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February 2025
Vol 5 No 2



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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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A DAY OF DISCOVERY



Welcome to the February issue of *Clinical Dentistry*!

With less than a month to go until the North of England Dentistry Show, it's all systems go for the FMC team!

We're busy putting the finishing touches on plans to ensure the UK's most vibrant dental conference will be the best one yet when it returns to Manchester on Saturday 8 March 2025.

With inspirational lectures, the latest innovations on display and plenty of networking opportunities, the show has everything you need to flourish in your career – and it's all free of charge.

For those looking to find new clinical inspiration, top up recommended CPD or gain fresh business insight, the show's got you covered!

More than 70 speakers will be delivering over 40 hours of lectures, covering everything from cosmetic bonding techniques and digital screenings to the secrets of effective financial planning and oral care for oncology patients.

Ash Jones, the personal branding guru behind Steven Bartlett and Gary Neville's explosive social media success, will kick off proceedings as headline speaker. Ash will be sharing the insights that helped the leaders of some of the world's biggest companies turbo charge their personal profiles.

As a globally respected pioneer in the world of personal branding, Ash will lift the lid on the principles behind cultivating a great individual brand, sharing practical hints and tips anyone can take away and use. Whether you're looking to expand your profile to attract more patients, find more referrals or even establish yourself as a key opinion leader, Ash's insights will help you grow.

To whet your appetite for what you can expect to discover at the show, in this issue you'll find clinical articles from some of the speakers, including Robbie Hughes (page 32), Alessandro Cucchiario (page 28) and Kiran Shankla (page 22).

With hours of verifiable CPD sessions from some of the UK's most exciting speakers on offer, not to mention more than 100 of the UK's most innovative dental companies sharing their latest developments, the North of England Dentistry Show is the perfect place to access the technology and insight you need to grow.

Register for free today: you won't want to miss this! I'll see you there.



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Back and better than ever!

The [North of England Dentistry Show](#) returns to Manchester this March.

Don't miss out: register for free today

The UK's most vibrant dental conference returns to Manchester on 8 March 2025 for a show that you won't want to miss.

Bringing fresh insights and deeper connections, the North of England Dentistry Show will open up the world of dentistry to visitors like never before. Totally free to attend, the show has something for everyone, from hours of verifiable CPD and unbeatable networking opportunities to the chance to hear from some of the UK's most exciting speakers.

With more than 100 of the UK's most innovative dental companies sharing their latest innovations, it's the perfect place to access the technology and services you need to grow.

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As you would expect, the speaker line-up is second to none. Headline speaker, Ash Jones – the personal branding guru behind Steven Bartlett and Gary Neville – will share insights behind great personal branding, with practical hints and tips anyone can take away and use. Whether you're looking to expand your profile to attract more patients, find more referrals or even establish yourself as a KOL, this is your chance for a face-to-face with the man in the know.

In addition, you can also hear from some of the most respected names in the dental profession, including Mervyn Druian, Mark Topley, Biju Krishnan, Shaz Memon, Robbie Hughes, Kiran Shankla, Pat Langley, Alan Clarke, Kristina Vaitelyte, and many more. [C](#)


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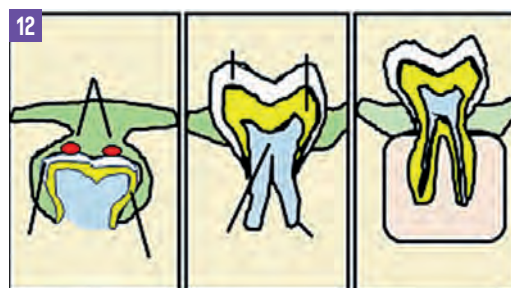
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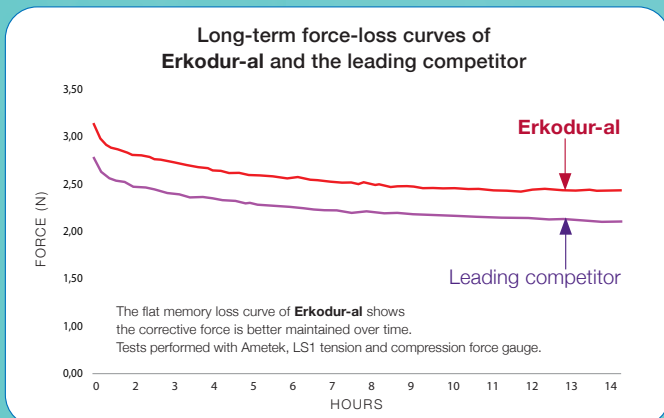
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GENERAL DENTISTRY

MAKYLE KHAN

Enamel and dentine: evolutionary significance

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Enamel and dentine have a symbiotic relationship with one another (Zhang et al, 2014). The combination of the two tissues allows the tooth to be both a shock absorber and flexible when it comes to the mechanical breakdown of food via occlusion and chewing – Makyle Khan, p12

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

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: General dentistry

Educational aims and objectives:

To explore enamel and dentine, examining their protective mechanisms, adaptive advantages and their structural significance. This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



Teeth have evolved over millions of years to fulfil functions in various organisms. The main purpose of our teeth is to facilitate the mechanical breakdown of food during mastication. However, teeth also aid in speech articulation by allowing the formation of certain sounds. This is enabled by how the tongue positions itself against the teeth.

Tooth embryology reveals the blueprint of the ‘architecture’ that makes up our teeth. It is composed of four stages: bud, cap, bell and crown stage. Both enamel and dentine are a product of this process, which makes embryology a crucial stage in determining the development of our teeth.

Teeth comprise four tissues:

1. Enamel
2. Dentine
3. Pulp
4. Cementum.

Enamel and dentine, the two primary components of teeth, play pivotal roles in their structure, function and survival. This article looks to examine their protective mechanisms, adaptive advantages and their structural significance.

Enamel is the outer visible layer of the tooth; it is the hardest mammalian tissue. It serves to protect the tooth due to its wear resistant qualities, as it is the most mineralised tissue within the tooth. Dentine is the tissue beneath the enamel and makes up most of the tooth. It’s yellow and less mineralised than enamel so it is softer. However, enamel and dentine have a symbiotic relationship that provides support to the tooth.

TOOTH EMBRYOLOGY

Teeth develop and erupt at different times and each tooth undergoes the same process with some differences in some stages. Five weeks post

fertilisation, the embryo plans events that will occur in five to 10 years with regards to how the teeth will develop in the mouth.

There are four stages in the development of the tooth germ:

1. Bud stage
2. Cap stage
3. Bell stage
4. Crown stage.

The bud stage occurs at week eight of intrauterine life (Rathee and Jain, 2023). Here, the enamel organs (mixture in population of cells) emerge. This is due to swellings of the dental lamina, which are influenced by mesenchymal cells.

The cap stage follows the bud stage and here the enamel organ grows and expands. The dental papilla forms via the condensation of the mesenchymal cells and this later gives rise to dentine and the pulp of the tooth. The enamel organ is surrounded by the dental follicle, and this later forms the periodontal ligaments (Rathee and Jain, 2023). The bell stage, which comes next, is one of the most important in forming enamel and dentine. Dentinogenesis occurs, which creates dentine. Immediately after dentine has formed, amelogenesis occurs, which is the process of creating enamel.

The crown stage, also known as the advanced bell stage, forms the hard tissues of the tooth and occurs when dentine and enamel have been formed completely.

Enamel is assembled from cells derived from the ectoderm, whereas dentine, cementum, pulp, periodontal ligaments (PDL) and alveolar bone are derived from the neuro mesenchyme. Enamel, dentine and cementum are hard tissues and share physical characteristics with bone tissue, but enamel differs, and this is due to its lineage (Sheldahl, 2020).

Makyle Khan explores enamel and dentine, examining their protective mechanisms, adaptive advantages and their structural significance

Enamel and dentine: evolutionary significance

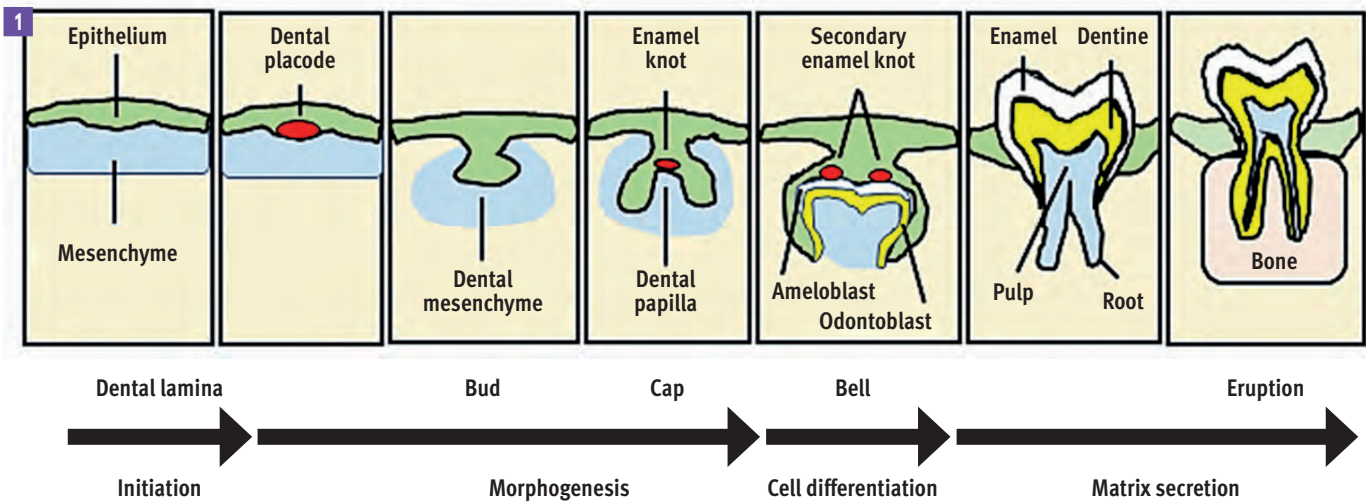


FIGURE 1: Tooth development stages

Enamel is unlike any other tissue in the tooth as it cannot ‘grow’ more enamel after it has erupted. Remineralisation of the enamel can occur passively under the correct conditions. Whereas cells of dentine, pulp, cementum and PDL are present throughout the whole of the tooth’s life, and they can undergo remodelling and regeneration (Sheldahl, 2020).

During amelogenesis, the enamel rods are formed and run from the ADJ to the surface. They are keyhole-shaped and are tightly packed together. Their arrangement determines how crack resistant the enamel is. This is a crucial part of tooth formation, as if the enamel is not wear resistant, it will have a mass consequence on the tissues beneath that the enamel serves to protect, for example, the nerve centre of the tooth, the pulp.

ENAMEL

The enamel is the outermost layer in the tooth and serves as a protective barrier against mechanical wear, chemical erosion and microbial degradation. It protects against forces that are injurious to the vital tissue beneath, the pulp (Lacruz et al, 2017).

The hardness and resilience of the enamel arise from its highly organised hydroxyapatite crystals. Enamel rods are tightly packed together

and run perpendicularly from the ADJ to the tooth surface. If the organisation of the enamel rods is compromised, this affects the whole tooth as the enamel is no longer wear resistant. Furthermore, enamel is also highly resistant to acid erosion and decay caused by bacteria in the mouth (Lacruz et al, 2017). This is because enamel’s high mineral content is impervious to many of the acidic by-products of the oral bacteria in fermentation. Therefore, this barrier helps prevent caries.

In addition, with a smooth, glossy surface, enamel provides an aesthetic appearance. Healthy enamel enhances a bright and attractive smile. However, enamel is susceptible to demineralisation by acidic factors (both extrinsic and intrinsic). Intrinsic acids include hydrochloric acid produced from GORD/vomiting. Extrinsic acids consist of citric acids (found in fruits), acetic acid (vinegar/pickled foods), and phosphoric acid (common in carbonated drinks).

DENTINE

Dentine, which is less mineralised than enamel, is softer in texture. However, it makes up the bulk of the tooth and provides support to the enamel and the cementum. Enamel and dentine have a symbiotic relationship with one another (Zhang et al, 2014). The combination of the two tissues

allows the tooth to be both a shock absorber and flexible when it comes to the mechanical breakdown of food via occlusion and chewing.

Furthermore, dentine has an intricate tubular structure that radiates throughout the whole of its structure, and this facilitates the transmission of sensory stimuli (eg temperature and pressure). This then activates pain receptors in the dental pulp. The pulp contains nerves, blood vessels and connective tissue.

Dentine has a dense structure, which helps to insulate the pulp from external stimuli like temperature and pressure changes (Fang, Lam and Beniash, 2011), further protecting the pulp from infection or injury. Secondary dentine can be formed in response to injury, decay or other forms of dental stress. This is a protective mechanism that again helps to protect the pulp from any further damage.

TOOTH EVOLUTION

Tooth evolution has undergone extensive changes over millennia (Rathee and Jain, 2023). Humans have developed a complex dentition with various tooth types.

Mammalian enamel is highly mineralised to maximise the hardness to accommodate a diverse range of foods. Also, human enamel has continued to develop to meet the demands of the varied diet we have today. The enamel in humans today is among the hardest and most durable in the animal kingdom, which reflects our omnivorous dietary habits.

Reptiles lack a prismatic structure in their enamels that humans have. This, therefore, makes human enamel crack-resistant compared to reptilian enamel, emphasising the importance of organised enamel rods (Sheldahl, 2020).

Through evolution, enamel has undergone adaptations to enhance its protective properties

Dental tissue	Enamel	Dentine
Composition	96% inorganics, the rest water and organics	65-70% minerals, the rest organics
Microstructure	Enamel rods, enamel rod sheath	Dentinal tubule, peritubular dentine, intertubular dentine

TABLE 1: Tooth development stages

to ensure the longevity/functionality of the tooth. This reflects the dynamic interaction between genetic mutations and selective pressures.

Dentine's evolutionary significance lies in its role as a sensory foundation, allowing organisms especially us as humans to respond to threats that will harm our teeth.

Enamel has therefore evolved to protect the tooth. When enamel is lost it can increase the risk of cavities as bacteria have easier access to the inner layers of the tooth (dentine and the pulp) (Lacruz et al, 2017).

Dentine's tubular structure radiates to the pulp, which contains the nerves of the tooth. The significance of this is to protect teeth from stimuli that are injurious to them. Furthermore, another consequence of not having enamel is that dentine hypersensitivity can occur as dentine becomes exposed.

Teeth are also likely to become weaker because of no/loss of enamel as the dentine below is softer and susceptible to decay at a faster rate (Zhang et al, 2014). This is why the teeth have evolved enamel due to its hard and


wear-resistant nature. It can protect the tooth and allow humans to carry out their daily lives as normal, primarily mastication.

Dentine has mass importance in providing support to the enamel, without dentine the enamel would not be able to fulfil its role.

Over time, enamel composition has changed and, in humans, it has thickened to be able to withstand the omnivorous diet. Enamel and dentine have evolved to work in conjunction with one another to form this symbiotic relationship (Fang, Lam and Beniash, 2011).

Without one the other would not be able to succeed in its role. Loss of enamel would cause an increased risk of caries to the more susceptible tissues beneath it compromising tooth vitality.

The loss of dentine would reduce the support that the enamel would have and endanger the tooth's structure.

By understanding and gaining an insight into the evolutionary significance of enamel and dentine, we can appreciate the complexities of biology and the diversity of life on Earth. 

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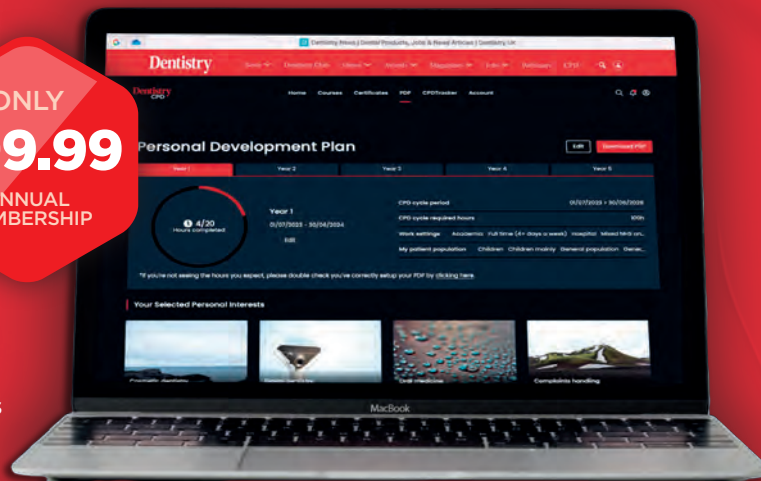
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DR MIKE GREGORY EXPLAINS HOW TECHNIQUES AND MATERIALS FROM THE 19TH CENTURY COULD HELP GENERAL DENTISTS IN THE 21ST CENTURY



DR MIKE GREGORY

Mike is a clinical lecturer at Bristol University Dental School.

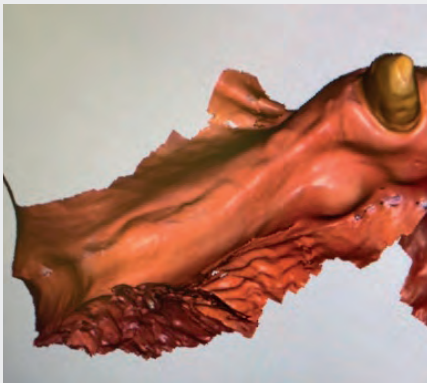


FIGURE 1: The limitations of scanning the retromylohyoid space

MATERIALS USED

Kemdent White Impression compound, Kemdent Green tracing sticks: www.kemdent.co.uk

VIDEO TUTORIALS

@kemdentUK

WHEN 21ST CENTURY DENTAL TECHNOLOGY CANNOT COPE

The advent of digital scanning is transforming the practice of clinical dentistry in the 21st century. There's no doubting the precision and accuracy achieved by scanning hard tissue and attached mucosa when providing fixed restorations and some removable prosthesis, but it is not without issues. Problems arise when we are trying to record movable, displaceable soft tissues when providing removable dentures.

In these situations, the goal is to record the true functional sulcal depths and how the surrounding musculature determines the borders of a prosthesis. In such situations, the aim is to manipulate the tissues and request the patient to make functional movements. Classically, in trying to record the lingual sulcus, we request the patient to lick the upper lip and swallow in order we can ensure tongue movements will be possible with the completed dentures. Figure 1 shows the difficulty in achieving a good representation of the retromylohyoid space let alone the true functional depth in this area. The tongue and lingual tissues are not easily identifiable by scanners and the software cannot easily determine what is needed to create a representation of the eventual denture bearing area.



FIGURE 2: Capture of the retromylohyoid space with Kemdent thermoplastic Impression Compound and Kemdent Greenstick

Asking a patient to replicate movements with a camera in the lingual sulcus is pretty much impossible.

Old school techniques and materials can quite easily utilised in these situations.

GAME CHANGER

Charles Stent (1807-1885) was a 19th-century English dentist notable for his advances in the field of denture making who made a major stride in the area of removable prosthodontics.

His work on making gutta percha, a material used for dental impressions in the mid-1800s transforming the quality and stability of materials at the time. He used waxes, resins and talc mixed with gutta percha to produce a 'game changing' thermoplastic impression material.

This radically changed the way impressions of soft tissues were taken – and still are over 150 years later.

These materials are readily available today in most countries around the world and require very little in the way of technology to be used a clinical environment.

Water maintained to approximately 60° and a heat source, either electric or gas burner, will allow a clinician to record the oral soft tissues with relative ease. With the addition of dental alginates, an accurate representation of the mouth is entirely possible with minimal financial outlay.

Whilst there is no denying that digital dentistry is transforming treatments and outcomes, many believe there is still a place for analogue methods when it comes to capturing impressions of soft tissues in the field of removable prosthodontics.

