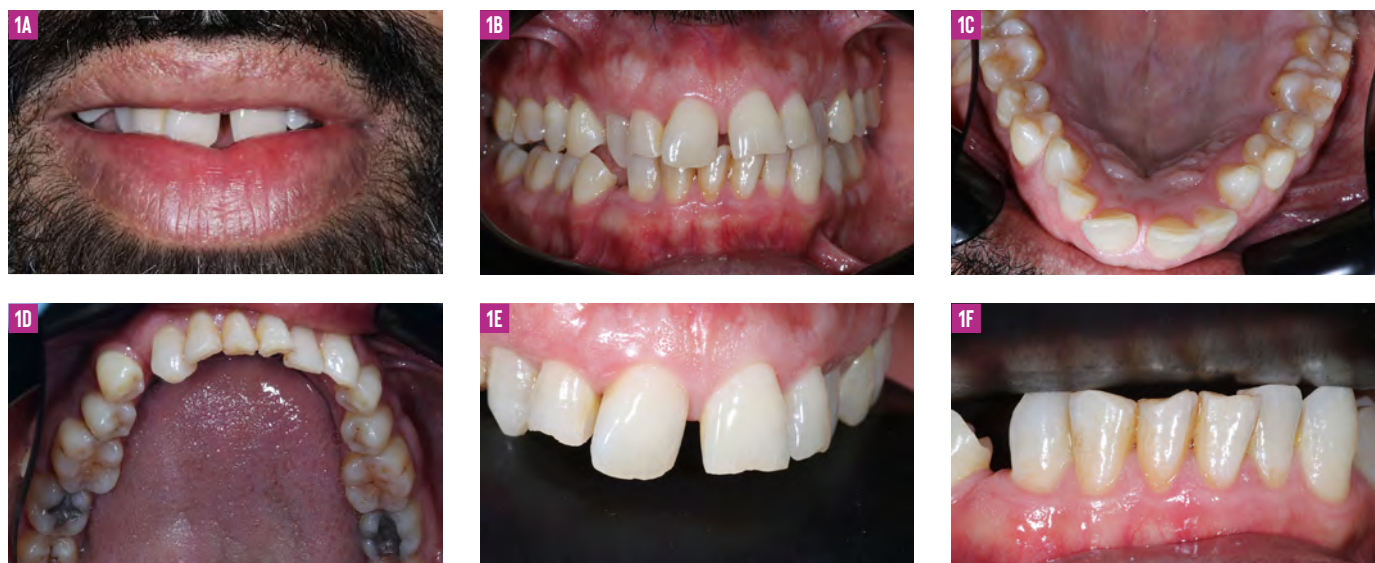
Further enameloplasty was carried out on the LR3, LR2, LR1 and LL3, LL2 and LL1 to smooth the teeth. Finally, we fitted some upper and lower bonded lingual wires and gave him a set of Essix retainers.

TREATMENT SEQUENCE

1. Hygiene treatment
2. Composite restorations LL6 and LL7
3. Alignment with Invisalign – 18 aligners (after patient approved smile simulation)
4. Tooth whitening
5. Composite bonding on UR3, UR2, UR1 and UL3, UL2 and UL1 using the injection moulding technique and G-aenial Injectable shade A1
6. Recontouring/enameloplasty on LR3, LR2, LR1 and LL3, LL2 and LL1 to remove any sharp edges
7. Retention with U/L bonded lingual wires and U/L Essix retainers.

Nishan Dixit presents a restorative and aesthetic case, from caries stabilisation and direct restoration to straightening, whitening and composite bonding

Composite bonding: injection moulding technique



FIGURES 1A to 1F: Before treatment



FIGURES 2A to 2F: After alignment

TREATMENT TECHNIQUE WITH G-AENIAL INJECTABLE (GUI)

A diagnostic wax-up was prepared by my technician Kevin Vara at Sai-Tech Digital Dental Laboratory.

From the diagnostic wax-up, silicon stents were made with holes for injecting the GUI for injection moulding chairside.

The patient's teeth were cleaned and alternate teeth isolated with PTFE tape to inject using the alternate teeth technique.

Teeth were then etched with phosphoric acid, rinsed and dried. Bond was applied onto etched teeth and light cured.

The clear stent was placed over the arch and GUI A1 was injected through the custom holes on

alternate teeth and light cured through the clear stent. The stent was removed and the final layer was cured through Gradia Air Barrier (GC) to help with polymerisation of the final layer.

The process was then repeated on the other untreated teeth (3-3).

Excess cured composite was removed with a number 12 scalpel.

The composite restorations were polished with Eve Diacomp Plus polishers and application of Enamelize.

Reflections on the materials used

G-aenial Injectable is easy to handle, to inject and sculpt, which offers control and precision when restoring the teeth.

The composite can be easily shaped and contoured. GUI has high strength and durability, which ensures long-lasting restorations with good wear resistance, thereby minimising fracture. This is due to full silination of the fillers to the resin (GC's full-coverage silane coating [FSC] technology).

The material polishes very well, giving a smooth and glossy finish and did not need repolishing on review.

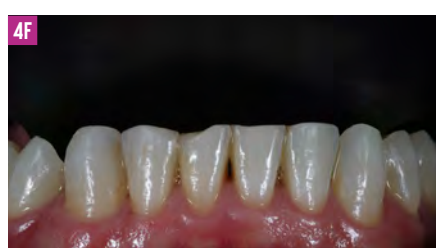
SIX-MONTH REVIEW

At the six-month review, it was clear that the material was holding up well. There were no chips and the polish had been maintained (Figures 4a to 4f).

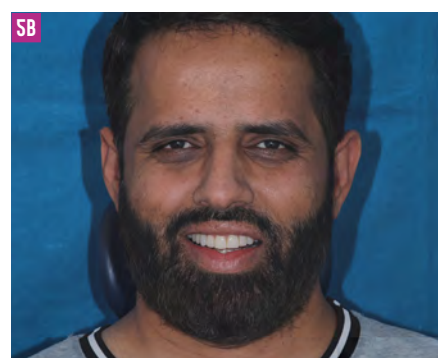




FIGURES 3A to 3F: Post treatment



FIGURES 4A to 4F: Six-month review



FIGURES 5A and 5B: Full face, before and after

CONCLUSION

The patient has been delighted with the results of his treatment. His new smile has increased his confidence and he is motivated to maintain his teeth and keep his gums healthy to preserve it. He has improved and maintains a full oral hygiene regime to protect what he calls the best investment he's ever made in his dental health.

My treatment approach in this case was fully in line with my ethos of providing minimally invasive dentistry. This additive technique has enabled me to take my patient from misalignment, tooth wear and a fracture to aligned, restored, natural-looking teeth without any drilling, damage or destruction of tooth tissue.

I see this patient regularly and to date (over two years since his treatment), his teeth retain their lustre and no chips have occurred. [CD](#)

PRODUCTS USED

Itero Align Technology
Invisalign, Clincheck Invisalign
Boutique home whitening Boutique
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Diacomp Plus Eve
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Tokuyama's spherical sub-micron fillers reflect light uniformly. This emulates tooth enamel, giving your composites a more natural look. The rough surfaces of other composites scatter light randomly upon reflection. This results in a duller and less natural appearance.

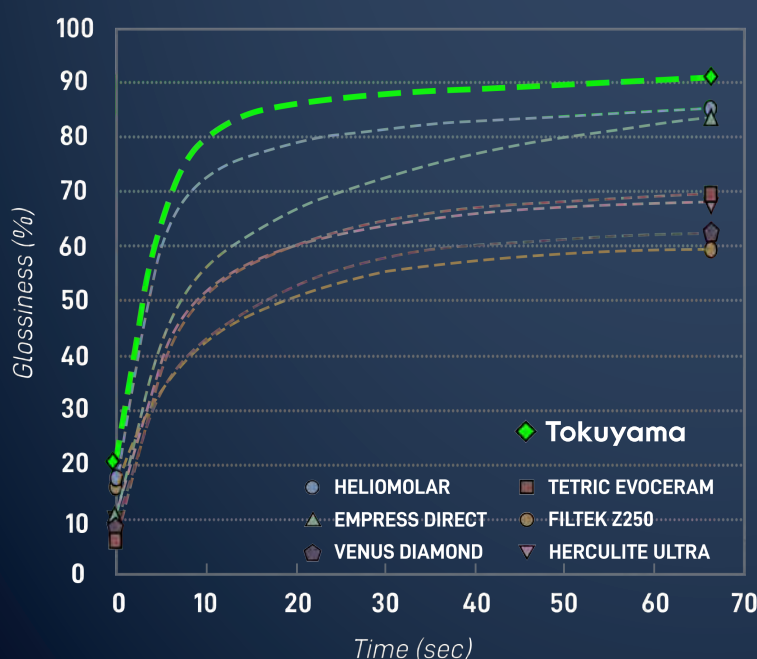
Uniformly Smooth Surface *Minimal abrasion & longevity.*

Tiny spherical fillers create a significantly smoother surface and are not easily dislodged, making them highly resistant to wear. Thanks to this, the initial polish remains permanent too - it never dulls like conventional composites.



10 Second Polish *An unrivalled, lasting gloss.*

When testing the relationship between polishing time and surface gloss, **Tokuyama** produced the highest gloss in the shortest time, and the highest level of gloss overall, that lasts and lasts.



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The only manufacturer to use patented spherical filler particles, each variant utilises different diameter particles to maximise their optical and physical properties for the indication.

In addition to optimised optical properties resulting in enhanced aesthetic restorations, Tokuyama's spherical filler particles offer other advantages to the irregular shaped filler particles used by other manufacturers.

They are quicker and easier to pack, reducing the risk of voids; easier to sculpt and carve; and have a much smoother surface finish with a natural high lustre requiring minimal if any polishing.

Tokuyama's unique spherical filler particles produce the highest gloss in the shortest time. Not easily dislodged, they create very smooth surfaces that are highly resistant to abrasion. Their initial lustre lasts and lasts.

Tokuyama's spherical fillers ensure smooth restorations that stay smooth; diffuse and transmit light for optimal aesthetics; produce mirror reflection and high abrasion resistance that ensures a long-lasting polish, lustre, durability and colour stability.

SPHERICAL FILLERS – A PEARL OF AN IDEA!

Utilising patented Sol-Gel Technology, Tokuyama “grow” spherical filler particles to diameters optimised for their desired colour adaptation and outstanding physical properties (Figure 1).

Other manufacturers grind their glass materials until the individual filler particles are within a desired, but random size range. Their filler particles are irregular in size and shape, as seen under scanning electron microscopy (Figure 2). What does this mean – and what are the benefits to dental practitioners?

Mirror reflection and lustre

With identically shaped spherical filler particles, Tokuyama composites reflect light just like natural enamel and have a natural lustre. Unlike rough surfaced composites which scatter light diffusely producing a dull matt appearance.

Abrasion resistance

Tokuyama composites' uniform and small spherical filler particles are not easily dislodged and produce a very smooth surface that is highly resistant to abrasion. This abrasion resistant surface remains smooth permanently, so that the initial lustre of Tokuyama composites remains permanent too.

Unlike other manufacturers' irregularly shaped filler particles, which can become dislodged by polishing etc leaving a rough and irregular pitted surface which is very abrasive and very difficult to polish.

Light diffusion and transmission

High light diffusion and transmission properties of Tokuyama composites ensure uniform and gradual transition between tooth and composite. Unlike conventional composites which exhibit minimal light diffusion and transition resulting in visible margins.

Faster polishing

Tokuyama composites produce the highest gloss in the shortest time.

CONCLUSION

In summary, Tokuyama's patented spherical filler particles mean that their composites are easier to place, sculpt and finish; produce smooth restorations which are easier to polish and have a mirror finish and lustre that lasts and lasts; diffuse and transmit light for optical shading and aesthetics; are extremely abrasion resistant; have optimum optical properties; and are extremely aesthetic.

Consequently, Tokuyama composites are in a sphere of their own! [📄](#)

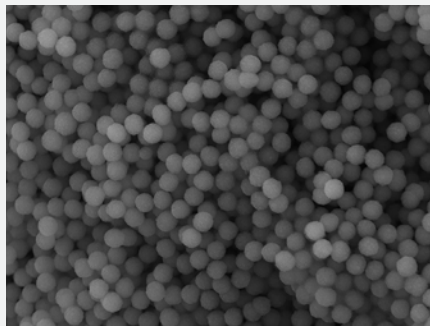


FIGURE 1: SEM of Tokuyama spherical filler particles



FIGURE 2: SEM of irregular filler composite material

TRYCARE

For more information about the complete Tokuyama range contact your local Trycare representative, call **01274 885544** or visit **www.trycare.co.uk**.



TOP TIPS...

WITH
KIRAN SHANKLA

MAKING TOOTH WHITENING MORE PROFITABLE

1 Always ask patients if they're happy with the colour of their teeth to initiate the conversation.

This question is often overlooked during routine check-ups, but it's crucial for guiding discussions about potential whitening treatments. By specifically addressing the colour aspect, patients are more inclined to express their concerns and desires accurately.

2 Educate patients on the whitening options available, emphasising the safety and effectiveness of professional treatments over store-bought products.

Providing information about safe and effective whitening methods, and highlighting the quality and potency of professional treatments, can allow patients to make informed decisions about enhancing their smiles.

3 Enquire about the toothpaste your patients use. Asking patients about their toothpaste usage, especially if they mention using whitening toothpaste, can serve as an indicator of their interest in tooth whitening.

This opens the door to educating them about the limitations of whitening toothpaste and offers professional whitening options as a safer and more effective alternative.

4 Show before and after whitening photos. Showing clinical cases of successful tooth whitening treatments during patient consultations can effectively demonstrate the potential outcomes and reassure patients about the natural-looking results.

By presenting before and after photos of various shades of whitened teeth, patients can visualise the possibilities and feel more confident about pursuing the treatment.

5 Take clinical photos of patients' teeth and compare them with shade tabs.

Taking clinical photos of patients' teeth, along with using shade tabs for colour comparison, provides a visual reference for both the current tooth colour and the desired outcome. This helps patients understand the potential results of whitening treatment and may also lead to discussions about other dental issues or treatments beyond whitening.

6 Offer whitening in conjunction with other treatments. When performing any dental procedure, offering whitening concurrently is beneficial.

Inform patients that changes to their teeth, such as crowns or implants, provide an opportunity to adjust tooth colour, ensuring a match with natural teeth.

7 Provide different whitening options. Providing patients with a range of whitening options, such as SDI's Pola night trays, day treatments, LED lights, or specific take-home products like Pola Luminare, allows for tailored solutions. Offering alternatives based on preferences, lifestyle, and desired level of whitening ensures patients can choose the option that best suits their needs and goals.

8 Set realistic expectations. Setting realistic expectations with patients regarding whitening outcomes is crucial.

Patients should understand that while whitening can improve tooth shade, there's a limit to how white they can become, determined by their natural tooth colour and saturation level. It's vital to communicate this to patients to manage their expectations effectively.

9 Advise patients to take a preoperative photo with their phone to monitor whitening progress. This practice helps manage expectations, as well as prevent unnecessary concerns and misunderstandings, as patients may not notice subtle changes day-to-day but can perceive them over time or through comparisons with previous photos.

Additionally, caution patients against becoming overly fixated on daily whitening progress and instead focus on long-term results and overall improvement.

10 Always offer whitening top-up kits during check-up appointments.

By enquiring about the duration since the last whitening session and suggesting additional syringes for patients who already have trays at home, you can capitalise on the opportunity to upsell and increase profits. ☑



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A 'LIGHTBULB' MOMENT COURSE

Dentists, have you ever asked yourself any of the following questions, when thinking about indirect dentistry, or porcelain veneers:

- Will it fit properly?
- Are they going to like it?
- Will it fall off or break?
- How much do I prep?
- What order do I fit these in?
- Should I just do composite instead?

It is time to answer them and bring both aesthetic, and functional predictability to your dentistry.

Since 2018, Bespoke Smile Academy and its founder Dr Sam Jethwa have been

‘One of the best courses I have done. Sam is very meticulous and does not leave a stone unturned. Occlusion was something that I always found complex however at this course I had the penny drop moment. Sam simplifies occlusion giving practical and predictable tips that can be used in all aspects of dentistry and not just for porcelain smile makeovers. Planning of cases, prepping for porcelain, temporising, communication with the lab and then fitting the veneers is now a smooth process’

Dr Aamir Vaghela

training dentists through the flagship six-day course with real patients and live treatments. The goals are to finally provide that ‘lightbulb’ moment surrounding occlusion, facially driven smile design, materials, prep, and patient management through cosmetic and functional indirect dentistry.

Dentists can learn through treatment of live patients, or by observing; this caters to different learning styles. Combined with the six in-person days, dentists can enrol on the BSA online platform and complete longer occlusion and full mouth rehab courses, along with handmade trial smile, and facially driven smile design short masterclasses.

A very small group of three dentists per year are taken on as one-to-one mentees, or provided one-to-one case guidance, and often these dentists are trained to become mentors in their own right, with the academy.

Courses usually sell out months in advance. With maximum group sizes set to 15 delegates, the next cohort dates set with a very small number of spaces available:

- Day 1 & 2: 8-9 February 2025
- Day 3 & 4: 22-23 February 2025
- Day 5 & 6: 22-23 March 2025. [📅](#)

‘I have just completed the 6-day BSA course as an observer and loved each of the 3 weekends. Sam is a brilliant teacher... approachable, relaxed and very generous with his knowledge. I took away so many tips I could implement immediately upon my return to clinic’

Dr Fran Brelsford

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DIGITAL DENTISTRY

RICHARD FIELD

Introduction to clinical digital photography

43



Although digital dental photography can still be daunting, with the appropriate basic kit, basic standardised settings, a little basic camera knowledge and some practice, everyone is able to take beautiful and consistent dental photographs – Richard Field, p43

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**RICHARD FIELD**

Richard graduated with honours from the University of Glasgow in 2011 and currently works in private practice in Wales and central London. He has a particular interest in aesthetic restorative dentistry. Richard was the winner of Best Young Dentist UK at the 2014 Dentistry Awards and is an accredited member of the British Academy of Cosmetic Dentistry.

ENHANCED CPD

GDC anticipated outcome: C
CPD hours: one

Topic: Dental photography

Educational aims and objectives:

To explore the world of digital photography for GDPs, providing an introduction to equipment, terminology, and camera types for taking superior clinical shots. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



Dental photography is not a new revelation. It has been the cornerstone of aesthetic and restorative treatment planning for many years. Traditional 35mm photography in general, not just in dental environments, was always regarded as somewhat of a specialist art in itself (Ahmad, 2009).

The monetary cost of a single exposure, once you added up the cost of the film and the processing, was such that it would put most clinicians off photographing every case.

Waiting several weeks for negatives to be returned from processing, only to find that the picture was inadequate, was a further disincentive.

Digital photographic technology has made dental photography much more accessible and practical for everyday use.

Instead of costly negatives and film processing, which takes weeks before seeing the results, we have reusable memory cards and LCD screens on the backs of the camera, enabling us to see our photographs instantly, allowing us to quickly rectify any mistakes.

Although digital dental photography can still be daunting, with the appropriate basic kit, basic standardised settings, a little basic camera knowledge and some practice, everyone is able to take beautiful and consistent dental photographs.

BASIC KIT

When buying a camera for clinical dental photography, there may be a temptation to get an off-the-shelf compact 'point and shoot' camera or one of the more specialised dentally orientated 'point and shoot' cameras.

However, one of the cornerstones of good clinical dental photography is consistency, and compact

setups can make it difficult to achieve consistent results. The author recommends a customised setup consisting of a DSLR camera body, a dedicated macro lens, and a macro flash.

This combination of equipment allows complete control of all aspects of the photograph and as your dental photography evolves, the setup can be adjusted and adapted to suit your growing needs and skills.

