Vitamin D supports the immune system and is instrumental in development of healthy bone and muscles and strengthening of tooth enamel. Yet, according to an article published by the National Center for Biotechnology Information earlier this year, approximately one billion people worldwide have vitamin D deficiency, and 50% of the global population has vitamin D insufficiency.

A recent article published by Dental Tribune International (DTI) reported on previous studies that highlighted the impact of vitamin D deficiency on osseointegration and failure of immediate implants. Additionally, an optimal diet rich in vitamin D

**Sunshine vitamin D and COVID-19:**
Is there a correlation?
Marketing cooperation agreement between EMOVA, representing ITI, and CAPP Events & Training signed

By CAPP / Dental Tribune MEA

The International Team of Implantology (ITI) appointed EMOVA to conduct a programme in the UAE which will facilitate the fulfillment of requirements for obtaining privileges to practice implant dentistry. The ITI Implant Privilege programme will be promoted by CAPP Events & Training.

The ITI Implant Privilege is a modular course with both theory and mentored clinical elements, which has the support of the ITI. The speakers are international, regional and local, all of which are ITI Fellows or Members.

The course is structured and provides evidence and scientific background to implantology. Within the modules is a dedicated day in detailed case documentation and dental photography. Also provided is supportive e-learning modules to assist with home study and access to the Simple Advanced and Complex treatment planning tool. Based on the SAC planning tool delegates will simulate on models' variable clinical situations in preparation for the clinical modules.

The clinical days are for delegates to work with highly skilled mentors who will support and guide the participants to achieve outstanding implant placements and restoration of 20 or 30 implants. The course will also include a live surgery day with Prof. Bilal Al-Nawas from Gutenberg University Mainz (Germany) who is the main faculty lead of the programme. At the end of the course, the delegates will be awarded the ITI Curriculum Intermediate Certificate.

The signing ceremony was held at CAPP Training Institute and the marketing cooperation agreement was signed by Stephan Scherrer, Managing Director at CAPP Events & Training. The focus of the agreement is the marketing of the ITI Implant Privilege programme in the Middle East and beyond.

Peter Mollov (left), Marketing Director at CAPP Events and Training and Stephan Scherrer, Managing Director at EMOVA, sign the marketing cooperation agreement at CAPP Training Institute in Dubai.
THEORY FOUNDATION 1  I  21 – 24 SEP 2021  I  BASICS OF IMPLANTOLOGY

THEORY FOUNDATION 2  I  DATES TO BE ANNOUNCED  I  SURGICAL INTERVENTION
Programme Outline: Surgical Intervention Part 1, Surgical Intervention Part 2, Surgical Intervention Part 3 & Loading Protocols

THEORY FOUNDATION 3  I  DATES TO BE ANNOUNCED  I  PROSTHETIC REHABILITATION

THEORY INTERMEDIATE 4  I  DATES TO BE ANNOUNCED  I  SURGICAL INTERVENTION ADVANCED

THEORY INTERMEDIATE 5  I  DATES TO BE ANNOUNCED  I  ADVANCED PROSTHETIC INTERVENTION
Programme Outline: Advanced Aesthetic Rehabilitation Part 1, Advanced Aesthetic Rehabilitation Part 2

THEORY INTERMEDIATE 6  I  DATES TO BE ANNOUNCED  I  MANAGEMENT OF BIOLOGICAL & MECHANICAL COMPLICATIONS
Programme Outline: Biological Complication Management, Technical Complication Management, Assessment of Intermediate Modules

CLINICAL MODULES  |  LIVE PATIENT TREATMENT IN UNIVERSITY COLLEGE IN UAE  |  6 DAYS
Dates to be announced

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Prioritizing safety while reopening your office

By Ultradent

Reopening dental offices is a welcome sight to clinicians and patients alike. But concerns about COVID-19 are still top of mind among doctors. Ultradent knows how important it is to get back to work and we want to help you do it safely by making sure you have everything you need while protecting you, your staff, and your patients.

Prioritizing effective products and knowing on the procedures they assist will smooth the transition as your practice regains some normalcy.

Patient Protection

As we all get back to work, products that reduce exposure are a necessity to ensure everyone in your office stays safe.

Ultradent Syringe Covers and VALO Barrier Sleeves provide reliable, medical-grade protection to prevent cross-contamination. DermaDam dental dams and DermaDam UltraPro Disposable Dam Kit provide patients with added peace of mind and quickly. Ultradent Syringe Covers provide an easy and reliable barrier to prevent contamination. Ultradent Syringe Cover helps prevent up to 95% of splatter.

The Omni-Matrix Disposable Retainer and Matrix is designed to perfectly customize to any preparation. They are available in winged and wingless styles and stainless steel and mylar so you have the ideal matrix no matter the circumstances. Consepsis antibacterial solution can be used for procedural endodontic disinfection, prior to pulp capping, and after smear layer removal for canal disinfection.