The recognition of the limitations when using dental scanners and the utilisation of techniques and materials from the 19th century can greatly enhance the outcomes of dental treatments in the field of removable prosthodontics for general dentists in the 21st century. [CD](#)

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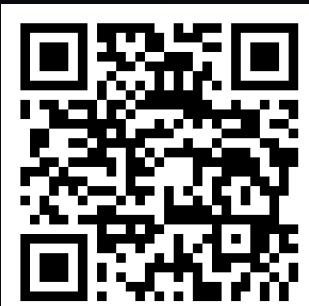
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AESTHETIC DENTISTRY

GOPINDER LALIA

Diastema closure with composite

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KIRAN SHANKLA

Streamlining restorative dentistry

22



The restoration process was straightforward, efficient and completed in less time than traditional methods. The use of Stela reduced the number of instruments and procedural steps involved, making the process more cost-effective and time-efficient – Kiran Shankla, p22

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**GOPINDER LALIA**

Gopinder is clinical director and cosmetic dentist at Lume Dental in Wilmslow.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Aesthetic dentistry

Educational aims and objectives:

To present an aesthetic case that highlights the use of layering composite in an upper left lateral to upper right lateral veneering restoration to close interproximal spaces and a midline diastema.

This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



Aesthetic restorations are one of my favourite dental treatments to perform.

When I'm asked which materials I prefer to use, I invariably respond that Tokuyama's Asteria layering composite is my go-to restorative material.

In my experience, it enables me to deliver high-end aesthetic results with the minimum amount of effort. Frequently, just two shades for the dentine and enamel layers are sufficient to reproduce undetectably super-natural restorations that require the minimum amount of polishing and that just seem to last and last.

This case study highlights Asteria's use in an upper left lateral to upper right lateral veneering restoration to close interproximal spaces and a midline diastema.

Closing a midline diastema can be one of the most challenging situations for a dentist. You need to make sure that the width of the centrals is even, and that the midline is upright and in line with the face. Otherwise you can create a midline tilt, which wrecks the balance and harmony of the whole patient's face.

It is particularly challenging if, as in the case presented, you don't employ a diagnostic wax-up. In this situation, it is essential to keep sitting the patient up and having a look from the front to prevent a midline cant. The importance of this cannot be overstressed.

CASE STUDY

The 23-year-old male patient was referred to me by his general dental practitioner because he wanted to explore options for closing the spaces between his maxillary anterior teeth. He also felt that some of his teeth were too small.

His medical history showed him to be generally fit and well. The dental examination identified that he had smaller than normal maxillary anterior teeth with smallish spaces interproximally.

Other than that, there was no other evidence of dental disease and no other treatment was indicated.

I discussed various treatment options with the patient. One option was to use clear aligner orthodontics to close the spaces followed by tooth whitening and the use of retention to maintain the occlusion. The other option was to utilise tooth whitening followed by layered composite bonding veneers on the four upper anterior teeth.

The second option would enable us to take advantage of the spaces between the teeth to build them up to the ideal size and so enhance the patient's smile and overall appearance.

The patient chose option two because he wanted to make his teeth look larger and it was quicker and did not require the use of long-term retention.

TREATMENT

After whitening the teeth for two weeks at home



FIGURE 1: Extraoral view of initial presentation taken prior to tooth whitening



FIGURE 2: Intraoral close-up of initial presentation showing small laterals, spaces and midline diastema

Gopinder Lalia presents an aesthetic case involving a diastema closure using Tokuyama's Asteria layering composite

Diastema closure with composite



using 10% carbamide peroxide (Boutique Whitening), the rubber dam was placed upper left canine to upper right canine, and secured in situ using rubber dam clamps and unwaxed dental floss around the necks of the teeth to be restored. This was to ensure complete isolation in order to maximise the adhesive's bond strength and effectiveness.

Next, the incisal edges of the teeth were roughened up slightly using a coarse blue banded long tapered prep bur. A stainless steel metal strip was placed behind the four anterior teeth and in front of the canines to protect them. The surfaces were then air abraded using 29µm Aquacare aluminium oxide grit and a Dento-Prep microblaster. This further cleans and prepares the enamel surface ready for etching.

The labial surfaces of the four anterior teeth were then acid etched with 37% phosphoric acid for at least 30 seconds.

Tokuyama Universal Bond II was applied to the etched surfaces. This is a colour-coded two-bottle system that turns green after mixing so that there is a visual indication that it has been mixed properly. It is applied with a Bendabrush (Centrix) and air dried with an oil-free three-in-one syringe for 10 seconds. There is no need to light cure Universal Bond II before the composite is applied.

The first stage of the reconstruction was to close the diastema using Asteria body A1B. Asteria is supplied in both syringe and individual PLT doses (that are dispensed using a Centrix Snapfit gun). I prefer to use the PLT version because it is easier to apply the composite directly onto the teeth and it avoids the mess and potential waste associated with syringe presentations. The Asteria restorations were light cured for 10 seconds, that's all it takes.

The next step was to build up the palatal walls of the incisal edges using Asteria body shade A1B. These only need to be light-cured for 10 seconds as well. A small amount of Estelite Color grey and blue was applied to the incisal edges to mimic the mamelons in the other teeth. This was light cured for 30 seconds.

The interproximal spaces on all four teeth were then closed using Garrison Varistrips and more Asteria body shade A1B, which was again light-cured for 10 seconds. At this point it is essential to sit the patient up and have a good look from

All the restorations were initially overbuilt and then cut back



FIGURE 3: Rubber dam in situ



FIGURE 5: Situation after air abrasion with stainless steel strip in situ



FIGURE 7: Anterior teeth after Universal Bond II applied



FIGURE 9: Building up the palatal wall of the incisal edges with Asteria Body A1B



FIGURE 11: Garrison Varistrip in situ prior to building up the enamel walls using Asteria WE White Enamel



FIGURE 4: Situation after reduction of incisal edges using coarse blue band long tapered bur



FIGURE 6: Etching gel applied to anterior teeth, canines protected by stainless steel metal strip



FIGURE 8: Closing the diastema using Asteria Body A1B



FIGURE 10: Building up the mesial walls of the laterals with Asteria Body A1B



FIGURE 12: Building up the labial surfaces of the laterals with Asteria WE



FIGURE 13: All four anteriors built up prior to cutting back



FIGURE 14: All four anteriors after initial cut back using a coarse blue banded long tapered bur



FIGURE 15: All four anteriors with graphite pencil lines to mark the mesial and distal line angles



FIGURE 16: Final result, extraoral view showing super-natural and undetectable restorations in a harmonious smile



FIGURE 17: Final result, intraoral view

the front to make sure that the centrals are of equal width and that there is no midline cant.

The remainder of the enamel on the labial surfaces of all four teeth was built up using Asteria WE, which is a whitish composite that was light cured for 10 seconds. The objective was to match the previous whitening of the other teeth.

All the restorations were initially overbuilt and then cut back using a coarse blue banded long tapered prep bur and Optidisc coarse and fine grit flame discs.

Graphite pencil lines were then drawn on the labial surfaces of the teeth to mark the mesial and distal line angles, in order to indicate the correct symmetry and shape of the final restorations.

The secondary anatomy was defined using a combination of large red banded Diatech flame discs and Enhance silicone points. Finally, the restorations were given a high sheen polish using Diacomp Twist polishers.

FINAL RESULT AND REFLECTION

Figures 16 and 17 show the final result, demonstrating a lovely harmonious appearance with closed interproximal spaces and larger teeth. The patient was certainly delighted.

In my opinion, using Tokuyama's Asteria layering composites, you can create super-natural and undetectable results with only two shades of composite. [📄](#)

PRODUCTS USED

Bendabrush Centrix
Asteria, Estelite Color, Universal Bond II Tokuyama
Aquacare Medivance Instruments
By Night 10% carbamide peroxide Boutique Whitening
Dento-Prep Ronvig
Diacomp Twist polishers Eve
Diatech flame discs, Enhance silicone points Dentsply Sirona
Optidisc Kerr
Varistrip Garrison

Streamlining restorative dentistry

Kiran Shankla presents a case study demonstrating the benefits of Stela, a self-cure composite that delivers durable, aesthetic results

A 17-year-old female patient presented for a routine six-month examination without complaints or concerns regarding her teeth. I noted a small colour change on the upper left premolar during the examination with five times magnification loupes.

An X-ray confirmed the presence of a cavity, which was highlighted using a second-opinion AI software (Figures 1 and 2). Given the cavity's location in the visible smile line and the patient's age, I opted for a tooth-coloured filling rather than the NHS amalgam option. I chose Stela, a high-performance self-cure composite, for its aesthetic and functional qualities.

TREATMENT DETAILS

The patient was booked for the filling appointment, where I administered a local anaesthetic.

As this was her first filling, the aim was to ensure a pleasant experience. I prefer working under a rubber dam for better control during the procedure, although Stela does not require one.

After removing the decay, I took several photos to help illustrate the cavity's extent. I then placed a sectional matrix to ensure proper contact closure, as the cavity was large. After this, I applied Stela.

Stela's two-step system consists of a primer and composite, reducing the steps typically required for an amalgam restoration. The primer, which takes just 15 seconds, was followed by applying the Stela composite. This material's

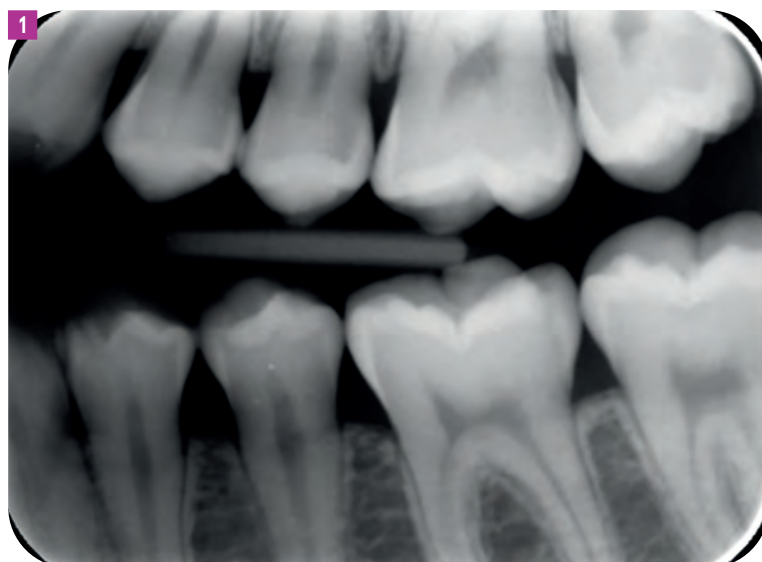


FIGURE 1: Routine bitewing

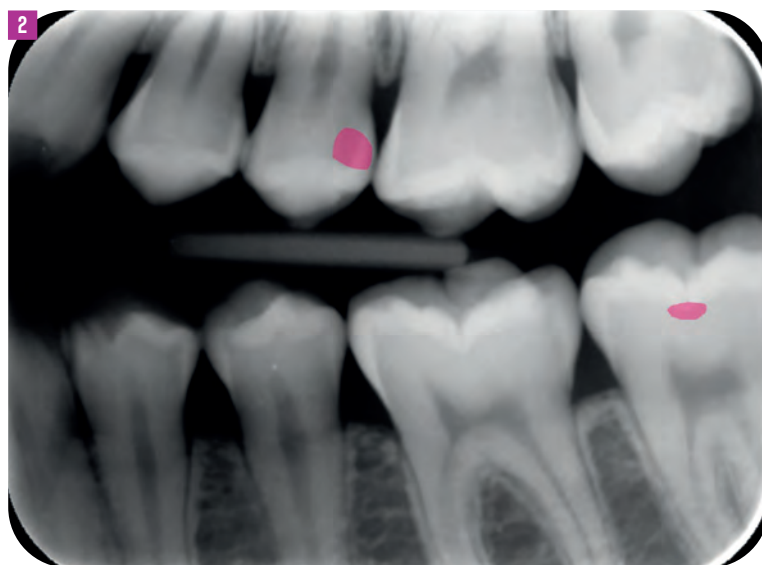


FIGURE 2: AI technology used to show areas of caries to the patient



KIRAN SHANKLA
BDS MSc MFDS
Kiran is a restorative and aesthetic dentist practising at Kendrick View Dental Practice in Reading.

consistency allowed me to sculpt it before it was set, making the procedure more efficient.

OUTCOME AND FOLLOW-UP

The restoration process was straightforward, efficient, and completed in less time than traditional methods. The use of Stela reduced the number of instruments and procedural steps involved, making the process more cost-effective and time-efficient.



FIGURE 3: The teeth are isolated using a rubber dam

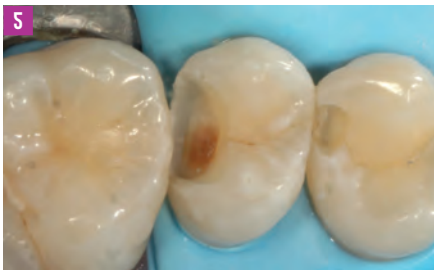


FIGURE 5: Teeth have been conditioned using air abrasion

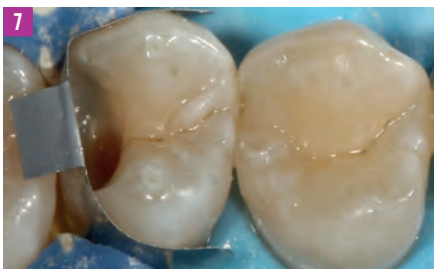


FIGURE 7: Appearance of the cavity after primer placement



FIGURE 9: Appearance after four minutes, fully set

After placing the filling, I let the material set for a few minutes, then carried out final trimming and polishing without additional curing lights, simplifying the procedure even further.

After treatment, the patient reported no sensitivity, and the restoration remained intact with no complications. However, as she is considered at higher risk for dental issues, I will schedule an X-ray in one year to assess the restoration's longevity.



FIGURE 4: Distal caries removed UL5, distal fractured cleaned UL4



FIGURE 6: Sectional matrix placement followed by placement of the Stela primer for five seconds



FIGURE 8: Single increment of Stela up to the cavity margins



FIGURE 10: Postoperative image after occlusal adjustment. Two fillings placed UR4 and UR5

The restoration remained intact with no complications

MATERIAL SELECTION

I selected Stela for its excellent aesthetic qualities, fast-setting process and ability to provide durable, reliable results.

The material's natural translucency allowed it to blend seamlessly with the surrounding tooth structure, a crucial factor due to the cavity's location. Furthermore, Stela's superior mechanical properties, including high flexural and compressive strength, made it an ideal choice for a restoration designed to withstand everyday function.

Stela has improved my workflow, replacing the traditional multi-step amalgam process with a simplified two-step system. This approach saves me time and reduces the risk of technique errors.

The self-curing nature of Stela eliminates the need for light curing, enhancing productivity, especially in busy NHS practices.

Stela's gap-free curing properties reduce the risk of shrinkage and microleakage, contributing to more reliable, long-lasting restorations. The material's self-curing properties allow it to cure from the margins inward, effectively reducing polymerisation stresses common in light-cured composites.

PATIENT SATISFACTION

The faster treatment time and less invasive procedure enhanced the patient's experience. Stela's simple, two-step process and reduced chair time made the procedure more comfortable.

Stela offers a transformative approach to restorative dentistry by simplifying procedures and improving clinical outcomes. Its self-curing properties, durability and aesthetic appeal make it a strong alternative to traditional amalgam, reducing treatment time and enhancing productivity.

This case highlights how Stela can streamline restorative dentistry, providing high-quality, durable, and aesthetically pleasing results with minimal effort. [CD](#)

PRODUCTS USED

Stela SDI



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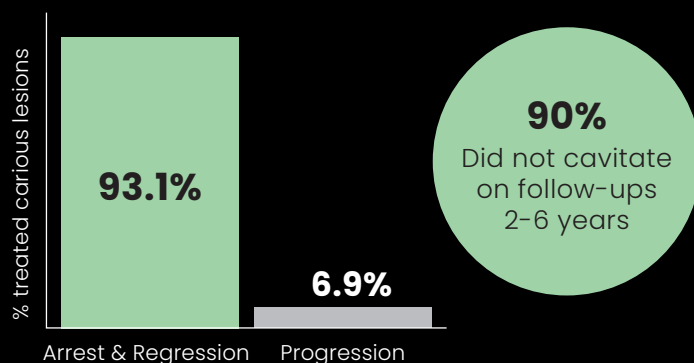
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1. Godenzi D et al. J Am Dent Assoc. 2023;S0002-8177 (23)00416-6 | 2. Keeper et al. J Am Dent Assoc. 2023 Jul;154(7):580-591.e11 | 3. Kind L et al. J Dent Res 2017; 96:790-797 | 4. Bröseler F et al. Clin Oral Investig 2020;24:123-132 | 5. Welk A et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

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

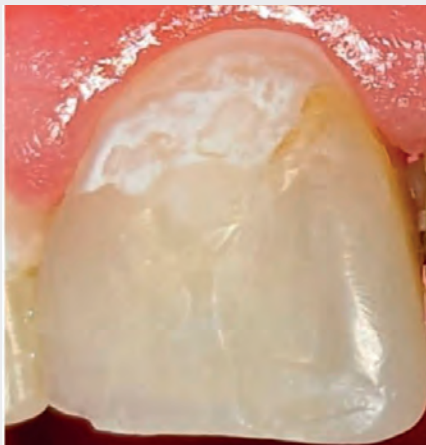


FIGURE 1A: Before: post-orthodontic white spot lesion on the buccal surface of the maxillary left central incisor (21)



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

GUIDED ENAMEL REGENERATION WITH CURODONT REPAIR

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

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

CASE REPORT

Chief complaint: An 18-year-old male patient arrived with the chief complaint of multiple white discolorations on his front teeth, which led to embarrassment

in social interactions. The patient gave a history of undergoing fixed orthodontic therapy during which he experienced difficulty in oral hygiene maintenance.

Intraoral examination: White discolourations of varying sizes were noted along the gingival margins of multiple maxillary and mandibular anterior teeth. These areas, which had rough surfaces and were chalky in appearance, were visible both when the surfaces were wet and dry. In particular, the maxillary left central incisor (21) presented a large white discolouration covering almost the entire cervical third of the labial surface of the crown (Figure 1a).

Diagnosis: Early-stage caries (ICDAS Score 2), as a result of improper oral hygiene maintenance during the fixed orthodontic therapy, were diagnosed, including for 21.

Treatment plan: Taking into account the oral findings, the patient's young age and his unsatisfactory experience with the past dental treatment, a decision was made to treat the lesions with Curodont Repair non-invasively and painlessly.

Treatment procedure: Thorough oral prophylaxis was performed to eliminate all deposits. Next, the affected teeth were cleaned with 2% sodium hypochlorite saturated in a cotton pellet. The teeth were then rinsed and dried. Next, 35% phosphoric acid was used to etch the lesion surfaces for 20 seconds, followed by rinsing. The treatment site was isolated using cotton rolls and dried gently.

One applicator of Curodont Repair was activated and the saturated sponge was squeezed well on the surface of the lesion. The patient was discharged 5 minutes later with routine oral hygiene instructions.

Follow up: Within 2 months of treatment, the early carious lesion demonstrated a reduction in size and appearance, indicating caries regression (Figure 1b).

The patient remains under follow up. [C](#)
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DIGITAL DENTISTRY

ALESSANDRO CUCCHIARO

Digital workflow for full dentures

28



**ROBBIE HUGHES &
ALEX CARRUTHERS**

Designing the perfect smile

32



The new aesthetic and functional situation was digitalised and the tooth set-up was adapted to the new impression. At this stage, the digital design of crown LR3 and of two sinter metal crowns was carried out – Alessandro Cucchiaro, p28

A WINDOW ON THE WORLD OF DIGITAL DENTAL WORKFLOWS

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ALESSANDRO CUCCHIARO
MDT

From 2006 to 2009, Alessandro worked at Zirkonzahn as a dental technician and served as Zirkonzahn USA general manager from 2009 to 2023. Specialised in CAD/CAM and digital technology, he works as a Zirkonzahn course instructor and lecturer at various conferences and events worldwide.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Digital dentistry

Educational aims and objectives:

To explore digital advancements, state-of-the-art materials and an innovative bonding technique for full dentures.