DSLR camera body

If you are a keen photographer and envisage yourself using your camera outside of work as a hobby, then by all means go for a high-end full frame camera. If, however, the camera will only be for use in your surgery, then a lower-end cropped sensor camera body is perfectly adequate (Figure 1).

Most DSLR cameras have sensors that exceed the minimum requirements in respect of megapixels count – 10 megapixels or more will be sufficient. The most important aspect is that the camera is comfortable to hold, as once you have attached the lens and flash, the setup becomes quite heavy.

Some of the lower-end models have a smaller hand grip, which can be awkward to hold, but otherwise the photograph quality is more than adequate.

Lens

After choosing the camera body, you will need to select a macro lens (Figure 2). The strict definition of a macro lens is 'a lens that will produce a life-sized image on a full frame sensor when taken at a magnification ratio of 1:1' – a bit like a dental periapical radiograph.

It is important that the lens has a 'fixed focal length', ie, not a zoom lens. The macro lens needs to have a manual focus override so you can set

Richard Field explores digital photography for GDPs, providing an introduction to equipment, terminology, and camera types for taking superior clinical shots

Introduction to clinical digital photography



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Compact LCD desktop printer with 52 µm print precision thanks to 4K display and high light intensity for fast construction times. The high-quality processed full metal housing, a huge build platform and an easy handling of the vat make the Dreve version of the Sonic XL 4K a user-friendly 3D printer for all dental applications.



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DIGITAL DENTISTRY

44

the magnification ratios and have a ratio window so you can consistently set these ratios. This is important for you to keep the consistency of each exposure you take.

Some cheaper lenses have only fully automatic focusing. The ideal macro lens to have is one with a focal length of 100 or 105mm, as this will enable the operator to stand at comfortable distance from the patient. A 50mm or 60mm lens would also work; however, the operator would need to be positioned very close to the subject to obtain only the smile on the image.

Flash

With macro photography, it is important to have enough light in order for photographs to be properly exposed and give a shadowless image. The inbuilt flash on the camera tends to produce a shadow over the lower teeth figure from the upper incisors, and the surgery lighting alone is insufficient for dental photography.

The ideal is using a separate flash that is positioned towards the front of the lens. A ring flash variant is the traditional option for dental photography and these flash units come in both 'wired' and 'wireless' options, depending on your camera functionality (Figures 3a and 3b).

SETUP

In order to obtain consistent photographs, the camera must be set in manual mode, not automatic mode. This gives the operator complete control over all aspects of the photograph rather than the camera altering settings on its own.

IMAGE QUALITY

A camera is capable of recording multiple different image formats. The two useful formats for dental needs are JPG and RAW. A JPG is a lower quality image; however, it is acceptable for most clinical situations. A RAW file is

GLOSSARY OF TERMS

- DSLR – digital single-lens reflex camera. Digital version of the traditional SLR high-end film camera
- Sensor – the light sensitive area inside the camera that records the image. Effectively the 'film' in a digital camera
 - Available in 'cropped' or 'full frame'
 - Full frame sensors are the size of a 35mm film negative whereas a cropped sensor is a smaller sensor and only records a portion of the image of a full frame sensor, hence the term 'cropped'
 - This article will assume 'cropped sensor' as there is little clinical benefit of a full frame sensor over a cropped sensor
- Megapixel (one million pixels) sensors will be described as having 'X' megapixels
 - The total number of pixels that make up the recorded image
 - The larger the number, the sharper the image
 - Unless photos are being enlarged to billboard size or being cropped (where you only show a small part of the original image, the number of pixels is not clinically relevant, as long as the camera has more than 10 megapixels)
- Exposure – two definitions:
 - Taking a photograph can also be referred to as 'an exposure', ie, you have exposed the film/sensor to light
 - In photography, the term 'exposure' refers to how bright the image is. 'Over exposed' means too bright or too much light; 'underexposed' means too dark, or too little light
- Depth of field – this describes how much of the image is 'in focus'.



FIGURE 1: DSLR camera



FIGURE 2: Macro lens



FIGURE 3A and 3B: A separate flash is important in dental photography

effectively a digital negative. It is a very large file size (up to 10 times the size of a JPG) and is sometimes requested for awards entries, exam case presentations, and medicolegal cases.

It is possible to set your camera to record JPG, RAW, or both at the same time, depending on your preferences.

WHITE BALANCE

The 'white balance' is the setting that allows the camera to reproduce objects that are white in real life, as white in the photograph. If the camera is set to auto white balance (AWB), often the resulting image is either too orange (warm) or too blue (cold), but more importantly may not be consistent in before and after images, which can be problematic when recording colour.

Natural daylight is in the region of 5,500K (Kelvin), similar to the colour temperature to the light from the ring flash. Depending on the functionality of your camera, you will be able to set your camera to record close to this. Changing the settings from AWB to the 'flash' or 'daylight' settings will give a realistic colour temperature for dental photography.

BASIC SETTINGS

Consistently well exposed and in focus pictures rely on three elements: ISO, shutter speed, and aperture. A change in one of the three will have an impact on the others, so all three elements must be set in harmony for the type of

photograph you wish to take.

Luckily for dental photography, as we are shooting in a very controlled environment, we only ever need to change aperture. The ISO and shutter speed always stay the same.

ISO

Sometimes called ASA, ISO is a measure of the sensor's sensitivity to light. The lower the number, the less sensitive the sensor, but the less grainy (noisy) the image. ISO follows a common scale across all cameras: 100, 200, 400, 800, 1,600, etc. The more advanced the camera, the higher the ISO will go. Increasing the ISO allows for a photograph to be taken in lower light conditions; however, the higher the ISO the more 'image noise' there is, resulting in a grainy photograph. As we are working with a flash at close range, there is plenty of light, so the ISO can be set to 200 and, in most cases, this will never need to be changed.

Shutter speed

Shutter speed is a measure of the amount of time that the sensor is exposed to light. It is measured in fractions of a second, eg 1/125 or 8 milliseconds. The longer the shutter is open, the greater the chance of motion blur.

In dental photography, you will always be working with a flash, so the shutter speed can be kept high, which reduces the chance of motion blur. A shutter speed of 1/125 should be used

if the camera is capable of syncing to the flash at that speed. Some lower-end models are only capable of syncing the flash at 1/60.

Aperture

The aperture is the size of the hole at the end of the lens when the photo is being taken. It is expressed in 'f' numbers or 'f-stops', ie, f2.8, f4, f5.6. The smaller the number, the larger the aperture, and the more light is allowed to enter the camera. The larger the aperture, the smaller the depth of field, ie, the less of the photograph that is in focus (Figure 4).

If too large an aperture is selected for intraoral photography, often the posterior teeth will not be in focus compared with a smaller aperture, where both the posterior and anterior teeth will be in focus (Figures 5 and 6). This is the only camera setting that will be changed on a regular basis:

- Full face – more light is needed as you are standing further back from the subject. Set aperture to f10
- Smile and all intraoral shots – aperture of f25.

CLINICAL KIT

There are some additional accessories required to aid in the taking of high quality, reproducible clinical photographs.

Retractors

Retractors are necessary as it is not professional to have fingers (gloved or ungloved) visible in photographs. Retractors come in many shapes and sizes. In the author's opinion, the best is the 'V-shaped' type, as they allow full retraction of the buccal segment, allowing for visualisation of the molar relationship. The standard 'C-shape' retractors often do not retract far enough, hence hiding the first molars (Figures 7 and 8).

High quality intraoral dental mirrors

A large occlusal adult mirror is preferable as this allows the mirror to be positioned without fingers present in the photograph. If only small occlusal mirrors are available, the use of a mirror handle is advised, as again this allows for positioning with no fingers in the shot. For buccal segment shots, thinner buccal mirrors are also available.

The use of a mirror cage is advised as these mirrors are easily scratched while cleaning, rendering them useless.

Contrastors

Contrastors are used to improve the quality of the upper anterior views by obscuring the tongue and teeth in the lower arch (Figure 9). They are available in ridged metal and flexible silicone. The silicone is preferable due to lower reflection and improvement in patient comfort.

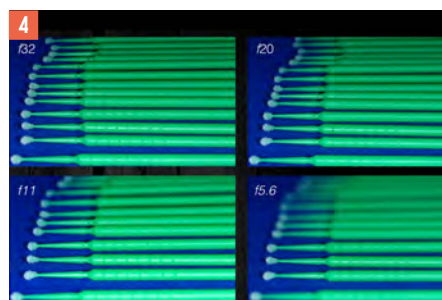


FIGURE 4: Different aperture



FIGURES 5 and 6: A smaller aperture is best for intraoral photography



FIGURES 7 and 8: Standard 'C-shape' retractors often do not retract far enough



FIGURE 9: Contrastors can improve the quality of the upper anterior views by obscuring the tongue and teeth in the lower arch

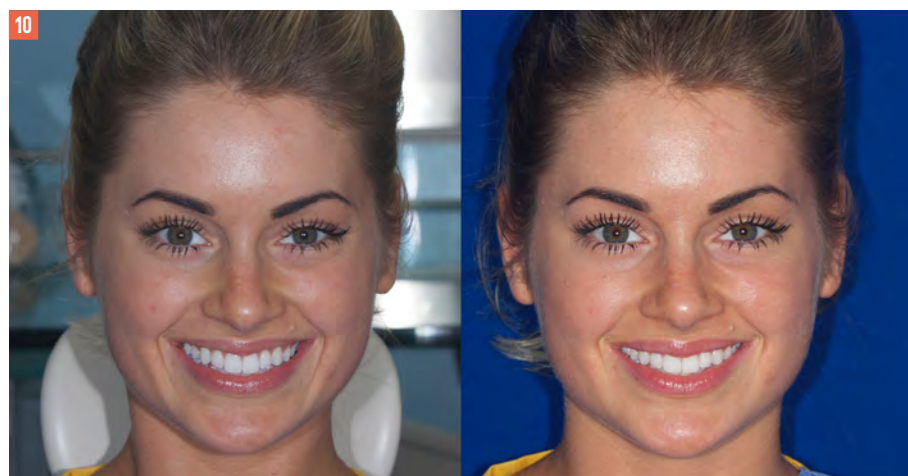


FIGURE 10: Holding a blue or black cloth behind the patient's head for full-face photographs is an inexpensive and effective way of improving the quality of shots

Backdrop

A dedicated photo studio is the ideal setup but is not always a possibility in general practice. Having a blue or black cloth to hold behind the patient's head while full-face shots are being taken is an inexpensive and effective way of improving the quality of the shots (Figure 10).

CONCLUSION

Digital photography done correctly can have a huge positive effect on your dental practice. It can help you communicate with your patients and gain their confidence in you. It also provides a detailed record of your cases. [📄](#)

CONTACT

www.drfield.co.uk

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ZIRKONZAHN PRESENTS ITS TWO-DAY INTRODUCTORY COURSE ABOUT MINIMALLY INVASIVE TOOTH PREPARATION

ZIRKONZAHN PREPARATION COURSE FOR DENTISTS

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). The new course focuses on the importance of a conservative 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.

COURSE PROGRAMME

Day 1 – from 9.00 am to 6.00 pm:

- 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 2 – from 9.00 am to 6.00 pm:

- Finalisation of the preparations
- Digital scanning of the final models with Zirkonzahn's 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.

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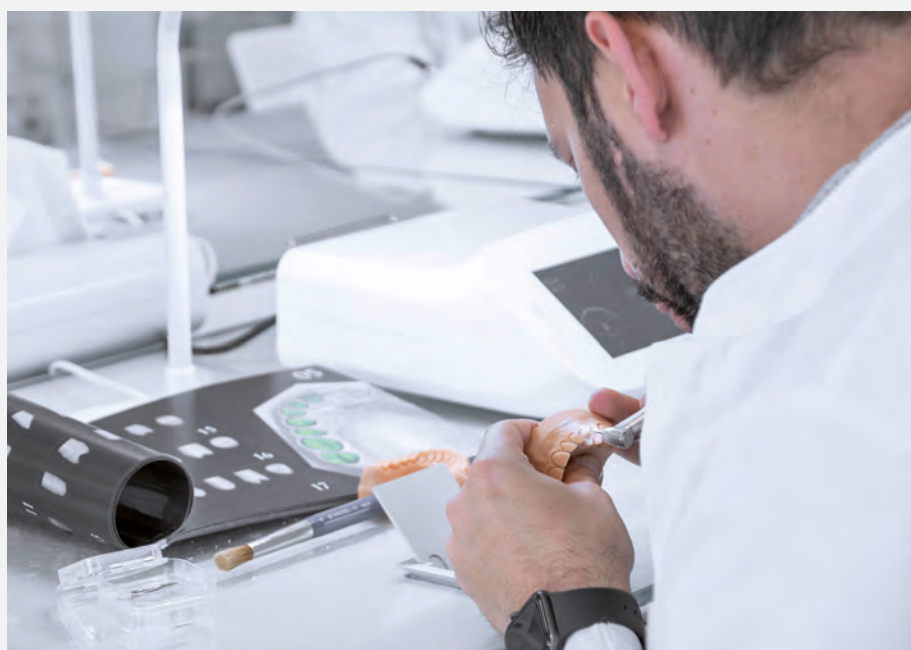
It takes place at Zirkonzahn Education Center Brunico, one of Zirkonzahn's nine training centres located in South Tyrol (Italy), which was designed to host events focusing on interdisciplinary collaboration between clinics and laboratories. [C](#)

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CLINICAL DENTISTRY AWARDS
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SATNAM SINGH VIRDEE
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NICOLAI ORSTEEN
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Clinical Dentistry Awards 2023 ceremony



ENDODONTIC PRACTICE

To enter this award the practice must have a strong interest in this discipline and have adapted an element of the practice towards endodontics.

This category recognises the efforts of an entire team, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction.

Entries in this category will be accepted from practices only (not individuals). Judges will be looking at the submission in its entirety and assessing the overall picture it paints of your practice rather than concentrating on individual elements. However, failure to address any of the criteria set out below may negatively impact your submission.

Entries should consist of a portfolio of information, including submission of at least one case and supporting notes. Send up to 1,200 words explaining why your practice is a contender for Endodontic Practice. Focus on the following:

The practice: the history, location, the appearance, feel and branding. How is a practice culture of excellence attained, both clinically and organisationally? What technology do you use?

The staff: who is there, what is their area of interest, what is their training and experience? How has practice investment in training and equipment benefited patients and outcomes?

The marketing: how do you attract patients? (Examples of marketing materials should be included if available)

The patient experience: what does your practice do to make the patient experience unique, from start to finish? How are people put at ease? How are treatment options explained?

The team: how does everyone work together to make sure that the patient receives the best results as efficiently as possible?

Clinical before and after photos: provide high-resolution before and after clinical photographs and X-rays to show clinically excellent results

Additional photography: the practice, the team etc.

Please also provide one exemplary case report (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and include a discussion of how the case was treated as effectively as possible. dentistry.co.uk

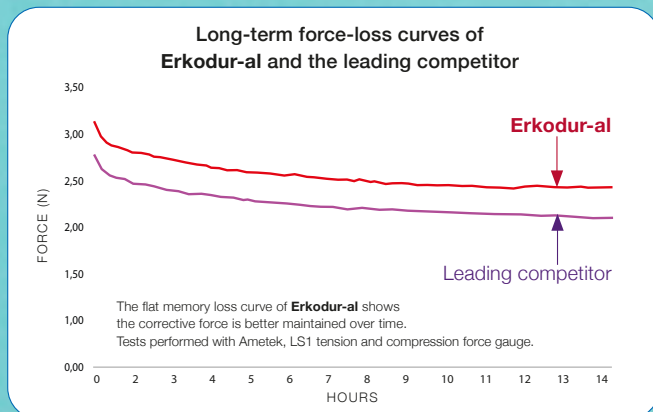
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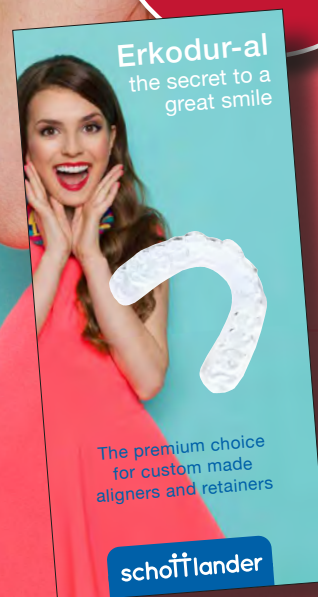
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**SATNAM SINGH VIRDEE**

BDS MFDS (RCSED) PGCERT (DENTED) FHEA MENDO (RCSENG)

Satnam is a clinical lecturer and speciality registrar in restorative dentistry. He is honorary assistant secretary of British Endodontic Society.

General, specialist and consultant practitioners of varying dental disciplines frequently examine root filled teeth that potentially require endodontic retreatment. Treatment planning for these cases can nevertheless prove challenging due to patients presenting with a broad range of symptoms, clinical signs and radiographic features.

This article aims to assist practitioners with such decision-making processes with particular emphasis on determining when to and when not to proceed with endodontic retreatment.

INDICATIONS FOR RETREATMENT

As per the European Society of Endodontology (ESE) 2006 quality guidelines, there are two indications for endodontic retreatment:

1. 'Inadequate root canal filling with clinical and/or radiological findings of developing/persisting apical periodontitis.'

The rationale for this pathological indication is to reduce the intraradicular microbial load to a threshold that is compatible with healing in a root filled tooth with active periradicular disease.

In order to fulfil this definition and proceed with orthograde retreatment, clinical and radiographic findings should reveal:

- A tooth that exhibits symptoms typical of active endodontic pathology (ie pain, tenderness to percussion or palpation, sinus or diffuse swelling)
 - Pathology that is likely originating from an intraradicular source (ie no recollection of rubber dam use, poor quality coronal seal or primary root filling)
 - A restorable tooth (adequate natural coronal tooth structure and clinical attachment levels, no vertical root fractures).
2. 'Teeth with inadequate root canal filling when the coronal restoration requires replacement, or the coronal dental tissue is to be bleached.'
- The rationale for this technical indication is to

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Endodontics

Educational aims and objectives:

To provide practitioners with guidance on when to and when not to endodontically retreat and introduce the subtle nuances in these types of cases that would warrant further investigations. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



FIGURE 1: Do not to commence treatment prior to confirming a diagnosis so not to exacerbate patient symptoms, as can be the case for post-traumatic trigeminal neuropathic pain

Satnam Singh Virdee shares his guide to making confident, informed decisions about endodontic retreatment

Initiating endodontic retreatment

prevent the ingress of bacteria or bleaching materials into the root canal system during the restorative intervention, the latter of which can result in the initiation of external root resorption.

PRESENTING SYMPTOMS

Patients attending a consultation for a root filled tooth will often present as follows:

- Asymptomatic with or without previous acute episode
- Symptomatology consistent of endodontic pain
- Symptomatology inconsistent with endodontic pain.

Orofacial pain of non-odontogenic origin (ie temporomandibular [TMJ] disorders secondary to myofascial pain, sinusitis, tension and vascular headaches, and neuropathies namely post-traumatic trigeminal neuropathic pain and persistent idiopathic dento-alveolar pain) commonly presents as tooth pain (Pigg et al, 2021). When the patient is or has previously experienced symptoms, it is thus imperative to confirm these are typical of endodontic pathology via a comprehensive pain history.

Features such as dull, throbbing, long lasting and well localised pain that has been successfully managed with over-the-counter analgesics or antimicrobials is a common presentation of root filled teeth with active periradicular disease.

In contrast, descriptions of pain such as numbness, tingling or burning sensations, or a failure of the initial root canal treatment and analgesics to successfully manage the pain, should raise suspicions of a non-odontogenic origin for the pain at a very early stage in the consultation and may warrant referral to an orofacial pain clinic in the absence of obvious clinical and/or radiographic findings.