This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



Although minimally invasive procedures are becoming increasingly important and their basic idea to preserve as much tooth structure as possible is undisputed among experts, there are still patients who need a complete restoration after total tooth loss. In addition to implant-supported restorations, full dentures are still a tried-and-tested method, especially among the elder demographic.

I will be presenting at this year's North of England Dentistry Show in Manchester on 8 March. In my lecture – 'High-tech meets handcraft: optimisation of the digital workflow for the fabrication of full dentures' – I will explore digital advancements, state-of-the-art materials and an innovative bonding technique for producing functional and aesthetically pleasing full dentures.

The process of creating high-quality dentures starts from considering the initial patient situation – edentulous, or wearing existing prostheses in good or poor condition. However, digital technologies and correct materials also play a key role.

During my session, I will show the impact of using a digital workflow and new materials available by presenting several patient cases.

I will also present an innovative method for bonding teeth to denture bases using Zirkonzahn's protocol based on the principle of cold welding.

To give a more practical insight into what we are going to discuss during my lecture at the event, I would like to share a recent patient case treated at Zirkonzahn's education centre in Brunico, Italy, which highlights how the latest advancements are transforming the way dentures are designed and manufactured.

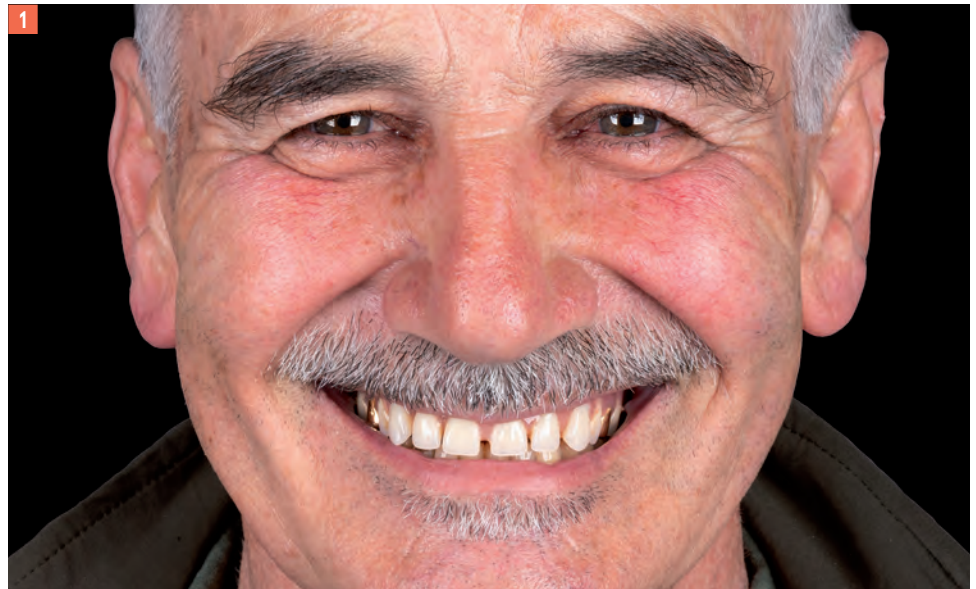


FIGURE 1: Initial situation: patient with old prostheses in the upper and lower jaws (edentulous jaws with only the presence of the LR3)

Ahead of his session at the North of England Dentistry Show 2025, **Alessandro Cucchiaro** presents a full denture case with a digital workflow

Digital workflow for full dentures

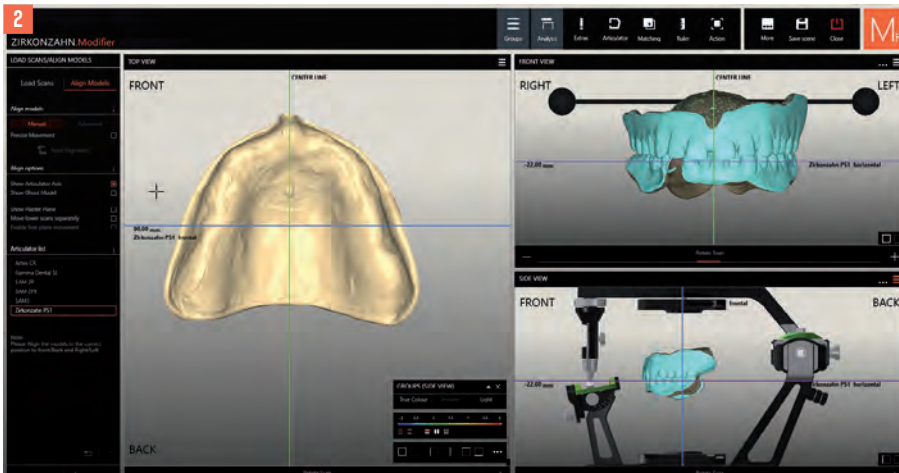


FIGURE 2: Digital articulation using the PS1 virtual articulator

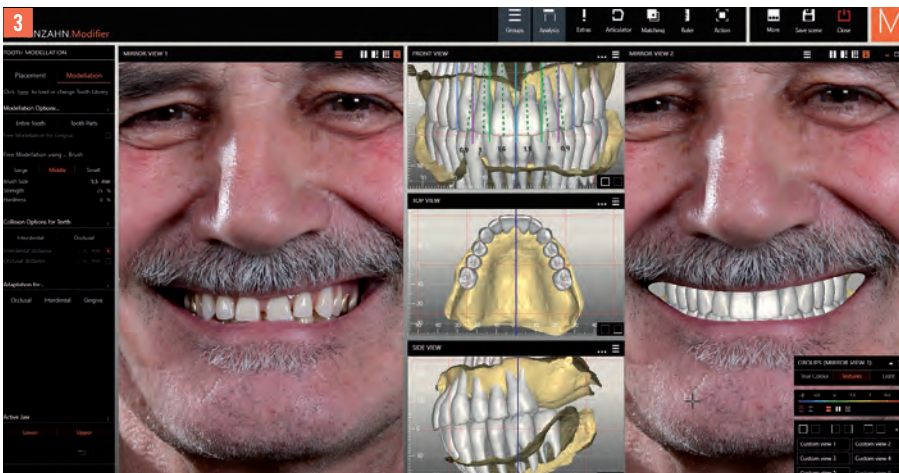


FIGURE 3: Zirkonzahn.modifier has natural tooth libraries and setup functions for defining tooth placement and alignment



FIGURE 4: Try-in on the model of the two dentures, the Prettau 3 Dispersive crown and the sinter metal (Sinternit material, Zirkonzahn) crowns

CASE REPORT

In this case, the initial situation presented an edentulous upper jaw and a lower jaw with only the presence of the LR3. The restorative team opted for two full dentures and a non-invasive crown restoration for the LR3 made with Prettau 3 Dispersive zirconia.

The workflow was performed using Zirkonzahn's hardware, software and materials, which are perfectly integrated to each other to guarantee a seamless work process.

DIGITAL DESIGN OF THE FULL DENTURES

The workflow started with the digital acquisition of the patient's worn prostheses with the intraoral scanner.

The tooth setup and the design phases were carried out in Zirkonzahn.modifier. This software is provided with new set-up concepts and extensive individual design options, and includes several modules dedicated to model production, mock-ups, bite splints and removable dentures.

The intraoral data were digitally articulated and then matched with 2D pictures of the patient. In Zirkonzahn.modifier, the gingival portion was generated automatically, teeth were individualised, tooth scaling was corrected and the exact placement in occlusion was found.

Subsequently, aesthetic, functional and phonetic aspects were evaluated in the patient's mouth by means of try-ins, which were then used as impression trays for the final impression.

The new aesthetic and functional situation was digitalised and the tooth set-up was adapted to the new impression. At this stage, the digital design of crown LR3 and of two sinter metal crowns (UR5 and UL5, later to be gold-plated) was carried out.

The digital design process is now concluded.

NEW RESIN MATERIALS FOR DENTURE BASES AND TEETH

The nesting of the two denture bases was performed in Zirkonzahn's dedicated software. As for the resin materials, the new Denture Gingiva Basic Mono Pink and Abro Basic Multistratum were selected. These are new PMMA-based materials specifically developed for full dentures. Due to their low residual monomer concentration, they tend to be more biocompatible with the oral environment than conventional heat-cured materials.

Abro Basic is available in two different shade variants:

- Abro Basic Mono – monochromatic
- Abro Basic Multistratum – with a natural colour gradient from dentine to enamel.

The mechanical and optical properties of the Abro resins with regards to their translucency,



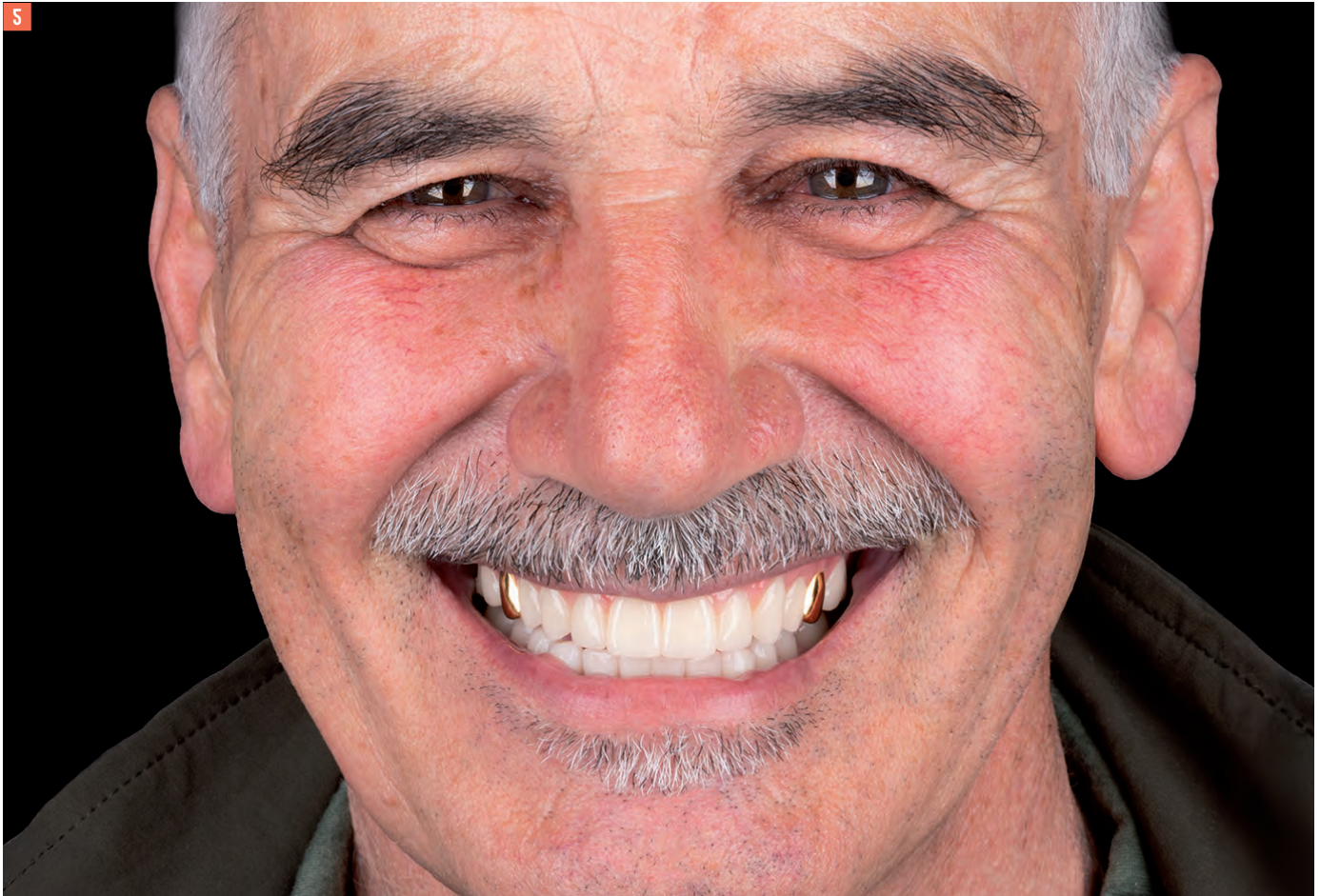


FIGURE 5: Final result, highlighting how new advancements in terms of digital solutions, materials and techniques can produce aesthetically pleasing and functional full dentures in a very short time compared to traditional working methods

flexural strength as well as fracture and abrasion resistance make them ideal for the manufacturing of denture teeth. They can also be used for long-term temporaries and superstructures.

The dentures were created using new PMMA-based materials and the teeth were bonded according to an innovative protocol based on the principle of cold welding

The gingiva was created using the Denture Gingiva Basic Mono Pink resin. This is a gingiva-coloured resin with high flexural strength and fracture resistance, which has been developed specifically for the production of denture bases.

The Denture Gingiva Basic Mono Pink blanks are also available in a diameter of 125mm, allowing dental technicians to manufacture up to two denture bases in a single milling process.

For a more individual result, the gingival area of the restorations can also be characterised with composites.

BONDING TEETH TO THE DENTURE BASES

Let's go back to our workflow. After nesting and milling, the gingival area was layered with Gingiva-Composites.

The colour spectrum of the Gingiva-Composites is based on Zirkonzahn's ICE Ceramics Tissue shades.

If applied to temporary restorations, Gingiva-Composites help both the clinician and patient to have a more accurate indication of what the final restoration may look like.

Finally, the LR3 crown was cemented and the denture teeth were bonded to the prosthetic bases using Polibond. This step was performed according to Zirkonzahn's innovative protocol based on the principle of cold welding. The dentures were then inserted in the patient's mouth.

This case is an example of how new advancements in terms of digital solutions, materials and techniques can greatly help to produce aesthetically pleasing and functional full dentures in a very short period of time compared to traditional working methods. [i](#)

NORTH OF ENGLAND DENTISTRY SHOW

Alessandro Cucchiario will be presenting at the North of England Dentistry Show 2025 in Manchester on Saturday 8 March. For more information and to register for free, visit dentistry.co.uk/shows/north-of-england-dentistry-show.



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Designing the perfect smile

Robbie Hughes and Alex Carruthers illustrate how Invisalign Smile Architect helped to create a new smile for a patient with multiple diastemas

A 23-year-old male patient presented requesting a smile makeover with either composite or porcelain veneers to address the gaps between his teeth, and creation of a wider, whiter smile.

To assess his dentition and oral health, we conducted a full case assessment, including clinical photographs, a radiographic and periodontal report and an Itero intraoral scan. We took an additional photograph for Invisalign Smile Architect using the Invisalign practice app. We detected no carious lesions, and aside from a BPE code 2 in his lower anterior region, his gingival health was good.

Prior to this consultation, the patient had no interest in orthodontics as a treatment option. Showing him his treatment plan helped us explain the need for an ortho-restorative approach to achieve his desired smile. He was able to visualise the projected tooth movements needed during orthodontic treatment and could understand that the proportions and size of his gaps meant that orthodontic treatment alone would not fully close them. He therefore understood that a combination of orthodontics and restorative treatment was required to achieve his desired result.

Additionally, the mass analysis tool within the Clincheck software allowed us to show the patient the amount of tooth enamel reduction that would be required to achieve his optimum result using only a restorative approach. It showed that

if no orthodontic treatment was carried out, at least 70% of his UR5 to UL5 would require more than 2mm of reduction – a detrimental outcome for any patient, particularly a 23-year-old. However, using Invisalign Smile Architect, we showed very little or no tooth reduction would be necessary for an optimum result. The patient understood our diagnosis and consented to the treatment plan.

TREATMENT PLANNING

Treatment planning with Invisalign Smile Architect is straightforward. In this case, the hygiene appointment found the patient's oral health to be good with no cavities or restorations required.

The Invisalign treatment plan consisted of six months of clear aligners. Attachments were placed at aligner one due to the patient lifestyle and time restrictions for in-practice appointments.

Six edge bonds were placed at the end of his treatment, with dual retention and Vivera retainers.

The patient was monitored via Invisalign Virtual Care AI throughout his treatment and compliance in the first two months was very good but decreased a little due to his lifestyle.

POST-ORTHODONTIC RESULTS AND RESTORATIVE TREATMENT

We merged the STL files from an Itero digital scan of the patient's final tooth position with the initial Invisalign Smile Architect design. This created a digital smile that was an exact copy of his pre-approved design originally created in Invisalign Smile Architect.



FIGURE 1A: Before treatment, smile



FIGURE 1B: Before treatment, pre-orthodontic tooth position



FIGURE 1C: Before treatment, close-up

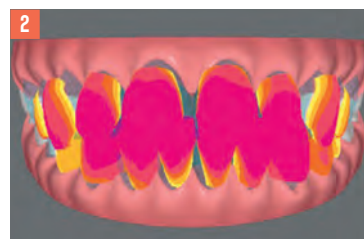


FIGURE 2: Mass analysis – reduction



DR ROBBIE HUGHES
Robbie qualified from the University of Liverpool in 2008 with honours. He has a special interest in cosmetic dentistry and has postgraduate certificates and diplomas in implant and restorative/aesthetic dentistry. Robbie is CEO and principal dentist for Avant Garde Dentistry.



DR ALEX CARRUTHERS
Alex graduated from University of Manchester in 2014. She provides short-term orthodontics using different systems and has a passion for endodontics.



FIGURE 3A: Post-orthodontic, smile

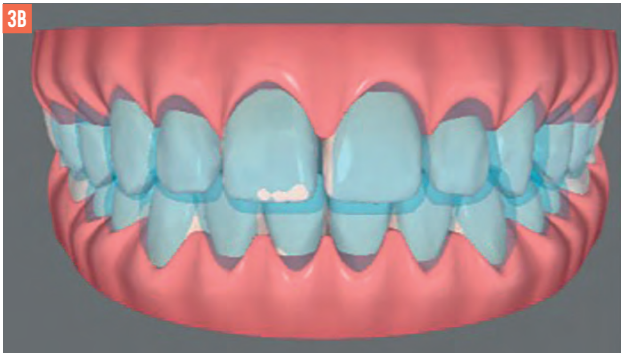


FIGURE 3B: Post-orthodontic, tooth position



FIGURE 3C: After treatment, close-up

The patient chose to have interproximal and incisal composite bonding to close the gaps. The restorative Invisalign Smile Architect design provided a visual tool to guide the final restorative position.

SUMMARY

Combining Invisalign treatment with restorative planning using Invisalign Smile Architect aids communication between patients and dentists – particularly with understanding the projected outcome and consent process.

Being able to show the patient what the treatment you are recommending can deliver is very powerful. In our experience, younger patients in particular enjoy being part of the treatment planning process and understanding why you are recommending different treatment combinations to achieve their desired outcomes. [🔗](#)

PRODUCTS USED

Invisalign Smile Architect, Itero, Clincheck, Vivera
Align Technology



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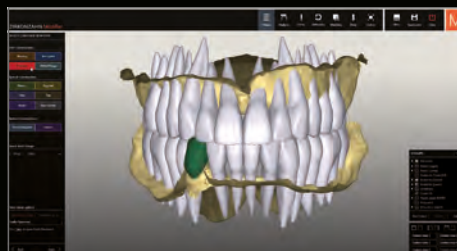


Dr. med. dent. Clara Zanini – South Tyrol, Italy
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ENDODONTICS

NICOLAI ORSTEEN

Conservative endodontic treatment

39



Challenges such as difficulty in achieving patency in the apical third, uneven dentine removal causing transportation, perforation, and instrument fracture within curved canals can pose significant procedural issues that may compromise the management of intraradicular infections and lead to unsatisfactory treatment results (Huang et al, 2024) – Nicolai Orsteen, p39

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*Taha et al. 2018



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**DR NICOLAI ORSTEEN**

Nicolai is a specialist in endodontics. He graduated from University of Oslo in February 2002, going on to study for a further three years, specialising in endodontics. Nicolai 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.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Endodontics

Educational aims and objectives:

To present a challenging endodontic case, complicated by apical curvature, calcification and significant tissue loss, necessitating a cautious, conservative approach. This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



The patient – male, with generally good oral and physical health – attended the practice in October 2024, having been referred by his dentist for assessment. He was originally seen in January 2024 with some pain associated with his UL7.