DETERMINE THE OUTCOME OF THE PRIMARY ROOT CANAL FILLING

Subsequent clinical and radiographic examination should be systematic and focus on categorising the outcome of the primary root canal treatment into one of the following (European Society of Endodontology, 2006):

- Favourable: absence of pain, swelling and other symptoms, no sinus tract, no loss of function and radiological evidence of a normal periodontal ligament space around the root
- Unfavourable: the tooth is associated with signs and symptoms of infection. A radiologically visible lesion has appeared subsequent to treatment, or a pre-existing lesion has increased in size. A lesion has remained the same size or has only diminished in size during the four-year assessment period. Signs of continuing root resorption are present
- Uncertain: radiographs reveal that a lesion has remained the same size or has only diminished in size.

It is worth noting that the above outcomes are independent of the technical quality of the existing root filling and unless an extensive coronal restoration or non-vital internal bleaching is to be provided, a poor-quality root filling in the absence of active periradicular pathology is not indication enough to proceed with endodontic retreatment.

THE APPROPRIATE COURSE OF TREATMENT

The above categories can be used to help determine the most appropriate course of treatment. For instance, a favourable outcome would indicate no further endodontic intervention.

If, however, a patient is symptomatic in the absence of obvious clinical signs and symptoms

from the tooth in question, further investigations such as a small field of view high resolution cone beam CT examination alongside an actionable radiology report or referral to an orofacial pain clinic may be warranted to confirm diagnosis. It is important not to commence treatment prior to confirming a diagnosis so not to exacerbate patient symptoms, as can be the case for post-traumatic trigeminal neuropathic pain (Figure 1).

If the primary root canal filling is deemed to have an unfavourable outcome, then the next challenge is to ascertain the likely source of the pathology. For example, the driver for the endodontic pathology is likely to originate from within the root canal if no rubber dam was used, there is defective coronal seal, poor quality primary root filling or missed canals, all of which are amenable to non-surgical root canal retreatment.

Conversely, persistent periradicular pathology in the presence of a guideline standard root canal treatment and coronal seal, foreign body reactions to extruded materials and self-sustaining cystic lesions are more amenable to an endodontic microsurgical approach (Figure 2).

In the presence of an uncertain outcome, continued annual clinical and radiographic monitoring of the tooth is indicated up to four years from the point of initial obturation. If within this period the radiographic lesion resolves, the outcome changes to favourable.

Conversely, if the tooth becomes symptomatic alongside clinical features, the radiographic lesion increases in size or only reduces in size over the four-year period, then the outcome changes to being unfavourable. The respective treatment pathways can then be offered to the patient.

CONCLUSION

It is hoped this article provides practitioners with guidance on when to and when not to endodontically retreat and introduces them to the subtle nuances in these types of cases that would warrant further investigations. [CD](#)

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- European Society of Endodontology (2006) Quality guidelines for endodontic treatment: consensus report of the European Society of Endodontology. *Int Endod J* 39(12): 921-930
- Pigg M, Nixdorf DR, Law AS, Renton T, Sharav Y, Baad-Hansen L, List T (2021) New international classification of orofacial pain: what is in it for endodontists? *J Endod* 47(3): 345-357

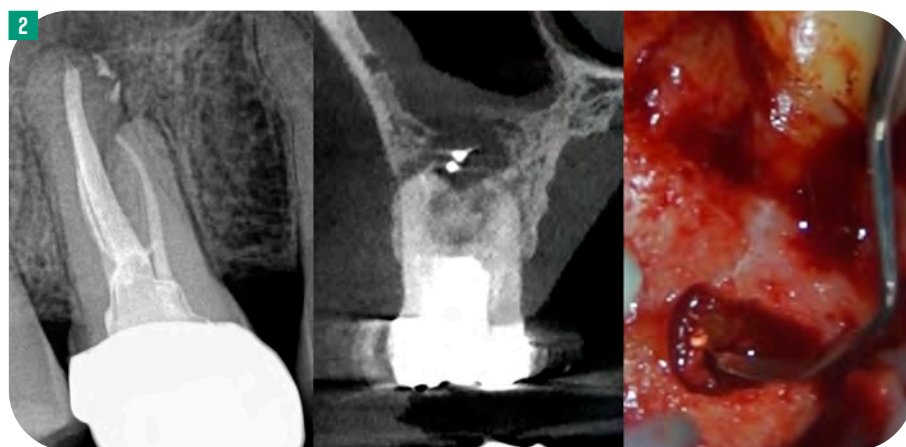


FIGURE 2: Persistent periradicular pathology in the presence of a guideline standard root canal treatment and coronal seal, foreign body reactions to extruded materials and self-sustaining cystic lesions are more amenable to an endodontic microsurgical approach

Upper premolar with three canals

Nicolai Orsteen describes a challenging case in which he performed root canal treatment on an upper premolar with three root canals

A young male patient was referred to the practice reporting pain in the upper left quadrant. Overall, his oral health was quite good, however he did have some decay and some existing fillings.

ASSESSMENT AND DIAGNOSIS

A clinical examination was carried out, and it was found that the UL5 was sensitive to percussion, and had a positive reaction to cold testing.

Periodontal health was good, with periodontal probing at 3mm. A deep composite filling was present on the distal-occlusal aspect. A periapical X-ray was taken at this time, which confirmed that there was a high probability that there were three root canals present.

A diagnosis of symptomatic irreversible pulpitis in the UL5 was given.

TREATMENT PLANNING

When planning treatment for the tooth, there were three potential options:

1. Root canal treatment
2. Extraction
3. No treatment with continued monitoring of the tooth.

The patient was in pain, and so did not want to wait and monitor the tooth. Additionally, it was preferred to save the tooth on this occasion, rather than opt for extraction. As such, the patient agreed to undergo root canal treatment.

TREATMENT PROVISION

To begin, local anaesthetic was delivered to the area. Following this a Hysolate latex dental dam (Coltene) was applied to isolate the tooth. The tooth was accessed using a Diatech multilayer

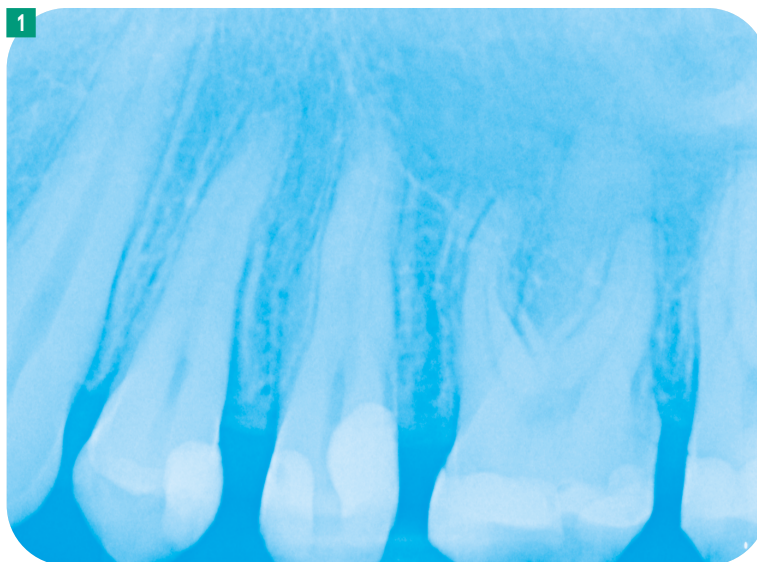


FIGURE 1: Initial radiograph confirmed that there was a high probability that three root canals were present

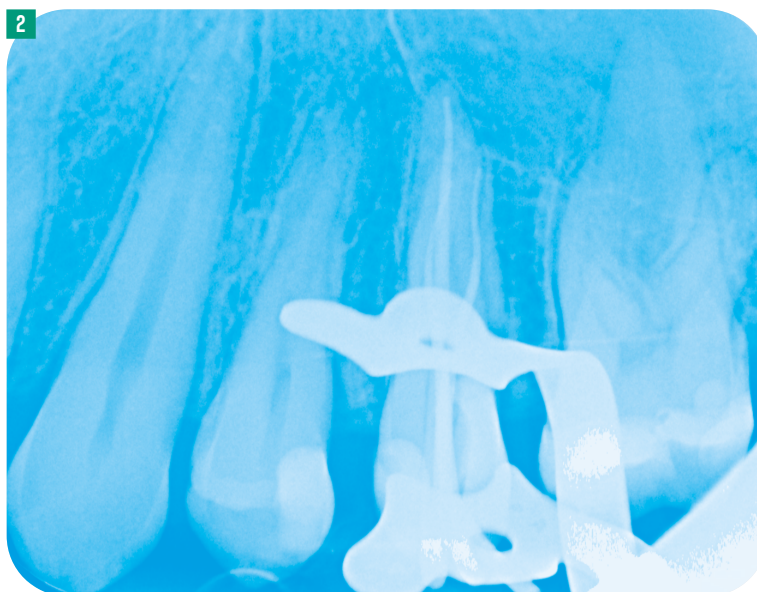


FIGURE 2: Radiograph, during treatment



DR NICOLAI ORSTEEN

Nicolai is a specialist in endodontics. He graduated from the University of Oslo in 2002, going on to specialise in endodontics. He has been working in private dental clinics in Oslo and London since 2002 and enjoys the challenge of difficult root canal cases. Since 2017 he has been the principal dentist at the Root Canal Dental Referral Centre in Richmond, London, which is a private practice solely limited to endodontics.

diamond bur (FG 848 016 10 ML) and all three of the canals were located.

It was confirmed that the vital pulp was inflamed. Because the treatment involved a premolar tooth with three canals, it was more complex and required a reliable and predictable treatment approach. As such, I opted to use the Hyflex OGSF file system because the files have a conservative taper, are flexible and they facilitate

a modern approach to root canal cleaning and instrumentation. The Hyflex OGSF sequence allows the clinician to preserve more dentine, as well as being safe and efficient.

The sequence consists of an orifice opener, glide path file, shaping file and finishing file that, when used in order, enables an effortless preparation, without the need for a lengthy decision-making process.

In this case, I established a glide path, then used the glide path file, followed by the shaping file and finished the preparation with the finishing file, which is 30.04.

After cleaning the root canals, they were filled with gutta percha and bioceramic sealer. A temporary glass ionomer filling was provided. The patient was then referred back to their general dental practitioner for the final restoration.

TREATMENT OUTCOME

The treatment was a success and both myself and my patient were happy with the result. The patient was relieved to no longer experience pain after the procedure.

DISCUSSION

In general, a premolar tooth is expected to have one to two root canals. In this case, I performed root canal treatment on an upper premolar with three canals.

In maxillary second premolars, laboratory studies have demonstrated an incidence of three root canals at between 0.3 and 2% (Mohammadi et al, 2016). As such, the rare third canal has the potential to be easily missed, making it essential to have a meticulous knowledge of root tooth morphology, carry out a thorough assessment and diagnosis, and carefully interpret radiographs prior to beginning treatment (Sulaiman, Dosumu and Amedari, 2013).

Due to the root canal anatomy in this case, it was vital to have a conservative approach to treatment, being careful not to remove too much dentine in the process. Utilising instruments that facilitated this was essential for a successful outcome. [CD](#)

CONTACT

www.rootcanalcentre.co.uk

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- Mohammadi Z, Shalavi S, Giardino L, Asgary S (2016) Endodontic considerations in three-canal premolars: a practical update. *Iran Endod J* 11(2): 134-7
- Sulaiman AO, Dosumu OO, Amedari M (2013) Maxillary first premolar with three root canals: a case report. *Ann Ib Postgrad Med* 11(2): 105-8

PRODUCTS USED

Hysolate, Diatech, Hyflex OGSF
Coltene

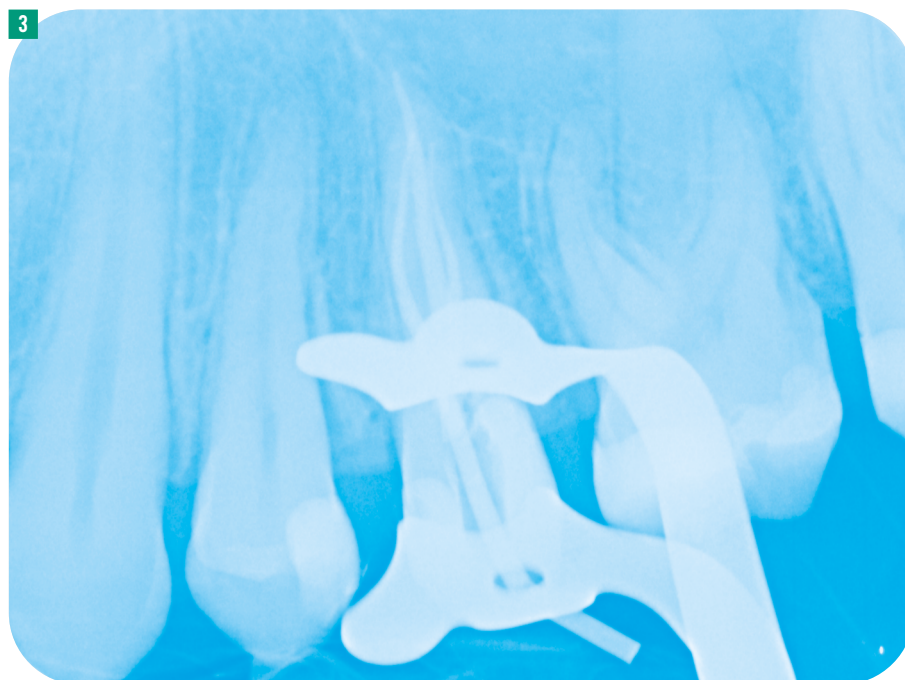


FIGURE 3: Radiograph, during treatment

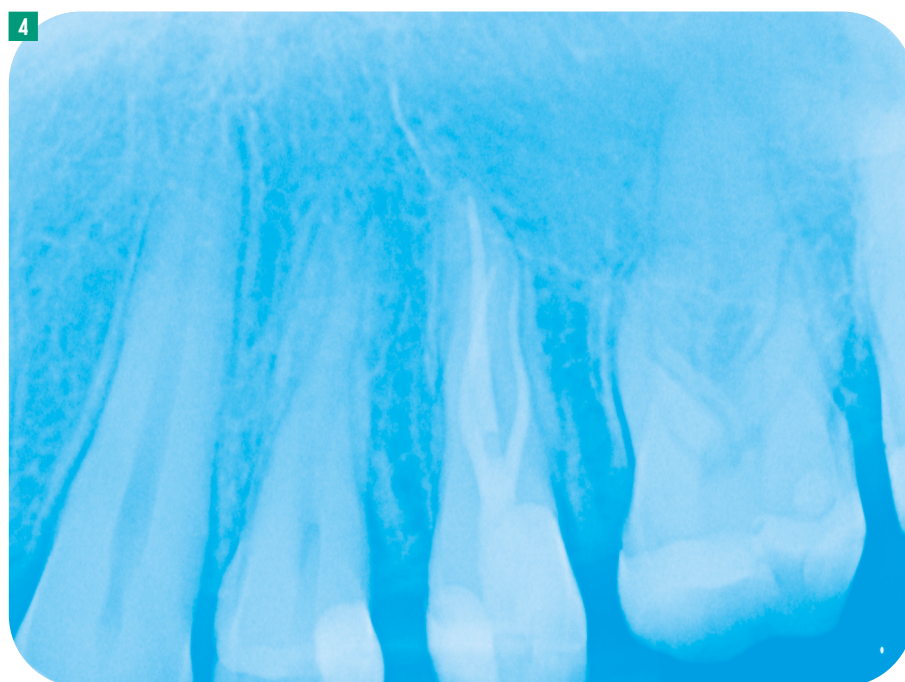


FIGURE 4: Radiograph, final result

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MAARTEN BOOGAARD

Utilising the socket-shield technique

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IMPLANT DENTISTRY CATEGORIES: CRITERIA

CLINICAL DENTISTRY AWARDS

The Clinical Dentistry Awards aim to acknowledge clinical excellence in practice. The ceremony takes place at Royal Garden Hotel in London on Friday 11 October. The closing date for entries is Wednesday 10 July. For the full list of categories and more information, visit dentistry.co.uk/clinical-awards, or scan the QR code to enter.



IMPLANT DENTISTRY PRACTICE

To enter this award the practice must have a strong interest in this discipline and have adapted an element of the practice towards dental implants.

This category recognises the efforts of an entire team, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction.

Entries in this category will be accepted from practices only (not individuals). Judges will be looking at the submission in its entirety and assessing the overall picture it paints of your practice rather than concentrating on individual elements. However, failure to address any of the criteria set out below may negatively impact your submission.

Entries should consist of a portfolio of information, including submission of at least one case and supporting notes. Send up to 1,200 words explaining why your practice is a contender for Implant Dentistry Practice. Focus on the following:

The practice: the history, location, the appearance, feel and branding. How is a practice culture of excellence attained, both clinically and organisationally? What technology do you use?

The staff: who is there, what is their area of interest, what is their training and experience? How has practice investment in training and equipment benefited patients and outcomes?

The marketing: how do you attract the patients? (Provide examples of marketing materials if available)

The patient experience: what does your practice do to make the patient experience unique, from start to finish? How are people put at ease? How are treatment options explained?

The team: how does everyone work together to make sure that the patient receives the best results as efficiently as possible?

Clinical before and after photos: provide high-resolution before and after clinical photographs to show clinically excellent results

Additional photography: the practice, the team etc.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment

planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

YOUNG IMPLANT DENTIST

This category is open to those born on or after 31 August 1988. Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and drive; show achievement in your career to date
- Explain how you set yourself apart from other young implant dentists
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

IMPLANT: SINGLE TOOTH



This category is for dentists and/or technicians. Please anonymise your entry for this category. Include a covering letter listing the names of all clinicians involved in treatment, such as the surgical and restorative stages.

If a dentist is entering alone, the technician should be named on the covering letter – both the dentist and technician will be awarded. Send up to 1,200 words detailing:

- The treatment, which involved replacement of one anterior tooth using implants to support the restoration
- This can include immediate/delayed placement and/or immediate/delayed loading
- Other treatment may have been carried out, but the major change will result from the implant therapy.

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IMPLANT: MULTIPLE TEETH

This category is for dentists and/or technicians. Please anonymise your entry for this category. Include a covering letter listing the names of all clinicians involved in treatment, such as the surgical and restorative stages.

If a dentist is entering alone, the technician should be named on the covering letter – both the dentist and technician will be awarded. Send up to 1,200 words detailing:

- The treatment, which involved replacement of multiple teeth using implants to support the restoration (this may be a small anterior bridge or two adjacent implants). Excludes full arches
- This can include immediate/delayed placement and/or immediate/delayed loading
- Other treatment may have been carried out, but the major change will result from the implant therapy.

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IMPLANT: INTERDISCIPLINARY TEAM

This category is for all members of the team – dentists, surgeons, technicians and other clinicians as appropriate to the treatment undertaken. All team members included in the entry will be awarded.

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Please anonymise your entry for this category. Include a covering letter listing the names of all clinicians involved in treatment.

Send up to 1,200 words detailing:

- The treatment should be carried out by more than one clinician, working as a team. The implant surgeon and other clinicians must be different individuals
- The treatment must involve the placement of dental implant/s. Other treatment should also have been carried out, depending on the case. This can include (but is not limited to) orthodontics/orthognathic surgery or endodontic treatment – but the major change in the smile should be underpinned by the implant surgery and restoration.

HOW TO ENTER

Highly inclusive and practice-based, the Clinical Dentistry Awards offer a wide range of categories, bringing together aesthetic dentistry, orthodontics, periodontics, endodontics, implant dentistry and oral health, to showcase the outstanding work being undertaken in dentistry.

The ceremony at the Royal Garden Hotel in London on Friday 11 October promises to be a prestigious and well-respected dental awards occasion for the United Kingdom.

Entering the Clinical Dentistry Awards 2024 is easy. Visit dentistry.co.uk/clinical-awards, click 'register now' and add your details, selecting the categories you wish to enter.

For this year's Clinical Dentistry Awards, please anonymise entries for the following implant categories:

- Implant: Single Tooth
- Implant: Multiple Teeth
- Implant: Interdisciplinary Team.

Remember to include a covering letter that lists the names of all the clinicians and technicians involved in treatment.

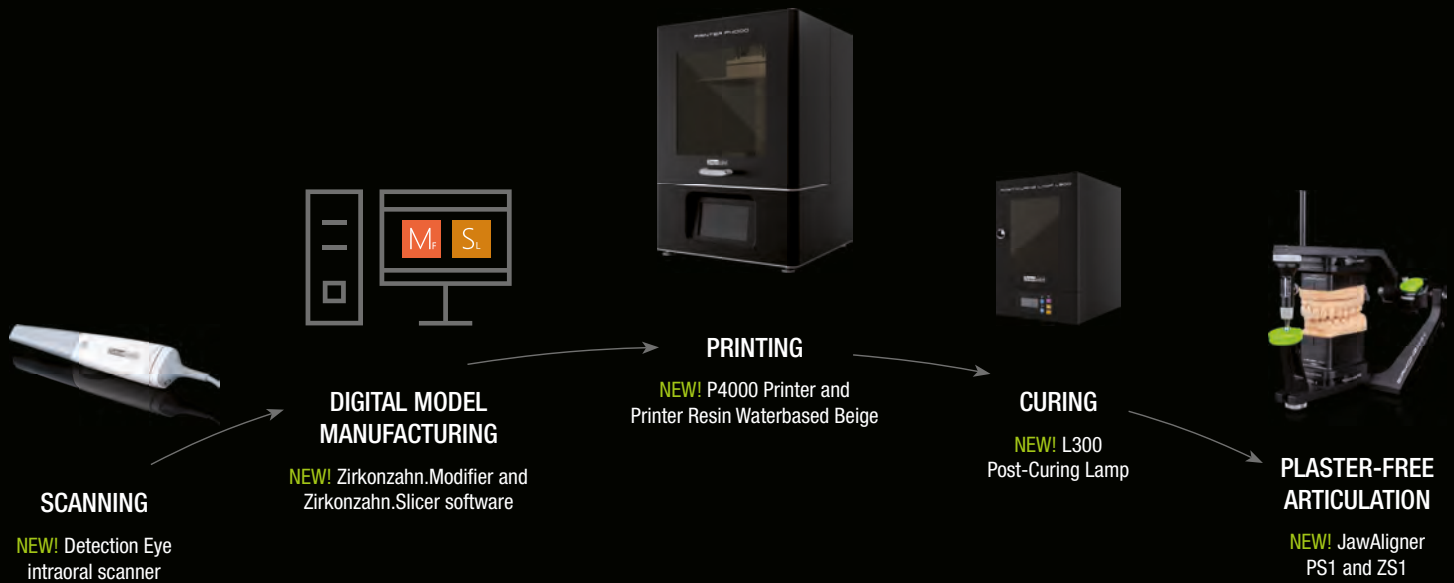
Once your entry has been written, polished and perfected, it's time to send it in! All you need to do is complete the online form at dentistry.co.uk/clinical-awards and upload your entry.

The deadline for entries is Wednesday 10 July.

To be eligible for an award, you should not be subject to any ongoing fitness to practise investigation by the General Dental Council (GDC), or be practising under any conditions imposed as a result of such an investigation.

If you need any guidance, don't hesitate to contact the awards team by calling 01923 851 777 or emailing awards@fmc.co.uk.

Good luck! 🍀

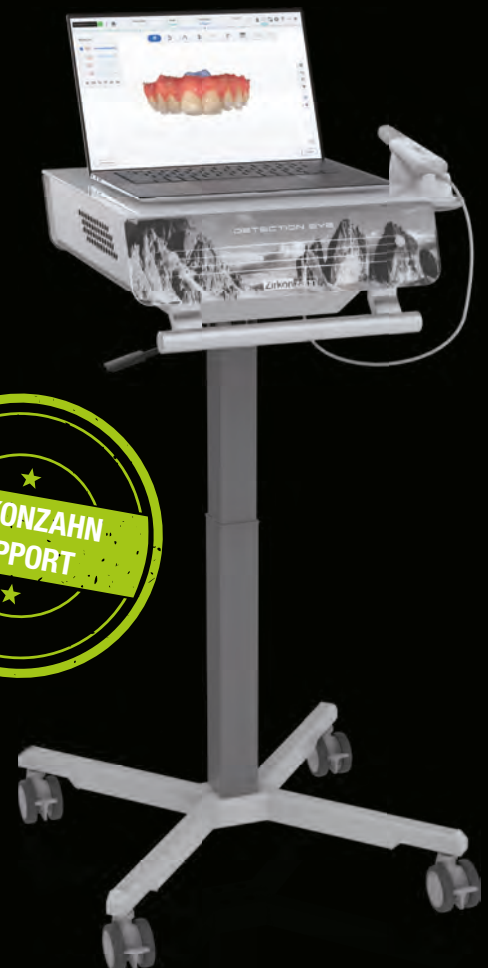


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**MAARTEN J BOOGAARD**

DMD

Maarten is in private practice in the Netherlands.

ENHANCED CPD**GDC anticipated outcome: C****CPD hours: one****Topic:** Implant dentistry**Educational aims and objectives:**

To present a case detailing the treatment of a socket-shield immediate implant placement that had a complication. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



Implant placement in extraction sockets was introduced by Lazarra and colleagues in 1989.

Since then, the clinical protocol for immediate anterior implant placement into fresh extraction sockets has evolved and, 30 years later, Hürzeler and colleagues (2010) were the first to introduce the socket-shield technique with the main goal that the buccal bundle bone is preserved, which could influence the aesthetic results.

Much has developed since 2010 and the immediate placement procedure has evolved with regard to partial extraction therapy.

Several modifications of the technique have been published over the years (Han, Park and Mangano, 2018; Gluckman, Salama and Du Toit, 2016; Gluckman, Salama and Du Toit, 2017).

This technique had been evaluated for more than 12 years and reviewed to perfect the protocol incorporating what has been learned in the past decade (Gluckman et al, 2020; Staehler et al, 2020).

In immediate placement – regardless of whether using the socket-shield technique or other immediate placement techniques – different bone grafts can be used to fill the jumping gap, including synthetic putties (Boogaard and Bollen, 2022). These putties are also being used in filling the gap between the socket-shield and the implant (Gluckman and Du Toit, 2019).

Materials like a putty may be beneficial since it is moldable and can gently be placed. Also, because of its consistency, putty is easy to apply in-between the socket-shield and the implant.

The dental putty consists of a calcium phosphate silicate placed in a carrier.

The material is available for direct use and does not have to be mixed. Around 80-90% of the putty will absorb in four to six months, and during this time the bone will regenerate.

The putty can be used to regenerate bone in different treatments like socket grafting, grafting

of periodontal defects or in crestal sinus lift procedures (Gonshor et al, 2011; Uppal et al, 2011; Mahesh et al, 2012; Jodia et al, 2014; Kotsakis et al, 2014a; Kotsakis et al, 2014b; Kotsakis and Mazor, 2015; Mazor et al, 2013).

Although the socket-shield technique has a high success rate, the treatment is not without complications (Siormpas et al, 2018).

The following clinical complications have been seen with the socket-shield technique:

- A lack of osseointegration of the dental implant
- Infections
- Mobilisation, migration and resorption of the root fragment (Barakat, Hassan, Eldibany, 2007).

When applying the socket-shield technique, the root may not have deep probing depths, significant fractures or mobility.

Leaving the apex in place, as accidentally happened in the following case, can later lead to inflammation around the implant, when there are still bacteria present in the apical delta of the remaining root apex (Staehler et al, 2021).

In the following case report, the issue was infection of the apical root that was left after the treatment and give an option of how to treat this complication in a socket-shield case.

SOCKET-SHIELD TIPS

- Make sure the tooth is a candidate for this treatment, meaning the root may not have deep probing depths, significant fractures or mobility
- Take a CBCT to plan the socket-shield, so you will be able to see the full anatomy of the tooth and its location and possible inflammations or bone loss
- Use the right treatment protocol. The Megagen socket-shield kit is ideal to use
- 3D implant planning with software and guided surgery will enhance the result.

Maarten Boogaard details how he treated a socket-shield immediate implant placement case that had a complication

Utilising the socket-shield technique



CASE PRESENTATION

The 25-year-old female patient had broken three of her front teeth in an accident (Figures 1 and 2).

The UL1 and UL3 could be saved with root canal treatment, but the UL2 was too severely damaged and had to be replaced with an implant.

The patient claimed to have had a CBCT taken at another practice where she also went for a consult. However, at the time of surgery, she could not present a CBCT but did not want another X-ray taken because of the amount of radiation. So, we decided to go forward with the information we had.

The patient received 2g amoxicillin one hour before surgery and chlorhexidine mouth rinse was used 60 seconds before surgery. Surgery was performed using local anaesthetic.

The tooth was removed atraumatically and the socket-shield was performed according to the protocol of Megagen and Gluckman and colleagues (2020).

After preparation, a Conelog progressive line implant was placed. The gap between the shield and the implant was grafted with Novabone putty (0.25ml). A titanium abutment was used and the temporary crown was made with Protemp 3.

After seven weeks, the patient presented herself with complaints and a minor swelling at the apical part of the root. The X-ray showed no differences.

Because of the inflammation after seven weeks, it appeared the socket-shield wasn't performed properly and the apical part of the root had been left behind and got infected. It was decided to perform an apex resection on the socket-shield with a semilunar flap.

This flap is a variant involving submarginal incision in the alveolar mucosa to form a crescent- or semilunar-shaped flap. The advantage of this flap is that it allows easy repositioning after periapical surgery, but it has increased tension and traction forces (Velvart and Peters, 2005).

The root was resected with an excavating drill. Granulation tissue was removed with titanium curettes, and the exposed implant threads were carefully debrided and decontaminated with 3% H₂O₂ for one minute, followed by rinsing with copious amounts of saline (Polymeri et al, 2020). The intrabony defect was filled with Novabone putty and covered with a Mem-Lok membrane resorbable collagen membrane (RCM), and stitched with simple interrupted sutures.

Six weeks after the apex resection, a CBCT was taken to evaluate the treatment. The CBCT shows the putty surrounding the implant at the apex and also bone growth in-between the remaining socket-shield at the cervical part of the implant (Figures 16 and 17).

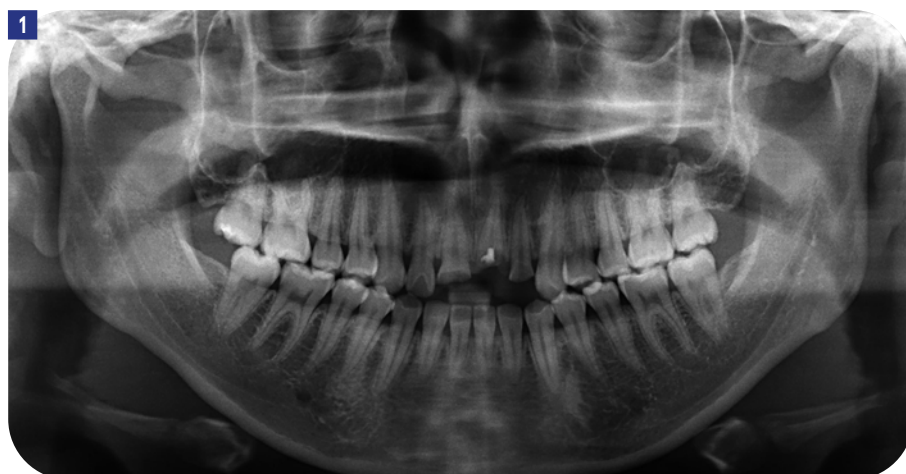


FIGURE 1: OPT after trauma



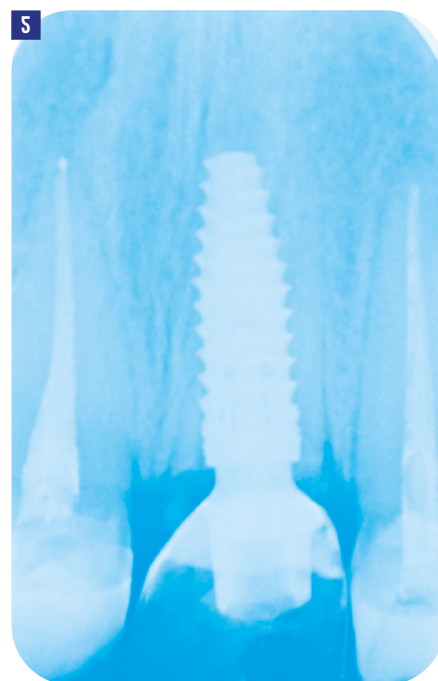
FIGURE 2: Situation after trauma



FIGURE 3: Partial extraction therapy (PET) kit, Megagen



FIGURE 4: Socket-shield after preparation



FIGURES 5 and 6: Implant placement and situation after two weeks



FIGURES 7 and 8: X-ray after seven weeks and swelling buccally



FIGURE 9: The swelling turned into a fistula



FIGURE 11: Clinical view after removing the root



FIGURE 13: Putty placed over the implant



FIGURE 15: Semilunar flap placed back with simple interrupted sutures



FIGURE 10: Cleaning of the surrounding and root resection with an excavating drill



FIGURE 12: Fitting of the membrane



FIGURE 14: Membrane placed over putty



FIGURE 16: CBCT showing the putty buccal of the implant

This flap is a variant involving submarginal incision in the alveolar mucosa to form a crescent- or semilunar-shaped flap

Ten weeks after the resection of the apical part of the root, the crown was placed, showing healthy soft tissue (Figures 18, 19 and 20).

DISCUSSION

Today, the socket-shield technique is an established procedure in implant dentistry. The procedure is technique sensitive and challenging, and should still be carried out by the knowledgeable, experienced and skilled clinician. Nevertheless, much has been learnt since Hürzeler and colleagues started with this procedure in 2010.

The socket-shield technique can only be performed if the failing tooth has not yet been extracted. The tooth should not have deep pockets or increased mobility. Significant fractures of the complete buccal dentine or bone

wall are also unacceptable (Stahler et al, 2021).

Ten years after its introduction, the step-by-step partial extraction therapy protocol outlines have been updated, making the socket-shield technique a more reproducible, reliable and safe treatment in combination with immediate implant placement (Gluckman et al, 2020; Stahler et al, 2020).

More research is required, as there are not a lot of well-designed prospective randomised studies in regards to the socket-shield. The multiple case articles that are published are limited in scientific value.

At this stage, it is unclear whether the socket-shield technique will give a stable long-time outcome (Blaschke and Schwass, 2020). However, the percentage of dental implant failure is the same for the socket-shield technique in comparison with conventional techniques for immediate implant placement in the aesthetic zone (Velasco Bohórquez et al, 2021).

The most valuable research is by Gluckman and colleagues (2018) and Siormpas and colleagues (2018).

Gluckman and colleagues (2018) analysed 128 immediate dental implants placed in the aesthetic zone with the socket-shield technique with at least four years of follow-up and they found an implant survival rate of 96.1%.

Siormpas and colleagues (2018) included 250 immediate dental implants performed with the socket-shield technique with a follow-up of 10 years and reported a dental implant survival rate of 98%. However, some eventual complications such as infections of the root membrane, internal and external exposures and migration of the

The socket-shield technique is reliable when combined with immediate implant placement in the aesthetic zone

dental implant were reported (Siormpas et al, 2018).

Research has shown that when the socket-shield technique is used, there is less marginal bone loss and better pink aesthetic scores than with the conventional techniques (Velasco Bohórquez et al, 2021).

Also, as happened in this case, when you leave the apex in place, it can later lead to inflammation around the implant, as there are still bacteria present around the apical delta of the remaining root apex (Stahler et al, 2021). So, in this case, the complication might have been prevented by taking a CBCT beforehand, and one should reconsider starting a procedure like this without a CBCT.

CONCLUSION

The socket-shield technique is reliable when combined with immediate implant placement in the aesthetic zone. However, the procedure is technique sensitive and challenging, and should still be for the experienced, and skilled clinician, and even then, it can give complications.

Before treatment begins, a CBCT and digital planning are recommended. This case study shows a solution of how to treat the inflammation that appeared due to an incorrectly executed shield preparation and the apex was not fully deducted.

Further research should be conducted to establish a treatment protocol in these complications. [DOI](#)

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siobhan.hiscott@fmc.co.uk

PRODUCTS USED

Protemp 3 3M Espe
DS Forte Ultracain
Conelog, Mem-Lok Biohorizons Camlog
Novabone Dental Putty Novabone Products



FIGURE 17: CBCT of the implant showing bone between remaining shield and implant after apex resection and putty placement



FIGURES 18 and 19: Healthy soft tissue

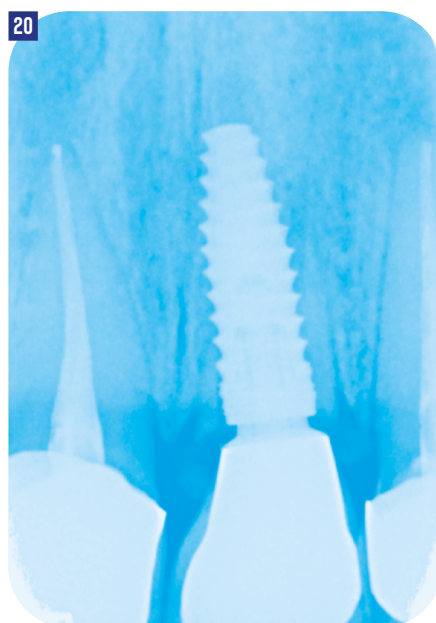


FIGURE 20: Final X-ray

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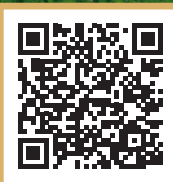
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PERIODONTIC PRACTICE

To enter this award the practice must have a strong interest in this discipline and have adapted an element of the practice towards periodontics.

This category recognises the efforts of an entire team, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction.

Entries in this category will be accepted from practices only (not individuals). Judges will be looking at the submission in its entirety and assessing the overall picture it paints of your practice rather than concentrating on individual elements. However, failure to address any of the criteria set out below may negatively impact your submission.

Entries should consist of a portfolio of information, including submission of at least one case and supporting notes. Send up to 1,200 words explaining why your practice is a contender for Periodontic Practice. Focus on the following:

The practice: the history, location, tech, the appearance, feel and branding

The staff: who is there, what is their area of interest?

The marketing: how do you attract patients?

The patient experience: what does your practice do to make the patient experience unique, from start to finish?

The team: how does everyone work together to ensure the best results as efficiently as possible?

Photography: provide high-res before and after clinical photographs to show clinically excellent results, and photos of the practice, the team etc.

Please also provide one case report and supporting notes (up to 1,000 words).

HYGIENIST OF THE YEAR

This award is for an individual dental hygienist working for a practice (or several practices). It is designed to recognise an empathetic, innovative and effective approach to clinical care and the promotion of oral health. Entrants to this category cannot enter both Hygienist of the Year and Therapist of the Year.

Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and passion for prevention; show achievement in your career to date
- Explain how you set yourself apart from other dental hygienists
- Show innovation in educating patients
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Demonstrate how you have carried the oral health message beyond the practice
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

THERAPIST OF THE YEAR

This award is for an individual dental therapist working for a practice (or several practices). It is designed to recognise an empathetic, innovative and effective approach to clinical care and the promotion of oral health. Entrants to this category cannot enter both Hygienist of the Year and Therapist of the Year.

Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and passion for prevention; show achievement in your career to date
- Explain how you set yourself apart from other dental therapists
- Show innovation in educating patients
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Demonstrate how you have carried the oral health message beyond the practice
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient’s presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

RECENTLY-QUALIFIED HYGIENIST

This award is for an individual who is starting out in their hygiene career. Individual hygienists who have qualified within the last five years are eligible to enter. It is designed to recognise an empathetic, innovative and effective approach to clinical care and oral health promotion.