The tooth had been restored with a permanent non-precious metal crown that his dentist was unable to remove.

ASSESSMENT AND DIAGNOSIS

The restored UL7 was tender on percussion, and the tooth was hypersensitive to an ice test using Roeko Endo-Frost. The neighbouring teeth had a positive response to the ice test within the normal limits.

Periapical radiographs showed some calcification, and there was significant curvature of the distobuccal canal – the mesiobuccal canal was also curved but not as acutely (Figure 1). There was

no apical radiolucency, and the UL7 was diagnosed with symptomatic, irreversible pulpitis.

TREATMENT PLANNING

All potential treatment options were explained to the patient:

- The tooth could be extracted and replaced with an implant
- The tooth could be extracted and the patient could be left with a gap
- The crown could be removed, and root canal treatment (RCT) be undertaken, and a new crown could be fitted by his regular GDP
- We could do nothing, which was not recommended in this case.

It was assessed that, despite the complicating factors, RCT treatment had a very high probability of success: the prognosis was 90% for five to 10 years. The patient provided informed consent for this treatment.



FIGURE 1: Preoperative radiograph

Nicolai Orsteen describes a challenging case in which he performed root canal treatment on a UL7 with a calcified and curved canal and that had been restored with a full metal crown

Conservative endodontic treatment ➤

TREATMENT PROVISION

Treatment was performed 17 days after the assessment and consultation. The efficacy of the local anaesthetic was confirmed using Roeko Endo-Frost, and a Hysolate Latex Dental Dam was used to isolate the tooth.

The metal crown was cut into sections, which was difficult due to the durability of the material. Extreme precision and care had to be exercised to avoid any damage to the tooth structure.

Upon removal of the crown, it was discovered that there was a great deal of decay under the metal that extended into the tooth and the pulp. However, the tooth was deemed restorable.

Working length was established with radiographs and by the use of the integrated apex locator in the Canalpro X Move endo motor and the canals were irrigated using Canalpro NaOCl 3% and Canalpro EDTA 17% solutions.

The Hyflex OGSF file sequence, consisting of an orifice opener, glidepath file, shaping file and finishing file were employed, with irrigation

between each file. Once the tooth was opened, Micromega K-Files and the glidepath file were used to reach the root apex. Then, shaping files were used to carefully clean the canals.

Magnification supported the process of navigating the calcification, and I used flexible files to adapt to the curvature of the canals, and to reduce the risk of file separation. The root canal treatment was completed with the finishing file (30.04).

Once the treatment was complete, the canals were sealed using gutta percha and bioceramic sealer. The core was built up using Paracore White, and a temporary crown made of Cool Temp Natural was cemented with the use of Temposilz.

TREATMENT OUTCOME


The patient and I were both happy with the treatment result. The tooth was saved and is asymptomatic.

It was subsequently successfully restored with a permanent crown by the patient's dentist.

REFLECTION AND LEARNING POINTS

The combined challenges of apical curvature, calcification and significant tissue loss necessitated a cautious, conservative approach. Such a serious loss of dental hard tissue at the crown decreases fracture resistance and can compromise the bonding surface (Huang et al, 2024). In addition, calcification and curvature both pose a risk to the success of RCT.

Challenges such as difficulty in achieving patency in the apical third, uneven dentine removal causing transportation, perforation, and instrument fracture within curved canals can pose significant procedural issues that may compromise the management of intraradicular infections and lead to unsatisfactory treatment results (Huang et al, 2024).

With so many elements to consider it was important to adopt a conservative approach to try to preserve as much of the tooth as possible. However, this required skill and careful selection of tools and materials. In such cases, I recommend using a conservative taper. The files in the Coltene Hyflex OGSF file sequence can be pre-curved, and are nickel titanium, which has been shown to improve success rates in cases of curvature (Chaniotis and Ordinola-Zapata, 2022). Using these, I was able to employ a precise approach to remove the infection without compromising the healthy tissue to reduce the risk of root fracture in the future. 

CONTACT

 www.rootcanalcentre.co.uk

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PRODUCTS USED

Roeko Endo-Frost, Hysolate Latex Dental Dam, Canalpro X Move, Canalpro, Hyflex, Paracore, Cool Temp Natural, Temposilz Coltene K-Files Micromega

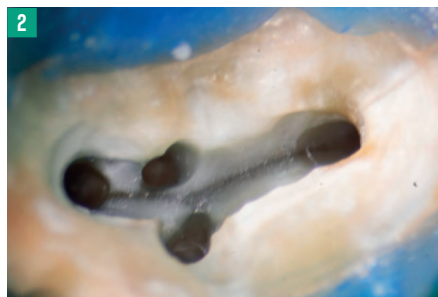


FIGURE 2: Access cavity canals instrumented



FIGURE 3: Access cavity canals filled



FIGURE 4: Masterpoint



FIGURE 5: Paracore placed

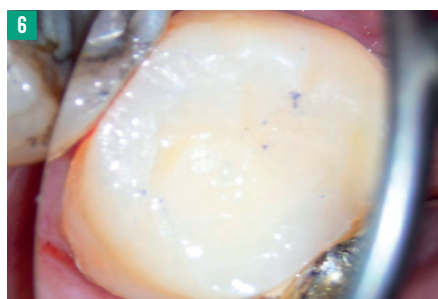


FIGURE 6: Temporary crown



FIGURE 7: Postoperative radiograph

ZIRKONZAHN SHARES THE DETAILS OF ITS UPCOMING LECTURE TOUR ON THE TOPIC OF DIGITAL FULL DENTURES

LECTURES IN DUBLIN AND BELFAST

The dental company Zirkonzahn (South Tyrol, Italy) has announced its 2025 “High-Tech meets Handicraft – Optimisation of the Digital Workflow for the Fabrication of Full Dentures” lecture tour will be coming to Dublin and Belfast on 4 and 6 March, offering dental professionals state-of-the-art methods and techniques for the creation of functional and aesthetically pleasing full dentures as an alternative to implant-supported prostheses.

Indeed, even if minimally invasive procedures are becoming increasingly important, there are still patients who need a complete restoration after total tooth loss. MDT Alessandro Cucchiaro will guide participants through the challenges faced when creating a full denture with 28 teeth, considering the different initial patient situations: whether the patient is

edentulous or wearing existing prostheses in good or poor condition, the lecture will provide insights into the tailored approaches needed for optimal results.

The process of creating high-quality dentures also involves digital technologies and correct materials. For this reason, the lecture will introduce two new particularly biocompatible PMMA-based resins which feature an extremely low residual monomer concentration and will demonstrate how digital solutions with automated set-up functions can simplify tooth placement and gingiva creation, ensuring an efficient, accurate and optimised workflow.

Furthermore, participants will benefit from hands-on demonstrations of bonding teeth to denture bases using an innovative protocol based on the principle of cold welding. [🔗](#)

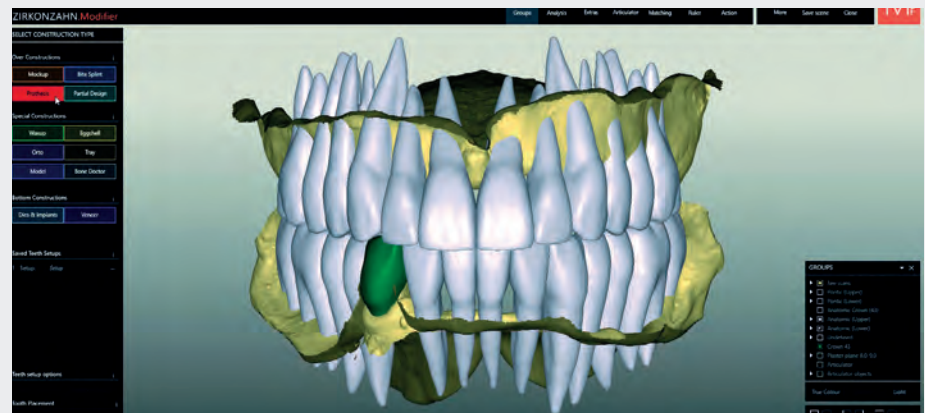


FIGURE 1: Digital tooth set-up in Zirkonzahn.Modifier



FIGURES 2A and 2B: Dentures in Abro® Basic Multistratum® and Denture Gingiva Basic Mono Pink resins

HOW TO REGISTER

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IMPLANT DENTISTRY

EDUARDO ANITUA

Immediate loading in short implants

45



SELVARAJ BALAJI

Rehabilitation with vertical augmentation

51



A CT scan was taken to assess the bone level. This confirmed that the patient had both horizontal and vertical hard and soft tissue defects. As such, bone and soft tissue augmentation were indicated as part of the restoration process – Selvaraj Balaji, p51

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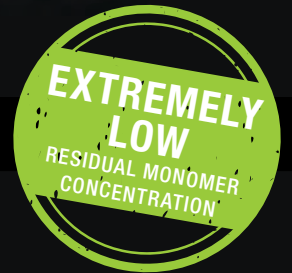
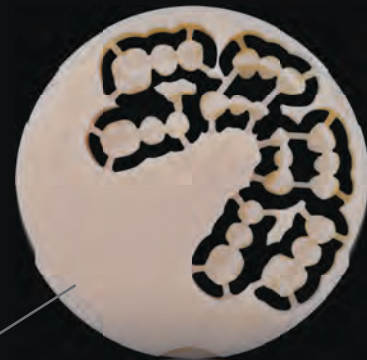
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**EDUARDO ANITUA**

DDS MD PHD

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

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

To present a nine-year retrospective study highlighting long-term follow-up data on implants with immediate loading using a uniform surgical and prosthetic protocol for short implants. This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



Since the 1980s, thanks to Professor Per-Ingvar Brånemark, modern implant dentistry has developed various techniques for implant placement and subsequent loading.

During the initial stages, the concept of osseointegration was established, which involves the solid, direct connection between the remodelling bone and the dental implant without any intervening tissue other than bone. To ensure this process, specific waiting times were defined, allowing the bone to adapt and form a stable connection after implant insertion.

As implant dentistry has advanced, protocols have been developed to shorten these waiting periods and aim for quicker treatment completion. This has led to the development of immediate loading protocols, which recognise that light, controlled loading that avoids micromovements exceeding 50 to 150 microns at the bone-implant interface can positively influence the osseointegration process.

As a result of these advancements, immediate loading protocols for dental implants have gained popularity since their implementation in the 1990s, with current success rates comparable to those of conventional loading protocols (98.2% in immediate loading versus 99.6% in conventional loading).

In 2002, the Spanish Society of Implantology published a consensus document on immediate and early loading in implants, establishing specific recommendations for its application: adequate primary stability (30-50Ncm), bone density of type I, II, or III, light occlusion in a full arch, and absence of occlusal contact in single-unit implants or bridges.

In 2007, the first systematic review on immediate loading reaffirmed these recommendations, while suggesting that insertion torque should be higher for single-unit prostheses (30-45Ncm) compared to multiple-unit prostheses (20Ncm) and

recommending a minimum implant length of 11mm.

Today, short and extra-short implants have become a routine treatment option in dental practices, allowing for predictable management of vertical atrophy while avoiding prior bone grafting techniques, with success rates around 99%.

Despite their incorporation into the trend of immediate loading, publications on the topic remain scarce, with survival rates for short and extra-short implants ranging from 87% to 96.6%.

This retrospective study aims to present long-term follow-up data (eight to nine years) on implants with immediate loading using a uniform surgical and prosthetic protocol for short implants, defined as those measuring 5.5 and 6.5mm in length. The standardisation of both the surgical and loading protocols enables more consistent results, facilitating conclusions that are applicable to daily clinical practice.

MATERIALS AND METHODS

Retrospective data was collected from cases involving short implants (5.5 and 6.5mm in length) where immediate loading was applied. All implants were placed in a single clinic in Vitoria, Spain, during 2015 and 2016. All patients underwent a diagnostic protocol that included a dental CBCT scan, diagnostic models, and wax-ups.

Data was collected on the patients' demographics, medical history, and medication, as well as details on the implants, such as position, diameter, length, insertion torque, type of prosthesis, and preoperative bone diagnostics. Implant and prosthesis survival rates and bone loss were also recorded.

The implant served as the unit of analysis for descriptive statistics regarding location, dimensions and radiographic measurements, while the patient was the unit of analysis for age, gender, and medical history.

Eduardo Anitua presents a nine-year retrospective study highlighting long-term follow-up data on implants with immediate loading using a uniform surgical and prosthetic protocol for short implants

Immediate loading in short implants



Antibiotic pre-medication included 2g of oral amoxicillin one hour before the procedure, followed by 500 to 750mg every eight hours for five days, depending on the patient's weight.

The procedure was performed under local anaesthesia, and drilling was carried out at low speed (biological drilling). The implants were placed with a surgical motor set at 35Ncm, and final insertion was completed manually with a ratchet wrench to ensure precise insertion torque.

Once the implant is loaded, monitoring of crestal bone loss is performed using panoramic and periapical radiographs. Periapical radiographs are conducted using a positioning device to generate reproducible images, and patients are positioned for the panoramic radiograph with a fixed positioning device at the glabella and chin, using a bite block for the interincisal area with a midline axis, bipupilar plane, and Frankfort plane (laser marking), with feet placed on marks drawn on the floor, to ensure highly reproducible results.

Necessary measurements are taken from these radiographs to assess the stability and crestal bone loss of the implants, as well as to monitor the overall volumetric increase in the mandible. Once the digital radiograph is obtained, it is calibrated using specific software (Imagej) based on a known length, such as the dental implant. After entering the calibration measurement, the software performs calculations based on this measurement to eliminate magnification, allowing for linear measurements free from this error.

Crestal marginal bone loss is calculated by measuring from the shoulder of the implant to the first site where the bone-implant contact becomes evident. The primary variable studied was crestal bone loss after loading at one year and at the final follow-up point. Secondary variables included the survival of the implants and prostheses, both calculated using the Kaplan-Meier method. Data were analysed using SPSS v15.0 for Windows.

RESULTS

Fifteen patients were recruited, and 29 implants were placed that met the inclusion criteria. Of the patients, 89.7% were women, with a mean age of 68.72 years (+/- 5.42).

The diameters of the implants included in the study ranged from 3.75mm to 5.50mm, with 5mm being the most common diameter, representing 34.5% of cases. Regarding length, 27.6% of the implants were 5.5mm, and 72.4% were 6.50mm.

Figure 1 shows the diameters and lengths of all the implants studied.

The most frequent implant location was position LR7, accounting for 24.1%, followed

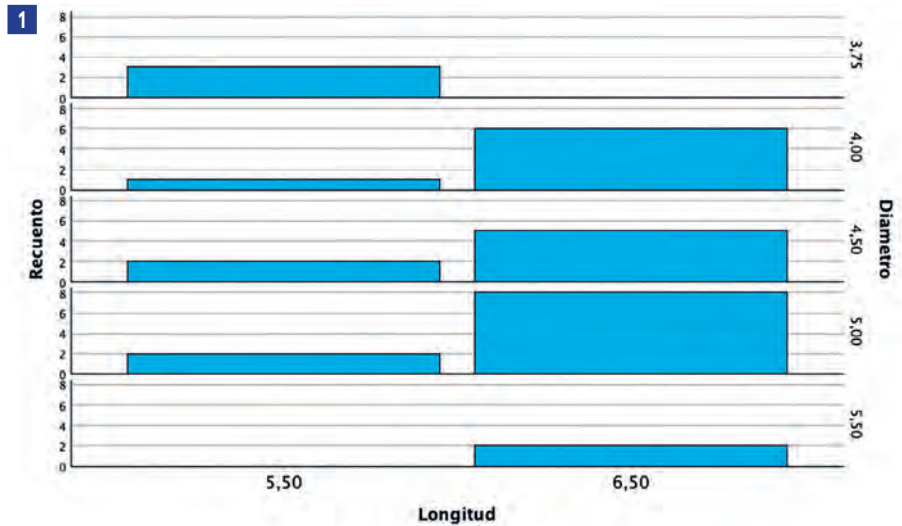


FIGURE 1: Diameters and lengths of the implants included in the study

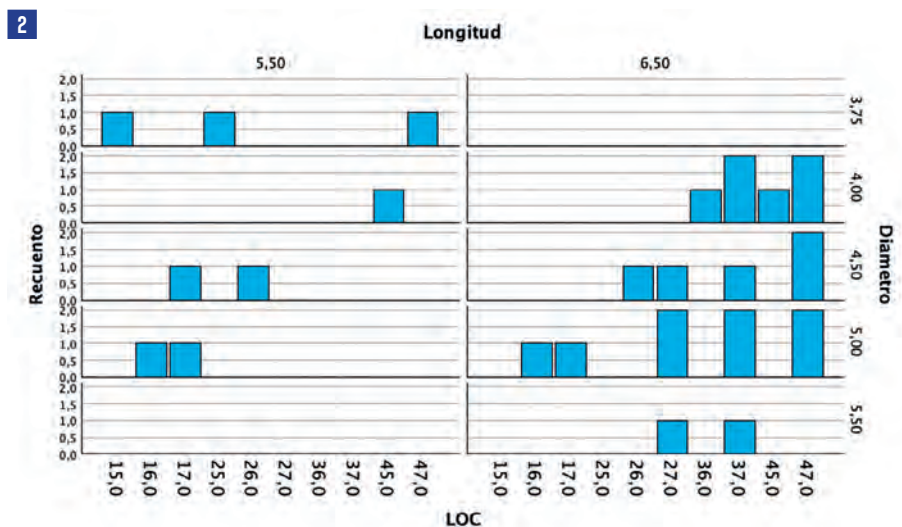


FIGURE 2: Lengths and diameters of the implants based on their anatomical location



FIGURES 3 and 4: Initial images of the case showing partial edentulism in both the upper and lower arches, along with complete bite collapse

by position LL7 at 20.7%. Regarding insertion, 44.8% of the implants were inserted in the upper arch, while the remaining 55.2% were placed in the mandible. Figure 2 displays the inserted implants along with their positions and measurements.