Entrants to this category cannot enter both Recently-Qualified Hygienist and Recently-Qualified Therapist.

Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and passion for prevention; show achievement in your career to date
- Explain how you set yourself apart from other dental hygienists
- Show innovation in educating patients
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Demonstrate how you have carried the oral health message beyond the practice
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

RECENTLY-QUALIFIED THERAPIST

This award is for an individual who is starting out in their therapy career. Individual therapists who have qualified within the last five years are eligible to enter. It is designed to recognise an empathetic, innovative and effective approach to clinical care and the promotion of oral health.

Entrants to this category cannot enter both Recently-Qualified Hygienist and Recently-Qualified Therapist.

Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and passion for

prevention; show achievement in your career to date

- Explain how you set yourself apart from other dental therapists
- Show innovation in educating patients
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Demonstrate how you have carried the oral health message beyond the practice
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

LOCAL ORAL HEALTH INITIATIVE

This award is designed to recognise the work being done to take oral health education outside the practice. Submissions are welcomed from all: individuals, practices, charities, local health teams etc.

Potential suitable projects include, but are not limited to, outreach work in care homes, education to local schools or spreading awareness of good oral health to the community.

Applicants should send up to 1,000 words explaining why they are a contender for Local Oral Health Initiative through any, or a combination, of the following:

- Describe the project and the intent behind it
- Explain how the initiative was put into action
- Highlight the impact that the work has had on the community.
- Include photographs, testimonials and other supporting evidence to help your entry stand out.

PHILIPS SHINE-ON AWARD


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The Philips Shine-On Award is designed to recognise and celebrate dental hygienists/therapists who are pushing the boundaries of the profession, creating their own career pathway and who demonstrate clear dedication to career development and success.

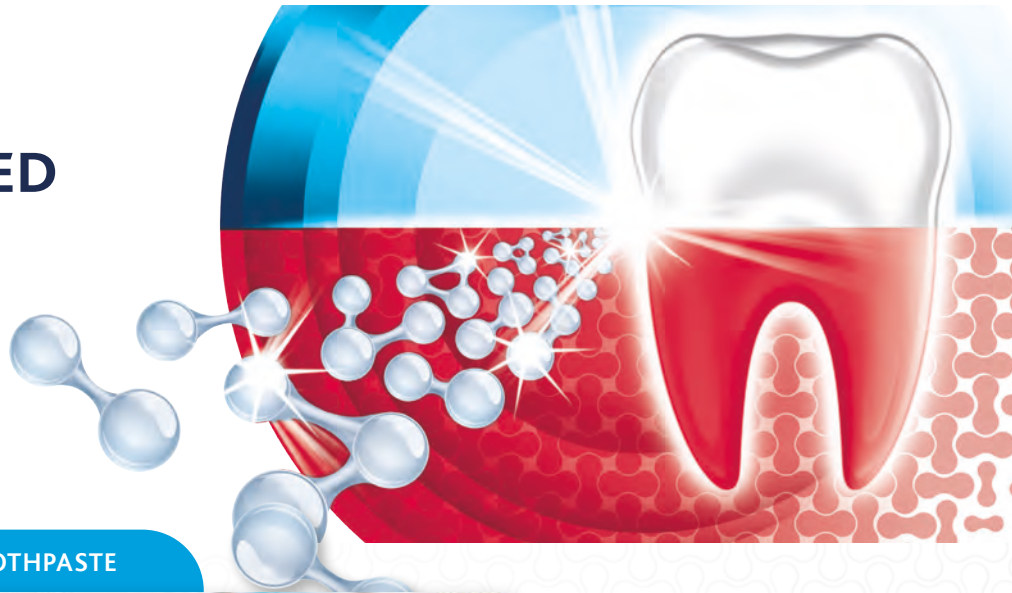
Applicants should send up to 1,000 words explaining why they are a contender for the Philips Shine-On Award through any, or a combination, of the following:

- Demonstrate passion for the profession
- Show how you have gone beyond the usual career boundaries
- Show your dedication to career development and progression
- Provide credible and relevant testimonials where relevant/possible.

While not essential, entries for the Philips Shine-On Award can include patient care cases. 



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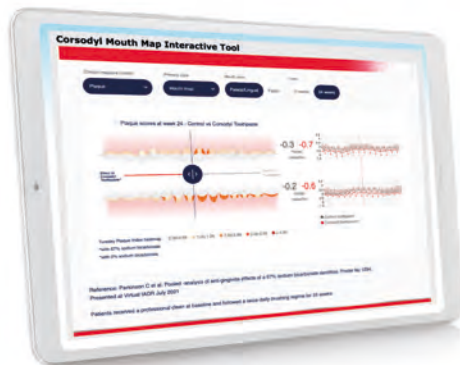


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1. Jose *et al.* J Clin Dent 2018;29:33-39. 2. Pratten J *et al.* Int J Dent Hygiene. 2016;14:209-214.

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

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**NEESHA PATEL**

Neesha is a specialist periodontist, and clinical director at Pure Periodontics.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Oral health

Educational aims and objectives:

To provide an understanding of the impact of perimenopause and menopause on oral health. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



Perimenopause and menopause are significant transitional phases in a woman's life, marked by hormonal fluctuations and physiological changes. While much attention has been given to the effects of these transitions on various aspects of health, their impact on oral health often goes unnoticed.

This comprehensive review explores the intricate relationship between perimenopause, menopause and oral health. It delves into the physiological changes occurring during these stages, their effects on oral tissues, and the associated oral health challenges. Furthermore, it discusses preventive measures and treatment strategies to manage oral health effectively during perimenopause and menopause.

Through a multidisciplinary approach, this review aims to enhance understanding and promote better oral health outcomes for women during this critical phase of life.

BIOLOGICAL PROCESSES

Perimenopause and menopause are natural biological processes marking the end of a woman's reproductive years.

Perimenopause refers to the transitional phase leading up to menopause, typically beginning in the late 40s or early 50s, characterised by hormonal fluctuations and menstrual irregularities.

Menopause, on the other hand, is defined as the cessation of menstruation for at least 12 consecutive months, signalling the end of reproductive function.

While these phases are commonly associated with symptoms like hot flashes, mood swings, and changes in libido, their impact on oral health is often overlooked. However, emerging research suggests that hormonal changes during

perimenopause and menopause can significantly affect oral tissues and increase the risk of various oral health conditions.

This comprehensive review aims to elucidate the complex interplay between perimenopause, menopause, and oral health. By examining the physiological changes, oral health challenges, and management strategies associated with these phases, this article hopes to provide valuable insights for healthcare professionals and promote better oral health outcomes for women during this transitional period.

PHYSIOLOGICAL CHANGES DURING PERIMENOPAUSE AND MENOPAUSE

Perimenopause and menopause are characterised by hormonal fluctuations, particularly a decline in oestrogen levels brings about a multitude of changes in a woman's body.

Hormonal shifts, primarily the decline in oestrogen levels, trigger various physiological alterations. These changes include hot flashes, night sweats, vaginal dryness, and mood swings, which can significantly impact a woman's quality of life. Additionally, decreased oestrogen levels may lead to bone density loss, increasing the risk of osteoporosis and fractures.

Weight gain and redistribution of fat are also common during menopause, often concentrating around the abdomen. Furthermore, menopausal women may experience disruptions in sleep patterns and cognitive functions, such as memory and concentration.

While menopause is a natural phase in a woman's life, its effects can vary widely among individuals, necessitating personalised approaches to manage its symptoms and promote overall wellbeing (Figure 1).

Neesha Patel provides a comprehensive review to help aid an understanding of the impact of perimenopause and menopause on oral health

Perimenopause and menopause: oral health impact



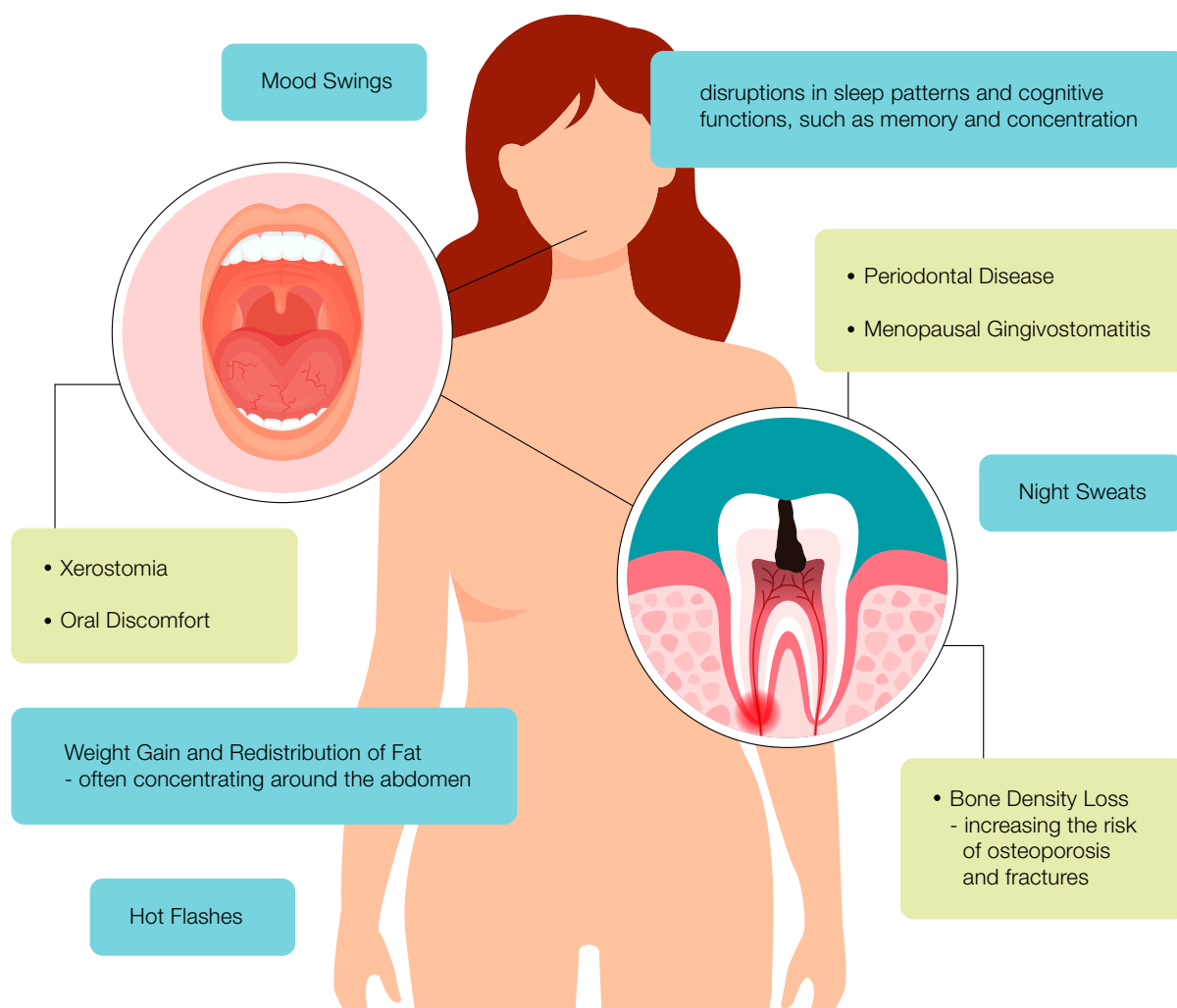


FIGURE 1: The impact of perimenopause and menopause on oral health

Oestrogen receptors are present in oral tissues, including the gingiva, salivary glands, and bone, suggesting a potential role for oestrogen in maintaining oral health (Figure 2).

IMPACT OF PERIMENOPAUSE AND MENOPAUSE ON ORAL HEALTH

The hormonal fluctuations and physiological changes associated with perimenopause and menopause can influence the development and progression of various oral health conditions.

Let's explore some of the key oral health issues observed during these phases (Figure 2).

Periodontal disease

Periodontal disease, including gingivitis and periodontitis, is more prevalent and severe in women experiencing perimenopause and menopause.

Oestrogen deficiency can exacerbate gingival inflammation and compromise periodontal

health, leading to increased risk of attachment loss and tooth loss.

Xerostomia

Dry mouth (xerostomia) is a common complaint among menopausal women, resulting from decreased salivary flow associated with hormonal changes.

Xerostomia can contribute to oral discomfort, difficulty chewing and swallowing, and an increased risk of dental caries and oral infections.

Oral discomfort

Hormonal fluctuations during perimenopause and menopause can lead to oral discomfort, including burning mouth syndrome, altered taste perception, and increased sensitivity to hot or cold temperatures. These symptoms can significantly impact quality of life and oral function.

Osteoporosis-related oral manifestations

Osteoporosis, a systemic bone disease characterised by decreased bone density, is more prevalent in postmenopausal women.

Osteoporosis-related oral manifestations may include loss of alveolar bone, tooth mobility, and increased risk of tooth loss.

Menopausal gingivostomatitis

Menopausal gingivostomatitis is a condition characterised by erythematous, shiny, and oedematous gingiva, often accompanied by bleeding and discomfort. Although relatively rare, menopausal gingivostomatitis may occur due to hormonal changes and compromised immune function during menopause.

The cumulative impact of these oral health issues can significantly affect the overall wellbeing and quality of life of women during perimenopause and menopause. Moreover, untreated oral health problems may contribute

to systemic health issues, highlighting the importance of comprehensive oral care during this transitional phase.

PREVENTIVE STRATEGIES AND TREATMENT INTERVENTIONS

Effective management of oral health during perimenopause and menopause requires a multifaceted approach, encompassing preventive strategies, regular dental care, and targeted treatment interventions.

Here are some key recommendations.

Maintain optimal oral hygiene

Tailored oral hygiene advice promoting teeth twice daily tooth brushing with fluoride toothpaste and flossing daily are essential for preventing dental plaque build-up and reducing the risk of periodontal disease and dental caries.

Address xerostomia

Managing dry mouth symptoms involves stimulating saliva flow through chewing sugar-free gum and staying hydrated by drinking plenty of water. Patients should avoid alcohol-containing mouthwashes and products with high sugar content, which can exacerbate dry mouth.

Regular dental visits

Routine dental examinations and professional cleanings are crucial for monitoring oral health status, detecting early signs of periodontal disease or dental caries, and providing timely interventions.

Dental professionals can also provide personalised oral hygiene instructions and recommend adjunctive therapies as needed.

Hormone replacement therapy (HRT)

Hormone replacement therapy, which involves supplementing oestrogen and/or progesterone to alleviate menopausal symptoms, may have beneficial effects on oral health.

HRT has been associated with improvements in oral mucosal integrity, salivary flow rates, and gingival health in menopausal women.

Calcium and vitamin D supplementation

Adequate calcium and vitamin D intake is essential for maintaining bone health and preventing osteoporosis-related complications, including alveolar bone loss and tooth mobility.

Women at risk of osteoporosis should discuss supplementation with their healthcare providers.

Lifestyle modifications

Adopting a healthy lifestyle, including a balanced diet rich in calcium and vitamin D, regular exercise, smoking cessation, and moderation of alcohol consumption, can support overall oral

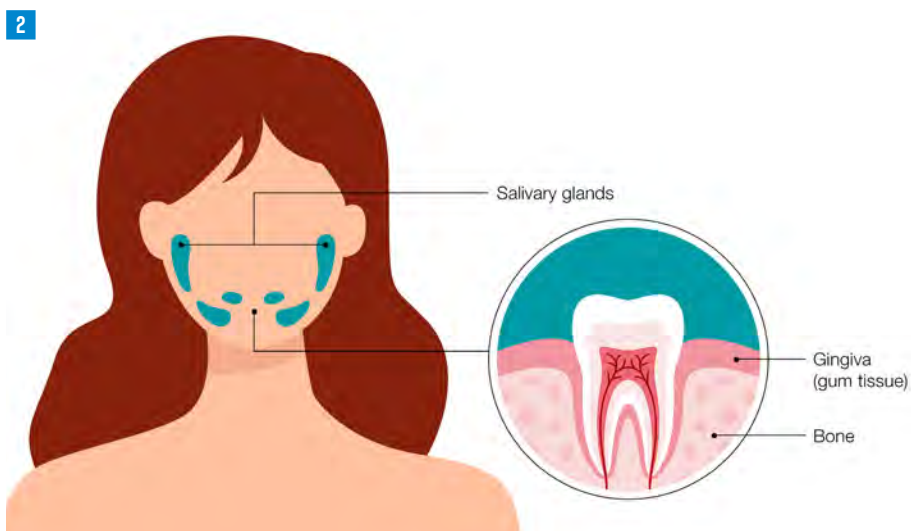


FIGURE 2: Oestrogen receptors are present in the oral tissues

and systemic health during perimenopause and menopause.

Stress management

Stress management techniques, such as relaxation exercises, mindfulness meditation, and yoga, may help alleviate symptoms of oral discomfort, such as burning mouth syndrome, and improve overall wellbeing during perimenopause and menopause.

CONCLUSION

Perimenopause and menopause are significant transitional phases in a woman's life, marked by hormonal fluctuations and physiological changes that can have a profound impact on oral health. Oestrogen deficiency during these phases can contribute to a range of oral health issues, including periodontal disease, xerostomia, oral discomfort, and osteoporosis-related oral manifestations.

Understanding the complex interplay between perimenopause, menopause, and oral health is essential for healthcare professionals to provide comprehensive care and support for women during this transitional period. Implementing preventive strategies, regular dental visits, and targeted treatment interventions can help mitigate the oral health challenges associated with perimenopause and menopause and promote better oral health outcomes and overall quality of life for women.

By raising awareness of the impact of perimenopause and menopause on oral health and advocating for tailored interventions, healthcare providers can empower women to prioritize their oral health and navigate this important life stage with confidence and resilience. [📄](#)

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Oral health and brain health

Nina Garlo and Olli Patrakka explore oral health and brain health and the crucial connection for overall wellbeing

Over the last few years, dental and oral bacteria have been linked to numerous chronic diseases throughout the body. The latest research indicates that thorough brushing and regular dental appointments can also play a role in preventing strokes (Shahi et al, 2022).

According to statistics from the World Stroke Organization (WSO), more than 13 million people globally suffer from strokes each year, with one in four individuals experiencing a stroke in their lifetime. Surprisingly, up to 90% of these cases could be prevented through lifestyle changes such as adopting a healthier diet, increasing regular exercise, quitting smoking, and even improving oral hygiene practices (Sen et al, 2018).

In the UK, stroke ranks as the fourth leading cause of death. However, Brain Research UK notes positive progress, citing a decline in stroke-related mortality attributed to increased awareness of symptoms, leading to faster and more effective treatment.

Epidemiological studies have identified poor oral hygiene as an independent risk factor for strokes

In his recent doctoral dissertation in forensic medicine at the University of Tampere, medical licentiate Olli Patrakka examined the significance of oral bacteria, particularly viridans group streptococci, in stroke development. While these bacteria are normal mouth microbes, they can lead to serious illnesses like heart valve inflammation when entering the bloodstream, such as through inflamed gums during toothbrushing (Patrikka, 2024).

These bacteria, attaching to tooth surfaces and initiating plaque formation, may similarly contribute to stroke and atherosclerosis development when entering arterial walls via the bloodstream during dental procedures or infections.

A RISK FACTOR FOR STROKES

According to Patrakka, dental bacteria are present in the blood clots of stroke patients in about four out of five cases, with similar results yet to be reported. Blood clots were collected from stroke patients undergoing acute care in Tampere, Finland, for the study, along with samples from patients with symptomatic carotid artery stenosis used as endarterectomy tissues (Patrikka, 2024).

Epidemiological studies have identified poor oral hygiene as an independent risk factor for strokes. Patrakka suggests that the inflammatory reaction induced by dental bacteria in atherosclerotic plaques could explicitly explain this connection.