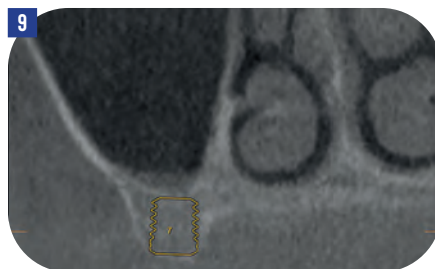
All implants were rehabilitated with immediate loading, using screw-retained prostheses placed within 24 hours of insertion. These prostheses were made of resin with metal frameworks (jointed bars). Subsequently, the definitive prosthesis was also screw-retained,



FIGURES 5 and 6: Side photographs highlighting the previously mentioned collapse, showing how the teeth in the lower arch occlude with the edentulous ridge in the upper arch



FIGURE 7: Initial panoramic radiograph. This image highlights the periodontal status of the remaining teeth, which exhibit horizontal bone loss, with two of them (LR1 and LR2) showing advanced circumferential defects



FIGURES 8 and 9: Planning images of the two upper implants included in the study at UR6 and UL6. In both cases, short implants were placed to avoid sinus elevation, adapting to the residual bone height

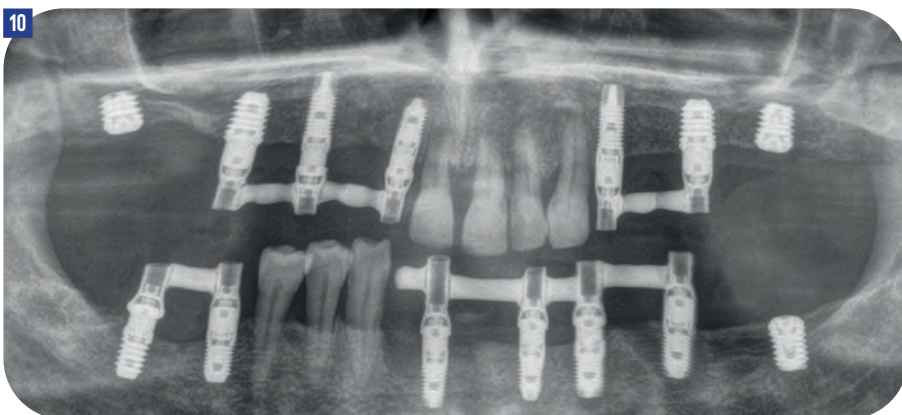


FIGURE 10: Initial panoramic radiograph. This image highlights the periodontal status of the remaining teeth, which exhibit horizontal bone loss, with two of them (LR1 and LR2) showing advanced circumferential defects

placed six months later in the upper maxilla and three months later in the mandible.

The material used for the definitive prostheses was metal-ceramic in the majority of cases (86.2%), while the remaining 13.8% were prostheses with a metal structure finished in resin.

Regarding the type of prosthesis, 51.7% of the implants were restored with full-arch prostheses, 44.8% with bridges of two to five units, and only one case was restored with a single crown. The antagonist for these prostheses was 72.3% screw-retained metal-ceramic prostheses, with ceramic-reconstructed teeth in 3.4% of cases, natural teeth in 14%, and resin prostheses over implants in 10.3%.

The survival rate of the implants was 100% throughout the follow-up period, which had a mean duration of 8.72 years (+/- 0.45), ranging from 8 to 10 years. There were no prosthetic complications during the entire follow-up; only two instances of screw loosening were recorded.

The mean mesial bone loss for all implants after one year of follow-up was 0.20mm (+/- 0.16), and the distal bone loss was 0.34mm (+/- 0.56). At the end of the follow-up period, the mean bone loss was 0.66mm for the mesial area (+/- 0.34) and 0.54mm for the distal area (+/- 0.28).

Figures 3 to 16 illustrate one of the cases included in the study.

DISCUSSION

Short and extra-short implants with immediate loading can now be considered routine procedures, as they can be performed in dental practices with total predictability, similar to what we observe with implants classified as 'conventional length'.

When immediate loading is applied to these implants, survival rates often show a decline in some studies, demonstrating variability ranging from 87% to 96.6%. The primary obstacle to achieving an adequate comparison of these rates, and thus the observed variability, lies in the diversity of lengths categorised as 'short' implants, as well as differences in insertion and loading protocols.

Furthermore, a uniform loading sequence was followed: provisional loading within 24 hours with immediate loading, and definitive prosthesis at six months in the upper arch and three months in the lower arch.

Thanks to the standardisation of these variables, the long-term results, with 100% survival up to 10 years, provide solid and reliable data. Based on these results, we can assert that this type of implant, when applying this protocol, offers a predictability that remains stable over time.





FIGURES 11 and 12: The immediate loading prostheses before taking measurements for the definitive prosthesis



FIGURES 13 and 14: Definitive prostheses in place

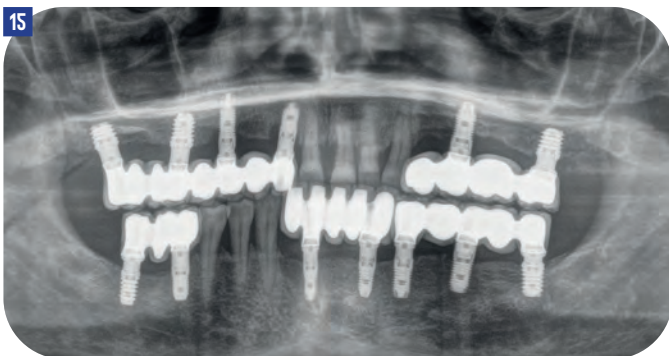


FIGURE 15: Panoramic radiograph one-year post-treatment, showing complete stability of the bone levels. The initially placed implant at UL3 for immediate loading was removed for the definitive prosthesis, as loading the more distal implant was unnecessary, and it was used as a transitional implant for this purpose

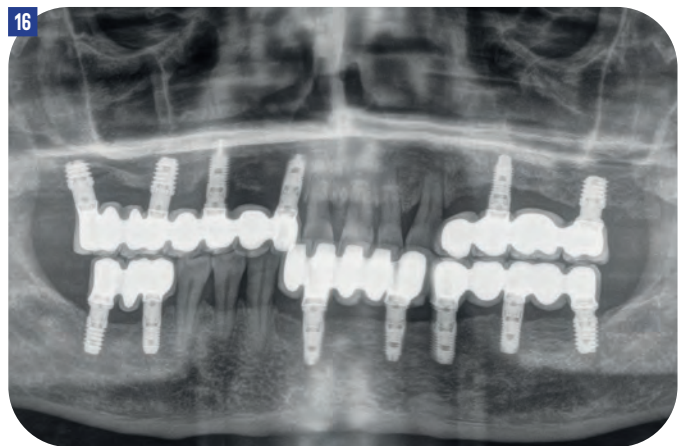


FIGURE 16: 10-year follow-up radiograph, showing complete stability of the treatment performed


The crestal bone loss of the implants evaluated after one year was 0.20mm in the mesial area (\pm 0.16mm) and 0.34mm in the distal area (\pm 0.56mm), figures comparable to those reported in other studies on short implants, where losses range from 0.4mm to 0.5mm in the first year of follow-up.

In the long term, with a follow-up of nine years, the bone loss observed in our study was 0.34mm in the mesial area (\pm 0.34mm) and 0.54mm in the distal area (\pm 0.28mm), results that are significantly lower compared to other studies that report average losses of 1.25mm (\pm 0.99mm) at three years.

Moreover, each implant system has its own drilling sequence and various approaches to rehabilitation, whether cemented, screw-retained, or utilising intermediate components. This diversity creates considerable heterogeneity in the data, hindering uniform and precise comparisons across different studies.

In this study, we utilised a single implant system with a homogeneous insertion protocol (biological drilling at low speeds), implants of the same length (5.5mm and 6.5mm), and a consistent rehabilitation approach: all implants were screw-retained using a transepitheal abutment.

CONCLUSION

Immediate loading of implants measuring 5.5mm and 6.5mm in length, provided that adequate primary stability is achieved, a careful insertion and rehabilitation protocol is followed, and splinted prostheses are utilised, does not pose a risk to the success of the implant or the preservation of the crestal bone, even in long-term follow-ups (between eight and 10 years). 

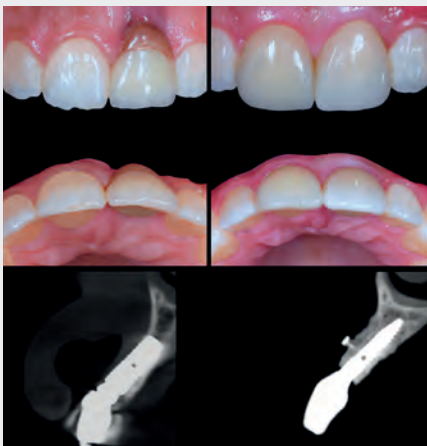
REFERENCES

 siobhan.hiscott@fmc.co.uk

TRYCARE ANNOUNCES A NEW ONE-DAY HANDS-ON WORKSHOP WITH DR ABDELSALAM ELASKARY, FOUNDER OF VESTIBULAR SOCKET THERAPY ON 10 MAY 2025



Dr Abdelsalam Elaskary



TRYCARE

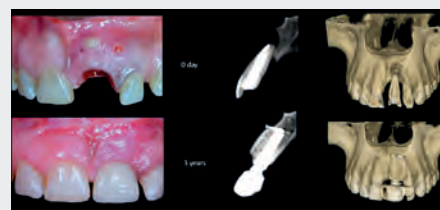
For more information, including details of the early bird discount before 28 February, contact your local Trycare representative, visit www.trycare.co.uk or email Denise Law on events@trycare.co.uk.

FIRST VST COURSE ARRIVES IN MAY!

Trycare are delighted to announce that Dr Abdelsalam Elaskary, founder of Vestibular Socket Therapy (VST), will be bringing his internationally popular VST One Day Hands-on Workshop to the UK for the first time on Saturday 10 May. But there are only 20 places available so early booking is recommended to ensure you secure your place! An event not to be missed, Dr Elaskary's one-day programme of presentations and hands-on workshop focuses on the most recent and updated implant protocols, in particular VST which allows treatment of fresh extraction sites with immediate placement that reliably delivers optimised outcomes even in the absence of labial walls. Emphasis will be on managing and optimising regenerative outcomes in the aesthetic zone.

VST AND THE SIX DAY PROTOCOL: ADVANTAGES

VST is an extensively scientifically validated surgical technique invented by Dr Elaskary and employed by many leading Implantologists worldwide. It enables treatment of a wide range of socket varieties suffering from complete loss of their labial plates. This unique technique allows immediate placement in severely defective sockets and offers a protocol to place immediate implants in sockets with active infection via Dr Elaskary's "Six Day Protocol". Thanks to minimised intra-operative surgical trauma with less complicated surgical intervention, it saves treatment time and minimizes the number of interventions. This innovative surgical approach reduces post-extraction socket collapse and the need for long-term provisional restoration, and provides predictable aesthetic outcomes.



VST ONE-DAY HANDS-ON WORKSHOP

Hosted by Trycare at the Royal Leonardo Hotel, Tower Bridge, London, on Saturday 10 May 2025, successful applicants will have the opportunity to learn everything they need to know in order to place immediate implants in the absence of labial bone using Vestibular Socket Therapy. With 6.5 hours CPD with Learning Outcome C, the Course fee is just £795 including VAT, with an Early Bird before 28 February of just £695 including VAT. Places have already been booked by international Delegates eager to take advantage of this opportunity to learn more about Dr Elaskary's Vestibular Socket Therapy – book today to ensure you don't miss out.

DR ABDELSALAM ELASKARY

Dr Elaskary graduated in Dental Science at the University of Alexandria in 1986 and Implantology at the University of Frankfurt in 1993. In 1993 he also graduated from the Periodontics Department at Tufts University in Boston, Massachusetts, US.

Dr Elaskary subsequently obtained his Master in Dental Implantology at the Periodontics Department at the Health and Science Center of San Antonio, Texas, US, in 1994. Founder of the Vestibular Socket Therapy treatment, he is the owner of the Elaskary & Associates clinic and educational institute located in Alexandria, Egypt.

Formerly Assistant Clinical Professor at the University of Florida, Jacksonville, US, from 2000 to 2005, Dr Elaskary is currently Visiting Lecturer at the Dental School of the Implantology Department at the University of New York, US.

He is President of the Arab Society of Oral Implantology (ASOI) in Cairo, Egypt, and has authored three books in the field of dental implantology and oral reconstruction, which have been translated into several international languages. Dr Elaskary has also authored many articles in the field of implant dentistry.

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Rehabilitation with vertical augmentation

Selvaraj Balaji presents a case that required both vertical and horizontal soft and hard tissue augmentation to achieve an aesthetic and functional result

A female patient presented with concerns about her smile aesthetics due to her failed upper bridge. She was getting married the following year and was worried that her lack of confidence smiling in front of people would have a negative impact on her big day.

The initial assessment revealed that she had an anterior bridge, which had been in place for around 10 to 15 years and no longer looked right in the smile.

The patient had approached other dentists to enquire about dental implants, but had only been offered a new bridge due to the amount of bone and soft tissue loss.

ASSESSMENT AND PLANNING

A comprehensive clinical assessment was conducted, including clinical photographs, a radiograph, and evaluation of the oral hygiene, smile line and all other relevant aspects.

The patient was referred to a colleague to assess the health and stability of the UR1 and UL3, which were the teeth supporting the bridge. It was important to establish the long-term prognosis of these teeth before making any further decisions about treatment.

The professional recommendation was that these teeth would likely remain stable for the foreseeable future.

When the patient returned to the practice, the bridge was removed and a CT scan was taken to assess the bone level. This confirmed that the patient had both horizontal and vertical hard and soft tissue defects. As such, bone and soft tissue augmentation were indicated

as part of the restoration process, to ensure sufficient tissue for the successful placement of the dental implants.

The CT scan and impressions were used to plan the treatment, identifying the ideal position, angle and depth for the implants with respect to the final restoration.

It was necessary to plan vertical bone augmentation using a non-resorbable

PTFE membrane. A combination of autogenous bone mixed with xenograft would be used.

All of this, including the potential benefits, risks and limitations of treatment were described in detail to the patient. The importance of long-term oral hygiene was also emphasised to the patient, who gave fully informed consent to proceed.

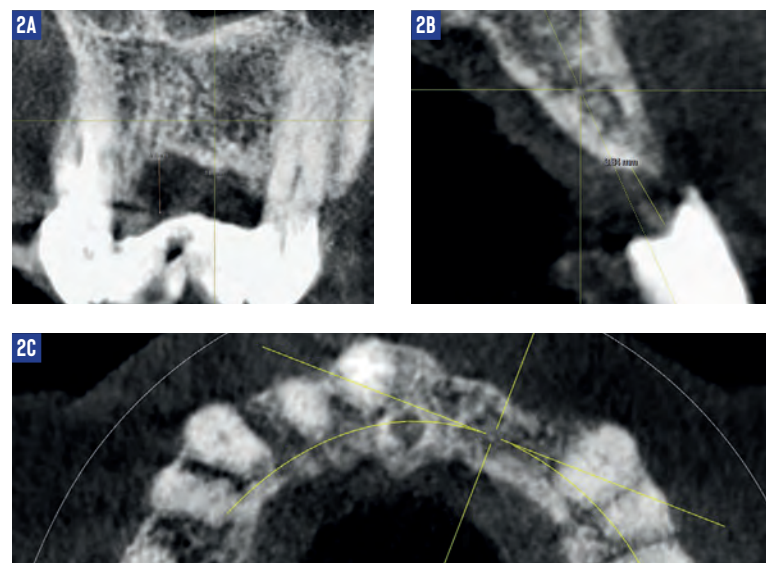


DR SELVARAJ BALAJI

BDS MFDS
RCPS(GLA) MFD
SRCS(ED) LDS
RCS(ENG)
Since obtaining his BDS degree, Selvaraj has worked in maxillofacial units in the UK and gained substantial experience in surgical dentistry. He is the principal dentist of The Gallery Dental Group, which is made up of Meadow Walk Dental Practice and The Gallery Dental & Implant Centre. Selvaraj is also the founder of the Academy of Soft and Hard Tissue Augmentation (ASHA). For details, visit www.ashaclub.co.uk.



FIGURE 1: Patient presentation



FIGURES 2A to 2C: Radiographic assessment



BONE AUGMENTATION

On the day of surgery, the area was sufficiently numbed and a very wide flap was raised, otherwise known as a safety flap. An autogenous bone block was harvested from the lower left ramus of the mandible using a Master-Core trephine bur and Safescraper Twist to collect the cortical bone.

The bone block was particulated to facilitate early vascularisation of the graft material for enhanced healing. It is also easy to shape the graft in this form in order to properly accommodate the shape and depth of the defect.

A mixture of 60% autogenous bone and 40% xenograft was created. The PTFE membrane was shaped according to the defect size and shape, placed and stabilised in the palatal bone with master pins.

The graft material was then applied to the defect. The membrane was folded buccally and stabilised with further master pins. It is important, at this stage, to ensure that the membrane adaptation is both stable and tight enough to hold the graft material in place. Any movement of the membrane or the graft material will lead to bone loss and could impact the treatment outcome.

Soft tissue handling is also crucial. Closure of the defect is paramount to avoid exposure of the membrane and the complications associated with this. For this case, the flap was released by using three separate techniques; the first was a mucoperio elastic technique, the second a perioplasty, and the third was orbicularis oris muscle extension.

This clinical approach allowed the release of the buccal flap to safely and effectively accommodate both the hard and soft tissue grafts.

The site was closed with PTFE sutures using a bi-layer closure, where connective tissue meets connective tissue. The patient was given standard postoperative oral hygiene instructions, and the site was left to heal for around eight months.

IMPLANT PLACEMENT, SOFT TISSUE GRAFTING AND RESTORATIONS

Healing after the first phase of treatment was uneventful. The patient returned for the implant placement appointment as planned, during which the graft was exposed and the membrane removed. Good, solid bone was revealed, confirming this an appropriate time for implant surgery.

Following the original treatment plan, two implants (3.6 x 11mm) were placed in the UL1 and UL2 positions. The soft tissue graft was performed simultaneously, using what I call the wedding cake technique. This involves



FIGURE 3: Bridge removal



FIGURE 4: Bridge removed, occlusal view



FIGURE 5: Safety flap raised exposing vertical bone defect

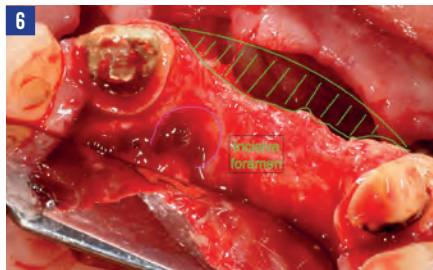


FIGURE 6: Horizontal bone defect revealed, avoiding vital structures during surgery



FIGURE 7A: Bone harvest site at left lower ramus of the mandible



FIGURE 7B: Harvesting cortical bone

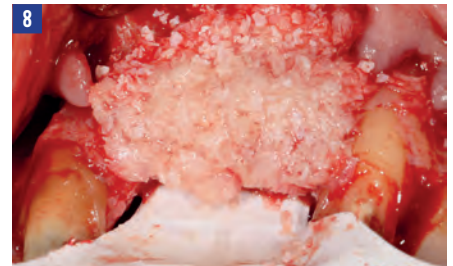


FIGURE 8: Mixture of autogenous bone and xenograft placed



FIGURE 9: Bone graft held in place with a PTFE membrane secured with master pins

The bone grafting technique described in this case was chosen because it offers predictable results

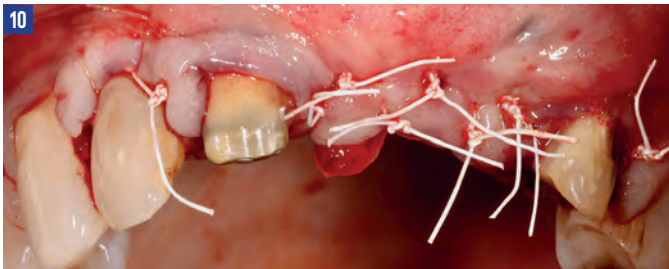


FIGURE 10: Flap closed without tension



FIGURE 11: Site healed

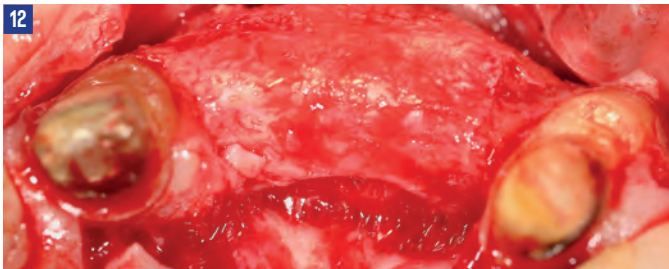
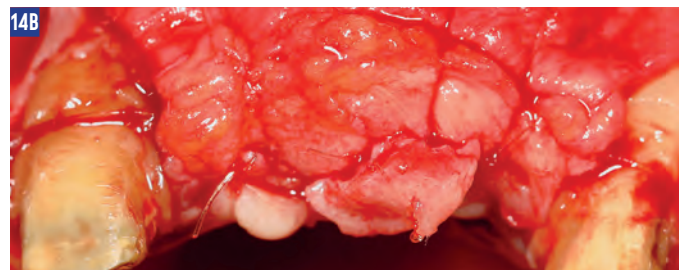
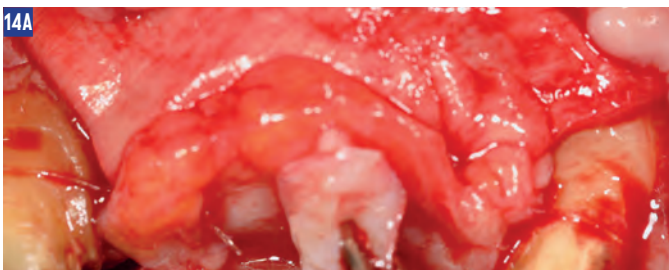


FIGURE 12: Site reopened after hard tissue augmentation healing



FIGURE 13: Implants placed in UL1 and UL2 positions according to the plan



FIGURES 14A and 14B: Soft tissue grafting with wedding cake technique



FIGURE 15: Soft tissue contour post-healing after temporary crown



FIGURE 16: Implant-retained crowns placed on UL1 and UL2, with standard crowns on UR1, UR2 and UR3

placing a thick layer of soft tissue, followed by a thinner layer of tissue on the top. This approach increases the thickness of the soft tissue around the implant crown, optimising healing and aesthetics. The site was once again closed tension-free using PTFE sutures.

Another three months were allowed for healing, before the implants were exposed and restored with screw-retained temporary implant crowns designed to contour the papillae. When ready for the final restorations, the patient received implant crowns on the UL1 and UL2, and standard crowns were placed on the UR1, UR2 and UR3 to complete the smile.

DISCUSSION

The bone grafting technique described in this case report was chosen because it offers predictable results when implemented effectively.

With the right amount of autogenous bone and careful management of the flap closure before and after implant placement, we were able to optimise both the functional and aesthetic outcome.

Exposure of the membrane is a very common complication associated with this type of surgery, and it usually occurs because the soft tissue or flap closure has not been correctly managed.

The soft tissue graft is also important in order to increase the gingival thickness around the implant crown – this should involve both horizontal and vertical grafting for the best results.

As can be seen from the eight-year follow-up photos, meticulously implementing these techniques deliver long-term stable results. [C](#)

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The advancements in periodontal precision are ever evolving. Emerging technologies, such as 3D printing for customised bone grafts and scaffolds, and the use of AI for diagnostics and treatment planning, promise significant improvements in managing complex cases – Wasim Ido, p60

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**AZIM MALIK**

Azim is a specialist periodontist and implant surgeon, practising at Norton Implants on Harley Street, London. A co-founder of Edudent Academy, he is also dedicated to advancing colleagues' dental education. Visit edudent.co.uk for more details.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Periodontics

Educational aims and objectives:

To discuss the role of periodontology in modern implant dentistry. This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



It is well-documented that supportive periodontal therapy is crucial for maintaining the health of implants. Eliminating residual pockets after initial treatment is essential in avoiding biological complications, with regular recall visits vital for clinicians to monitor periodontal health – all of which are the cornerstone of long-term implant success and periodontitis prevention (Durrani, Shukla and Painuly, 2019).

Successful implant dentistry goes beyond implant placement; it also involves addressing any associated soft tissue complexities.

In cases of advanced periodontal disease, I advocate for saving natural teeth where possible, reserving implants for instances where natural teeth are no longer viable. The best implant in the world is the one that nature has given us. In cases of periodontal disease, I will always ensure stabilisation first, working with patients to manage gum disease effectively.

Only when periodontal treatments fail would I consider implant placement.

After periodontal treatment and surgery, we sometimes reach a point where we cannot achieve the desired outcomes for every tooth. With a patient with 32 teeth affected by gum disease, a few teeth may not have responded well and remained mobile despite all efforts. At this stage, we must decide: do we keep these teeth, risking further bone loss that could be needed for future implants?

When teeth exhibit disease or mobility despite treatment, we discuss the option of extraction and potential implant placement, minimising future bone loss and preserving implant site integrity.

If the better option is to remove failing teeth and consider implants to provide a stable, anchored solution, then we discuss options with the patient. I explain that removing these teeth might restore stability, allowing for secure, immobile implants as a long-term solution – something many patients prefer.

Success, to me, means the patient can eat and smile confidently without hesitation or discomfort. If natural teeth remain functional, we retain them; if not, implants provide a dependable alternative, but our first goal is always to stabilise the gum disease.

SOFT TISSUE QUALITY

The quality of the surrounding soft tissue is a critical factor in implant placement, especially when gum tissue is limited. After building the bone, concentrate on thickening the gum around the implant, which typically involves grafting.

In most cases, we harvest soft tissue from the palate and secure it around the implant site to achieve the necessary thickness and keratinisation. Using the patient's own tissue remains the gold standard, though human and porcine derivatives are also available.

By following a staged approach, we can ensure the implant's structural integrity and aesthetic quality.

My current method, particularly for patients needing both implant placement and bone grafting, begins with building up the bone without soft tissue grafting at this stage. Once the bone is fully developed and mineralised, I place the implant. During implant exposure, I generally perform soft tissue grafting at the same time.

Implant failure is a critical concern for any practitioner. Poor plaque control, discomfort from thin, soft tissue leading to avoidance of brushing and, occasionally, improperly placed implants are leading causes of implant failure in my experience.

Many patients assume implants are a permanent solution, so I explain that implants require maintenance throughout life; without it, they risk complications that can get overlooked if they feel no symptoms.

We take time to educate patients on plaque control and identify any necessary soft or bone augmentation. If needed, I will also decontaminate the implant surface.

Successful implant dentistry goes beyond implant placement. [Azim Malik](#) explores the importance of addressing any associated soft tissue complexities

Periodontics and implant therapy

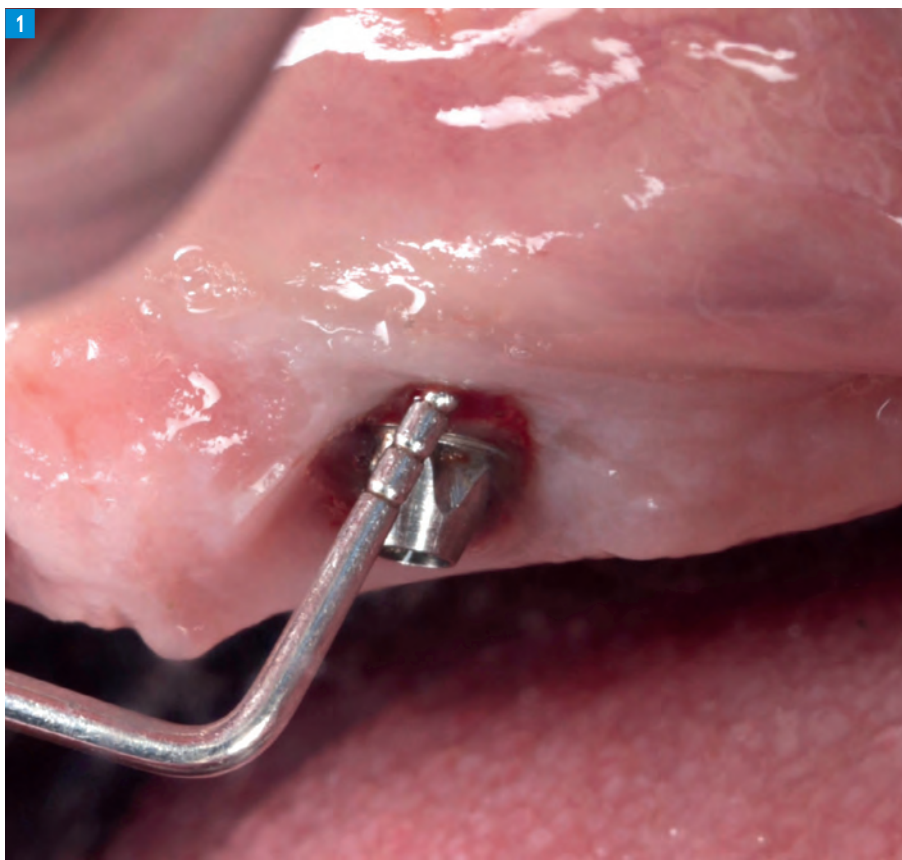


FIGURE 1: Periodontal pocketing

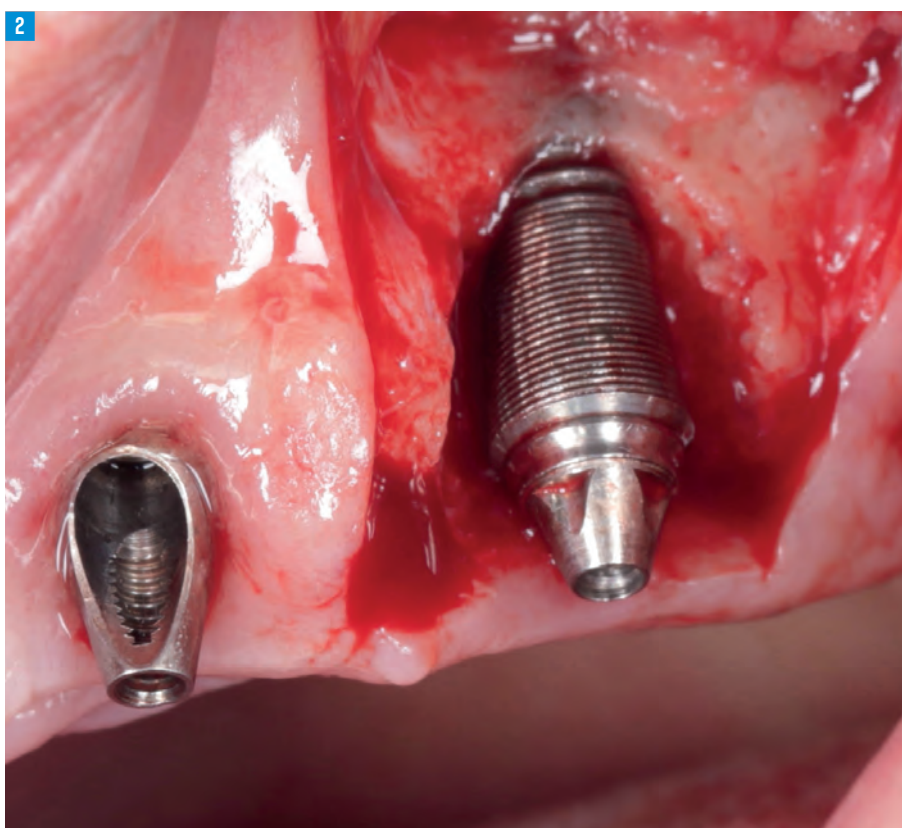


FIGURE 2: Peri-implantitis with exposed threads

The free gingival graft remains my preferred option where possible

Implant surface quality plays a critical role in maintenance, and highly porous surfaces may be more prone to bacterial infiltration, increasing the risk of peri-implantitis.

Occasionally, I may perform an implantoplasty, removing implant threads as part of decontamination and smoothing the surface to make it less hospitable to bacteria.

SOFT TISSUE AUGMENTATION

When it comes to soft tissue augmentation, my preferred method is a free gingival graft. The free gingival graft guarantees keratinisation, offering the thick, resilient gum needed around implants. However, due to its subtler appearance, I opt for a connective tissue graft in prominent aesthetic areas because the free gingival graft may not blend as seamlessly with surrounding tissue in the front of the mouth.

In patients with a high smile line in the upper, for example, the graft we use often has a slightly different colour because it's taken from the palette, so it's a little pinker and looks odd when the patient smiles. So, in the aesthetic area in the front and upper, I usually go for a connective tissue graft, which is, again, taken from a palate but uses a slightly different technique.

I believe this is the most predictable approach for achieving gum thickness and keratinisation in the posterior regions or lower jaw.

I've also found advances, such as Dr Istvan Urban's strip graft technique and human allografts, to be beneficial in select cases.

Human donor skin, or allografts, have yielded excellent results, yet the free gingival graft remains my preferred option where possible.

POSTOPERATIVE CARE

Follow-up care is integral to implant longevity, and for postoperative care, I integrate Gengigel, which contains high molecular weight hyaluronic acid, into this treatment regimen to reduce inflammation and promote healing.

After any surgical intervention, some level of inflammation is inevitable, and Gengigel aids in mitigating this to enhance recovery.

Hyaluronic acid, a natural anti-inflammatory agent, supports tissue healing, making it particularly valuable after gum surgery. We provide patients with a Gengigel mouthrinse as



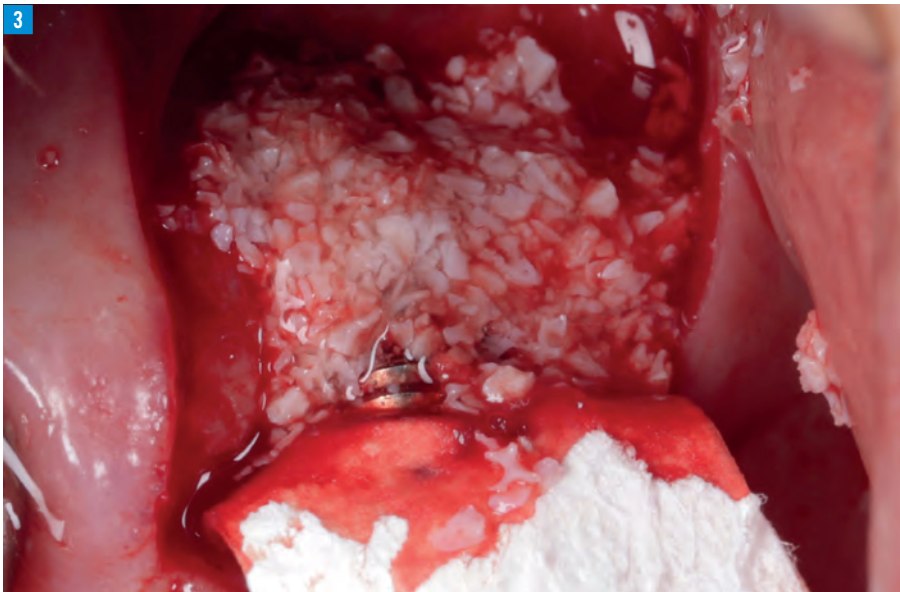


FIGURE 3: Bone grafting

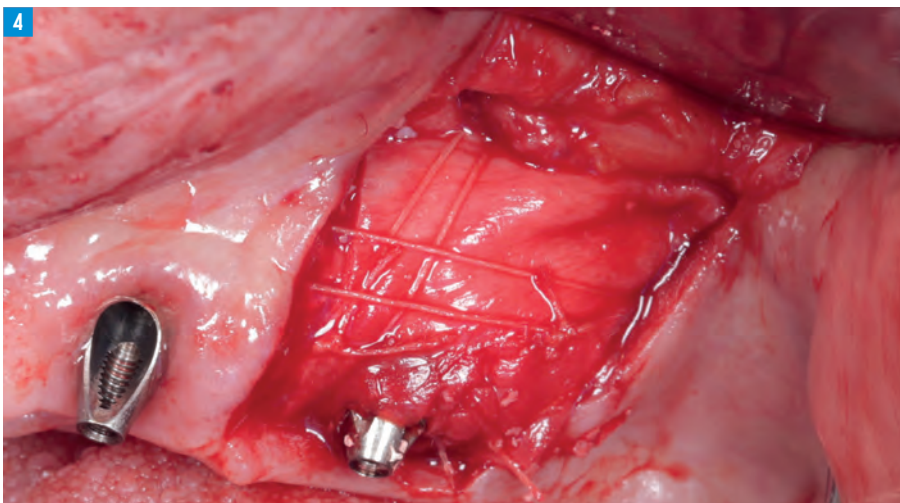


FIGURE 4: Membrane and stabilising sutures

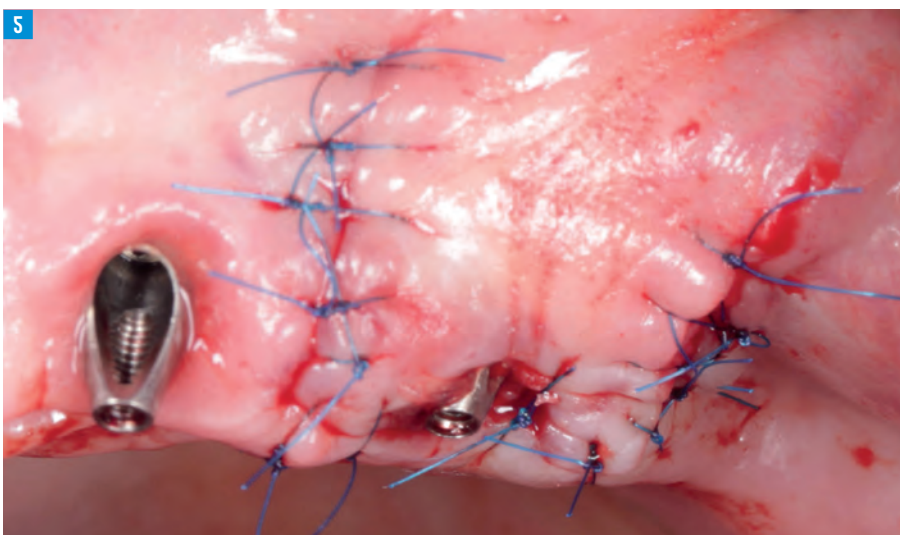


FIGURE 5: Final sutures and closure

part of their postoperative care package, and it consistently contributes to better outcomes.

I advise patients to see a hygienist every six months – or every three months for those with a history of periodontal disease, and an annual review with myself ensures implant integrity.

Often, I record demonstrations on patients' mobile devices to show them effective cleaning techniques around implants and prostheses.

This proactive approach empowers them to ensure long-term maintenance, as having a visual guide to hand can make a significant difference in their home care routine.

EMERGING TRENDS AND TECHNOLOGIES

There are a couple of emerging trends and technologies in periodontology that have the potential of elevating patient care.


I'm enthusiastic about enhancing outcomes for periodontal patients, and have found that using local antibiotics and a sulfonic acid product called Hybenx benefits the patients I treat for peri-implantitis and mucositis.

Laser and electrosurgery have also found a place in my practice, aiding soft tissue treatment and improving postoperative recovery.

In modern implant dentistry, long-term success hinges on more than just implant placement; it requires meticulous maintenance, proactive periodontal therapy, and patient empowerment through education.

Preserving natural teeth remains a priority, with implants reserved for cases where they offer a stable, lasting solution.

I am committed comprehensive patient care – from soft tissue grafting to advanced surgical techniques, ensuring that each implant is resilient against time and biological challenges.

Integrating regular follow-ups, patient-guided home care, and emerging technologies exemplifies an approach that safeguards implant health, ensuring patients enjoy confident, lifelong smiles. 

REFERENCE

Durrani F, Shukla A, Painuly H (2019) Implant therapy in patients with chronic periodontitis: A short follow-up with a successful outcome. *J Adv Periodontol Implant Dent* 11(1): 39-45

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Periodontal precision: a new era

Wasim Idoo explores advanced strategies and innovative practices for handling and managing complicated periodontic cases

The realm of periodontics has undergone a remarkable transformation, propelled by cutting-edge technologies and a deeper understanding of the complex connection between oral and systemic health. This evolution is embraced at Olive Tree Dental, where I practise, with a commitment to excellence and a holistic patient approach.