The dissertation's findings are significant as they present new opportunities for stroke patient

treatment development. Patrakka also believes that the development of a vaccine may be now feasible.

While further research is necessary to establish causality, the study supports the importance of oral health, particularly in individuals at risk of strokes. Patrakka emphasises that considering the inflammation caused by streptococcal bacteria in the mouth is crucial in stroke prevention as part of routine dental care. Moreover, investigating the potential benefits of timely antimicrobial treatment or bacterial vaccines in the future is essential.

THE ROOT CAUSE

Studies show dental plaque bacteria are responsible for about 95% of oral diseases. One of the most common oral diseases is periodontitis, a severe gum disease caused by dental plaque. Early signs of this disease include red gums, gum bleeding, and bad breath (Saini, Saini and Sharma, 2011).

In patients with periodontitis, the fibres that attach the tooth to the gum are destroyed, forming a periodontal pocket between the gum and the tooth. This pocket may expand around the entire tooth. If the infection is not treated promptly and oral hygiene is not improved, it can progress to destroy more extensively the supporting tissues of the teeth and, ultimately, the jawbone (Saini, Saini and Sharma, 2011).

Thorough oral hygiene is crucial for the prevention and treatment of oral infections. According to the Oral Health Foundation, one in four (26%) British adults regularly brush their teeth only



NINA GARLO

Nina is a health journalist at Koite Health.



OLLI PATRAKKA

Olli is a medical licentiate from the University of Tampere.

once a day, raising concerns about the number of people willing to skip twice-daily brushing (Mehrotra and Singh, 2023).

The charity is especially worried by the number of people who regularly fail to brush their teeth last thing at night, when the health of the mouth is most likely to deteriorate. Insights from the research show that one in four (25%) do not brush their teeth in the evening before they go to bed (Mehrotra and Singh, 2023).

Deficiencies in oral hygiene are directly reflected in the statistics of oral infectious diseases. More than 45% of adults in the UK are currently being affected by gum disease. Meanwhile, 10% are living with the most severe form, which can lead to tooth loss (NHS Digital, 2011).

Thorough mechanical brushing of teeth and cleaning of the interdental spaces are crucial because even asymptomatic oral inflammations can affect the body's overall health. According to statistics and research, individuals with healthy mouths even live longer (Friedman and Lamster, 2016).

Every missing tooth reduces life expectancy. This is talked about far too little, says Tommi Pätälä, a heart and transplant surgeon at HUS New Children's Hospital in Helsinki, Finland.

Pätälä is also one of the developers of the antibacterial Lumoral method. Lumoral is

More than 45% of adults in the UK are currently being affected by gum disease

a medical device designed to improve oral hygiene and oral health. The antibacterial oral care method is especially suitable for patients with difficult-to-treat gum diseases such as periodontitis who do not get adequate results from traditional oral hygiene methods such as brushing teeth and cleaning interdental spaces (Pakarinen et al, 2022; Nikinmaa et al, 2020; Nikinmaa et al, 2021).

The effectiveness of the novel oral health enhancing device relies on antimicrobial photodynamic therapy (aPDT), also referred to as photoantimicrobial chemotherapy. While this technology is already prevalent in dental practices, the advent of a home-use device allows for more frequent application of this antibacterial treatment (Jao, Ding and Chen, 2023).

aPDT technology itself utilises light energy and a photosensitiser to generate an antimicrobial effect that eliminates problem-causing plaque bacteria from the mouth. Due to its targeted approach, aPDT does not lead to bacterial resistance (Jao, Ding and Chen, 2023).

THE IMPORTANCE OF INTERDISCIPLINARY COLLABORATION

According to Pätälä, the recent medical dissertation at the University of Tampere holds significance as it integrates oral health into overall body health.

Enhancing collaboration between doctors and dentists is crucial and needs improvement across various European countries. While many medical doctors already evaluate their patients' oral health at clinics and refer them for additional treatment when needed, closer collaboration is essential.

Diabetes serves as a prime example of a disease where the importance of underlying inflammations is widely acknowledged. However, heightened collaboration is necessary to accelerate diagnoses and even prevent several common diseases. [🔗](#)

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OLLI PATRAKKA: BACKGROUND

Olli Patrakka's interest in oral bacteria stemmed from his responsibilities as a pathologist. We asked him: has the interest of young doctors in the impact of dental infections on general health increased?

'It hasn't increased significantly, but it should. In my basic medical training about five years ago, there was minimal discussion of the impact of dental infections on overall health. While the topic is relatively new, it's crucial that awareness and scientific evidence grow over time.'

Patrakka underscores the importance of general practitioners recognising when a dental issue necessitates a referral to a dentist. This could streamline the treatment of oral infections and potentially aid in achieving a balance in treating various general diseases.

'My research contributes to the growing evidence that oral health influences overall health. The blood vessels of the tooth pulp directly connect to the systemic circulation. Therefore, if teeth are in poor condition, bacteria and their byproducts can circulate directly into our bodies.'

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ORTHODONTICS

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ORTHODONTIC CATEGORIES: CRITERIA

CLINICAL DENTISTRY AWARDS

The Clinical Dentistry Awards aim to acknowledge clinical excellence in practice. The ceremony takes place at Royal Garden Hotel in London on Friday 11 October. The closing date for entries is Wednesday 10 July. For the full list of categories and more information, visit dentistry.co.uk/clinical-awards, or scan the QR code to enter.



ORTHODONTIC PRACTICE

To enter this award the practice must have a strong interest in orthodontics and have adapted an element of the practice towards this discipline.

This category recognises the efforts of an entire team, from procedure to aftercare, focusing on the practice environment as well as clinical outcomes achieved and patient satisfaction.

Entries in this category will be accepted from practices only (not individuals). Judges will be looking at the submission in its entirety and assessing the overall picture it paints of your practice rather than concentrating on individual elements. However, failure to address any of the criteria set out below may negatively impact your submission.

Entries should consist of a portfolio of information, including submission of at least one case and supporting notes. Send up to 1,200 words explaining why your practice is a contender for Orthodontic Practice. Focus on:

The practice: the history, location, the appearance, feel and branding. How is a practice culture of excellence attained, both clinically and organisationally? What technology do you use?

The staff: who is there, what is their area of interest, what is their training and experience? How has practice investment in training and equipment benefited patients and outcomes?

The marketing: how do you attract the patients who are interested in orthodontics? (Marketing materials should be included if available)

The patient experience: what does your practice do to make the patient experience unique, from start to finish? How are people put at ease? How are treatment options explained?

The team: how does everyone work together to ensure the best results as efficiently as possible?

Photography: provide high-resolution before and after clinical photographs to show clinically excellent results, and the practice, the team etc.

Please also provide one case report (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible.

ORTHODONTIC THERAPIST

This award is for an individual dental orthodontic therapist working for a practice (or several practices). Entries should consist of a portfolio of information, including submission of a case and supporting notes. Send up to 1,000 words focusing on the following:

- Demonstrate hard work and drive; show achievement in your career to date
- Explain how you set yourself apart from other orthodontic therapists
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and include a discussion of how the case was treated as effectively as possible.

YOUNG ORTHODONTIST

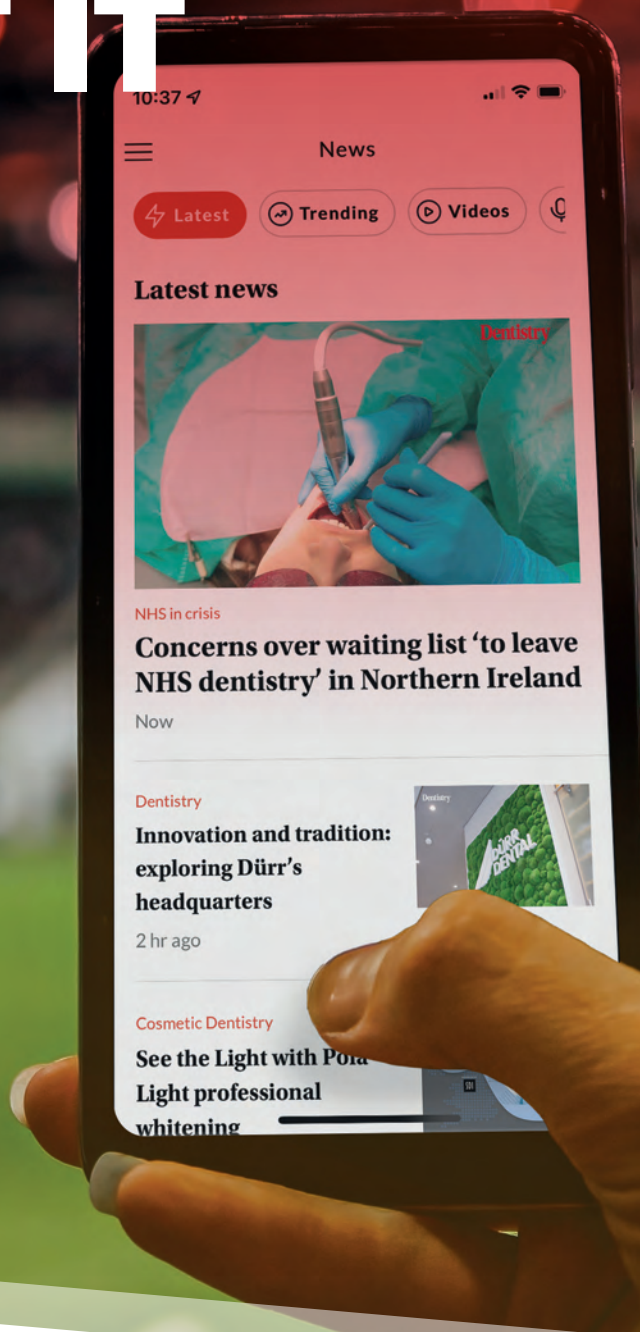
This category is open to those born on or after 31 August 1988. Applicants should send up to 1,000 words explaining why they are a contender for an award through any, or a combination, of the following:

- Demonstrate hard work and drive; show achievement in your career to date
- Explain how you set yourself apart from other young orthodontists
- Present postgraduate training/development information if relevant
- Provide evidence of how you go beyond the regular duty of care
- Provide any other supporting evidence and pictures you feel are relevant
- Provide a portfolio of high-resolution outstanding before and after clinical photographs.

Please also provide one report of a case that you feel is exemplary (up to 1,000 words). This should detail the treatment carried out – the patient's presentation, diagnosis, treatment planning and treatment execution, and specifically include a discussion of how the case was treated as effectively as possible. dentistry.co.uk/clinical-awards

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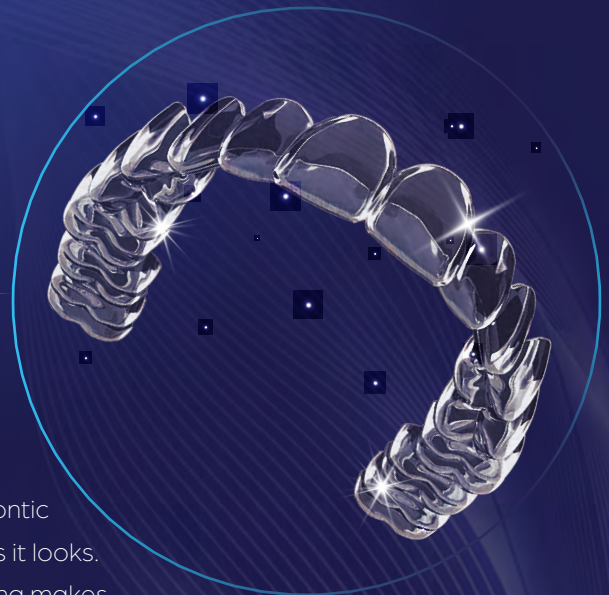
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**DR AVAN MOHAMMED**

Avan is an award-winning specialist orthodontist working in private practices in Marylebone, Islington and south Kensington.

**SRI JEGANATHAN**

Sri is a specialist orthodontist based in London, working in both private and NHS practices. She qualified from King's College London in 2007. She has worked in paediatric, general dentistry and oral maxillofacial surgery departments.

ENHANCED CPD**GDC anticipated outcome: C****CPD hours: one****Topic: Orthodontics****Educational aims and objectives:**

To discuss the role of soft tissues in the aetiology of malocclusions, orthodontic diagnosis and treatment planning. This article qualifies for one hour of enhanced CPD; answer the questions on page 96.



Malocclusion can be defined as a deviation of the occlusion from the norm that can result in an unsatisfactory aesthetic or function (Houston, Stephens and Tulley, 1992).

This could be a deviation from the norm in the dental, skeletal or soft tissues. There are two main factors that can affect the developing occlusion:

1. Genetics
2. Environment.

Genetics

Studies on twins have shown that arch form and development of the dentition is highly influenced by genetics (Townsend et al, 2008).

Environment

Proffit (1978) suggested that soft tissues can influence the developing dentition as they exert forces on teeth. The soft tissue environment produces an equilibrium of forces. These forces can be intrinsic (teeth and tongue), extrinsic (habits, such as thumb sucking), occlusal and periodontal membrane. This is known as the theory of equilibrium.

The eruption of teeth occurs in equilibrium with the surrounding soft tissues and teeth are therefore under the influence of the lips, cheeks on one side and the tongue on the other side.

Habits and diet can cause an imbalance in equilibrium and a new equilibrium being established. A change in the balance of the forces can result in a developing malocclusion.

Changes in the soft tissue profile during adolescence can have an impact on the developing occlusion. The position of teeth within the alveolar bone can be influenced by the surrounding soft tissues. Where there is a skeletal discrepancy, the soft tissues can influence the teeth, creating a dental alveolar compensation in an attempt to hide the discrepancy and find the best fit for the teeth in occlusion. Therefore, the evaluation of soft tissues

during patient examination is a critical step for accurate diagnosis and treatment planning.

There are a number of factors that can influence soft tissues, including age, gender and habits.

THE INFLUENCE OF THE LIPS

Lips are important for both smile and facial aesthetics. Age and gender influence the vertical growth of the lips. The upper lip growth is completed by the age of 14 in females and 16 in males. The lower lip growth continues in females for longer and is completed by the age of 16. After the age of 16, the upper lip will begin to thin in both genders. The average upper lip length is 20mm in females and 22mm in males. The lips are examined for thickness, length, morphology, tone, lower lip line and competence.

When assessing the patient in profile, lips can be examined using the relationship to the E-line – a line that runs from the tip of the nose to the chin point (Ricketts, 1959). The patient's profile can then be classified as normal when lips are on the E-line, retrusive (lips lie behind the E-line) or protrusive (lips lie ahead of the E-line).

This can influence the decision of whether to extract teeth or not during treatment planning.

If the patient's profile is already retrusive it is probably best to avoid extractions, as it will make the patient retrusive further. On the other hand, if lips are protrusive it may be best to extract.

Lip morphology

Lips that are flaccid, normal tone or highly active can have an effect on the position of the teeth. Where the lips are very active (strap-like) as a result of increased muscular activity, the upper and lower incisors may be retroclined. Lips with low tone may cause the proclination of incisors.

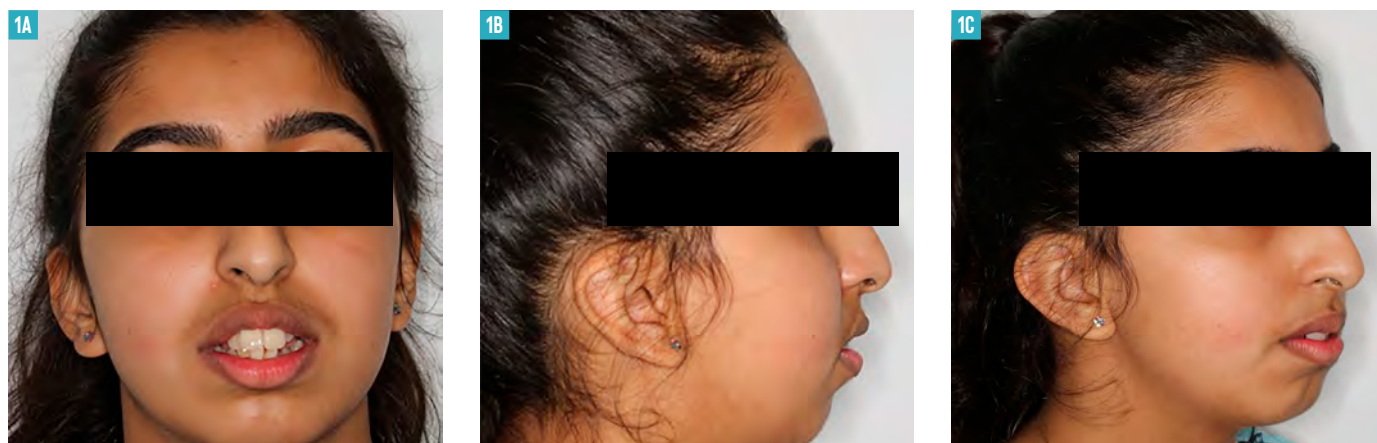
Lip line

The lower lip line refers to the vertical relationship between the lower lip and the maxillary incisors.

Avan Mohammed and **Sri Jeganathan** discuss the role of soft tissues in the aetiology of malocclusions, orthodontic diagnosis and treatment planning

Impact of soft tissues in orthodontics





FIGURES 1A to 1C: Lip incompetence at rest as due to excessive increase in lower anterior face height



FIGURE 2: Adaptive tongue thrust resulting in bimaxillary proclination of the incisors

In order to maintain stability of the incisors, the lower lip should cover one to two thirds of the upper incisors (Ballard, 1959).

A high lower lip line can cause the retroclination of the upper incisors, which is often the case in class II division II malocclusion. A very low lower lip line, on the other hand, can result in the upper incisor being proclined, which is often seen in class II division I malocclusions.

A deep labiomental fold is often associated with excessive lower lip activity. It can result in crowding of the lower incisors and retroclination.

Lip competence

Competent lips are lips that meet at rest without any effort. Potentially competent lips are lips that are separated only by proclined upper incisors as a result of an increased overjet. Incompetent lips occur when there is an excessive increase in the lower anterior facial height or when the upper lip length is short due to proclined upper incisors.

Lip-tooth relationship

In smile aesthetics, the incisor exposure should fit within the smile arc, the curvature of the upper incisors should match the curvature of the lower lip. At rest, 3 to 5mm of upper incisor show is considered the ideal and, on smiling, 8mm of incisor show to 2mm of gingival tissue (Ackerman et al, 1998). Peck and colleagues (1992) showed that the normal upper incisor show at rest for girls aged 15 is 5.3mm and 4.7mm for boys.

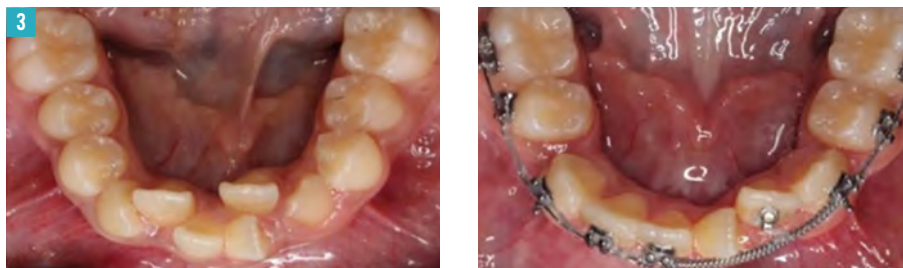


FIGURE 3: Severe rotation of LL1 (high risk of relapse)

THE TONGUE

During normal tongue swallowing, the lips are together, the tongue elevates to the palate and the teeth clench as the food passes to the pharynx. The size, position and function of the tongue can influence the position of the teeth.

Primary (endogenous) tongue thrust occurs as a result of excessive muscular activity that results in the tongue continuously being placed in an anterior position. Although this is a rare condition, it can occur in patients with neuromuscular defects such as those with Down syndrome or cerebral palsy.