Historically, managing complex periodontal cases – characterised by extensive tissue destruction, compromised tooth support, and potential systemic comorbidities – posed significant challenges.

Today, however, a new era of periodontal precision has emerged. Advanced tools and techniques empower dental practitioners to deliver reliable outcomes, restoring oral health even in the most challenging scenarios.

Conventional treatments like scaling and root planing remain foundational, often falling short of tackling advanced disease progression.

Periodontists are now able to employ a sophisticated array of methodologies, wielding a comprehensive toolbox of instruments and techniques to manoeuvre through the intricacies of severe periodontitis.

In this article I want to take a closer look at the innovative practices reshaping the management of what previously could be considered as ‘problematic periodontal cases’.

MICROSURGICAL PERIODONTICS

Microsurgical methodologies have revolutionised periodontal surgery. By employing high-powered operating microscopes and specialised micro-tools, periodontists can carry out detailed procedures with unmatched accuracy and minimal tissue disruption.

This technique brings several benefits in complex cases:

- Enhanced visualisation: magnification enables meticulous debridement of root surfaces, removal of granulation tissue and precise suturing placement, especially in deep pockets and furcation areas
- Reduced trauma: smaller incisions and careful tissue management facilitate quicker healing, reduce postoperative discomfort and lessen the risk of complications like recession and scarring
- Improved aesthetics: microsurgical techniques are invaluable in procedures such as crown lengthening and soft tissue grafting, where delicate tissue handling is crucial for achieving optimal aesthetic outcomes.

LASER THERAPY

Laser technology offers a versatile resource for addressing complex periodontic cases. Various laser wavelengths, including diode, Nd:YAG, and Er:YAG, have properties that make them suitable for diverse applications:

- Bacterial reduction: lasers effectively target and exterminate periodontal pathogens in deep pockets, including

areas unreachable by traditional tools

- Tissue ablation: precise elimination of diseased tissue, such as granulation matter and infected pocket epithelium, can occur with minimal harm to surrounding healthy tissues
- Biostimulation: specific laser wavelengths encourage wound healing, stimulate bone regeneration and mitigate inflammation, hastening healing and improving results in intricate regenerative procedures.

GTR AND BONE GRAFTING

Intricate periodontal cases frequently involve considerable bone loss, necessitating regenerative treatments to restore lost tooth support.

Guided tissue regeneration (GTR) utilises barrier membranes to create a protected space for bone and periodontal ligament regeneration, excluding unwanted epithelial cells that may obstruct the process.

This approach, combined with various bone grafting materials, has transformed the management of severe bone defects:

- Bone graft materials: a range of bone graft alternatives, including autografts, allografts, xenografts and synthetic materials, are available to meet diverse clinical requirements
- Growth factors: integrating growth factors, such as platelet-rich plasma (PRP) and enamelmatrix derivative (EMD), into GTR and bone grafting techniques can further amplify tissue regeneration and speed up healing.



WASIM IDOO

Wasim is a dentist with a special interest in periodontics. Practising at Olive Tree Dental in Reading, he is passionate about all aspects of periodontal care, with a strong commitment to helping patients achieve optimal gum health.

INNOVATIVE PERIODONTAL PRACTICES: KEY TAKEAWAYS

**Microsurgical periodontics**

- Specialised microscopes and micro-tools enable detailed, minimally invasive procedures
- Benefits include better visualisation, reduced trauma, faster healing and improved aesthetics.

Laser therapy

- Different laser wavelengths (diode, Nd:YAG, Er:YAG) are used for:
 - Bacterial reduction in hard-to-reach pockets
 - Precise diseased tissue removal
 - Biostimulation for faster healing and bone regeneration.

Guided tissue regeneration (GTR) and bone grafting

- Barrier membranes and graft materials support bone and ligament regrowth
- Growth factors like platelet-rich plasma (PRP) boost regeneration and speed healing.

Cone beam computed tomography (CBCT)

- Provides high-resolution 3D imaging for accurate diagnosis and treatment planning
- Supports evaluation of bone morphology, implant placement and treatment monitoring.

CONE BEAM COMPUTED TOMOGRAPHY

Precise diagnosis and treatment planning are crucial in complicated periodontal cases. Cone beam computed tomography (CBCT) provides high-resolution, three-dimensional images of the teeth, jaws, and adjacent structures, allowing for accurate evaluation of:

- Bone morphology: detailed visualisation of bone defects, furcation involvement, and root proximity to essential structures enables informed decision-making regarding treatment options
- Implant planning: CBCT is essential for assessing bone volume and quality when considering various implant scenarios, ensuring accurate implant placement and optimal osseointegration
- Treatment monitoring: postoperative CBCT scans facilitate precise evaluation of bone regeneration and implant integration, allowing clinicians to assess treatment results and make necessary adjustments.

MANAGING COMPLEX CASES

Tackling complex periodontal cases often requires a collaborative strategy involving various dental specialists, such as endodontists, prosthodontists, and orthodontists. This interdisciplinary method ensures holistic care, addressing not only periodontal health but also restorative and functional requirements.

The advancements in periodontal precision are ever evolving. Emerging technologies, such as 3D printing for customised bone grafts and scaffolds, and the use of artificial intelligence for diagnostics and treatment planning, promise significant improvements in managing complex cases.

The era of periodontal precision has established a new benchmark of care for patients with complicated periodontal conditions.

By adopting these modern methodologies, periodontists are now better equipped than ever to restore oral health, functionality and aesthetics, even in the most challenging circumstances, ultimately enhancing their patients' quality of life.

The ongoing innovations in this field foreshadow even more sophisticated and effective solutions in the future, ensuring a brighter outlook for periodontal health. [CD](#)

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ORTHODONTICS

FILIPE AMANTE

The missing piece:
anterior upper tooth

64



MICHAEL SANTANGELI

Restoring aesthetics and
function

69



We discussed techniques the patient could implement to halt his parafunctional habits, but ultimately restoring a functional occlusion was the only way to optimise restorative results for years to come – Michael Santangeli, p69

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**FILIFE AMANTE**

LMD MSC

Filipe is an award-winning dentist practising at Together Dental in Norfolk. He qualified in Oporto, Portugal and underwent a masters of implantology and oral rehabilitation in Paris in 2009, before moving to the UK in 2010. He has also completed extensive postgraduate training in Brazil, Portugal, Italy and UK. His main areas of interest include cosmetic and digital dentistry, facial aesthetics, with a special focus on dental implants and orthodontics with clear aligners.

ENHANCED CPD

GDC anticipated outcome: C

CPD hours: one

Topic: Orthodontics

Educational aims and objectives:

To discuss the absence of an upper canine and all the complex occlusal and aesthetic implications this missing dental element poses. This article qualifies for one hour of enhanced CPD; answer the questions on page 74 or scan the QR code.



Several centuries ago, Aristotle suggested that beauty is symmetry or, to be more literal and exact, he stated that: 'The chief forms of beauty are order and symmetry'.

The human eye is strangely drawn to what's different, particularly when it comes to facial asymmetries, and when the issue is a missing front tooth, the pursuit of a natural-looking and symmetrical smile can become quite an obsessive and disappointing quest.

The upper front teeth are the core of our smile, and are usually arranged in a group of six anterior teeth – four incisors and two canines. They may be aligned, crowded, oddly shaped or in absolutely perfect shape and position. When one of these pieces is missing, or terribly out of its natural order or position, it can cause a considerable impact on the appearance of the patient's smile and, by consequence, on their willingness to smile with confidence.

Canines in particular are quite distinctive teeth; they are the longest rooted teeth, often with pointy incisal edges, and considerably wider and thicker when compared to their neighbouring incisors. It is frequent that these teeth are the piece of the smile puzzle that doesn't quite fit evenly in the smile display, leading patients to avoid smiling because of their unpleasant-looking 'fangs' or 'vampire-teeth'.

The aim of this article is to discuss two different clinical cases where two young female patients had orthodontic treatment with clear aligners with one commonality – the absence of one of the upper canines and all the complex occlusal and aesthetic implications this missing dental element poses.

CASE ONE

A 33-year-old female patient attended for a consultation at our practice in Norwich. Her chief complaint was that she was unhappy with her 'crooked and stained teeth' (Figure 1).

The patient reported no health issues, she had never smoked, and was a regular attender for dental routine appointments. She brushed her teeth twice a day, flossed and used mouthwash. She also mentioned that she had been missing a front tooth 'that never came through' since she was a child.

On examination, it became obvious that her upper right permanent canine – UR3 – was missing and the absence of this tooth was confirmed after taking a panoramic X-ray.

Congenital absence of teeth, or hypodontia, is the most prevalent craniofacial malformation and dental anomaly (Goodman et al, 1994) and the literature reports prevalences that fluctuate across studies, continents, racial groups, sexes and jaws.

Some researchers have found the maxillary permanent canine to be missing, but the instances of this are very rare (Larmour et al, 2005).



FIGURE 1: Case one – initial full face photograph

Filipe Amante presents two case reports utilising an orthodontic approach with clear aligners to address a missing upper canine

The missing piece: anterior upper tooth



FIGURE 2: Case one – initial anterior intraoral



FIGURE 3: Case one – initial RHS intraoral



FIGURE 4: Case one – initial LHS intraoral

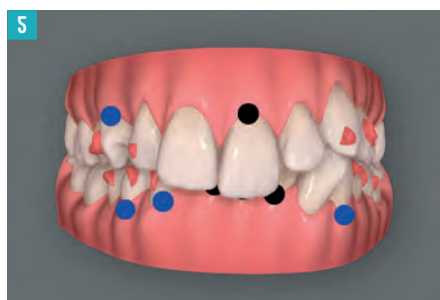


FIGURE 5: Case one – Clincheck initial

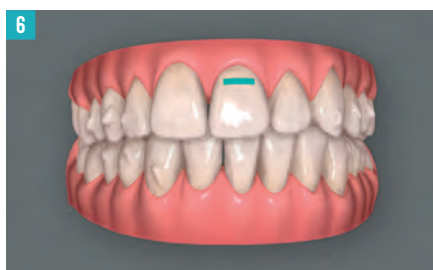


FIGURE 6: Case one – Clincheck before refinement



FIGURE 7: Case one – final anterior intraoral



FIGURE 8: Case one – final RHS intraoral



FIGURE 9: Case one – final LHS intraoral



FIGURE 10: Case one – final full face photograph

In this case, the patient’s anamnesis and radiographical data suggested she was one of these exceptions.

The patient reported she had lost the deciduous upper right canine – URC – when she was still in primary school, when her general dental practitioner opted to extract it after it started to become mobile and uncomfortable to bite on. Since then, the corresponding gap had closed. This had an impact on the eruption and position of the neighbouring teeth, particularly on the upper right first premolar – UR4 – that was severely mesially rotated.

The patient also presented with severe crowding of her anterior teeth, particularly in the mandible where an anterior crossbite was evident on the lower left canine area. The occlusal assessment revealed an increased overbite caused by a marked anterior deep bite.

The oral hygiene was fair but greatly impacted by the heavy anterior crowding that affected the ability for the patient to perform adequate interdental hygiene.

Finally, her teeth were severely stained. The patient reported she used mouthwash daily to ‘help with her gums’. We can deduce that the staining was a likely outcome caused by its regular use.

The patient was hoping to not only improve the appearance of her smile but also facilitate her oral hygiene and improve the overall longevity of her dentition. It was therefore clear that a multidisciplinary treatment plan, including orthodontic treatment, was the advisable route to follow.

Treatment plan

Different orthodontic treatment options were discussed, including conventional fixed and lingual orthodontics. The patient decided to proceed with a treatment using clear aligners.

Orthodontic treatment with clear aligners have become quite popular, particularly with young adults, as this approach enables patients to go through their orthodontic journey in a discreet, efficient and convenient way, ensuring that the teeth are being moved to a position that is more functional, aesthetic and easier to keep clean without the need to have to resort to a fixed metal appliance.

A maxilla and mandible intraoral scan was subsequently performed, as well as a digital record of the intermaxillary occlusion, followed by a set of intraoral and extraoral photos (Figures 3 and 4).

These digital records, together with a comprehensive and detailed prescription were submitted to Align Technology in view to order a bespoke digital treatment plan – Clincheck (Figure 5). This was provided within a few days in the form of a video simulation that was forwarded to the patient via email.

The patient was motivated and keen to proceed with the proposed treatment plan, which entailed a comprehensive periodontal treatment with some hygienist appointments, followed by an initial number of 26 clear aligners, and would be concluded with tooth whitening treatment once the orthodontic movement stage was finished and the retention stage was in place.

It was highlighted that, due to the absence of an anterior tooth, the predicted final aesthetic



outcome would be compromised, particularly due to the shifting of the midline, which would cause a discrepancy between maxilla and mandible, and also because of the anatomy of the dental elements, as the upper right first pre-molar – UR₄ – would effectively be in the position of the missing upper canine.

The patient was happy with the treatment simulation and the treatment box was subsequently ordered. As protocolled in our workflow, we start by placing all the attachments and perform all the interproximal reduction required in an initial appointment. In this case, six maxillary attachments and eight mandibular attachments were placed.

The patient was meticulously instructed on how to place, remove and clean her aligners. Speech tests were also performed, and the patient seemed to tolerate the aligners easily and quite motivated to follow the instructions given. Following this initial appointment, review appointments were recommended to take place every six to eight weeks to ensure the orthodontic movements were happening as predicted and the treatment was ‘on track’.

Review, retention and result

During each of the review appointments, the patient always seemed motivated to use her aligners as instructed and a clear improvement was noted for her oral hygiene. In my experience, patients often become more motivated with their oral hygiene habits and even improve their dietary preferences (with less snacking and consumption of healthier foods) as they go through orthodontic treatment with clear aligners. Having gone through the initial sequence of aligners and an additional set of eight refinement aligners (Figure 6), the results obtained were quite satisfactory with a considerable improvement of both the occlusal dynamics and the alignment of the dental elements noted. The retention stage followed the active orthodontic stage with the provision of removable Essix retainers, manufactured by Providental3D. The patient was instructed to use the removable retainers sporadically during the daytime and constantly during the night-time period. A subsequent three-month review appointment was booked to review the retention.

The removable retainers were also used as whitening trays and a Boutique Whitening night-time kit, which included four syringes of 16% carbamide peroxide, was provided.

The patient was absolutely delighted with the treatment outcome and, despite the absence of such as important anterior tooth, we were able to finish the case with a pleasant outcome from both an aesthetic as well as occlusal point of view (Figures 7 to 10).

CASE TWO

A 29-year-old female patient attended for a consultation at our Watton practice in Norfolk. She was looking to improve her smile and mentioned during the initial appointment that she particularly disliked her ‘protruding fang’ and would like to have it removed to ‘straighten her smile’ (Figure 11).

She hadn’t attended for a routine dental appointment for some time, but had no complaints.

The patient was healthy, a non-smoker, and brushed her teeth twice a day but didn’t perform any form of interdental hygiene.

Due to the prolonged absence to the dental practice, the patient hadn’t had any form of periodontal treatment for quite some time and

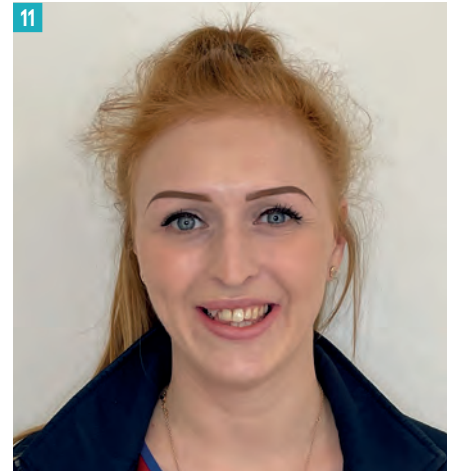


FIGURE 11: Case two – initial full face photograph



FIGURE 12: Case two – initial anterior intraoral



FIGURE 13: Case two – initial RHS intraoral



FIGURE 14: Case two – initial LHS extraoral

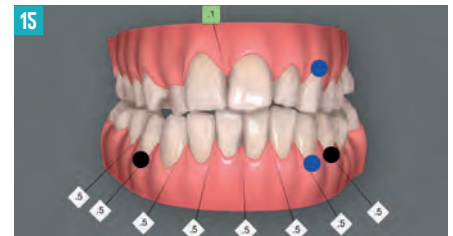


FIGURE 15: Case two – Clincheck initial



FIGURE 16: Case two – Clincheck before refinement



FIGURE 17: Case two – before refinement RHS intraoral



FIGURE 18: Case two – before refinement LHS intraoral



FIGURE 19: Case two – final anterior intraoral



FIGURE 20: Case two – final full face photograph

her gums were inflamed, suggesting a marginal gingivitis, possibly related to some interdental calculus that was noted.

Her upper right canine – UR₃ – was buccally displaced and positioned quite high up cervically, leading to the incompetence of her lips (Figure 12).

The patient was adamant she wanted this tooth extracted followed by orthodontic treatment with clear aligners.

An intraoral scan, a sequence of intraoral and extraoral photos and a panoramic X-ray were taken in view to perform an orthodontic assessment.

The patient was also booked in for a hygienist appointment and oral hygiene instructions were given.

Tooth extraction

The extraction of a definitive tooth, particularly an anterior one, is a serious clinical decision that needs to be discussed in detail. The possible clinical outcomes, implications and alternatives need to be pondered before choosing this resolution.

Choosing the route of non-extraction is always our preferable treatment option, but in certain cases, it can be a necessary evil. Due to the extreme position of the UR₃, preserving and aligning this tooth would be very challenging and promised to be a lengthy, if at all possible, process.

After having discussed the implications of this scenario, it was agreed to perform the extraction of this tooth prior to the commencement of the orthodontic treatment (Figures 12 to 14).

The extraction of the tooth was performed uneventfully and with no difficulty, as the buccal position of UR₃ meant that there was barely any bone anteriorly. The treatment was done



FIGURE 21: Case one – smile makeover (before and after)

atraumatically to preserve both soft and hard tissue.

After a healing period of four weeks, a new intraoral scan and set of photos were taken and subsequently submitted with an orthodontic prescription to Align Technology in view to order a Clincheck treatment simulation (Figure 15).

Treatment, refinement and result

Once again, the limitations of having a missing anterior tooth were discussed, but the patient was very happy with the predicted virtual simulation.

The treatment box was ordered and in a matter of a few days the treatment started.

The placement of eight maxillary and six mandibular attachments was subsequently performed and the patient was fitted with her first pair of aligners, and was also given detailed instructions about daily usage, oral hygiene and dietary habits.

The patient was reviewed every eight weeks and finished the initial course of 22 aligners, after which an additional eight refinement aligners were provided (Figures 16 to 18).

Once the active orthodontic stage was complete, the patient was fitted with a fixed palatal retainer as well as a pair of removable Essix retainers that she was instructed to use every night.


Night-time Boutique Whitening treatment, entailing the usage of four syringes of 16% carbamide peroxide, followed and the results obtained were extremely rewarding for both the patient and our clinical team (Figures 19 and 20).



FIGURE 22: Case two – smile makeover (before and after)

CONCLUSION

A missing anterior upper tooth poses a great aesthetical challenge due to the impact it has on the symmetry of the patient's smile. In these cases, clinicians often have to resort to approaches that involve masking this important absence by attempting to trick the human eye and minimising the visual impact of this crucial missing piece.

This article has showcased two different cases where an orthodontic approach was used with clear aligners, to address two clinical scenarios where an upper canine was absent and the results obtained were quite satisfactory (Figures 21 and 22). 

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Restoring aesthetics and function

Michael Santangeli presents a long-term solution to a class II division 2 malocclusion with mild to severe incisal wear

A 36-year-old male patient presented with concerns about the aesthetics of his dentition, primarily regarding mild to severe wear on his anterior dentition. A regular attendee of the practice, we had discussed his compromised anterior envelope and how his teeth were in a non-harmonious position for optimal function in previous appointments.

He was interested in learning about the potential treatment options available to him to improve function and aesthetics.

A full orthodontic assessment was carried out. Mild wear was observed on the upper incisors, and moderate to severe wear on the lowers, creating concerns about the functional viability of these teeth in the long-term. This was compounded by a class II division 2 malocclusion and a restricted anterior envelope of function.

Each of these factors can significantly exacerbate tooth wear, which lead to his condition and, without appropriate intervention, would have worsened. Digital scans were used to assess the existing intercusp positions, and unfavourable results were observed in the incisal areas.

X-ray assessments were completed, and the patient was deemed to have adequate bone health for orthodontic treatment. His oral hygiene was acceptable, but he was a habitual nail biter. This parafunctional habit is well known as a potential cause of tooth wear (Algadhi, 2021). Intraoral images were attained with a DSLR camera.



FIGURE 1: Mild wear on the upper incisors, moderate to severe wear on the lower incisors, anterior view



FIGURE 2: Wear on the upper incisors in occlusion, anterior view



FIGURE 3: Pre-treatment, right lateral view



FIGURE 4: Pre-treatment, left lateral view

TREATMENT PLANNING

A number of treatment plans were prepared and presented to the patient. Soft splint therapy and continual monitoring of the dentition was discussed. While this would be a more affordable form of treatment for the patient, it would not address the cause of tooth wear entirely, merely mask it.

Taking a Dahl approach was discussed, readjusting the bite to create space in the anterior dentition and then building up the incisors with composite to restore aesthetics and function. This too would not be enough to prevent long-term problems, as the restricted envelope of function meant that he would still be prone to wear upon the restorations. The patient appreciated the alignment of the dentition would need



FIGURE 5: Wear in the upper arch, occlusal view



FIGURE 6: Prominent wear in the lower arch, occlusal view



DR MICHAEL SANTANGELI

Michael graduated from Liverpool Dental School with honours and distinctions in all subjects. He received multiple academic prizes upon graduation, including the prestigious Malcom Foster Medal, awarded to the student with the highest overall finals grade. Michael provides general dentistry, orthodontic and restorative care at Starbeck Dental Centre in Harrogate.



correcting. To ensure longevity of the restoration, it was proposed that the patient undergo a course of orthodontic treatment to correct the mild crowding in the upper arch and moderate to severe crowding in the lower dentition, while intruding both the upper and lower anterior teeth.

This would be achieved with a view to create space in the intercuspal positions in order to restore the lower incisors to the correct height and anatomy, in turn reversing years of non-carious tissue loss and minimising the risk of it happening again.

This approach leaned heavily on the skills and insights I acquired from the Align, Bleach & Bond (ABB) course with the IAS Academy. Without the experiences the course gave me in aligning and restoring complex cases, I may have only been able to provide a soft splint, which is ultimately not the most optimal outcome for the patient, and so need to refer the case for orthodontic treatment. The approach also leaned on the philosophy of minimally invasive, but long-term care, which was imparted onto me by the tutors.

Each treatment plan was presented to the patient with its positive and negatives. He was receptive to each, and gave informed consent to proceed with orthodontic treatment with clear aligners, followed by composite restorations.

TREATMENT

Clear aligners were the chosen orthodontic approach due to their aesthetic advantages. In total, 20 appliances were used throughout the process, with the patient instructed to wear them for a minimum of 22 hours a day. He was also advised on how to maintain his oral hygiene to an optimal standard, with direction to routinely clean the aligners.

Each aligner was worn for around seven days at a time, and the patient experienced no issues. He was exceptionally compliant, and the treatment plan tracked with the in vivo outcomes, requiring no adjustments during the process. Post-treatment scans displayed that the desired movements had been achieved from the clear aligner therapy.

With successful intrusion of the incisors, there was adequate intercuspal space for restorations to be built in the lower arch.

A digital wax-up allowed for precise planning of this aspect, and also the chance to visually display the treatment to the patient. Using technology in this way means clinicians can create a 'trial smile' that can assess function and aesthetics reliably before further treatment is provided, creating a more predictable outcome.

Following the completion of orthodontic care, the patient underwent a course of whitening to achieve an aesthetic, bright shade.

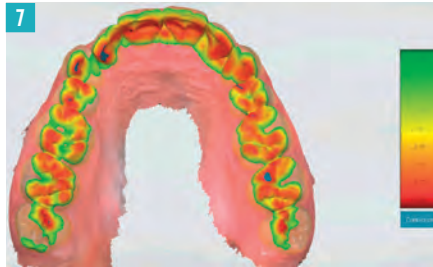


FIGURE 7: Occlusal analysis finds no space in intercuspal positions for restorations

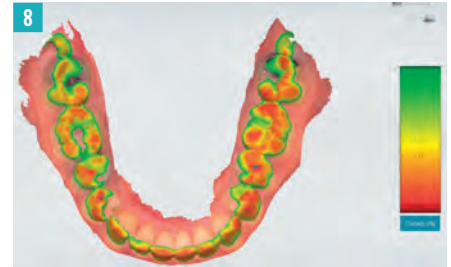


FIGURE 8: Occlusal analysis of the lower arch



FIGURE 9: Post-orthodontic treatment, alignment complete



FIGURE 10: Anterior dentition after orthodontic treatment

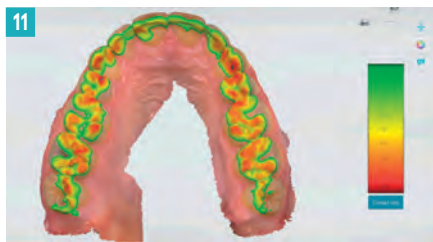


FIGURE 11: Occlusal analysis after orthodontic treatment showing space created in upper arch

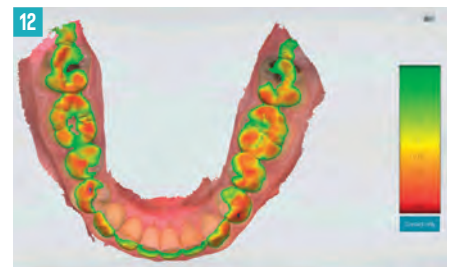


FIGURE 12: Occlusal analysis of the lower arch shows space creation achieved



FIGURE 13: Digital wax-up of restored lower incisors in occlusion

His lower incisors were built up with the G-aenial Universal Injectable and the Exaclear clear VPS, utilising a composite injection moulding technique. This approach is favourable as it allows the clinician to effectively build height while retaining aesthetics and durability. The upper incisors were restored with freehand edge-bonding, another technique I was able to refine through the IAS Academy ABB course.



FIGURE 14: Digital wax-up of restored lower incisors, occlusal view



FIGURE 15: Equipment used during composite injection moulding placement



FIGURE 16: Restored lower anterior dentition following injection moulding



FIGURE 17: Anterior guidance showing posterior disclusion



FIGURE 18: Final result, anterior view in occlusion



FIGURE 19: Canine guidance and anterior and posterior disclusion, showing a mutually protected occlusion



FIGURE 20: Canine guidance and anterior and posterior disclusion, showing a mutually protected occlusion



FIGURE 21: Final result, lower arch, occlusal view



FIGURE 22: Final result, upper arch, occlusal view

The restorations were checked to ensure they optimised the occlusal contacts, resulting in a restored anterior dentition with improved aesthetics and function in everyday life.

Removable clear retainers were provided to be worn nightly, and the patient was instructed to maintain his oral hygiene routine and regularly clean the new appliances.


FINAL RESULT

The patient was delighted with the outcome, and agreed that the extra steps for orthodontic treatment were worth the extended period of care. I was equally delighted, not least for the immediate result, but knowing that it would be a long-term solution.

Had the teeth been left in malocclusion, the failure of restorative work is almost an eventuality, suffering the same fate as the natural dentition.

We discussed techniques the patient could implement to halt his parafunctional habits, but ultimately restoring a functional occlusion was the only way to optimise restorative results for years to come.

Without improving my clinical knowledge through advanced training courses, it would be impossible for me to deliver such results to my patients without referrals.

Taking courses like the Align, Bleach & Bond course from the IAS Academy allows me to present these complex treatments in house, and make patients for life. 

REFERENCE

Algadhi A (2021) Tooth surface loss: definitions, prevention and diagnosis. *Saudi J Oral Dent Res* 6(3): 129-133



PRODUCTS USED

G-aenial Universal Injectable, Exaclear GC

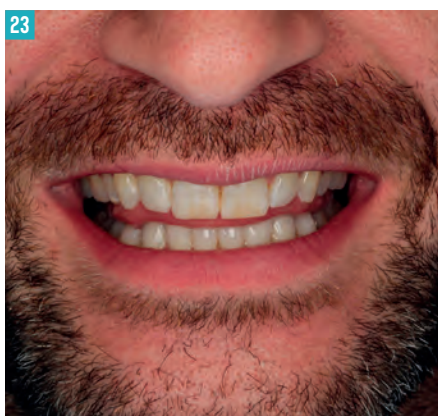


FIGURE 23: Final result, smile view

EVIDENCE-BASED EDUCATION

Ucer Clinic

ICE Postgraduate Institute and Hospital strongly believes in its mission to provide evidence-based training to all members of the dental team.

Led by eminent specialist oral surgeon, Professor Cemal Ucer, ICE offers standalone CPD training opportunities as well as accreditation by the University of Salford for postgraduate courses. Every course is developed using extensive clinical research and experience in implant dentistry.

For example, the advanced certificate in bone and tissue regeneration and sinus grafting combines the expertise of ENT consultants, oral surgeons and implant experts to deliver a comprehensive, hands-on programme.

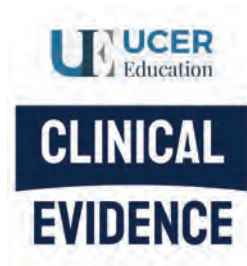
The four-part course, with an optional opportunity to perform sinus-graft surgery under expert supervision, draws from the highest quality research to enable delegates to gain total confidence in the theory and practice of the advanced techniques available in the field today.

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With Abro Basic Multistratum and Denture Gingiva Basic Mono resins, Zirkonzahn introduces new PMMA-based materials that are particularly biocompatible and health-friendly due to their low residual monomer concentration.



Abro Basic Multistratum shows a natural colour gradient from dentine to the enamel and improved material properties in terms of translucency values, flexural strength as well as fracture and abrasion resistance, which make it particularly suited for the manufacture of denture teeth.



However, it can also be used for long-term temporaries and various secondary and tertiary structures.



On the other hand, Denture Gingiva Basic Mono is a gingiva-coloured resin with improved material properties in terms of flexural strength and fracture resistance, specifically conceived for the production of denture bases.

The resin blanks are also available in 125mm diameter for the manufacture of up to two denture bases in just one milling process.

The gingival area of the restorations can be then characterised individually with Gingiva-Composites. Their colour spectrum is based on the company's ICE Ceramics Tissue shades from light to dark: through the temporary, dentists and patients can get an immediate aesthetic impression of the final restoration.

www.zirkonzahn.com

CONNECTION FOR STRENGTH AND AESTHETICS

Biohorizons Camlog

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



'Importantly, the new conical connection, adapted from the evidenced, long-term Conelog connection, achieves an enhanced emergence profile, which is crucial for soft tissue healing and aesthetics. The addition of the 3.3mm diameter also provides greater versatility in areas of limited bone, providing a strong base for restorations, even in compromised sites. In fact, it offers strength in situations where other implants wouldn't – they are simply too wide.'

'With the excellent connection of the Tapered Pro Conical implant, the Biohorizons Camlog portfolio is the complete package. Like all solutions from the manufacturer, it comes with the support of extensive research and innovation giving the clinician total peace of mind.'
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MINIMALLY INVASIVE EVALUATION **W&H**

Monitoring implant stability and osseointegration is easy with the Osstell Beacon from W&H. Appropriate even for high-risk patients, the Osstell Beacon provides an accurate ISQ reading in a matter of seconds. A Smartpeg is inserted into the implant, and stability is measured wirelessly, without risking the osseointegration process. Information is easily interpretable, and can be analysed, stored or shared as needed.

Data can be extracted and vital trends can be monitored over time to allow you to evaluate which implants can be loaded, and which require further healing. This data can be a vital tool in the patient communication process, as reasons for any adjustments to treatment, for example, can be discussed alongside documented evidence.

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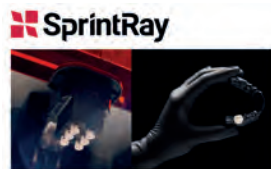


NEW CERAMIC CROWN RESIN **Sprintray**

The brand-new Sprintray Ceramic Crown is a hybrid nanoceramic that contains 51% nano ceramic material for unparalleled flexural strength and wear resistance. This new class of resin has been shown to deliver an excellent margin fit, optimising the effectiveness and longevity of restorative treatment. As an inorganic material, it is radiopaque for easy visibility on scans, and is FDA-cleared as a class II resin for definitive crowns, partial crowns and veneers.

The Sprintray Ceramic Crown completes the end-to-end solution for 3D printed restorations, changing the game for dental practitioners and their patients. Crowns can now be designed, 3D printed and finished chairside in less than 45 minutes – with no compromise in accuracy, strength or aesthetics – and at a price you and your patients won't believe.

The Sprintray Ceramic Crown is the ideal 3D printed chairside solution for definitive crowns, completely redefining the professional workflow. sprintray.com/en-uk



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Led by eminent specialist oral surgeon, Professor Cemal Ucer, the clinic performs everything from routine treatments to complex specialist oral surgery.

Services include the diagnosis of diseases of the mouth, zygomatic implant treatment, management of jaw and teeth pathology, facial pain management, wisdom tooth surgery, cyst removal, dentoalveolar surgery, pre-prosthetic oral surgery, reconstructive bone surgery, and much more.

In addition to providing expert assistance with complex cases, referring to the Ucer Clinic ensures your patients are treated by caring and attentive professionals. Prompt and professional communication of key information throughout the treatment process guarantees that patients receive seamless care.

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**GENERAL DENTISTRY
CD/FEB/KHAN/PAGE 12**

1. How many stages are there in the development of the tooth germ?
 - a. Three
 - b. Four
 - c. Five
 - d. Six
2. What is the hardest mammalian tissue?
 - a. Dentine
 - b. Pulp
 - c. Enamel
 - d. Cementum
3. When does the bud stage occur of intrauterine life?
 - a. Week five
 - b. Week six
 - c. Week seven
 - d. Week eight
4. Extrinsic acids consist of...
 - a. Citric acid
 - b. Acetic acid
 - c. Phosphoric acid
 - d. All of the above

**AESTHETIC DENTISTRY
CD/FEB/LALIA/PAGE 19**

1. According to the author, what makes closing a midline diastema a challenging situation for a dentist?
 - a. The width of the centrals must be even
 - b. The midline must be upright
 - c. The midline must be in line with the face
 - d. All of the above
2. Regarding treatment options, why did the patient choose to utilise tooth whitening followed by layered composite bonding veneers on the four upper anterior teeth?
 - a. He wanted to make his teeth look larger
 - b. It was quicker
 - c. It did not require the use of long-term retention
 - d. All of the above
3. What colour does Tokuyama Universal Bond II turn after mixing, giving a visual indication that it has been mixed properly?
 - a. Blue
 - b. Orange
 - c. Green
 - d. Black
4. When building up the palatal walls of the incisal edges, which Asteria body shade was used?
 - a. A1B
 - b. A2B
 - c. A3B
 - d. A4B

**DIGITAL DENTISTRY
CD/FEB/CUCCHIARO/PAGE 28**

1. In this case, which tooth was present in the lower jaw?
 - a. UR3
 - b. UL3
 - c. LR3
 - d. LL3
2. What was evaluated in the patient's mouth by means of try-ins?
 - a. Aesthetic aspects
 - b. Functional aspects
 - c. Phonetic aspects
 - d. All of the above
3. Which two sinter metal crowns were subsequently gold-plated?
 - a. UR3 and UL3
 - b. UR4 and UL4
 - c. UR5 and UL5
 - d. UR6 and UL6
4. Zirkonzahn's innovative protocol for bonding teeth to the denture bases is based on what principle?
 - a. Cold welding
 - b. Hot welding
 - c. Resistance welding
 - d. Stick welding

**ENDODONTICS
CD/FEB/ORSTEEN/PAGE 39**

1. The patient had originally been seen in January 2024 with some pain associated with which tooth?
 - a. UL6
 - b. UL7
 - c. LL6
 - d. LL7
2. What did the periapical radiographs show?
 - a. Some calcification
 - b. Significant curvature of the mesiobuccal canal
 - c. Slight curvature of the distobuccal canal
 - d. Apical radiolucency
3. How many days were left between assessment and consultation and the treatment being performed?
 - a. Seven days
 - b. 10 days
 - c. 17 days
 - d. 27 days
4. Why was it important to adopt a conservative approach in this case?
 - a. To try to preserve as much of the tooth as possible
 - b. To try and achieve an aesthetic result
 - c. To try and achieve patency in the apical third
 - d. None of the above

IMPLANT DENTISTRY CD/FEB/ANITUA/PAGE 45

1. When did the Spanish Society of Implantology publish a consensus document on immediate and early loading in implants, establishing specific recommendations for its application?
 - a. 2000
 - b. 2001
 - c. 2002
 - d. 2003
2. What was the minimum implant length recommended by the 2007 systematic review on immediate loading?
 - a. 10mm
 - b. 11mm
 - c. 12mm
 - d. 13mm
3. In the presented study, what did all patients undergo as part of a diagnostic protocol?
 - a. Dental CBCT scan
 - b. Diagnostic model
 - c. Wax-up
 - d. All of the above
4. In the study, what was the most frequent implant location, accounting for 24.1%?
 - a. LR7
 - b. LL7
 - c. UR7
 - d. UL7

ORAL HEALTH CD/FEB/MALIK/PAGE 56

1. What does the author state is a critical factor in implant placement, especially when gum tissue is limited?
 - a. Minimal bone loss
 - b. The quality of the surrounding soft tissue
 - c. Using an appropriate implant
 - d. Successful soft tissue grafting
2. In the author's experience, what is a leading cause of implant failure?
 - a. Poor plaque control
 - b. Avoidance of brushing
 - c. Improperly placed implants
 - d. All of the above
3. When it comes to soft tissue augmentation in prominent aesthetic areas, what does the author opt for?
 - a. Connective tissue graft
 - b. Free gingival graft
 - c. Acellular dermis graft
 - d. Pedicle graft
4. In modern implant dentistry, in addition to implant placement, what does long-term success require?
 - a. Meticulous maintenance
 - b. Proactive periodontal therapy
 - c. Patient empowerment through education
 - d. All of the above

ORTHODONTICS CD/FEB/AMANTE/PAGE 64

1. Which tooth was missing in case one, confirmed by taking a panoramic X-ray?
 - a. UR1
 - b. UR3
 - c. UL1
 - d. UL2
2. In case one, how many clear aligners were proposed in the treatment plan?
 - a. Eight
 - b. 12
 - c. 26
 - d. 32
3. What was the healing period following the tooth extraction in case two?
 - a. One week
 - b. Two weeks
 - c. Three weeks
 - d. Four weeks
4. In case two, after the initial course of aligners, how many additional refinement aligners were provided?
 - a. Four
 - b. Six
 - c. Eight
 - d. 10

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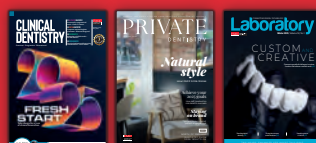
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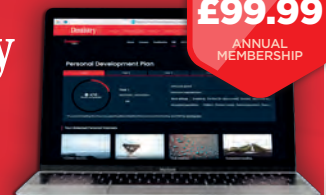


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