A theory on oral posture and malocclusion by Mew (2004) suggests that the tongue must sit in the roof of the palate posterior to the upper incisors for good facial growth. If the tongue is in a lower position it will result in the development of a narrow maxilla, short mandible, increased vertical growth and crowding. Other features that present in tongue thrust include bimaxillary

proclination of incisors, reverse curve of Spee in both arches and a marked list. However, the evidence for this theory is weak, as the tongue is an adaptive organ that develops to fill in spaces.

Secondary or adaptive tongue thrust is more common and occurs when the tongue postures forward to make an oral seal to facilitate swallowing where an anterior open bite is present. This is also likely to be seen in patients with a class II division I malocclusion where the lips are incompetent.

Macroglossia or enlarged tongue can result in spacing of the lower incisors, bimaxillary proclination and an anterior open bite. Clinically, the tongue appears flat and protruding.

THE NOSE

The size, shape and position of the tongue affects the relative prominence of the lips. The nose grows more in the vertical direction than in the anterior-posterior direction.



FIGURE 4: Midline diastema caused by a large labial fraenum

ORO-NASAL FUNCTION

Enlarged adenoids are often associated with nasopharyngeal obstruction and mouth breathing in children.

Children with enlarged adenoids tend to have an increase in vertical growth, smaller mandible and dento-alveolar compensation in comparison to controls, 'long face syndrome' or 'adenoid faces' (Linder-Aronson, 1970; 1974).

The evidence suggesting that chronic nasal obstruction is an aetiological factor in the development of malocclusion is weak.

PERIODONTAL LIGAMENT

The periodontal ligament (PDL) undergoes occlusal and masticatory forces. Intrinsic forces from the PDL resist these forces. When the PDL is disturbed (for example, in periodontal disease) teeth will drift (Proffit, 1978).

The transseptal fibres in the PDL play a role in the high risk of relapse in treated cases of rotations and diastemas.

FRAENUM AND GINGIVAE

Large labial or lingual fraenum can result in a diastema between the incisors. A frenectomy is often indicated prior to orthodontic closure of the diastema. A common test for large fraenum is traction of the fraenum, which will result in blanching.

Retention can be an issue even after a frenectomy, therefore long-term retention is advised. Gingival hypertrophy can cause short clinical crowns. Crown lengthening or gingivectomy may be indicated in cases with excessive overgrowth of the gingivae.

Children with enlarged adenoids tend to have an increase in vertical growth, smaller mandible and dento-alveolar compensation in comparison to controls

MUSCULAR DYSTROPHY

This is a group of genetic disorders that causes progressive muscle weakness.

As a result of decreased muscle function, children with muscular dystrophy can have an increase in vertical dimensions, resulting in an anterior open bite.

DIGIT SUCKING

Prolonged digit sucking of more than six hours per day can result in local malocclusion. The severity depends on the duration, frequency and intensity of the thumb sucking.

In growing children, spontaneous correction of some of the dental effects will occur if the digit sucking habit is stopped (Larsson, 1987).

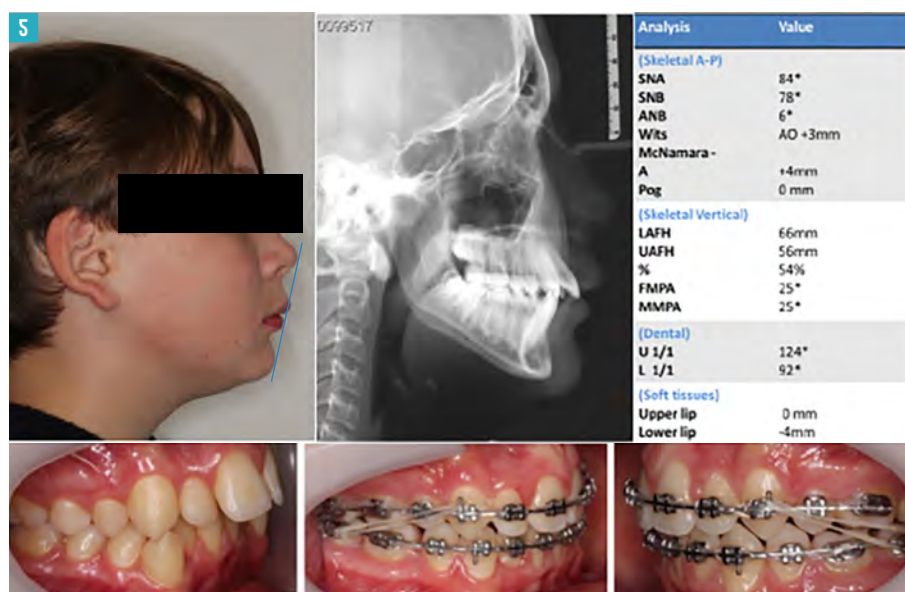


FIGURE 5: Class II div I malocclusion with lip incompetence and increased overjet in a 16-year-old



FIGURE 6: Class II div II malocclusion with retrusive profile and strap like lower lip causing proclination of UR2 and UL2 and retroclination of UR1 and UL1

Common features seen in patient with digit sucking include:

- Proclined upper and retroclined lower incisors
- Anterior open bite; often asymmetrical towards the side of the thumb sucking
- Narrow maxillary arch
- Posterior crossbites.

THE ROLE OF SOFT TISSUE IN DIFFERENT MALOCCLUSIONS

Class II division I

Patients with short upper lip may have proclined upper incisors as the teeth are out of lip support and control. This can cause or worsen a class II div I malocclusion, causing an increased overjet with or without an anterior open bite.

Digit sucking can cause a class II div I by proclining the upper teeth and causing a localised anterior open bite.

A common feature of this malocclusion is incompetent lips, which is often associated with tongue thrusting during speech and swallow as patients try to achieve an oral seal.

Vig and Cohen (1979) showed that lip competence improves with age as vertical lip growth continues until the age of 17. However, in non-growing patients with true lip incompetence, long-term stability is often poor.

Class II division II

Strap-like lower lip with increased mentalis muscle activity and a high lip line can result in the retroclination of the upper incisors.

The upper central incisors erupt before the lateral incisors and are the larger teeth. These teeth are often proclined in class II div II cases.

The lateral incisors, however, are often proclined by the lower lip. Excess muscular activity may result in the retroclination of both upper and lower incisors.

Class III

Soft tissues do not play a major role in the aetiology of class III. In fact, the reverse is true.

The soft tissues try to camouflage the underlying skeletal discrepancy by tilting the

The role of soft tissues must be considered during diagnosis, treatment and retention planning

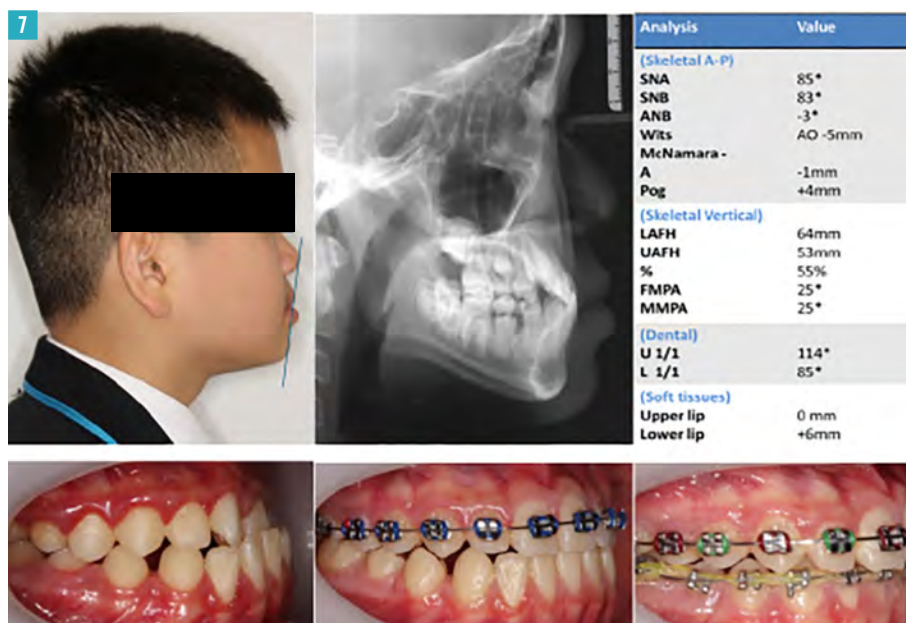


FIGURE 7: Class III malocclusion in a 16-year-old treated with camouflage orthodontic treatment

upper and lower incisors towards each other (dento-alveolar compensation) (Solow, 1980).

Vertical discrepancies

Digit sucking can cause an increase in the vertical dimension, resulting in an increased overjet, anterior open bite and over eruption of the posterior teeth.

Bimaxillary proclination

The contour of the lips can influence the position of the teeth. Everted lips can cause bimaxillary proclination in skeletal I or mild skeletal II patients.

Transverse discrepancies

During thumb sucking, the tongue rests in a lower position in the floor of the mouth and the buccinator muscles contract. This results in a reduced pressure and a narrow maxilla.

A unilateral crossbite is likely to occur on the side where the thumb rests.

CONCLUSION

Soft tissues are important as they contribute to facial aesthetics and functional stability and hence can limit the orthodontic treatment. If habits are present, it is important to eliminate them.

Understanding the soft tissue aetiology of the malocclusion must play a role in the treatment planning, as stability can be a problem.

Teeth exist in a state of equilibrium with the surrounding soft tissues. Malocclusion develops when this equilibrium is disturbed. The role

of soft tissues must be considered during diagnosis, treatment and retention planning.

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DR KARLA SOTO TALKS ABOUT INVISALIGN SMILE ARCHITECT

INVISALIGN SMILE ARCHITECT: A GAME CHANGER

Invisalign Smile Architect is the next chapter in ortho-restorative dentistry and beyond. Using the words “game changer”, that’s a big statement, but what can I say – I think it’s really going to elevate the industry as a whole.

‘Ever since my residency, I’ve always been taught to look at the big picture. That’s my philosophy. We’re not just looking at a one tooth problem, not just patching up something and have it keep breaking. It’s about full, comprehensive care, being able to get into detail and walk the patient through their journey to health. Invisalign Smile Architect makes treatment planning so much more predictable, so much more efficient, and so much more fun. And it’s all in one place. Before Invisalign Smile Architect when creating a comprehensive ortho restorative treatment plan, the process was so fragmented, so disjointed. We had wax-ups, and drawings, and pictures, and smile designing apps, and photo editing, and all kinds of things to try to put everything together. But now it’s all integrated in one seamless place.

‘Invisalign Smile Architect is also a huge collaboration tool. You can share your plan with your team, collaborate with your specialists, your periodontist, with orthodontists. It’s a place where you’re all coming together to transform your patient’s life.

‘I have a friend, who is also my patient, and I’ve been trying to get him in treatment for years, and he just really wasn’t going for it.

‘He couldn’t see what I could see. I get it totally – you tell a patient: “Hey, I promise we’ll get you your perfect smile in two years”, but then have no proof. That’s a lot to commit to.

‘But with Invisalign Smile Architect, his mind completely changed – it was a full 180-degree turnaround because he could

actually see the image in his own face – and that’s transformation.

‘You can promise your patient this will be your smile by next summer, by next holiday, by your wedding – you can confidently say that. And that is huge. Because to me, my word is my bond. And it should be for you too. It really is so powerful and it makes you so powerful. You’re already doing some aligner cases, some cosmetic treatments, but just wait – you’re going to become this super cool GP and you’re going to be unstoppable.’

ABOUT INVISALIGN SMILE ARCHITECT

Invisalign Smile Architect ortho-restorative treatment planning software combines orthodontic and restorative planning in a single platform. This provides doctors with a complete ecosystem for the visual planning of orthodontic treatment and restorative dental care.

The platform, which celebrated its first anniversary in February, combines ortho-restorative planning based on the patient’s smile design integrated into Invisalign’s ClinCheck software, ensuring flexibility throughout treatment planning to address the varying ortho-restorative needs of patients.

The technology combines smile design, digital tools and treatment planning to help Invisalign providers achieve the best clinical results. This includes key integrated functions: specific 3D modifications to facilitate ortho-restorative analysis and restoration, as well as multi-layer visualization of the dental mass.

The software also leverages enhanced visualisation to make complex, multi-step treatment plans easy for patients to understand, inspire treatment acceptance, to help clinicians achieve their desired smile design goals with greater predictability and provide exceptional patient experiences. [📄](#)



Dr Kara Soto has been in practice since 2007 in Boca Raton, Florida

INVISALIGN

For more information, visit
www.invisalign.co.uk/provider/smilearchitect.



Complex open bite cases: part one

In this first part of a series on treatment planning in complex open bite cases with a modern protocol, **Christian Leonhardt** discusses utilising the airway-facially generated treatment planning pyramid

Orthodontic and prosthodontic treatment planning for complex open bite cases has seen remarkable evolution in recent years, marked by a shift towards holistic approaches that consider not only dental aesthetics and occlusion, but also the intricate connections between oral health, facial structure, airway functionality and overall wellbeing.

This shift has given rise to the concept of airway-facially generated treatment planning (AFGTP), which encompasses a comprehensive framework beginning with airway assessment, progressing through facially generated treatment planning, orthodontics, biomechanics, and concluding with periodontal considerations.

- Understanding complex open bite cases: complex open bite malocclusions represent a significant challenge in orthodontics and prosthodontics. In the past, treatment often centred solely on aligning teeth and optimising occlusion. However, contemporary insights have revealed that open-bite cases are multifactorial in nature, involving not only dental factors but also skeletal, muscular, functional, and airway-related components
- Facially generated treatment planning (FGTP) and airway and facially generated treatment-planning (AFGTP) represents a groundbreaking approach that departs from traditional orthodontic planning by emphasising the patient's facial characteristics,



FIGURE 1: Initial situation with intraoral problem areas highlighted: anterior open bite, crowded teeth, negative crown torque, early beginnings of black triangles, hanging posterior corridors, thin biotype and early recessions

- growth patterns, and the dynamic interplay between the facial skeleton, soft tissues, and occlusion. FGTP recognises that achieving optimal outcomes in open bite cases requires a profound understanding of the facial aesthetics and the impact of treatment on facial harmony
- Airway assessment is a fundamental pillar. One of the most significant advancements in modern orthodontics and prosthodontics is the integration of airway assessment into treatment planning. Recent research has underscored the intricate connection between orthodontic issues, including open bites, and compromised airway function. The assessment of airway dimensions, nasal breathing, and potential obstructive sleep apnoea risk factors has become a cornerstone of the diagnostic process

- Orthodontics and aligner therapy. The toolbox of orthodontic treatment has expanded to include innovative modalities such as clear aligner therapy, which offers enhanced patient comfort, aesthetics and compliance. These treatments can seamlessly integrate into a comprehensive AFGTP, addressing both the aesthetic and functional aspects of open bite malocclusions while maintaining a patient-centric approach
- The role of biomechanics. Effective biomechanics is pivotal in the treatment of open bite cases. Modern orthodontics offers advanced materials, appliances, and techniques that provide precise control over tooth movement and jaw position. Incorporating biomechanical principles into AFGTP enables

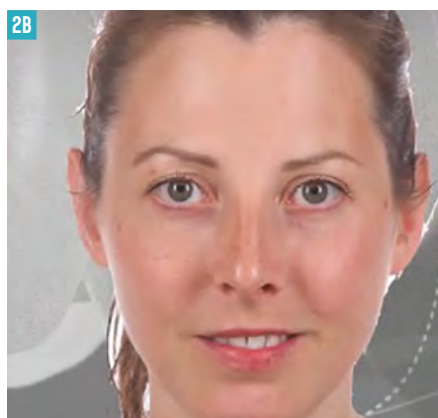


DR CHRISTIAN LEONHARDT

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.

practitioners to achieve the desired occlusal and skeletal outcomes while minimising the risk of relapse

- Periodontal considerations. Long-term success in orthodontic and prosthodontic treatments is closely tied to periodontal health. Open bite cases often present periodontal challenges due to altered force distribution and occlusal contact patterns. A comprehensive AFGTP must account for these considerations, ensuring that periodontal health is preserved or improved during and after treatment
- The holistic approach: AFGTP. The AFGTP approach presented in this series of articles is an integrated method that takes into account the entire craniofacial system, from airway assessment to facially generated treatment planning, orthodontics, biomechanics, and periodontal health. Implementing AFGTP requires collaboration among orthodontists, prosthodontists, and other dental specialists, as well as ongoing interdisciplinary communication and a commitment to continued education.



FIGURES 2A and 2B: Extraoral photographs, highlighting gummy smile, high lip mobility, asymmetric arch forms, asymmetric hanging posterior corridors, no competent lip closure and recessions

Throughout this series, we will delve deeper into each aspect of the AFGTP approach, providing valuable insights, clinical examples, and evidence-based strategies. As the field of dentistry continues to advance, adopting a holistic treatment planning model like AFGTP that considers all facets of patient health and wellbeing will be crucial in achieving optimal outcomes for our patients.

Open bite cases, once considered challenging, can now be managed comprehensively, resulting in improved function, aesthetics, and long-term stability for our patients.

CASE REPORT

A 31-year-old female patient presented with a comprehensive list of dental and periodontal concerns. The complexity of this case necessitated a detailed examination and a multidisciplinary treatment approach to address her unique needs effectively.

Intraoral findings

The intraoral examination found (Figure 1):

- Anterior open bite. The most prominent feature of this case was the anterior open bite, where there was a lack of vertical overlap between the upper and lower anterior teeth when in centric relation or maximal intercuspation. This malocclusion resulted in impaired aesthetics and functional challenges for the patient, affecting her overall quality of life
- Crowded teeth. The patient exhibited crowding in both the maxillary and mandibular arches. Crowding can exacerbate open bite issues by further preventing proper alignment of the teeth, thus compounding both aesthetic and functional concerns
- Negative crown torque. Negative crown torque was evident, where the anterior teeth exhibited an inclination in a labial direction. This can further contribute to the open bite problem and negatively impact facial aesthetics
- Early beginnings of black triangles. The patient also presented with early signs of black triangles, particularly in the anterior teeth. This is a common concern in open bite cases and can be exacerbated by the negative crown torque and thin periodontal biotype
- Thin phenotype and biotype. The patient's thin periodontal phenotype and biotype indicated a susceptibility to periodontal issues. This is crucial information for treatment planning, as it highlights the need for a meticulous approach to prevent or manage potential gingival recessions
- Early recessions. Early gingival recessions were already evident, especially in the lower

anterior region. Open bite cases often have unique periodontal challenges due to altered force distribution and occlusal contact patterns, which can contribute to recession.

These clinical findings underscored the complexity of this open bite case. It is imperative to approach the treatment comprehensively, considering both orthodontic and periodontal aspects to achieve favourable outcomes.

A review of the literature reveals that these symptoms are often interconnected in open bite cases (Proffit et al, 2013; Scalioni et al, 2018; Kassab and Cohen, 2003).

This interconnectedness emphasises the need for an integrated treatment plan that addresses not only the dental and orthodontic components but also the periodontal health of the patient.

Extraoral findings

In addition to the intraoral findings, the extraoral aspects of this complex open bite case were equally noteworthy and warranted thorough assessment.

The patient's extraoral presentation comprises a combination of gummy smile, high lip mobility, asymmetric arch forms, asymmetric hanging posterior corridors, the absence of competent lip closure, all of which are compounded by her young age and the presence of gingival recessions, thin periodontal biotype, and thin phenotype (Figures 2a and 2b).

The extraoral examination revealed:

- Gummy smile. The patient exhibited a gummy smile, characterised by excessive gingival display when smiling. This aesthetic concern can result from multiple factors, including altered maxillary vertical development, dentoalveolar extrusion, or excessive upper lip mobility
- High lip mobility. High lip mobility was evident, where the upper lip could be retracted significantly, exposing a significant portion of the gingiva. This mobility can contribute to the gummy smile and complicate treatment planning
- Asymmetric arch forms. The presence of asymmetric arch forms was a notable feature in the extraoral presentation. Such asymmetry can impact facial aesthetics and the overall harmony of the patient's smile
- Asymmetric hanging posterior corridors. This refers to the visible space between the posterior teeth and the corners of the mouth when smiling. The presence of these corridors can affect facial balance and aesthetics
- Lack of competent lip closure. The patient also exhibited a lack of competent lip closure, which can exacerbate the gummy smile issue and contribute to challenges in maintaining periodontal health



- Combination with young age and existing recessions. The patient's age, combined with the presence of gingival recessions, a thin periodontal biotype, and thin phenotype, was a particularly complex aspect of this case. Young patients often present with orthodontic and periodontal challenges, and the presence of recessions in such cases necessitates a meticulous approach to treatment planning.

The complexity of this extraoral presentation underscored the need for an interdisciplinary approach to address both the dental and facial aesthetic aspects of the patient's condition.

Recent literature emphasises the importance of considering the interplay between dental and facial aesthetics in treatment planning for gummy smiles and other aesthetic concerns (Sarver, 2001; Kokich, Kiyak and Shapiro, 1999; Peck, Peck and Kataja, 1992; Kaku et al, 2012).

This integrated approach ensures that the patient's aesthetic goals are met while preserving or enhancing periodontal health.

The combination of these extraoral factors with the existing intraoral complexities necessitates a comprehensive treatment approach that addresses both aesthetic and functional aspects, taking into account the patient's age and periodontal condition.

Treatment protocol

The airway-facially generated treatment planning pyramid (AFGTP-pyramid) represents a groundbreaking and comprehensive treatment protocol for addressing complex open bite cases (Figure 3).

This innovative approach is designed to address the interconnected aspects of airway, dentofacial, functional, biomechanical and periodontal concerns, offering a holistic

framework to achieve optimal outcomes in challenging clinical scenarios.

Airway assessment

The foundation of AFGTP-pyramid begins with a thorough evaluation of the patient's airway. This step is essential, as compromised airway function can significantly impact both dentofacial development and overall health.

Airway concerns encompass a range of issues, including snoring, sleep apnoea, insomnia, restless sleep, and excessive daytime sleepiness.

Understanding both anatomic and non-anatomic factors affecting the airway is crucial, as they can contribute to malocclusions, facial development and systemic health.

Dentofacial evaluation

Once the airway assessment is completed, attention turns to the dentofacial component.

This phase involves a detailed examination of teeth and their position within the facial architecture. It explores the interplay between dental aesthetics and facial harmony, ensuring that treatment planning aligns with the patient's facial characteristics and expectations.

Functional considerations

The functional dimension of AFGTP-pyramid delves into bite and joint concerns, including issues like premature wear, joint sounds and muscle pain.

The evaluation of the patient's occlusion and occlusal vertical dimension (OVD) is critical. By addressing functional concerns, the treatment plan aims to restore proper occlusal relationships and mitigate potential long-term issues related to malocclusion and joint disorders.

Biomechanical analysis

Biomechanics in AFGTP-pyramid scrutinises tooth structure and restoration concerns. This phase ensures that any required tooth movement or restoration is executed with precision, preserving dental health and optimising long-term outcomes.

Attention to biomechanics minimises the risk of complications and relapse, promoting stability in complex open bite cases.

Periodontal considerations

The apex of AFGTP-pyramid is dedicated to periodontal gum and bone concerns. These include inflammation, gingival recessions, bone loss, and tooth angulation issues.

Given the multifactorial nature of open bite cases, periodontal health plays a pivotal role in overall treatment success.

AFGTP-pyramid integrates strategies to prevent, manage or improve periodontal conditions, ensuring a healthy foundation for orthodontic and prosthodontic interventions.


A PARADIGM SHIFT

The AFGTP-pyramid approach represents a paradigm shift in the management of complex open bite cases. It acknowledges the intricate relationships between various facets of oral health, facial aesthetics, and overall wellbeing.

Furthermore, this protocol recognises that a one-size-fits-all approach is inadequate for addressing the diverse challenges presented by each patient.

This approach is well-supported by current literature (Proffit et al, 2013; Gu et al, 2011; Zymperdikas et al, 2016), which underscores the importance of considering airway health, dentofacial features, functional aspects, biomechanics and periodontal conditions in treatment planning for open bite cases.

By integrating these dimensions into a unified framework, AFGTP-pyramid offers a more holistic and patient-centred approach to complex open bite cases, ultimately enhancing the quality of care and long-term outcomes for our patients.

By adhering to the principles of AFGTP-pyramid and drawing insights from current research, clinicians can deliver personalised treatment that optimally addresses the unique needs of each patient while achieving lasting and aesthetically pleasing outcomes. 

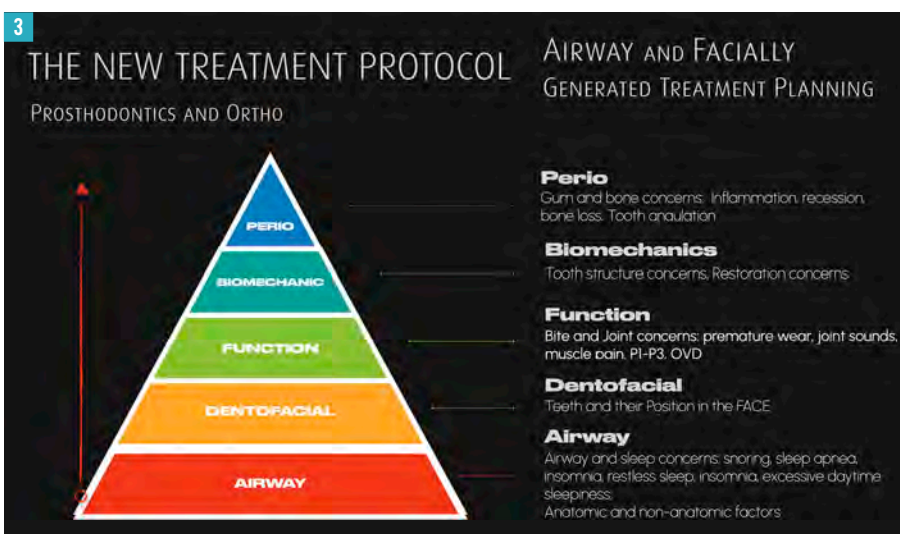


FIGURE 3: The airway-facially generated treatment planning pyramid

COURSE INFORMATION

Christian's Advanced Aligner Treatment Planning course takes place on 27-29 June in Amersham. For details, visit theorthodonticspecialist.co.uk/courses.

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In association with GC UK and NSK, Trycare are running a series of full-day workshops by Joan Mach, one of Europe's leading exponents in minimally invasive aesthetic and restorative dentistry. Joan will cover all the key points for achieving excellence in direct anterior composites using a biomimetic and non-invasive approach. This will include how to accomplish outstanding aesthetic results and long-lasting treatments in the anterior region using the latest products, including Tokuyama's Estelite Sigma Quick.

Featuring the use of silicon matrices, layering processes for complex class IV restorations, finishing and polishing, and much more, live demonstrations and hands-on practice will help delegates to recreate nature and achieve natural lifelike results.

Offering six and half hours of CPD with learning objective C, the workshops will be held in Birmingham (Friday 14 June) and London (Saturday 15 June). The course fee is £495 plus VAT including all course materials and refreshments.

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COMPREHENSIVE PORTFOLIO ON DISPLAY

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Known for supporting clinical excellence across dentistry, Straumann Group demonstrated an array of its industry-leading brands at the recent British Dental Conference & Dentistry Show Birmingham.

Implant dentists had an opportunity to discover the different implant systems available, including those from Straumann, Neodent and Anthogyr. With varying features, these solutions afford a spectrum of benefits for different patients and situations.

Clinicians interested in providing predictable aligner treatment were interested to discuss the Clearcorrect system, which offers an unparalleled level of customisability and control of tooth movements.

Other brands on display included Medentika and Dental Wings, showing the breadth of Straumann Group's comprehensive product portfolio.

www.straumann.com



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The software can detect a vast range of pathological and non-pathological conditions, including the presence of caries, implants and fillings, and highlights them within the interactive chart.

Not only does this aid your diagnostic workflows, but the chance to immediately analyse the dentition and receive a visual, easy-to-interpret result can also help patient interactions in the very same appointment as the initial scan.

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Neodent Grand Morse implant system improves oral health-related quality of life for edentulous patients, including those with a severely atrophic maxilla. The optimised implant designs from Neodent achieve high primary stability in all bone types, even with different conditions of the residual alveolar bone. The Neoarch immediately restores function and natural-looking aesthetics thanks to the stable foundation.

www.neodent-uk.co/portal



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Due to its very fast action, Blancone treatments are not aggressive, do not dehydrate the enamel and do not induce pain or sensitivity, so no desensitising or remineralisation agents are required.

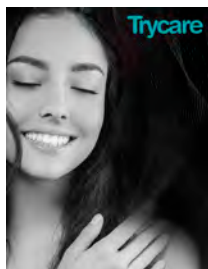
No gingival barriers are required, which saves time and money. The treatment is the ideal add-on to EMS guided biofilm therapy and can be combined with the hygiene appointment.

Offering a new approach to tooth whitening, based upon new photochemical technologies, Blancone treatments can be repeated regularly and are the gateway to more intensive treatments if required.

Blancone's photochemical gels include two special components that break down the peroxide in such an effective way and at a speed that cannot be achieved by the chemical reactions of traditional whitening systems.

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TOGETHER TOWARDS THE FUTURE

Ivoclar

The Ivoclar Group has announced a partnership with the American technology company Sprinray. Ivoclar is now setting new standards in the field of 3D printing with this cooperation.

During Sprinray's 3Dnext event in Miami, USA, Ivoclar's CEO Markus Heinz and Sprinray's CEO Amir Mansouri shared their joint vision with the dental sector.

Markus Heinz said: 'We are very pleased to partner with Sprinray – an equal partner with whom we want to set new standards together. The philosophies of our companies complement each other perfectly and we are striving to provide our customers with the best possible support in their daily work.'

Amir Mansouri added: 'Ivoclar and Sprinray both have extensive internal dental expertise. Our aim is to really understand the problems and needs of our customers in order to provide optimally coordinated solutions. With Ivoclar, we are delighted to have one of the dental industry's leading material manufacturers at our side.'

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With Zirkonzahn's new Detection Eye intraoral scanner, the patient's jaw can be easily digitised in less than 60 seconds. The scanner is easy to use and the choice of two different tips (standard and small) makes the impression taking more comfortable. The scanner is lightweight, compact and ergonomic. Scanning areas don't need to be pre-treated with powder and its art can be rotated to reach the most ergonomic posture.

Once the data has been captured, it can be quickly loaded into the Model Maker software module. The produced model is then transferred to the new Zirkonzahn.Slicer software, where it is placed on the virtual printing platform. If needed, special supports can be also generated. The software is conceived for the dental workflow and pre-configured with settings for a seamless and well-calibrated printing process.

At this point, the generated 3D printing data is transferred to Zirkonzahn's P4000 printer either via USB, LAN or Wifi and the large printing volume (20x12.5x20cm) permits the simultaneous production of, for instance, up to 21 Geller models or 15 dental arches. The P4000 system for 3D printing works ideally in combination with the Printer Resins and the Printer Resins Waterbased by Zirkonzahn.

The model can be cleaned in an ultrasonic bath and then cured in the L300 Post-Curing Lamp. It can be mounted into the PS1 articulator or ZS1 Mini-Arti to check the patient's jaw movements without using plaster thanks to the new Jawaligners PS1 or ZS1 (magnetic spacer plates).

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Bond Apatite sets hard, so it won't wash away even in the presence of blood and saliva. Because of this, there is no need for a membrane, which saves additional time and unnecessary expense.

There is no need to achieve tension-free closure, this is actually contra-indicated, or even complete primary closure for gaps less than 3mm. Small dehiscences can be left exposed without any risk of infection or breakdown. Larger dehiscences can be protected by suturing an Augma Shield protective layer over it.

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 and over 95% new bone after eight months.

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BSSPD ORAL AWARD WINNER

Schottlander

The BSSPD in association with Schottlander oral prize was awarded to Dr Rachael Jablonski from the University of Leeds for her presentation entitled 'The impressed study: improving facial prosthesis construction with contactless scanning and digital workflow'. This translational research project explored the impact of digital manufacturing on facial prosthesis production by using basic science, patient orientated and early population-based research. The feasibility randomised control trial recruited 15 participants and had a 27% attrition rate. Around 45% of participants preferred the digitally manufactured facial prostheses compared with 27% who preferred the conventionally manufactured prostheses. The qualitative sub-study recruited 10 participants. Most participants (90%) preferred the digital manufacturing processes. Participants were averagely willing to trade off a three-month wait to commence treatment if it meant they could undergo the digital manufacturing processes. Public engagement activities have been co-developed with patients, artists, clinicians and researchers to disseminate research findings and share the lived experience of people with facial prostheses. Arts exhibition based dissemination events are planned in 2024.

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GENERAL DENTISTRY CD/JUNE/JULY/HOWARD/PAGE 17

1. How many conditions does the author state a desired treatment outcome is dependent upon?
 - ☐ a. Three
 - ☐ b. Five
 - ☐ c. Seven
 - ☐ d. Nine
2. What percentage of the population of the USA and Canada are estimated to identify as transgender?
 - ☐ a. 0.1-0.5%
 - ☐ b. 0.5-0.6%
 - ☐ c. 0.6-1.0%
 - ☐ d. 0.9-1.0%
3. Which of the following does the author not state as a significant difference between male and female anterior teeth?
 - ☐ a. Anatomical shape
 - ☐ b. Surface texture
 - ☐ c. Tooth shade
 - ☐ d. Facial gingival contours
4. Masculine teeth tend to have:
 - ☐ a. Straighter and more angled incisal edges
 - ☐ b. Softer and rounder incisal edges
 - ☐ c. Curved and shorter mesial and distal contact zones
 - ☐ d. Facial line angles closer set

AESTHETIC DENTISTRY CD/JUNE/JULY/DIXIT/PAGE 30

1. In this case, during the examination, it was noted that which tooth had fractured?
 - ☐ a. Lower left first molar
 - ☐ b. Lower left second molar
 - ☐ c. Lower right first molar
 - ☐ d. Lower right second molar

2. How many aligners were needed to complete the patient's tooth alignment?
 - ☐ a. 10
 - ☐ b. 15
 - ☐ c. 18
 - ☐ d. 22
3. For the composite bonding on the upper arch using the injection moulding technique, what shade of G-aenial Injectable was used?
 - ☐ a. A1
 - ☐ b. A2
 - ☐ c. B2
 - ☐ d. JE
4. What was found at the patient's six-month review?
 - ☐ a. The material had chipped
 - ☐ b. The material was holding up well
 - ☐ c. The material had lost lustre
 - ☐ d. The material had discoloured

DIGITAL DENTISTRY CD/JUNE/JULY/FIELD/PAGE 43

1. According to the author, what is one of the cornerstones of good clinical dental photography?
 - ☐ a. Specialist kit
 - ☐ b. Consistency
 - ☐ c. A compliant patient
 - ☐ d. Hands-on training
2. To achieve consistent results, the author recommends a customised setup, consisting of what?
 - ☐ a. DSLR camera body
 - ☐ b. Dedicated macro lens
 - ☐ c. Macro flash
 - ☐ d. All of the above
3. What is natural daylight in the region of?
 - ☐ a. 3,500K
 - ☐ b. 4,500K
 - ☐ c. 5,500K
 - ☐ d. 6,500K

4. What do consistently well exposed and in focus pictures rely on?
 - ☐ a. ISO
 - ☐ b. Shutter speed
 - ☐ c. Aperture
 - ☐ d. All of the above

ENDODONTICS CD/JUNE/JULY/SINGH VIRDEE/ PAGE 52

1. According to the European Society of Endodontology (ESE) 2006 quality guidelines, how many indications are there for endodontic retreatment?
 - ☐ a. Two
 - ☐ b. Three
 - ☐ c. Four
 - ☐ d. Five
2. According to the author, how will patients attending a consultation for a root filled tooth often present?
 - ☐ a. Asymptomatic with or without previous acute episode
 - ☐ b. Symptomatology consistent of endodontic pain
 - ☐ c. Symptomatology inconsistent with endodontic pain
 - ☐ d. All of the above
3. Suspensions of a non-odontogenic origin for the pain should be raised if the patient describes the pain as:
 - ☐ a. A tingling or burning sensation
 - ☐ b. Dull
 - ☐ c. Long lasting
 - ☐ d. Throbbing
4. What does the author recommend if a patient is symptomatic in the absence of obvious clinical signs and symptoms from the tooth in question?
 - ☐ a. Further investigations, such as a small field of view CBCT examination
 - ☐ b. An actionable radiology report
 - ☐ c. Referral to an orofacial pain clinic
 - ☐ d. All of the above

IMPLANT DENTISTRY CD/JUNE/JULY/BOOGAARD/ PAGE 63

- When was implant placement in extraction sockets introduced by Lazarra and colleagues?
 - ☐ a. 1985
 - ☐ b. 1987
 - ☐ c. 1989
 - ☐ d. 1991
- What benefit does the author mention about putty?
 - ☐ a. It is moldable
 - ☐ b. It can gently be placed
 - ☐ c. It is easy to apply in-between the socket-shield and the implant
 - ☐ d. All of the above
- In the case presentation, which tooth was severely damaged and needed to be replaced with an implant?
 - ☐ a. UL1
 - ☐ b. UL2
 - ☐ c. UL3
 - ☐ d. UL4
- According to the author, how might the complication have been prevented in the case?
 - ☐ a. By taking a CBCT beforehand
 - ☐ b. By using a different bone grafting material
 - ☐ c. By using a different treatment technique
 - ☐ d. There was no complication in this case

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- What symptom is commonly associated with perimenopause and menopause phases?
 - ☐ a. Hot flashes
 - ☐ b. Mood swings
 - ☐ c. Changes in libido
 - ☐ d. All of the above
- What key oral health issue is typically observed during perimenopause and menopause phases?
 - ☐ a. Periodontal disease
 - ☐ b. Increased salivary flow
 - ☐ c. Enlarged tonsils
 - ☐ d. Swollen tongue
- The author states effective management of oral health during perimenopause and menopause requires a multifaceted approach. What does this encompass?
 - ☐ a. Preventive strategies
 - ☐ b. Regular dental care
 - ☐ c. Targeted treatment interventions
 - ☐ d. All of the above
- What does the author recommend when it comes to addressing xerostomia?
 - ☐ a. Avoiding alcohol-containing mouthwash
 - ☐ b. Chewing sugar-free gum
 - ☐ c. Increasing sugar consumption
 - ☐ d. Drinking alcohol

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- What do the authors suggest is a critical step for accurate diagnosis and treatment planning during the patient examination?
 - ☐ a. The evaluation of soft tissues
 - ☐ b. The evaluation of TMJ
 - ☐ c. The evaluation of arch form
 - ☐ d. The evaluation of habits
- In females, upper lip growth is completed by what age?
 - ☐ a. 12 years
 - ☐ b. 14 years
 - ☐ c. 16 years
 - ☐ d. 18 years
- How do the authors describe 'competent lips'?
 - ☐ a. Lips that are separated by proclined upper incisors as a result of an increased overjet
 - ☐ b. Where the upper lip length is short due to proclined upper incisors
 - ☐ c. Lips that meet at rest without any effort
 - ☐ d. Where there is an excessive increase in the lower anterior facial height
- According to Peck and colleagues (1992), what is the normal upper incisor show at rest for boys aged 15?
 - ☐ a. 3.5mm
 - ☐ b. 4.7mm
 - ☐ c. 5.3mm
 - ☐ d. 8mm

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