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The Omn-Era Matrix is designed to perfectly customize to any preparation. They are available in winged and wingless styles and stainless steel and mylar so you have the ideal matrix no matter the circumstances. Consepsis antibacterial solution can be used for procedural endodontic disinfection, prior to pulp capping, and after smear layer removal for canal disinfection.

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The SphereTEC revolution continues...

New Neo Spectra ST flow – the simpler, more versatile esthetic flowable composite

By Dentsply Sirona

Dentsply Sirona’s Neo Spectra ST flow expands the benefits of novel SphereTEC filler technology to flowable composites. Excellent channel blending enables 5 shades to cover the full VITA* range, and flow-on-demand handling provides versatility across all traditional flowable indications.

Dentsply Sirona’s latest innovation in composite filler technology, SphereTEC, was introduced to the dental industry in 2015. Over 14 million composite restorations later, Dentsply Sirona introduces an expanded portfolio with SphereTEC technology. Clinicians will now be able to enjoy SphereTEC benefits in all composite cases with the comprehensive Neo Spectra ST portfolio. Neo, meaning ‘new’ or ‘revived’ emphasizes the modern, cutting-edge approach taken to optimize our composite portfolio. The Spectra ST part of the brand explains the portfolio’s coverage of the full range or ‘Spectra’ of handling preferences and esthetic needs optimized with SphereTEC technology.

Designed to perfectly complement Neo Spectra ST universal composite, new Neo Spectra ST Flow is characterized by its cutting-edge filler technology, SphereTEC – like with its universal composite counterpart, SphereTEC technology enables Neo Spectra ST flow composite to excel in the areas that matter most to dentists: handling, esthetics, and durability. SphereTEC fillers, proprietary to Dentsply Sirona and Neo Spectra ST Composites, are spherical-shaped, pre-polymerized fillers created from sub-micron barium glass. Spherical-shaped filler particles allow for excellent adaptation to cavity surfaces, and work together with smaller irregular-shaped filler particles in the material to achieve versatile, flow-on-demand handling. Precise match of SphereTEC filler to the Neo Spectra ST flow main matrix creates an excellent chameleon shade blending effect, and a perfect match to Neo Spectra ST universal composite shades. The unique structure of SphereTEC fillers maximizes composite strength and durability, while their sub-micron primary particle size ensures excellent esthetics and polishability.

The new Neo Spectra ST flow composite uses five universal CLOUD shades. A1 to A4 to cover the entire VITA® Classic range, streamlining flowable composite inventory and ensuring highly aesthetic clinical results thanks to their unique chameleon effect. Neo Spectra ST flow composite also offers one bleach shade (BW), two opaque dentin shades (D1 and D2), and one translucent enamel shade (E) to accommodate less frequent case demands.

For further information about the new Neo Spectra ST flow composite available from Dentsply Sirona, or to request a sample, please contact your local Dentsply Sirona sales representative.

Introducing Axeos

Dentsply Sirona’s imaging solution for exceptional patient experiences and greater practice success

By Dentsply Sirona

Dentsply Sirona’s reimaged imaging solutions drive patient-centered experiences, greater practice efficiency, and the opportunity for procedural expansion. To help deliver on such a promise, Dentsply Sirona introduces the new Axxeo™ 3D/2D imaging system, setting a new standard for extraoral imaging.

As dental practices adapt to new safety protocols and adjust their workflow practices, Dentsply Sirona continues to develop new solutions for both intraoral and extraoral imaging that produce superior images that support patient satisfaction and practice growth.

We’re excited to introduce two new and reimagined imaging technologies that will ultimately help dental professionals deliver happy and healthy smiles to their patients.

Axxeo - Experience the Difference

Recipient of the Red Dot Award for Production Design 2020, the Axxeo 3D/2D imaging system offers enhanced clinical confidence, smart connectivity, and an exceptional experience, with the largest field of view of any Dentsply Sirona 3D/2D system. Axxeo uses intelligent low dose exposure to capture high-quality images while providing procedure-to-use features to enhance patient comfort, such as smart height adjustment and quick scan times, that lead to exceptional patient experiences with high infection prevention standards.

Axxeo is powered by Sidexis 4 and seamlessly integrates with more than 250 practice management software systems and multiple treatment planning software like SICAT®, Innow, SICAT® Function and SICAT® Air, giving dental practices the opportunity to enhance current treatment offerings or expand into new procedural offerings in the future.

“Our purpose is to support dental professionals in providing healthy, happy smiles. Working with dentists to understand their needs and translating those into product solutions is what drives us. With our new imaging solution, we not only offer outstanding image quality, clinical safety and an easy-to-use interface but also smart integration to ensure seamless workflows and procedural processes,” says Don Casey, Chief Executive Officer at Dentsply Sirona.

“Waiting is a bad experience for both dentist and patient. Even worse, if I am unable to see what I need to see, I will have to repeat the image, then patient is gone because he does not trust my treatment,” says Prof. Chung How Kau, Department of Orthodontics, Birmingham, Alabama, USA. “Axxeo has exactly the right balance between excellence, speed and precision. The big volume exposure takes only 16 seconds and the image quality is great in both 2D and 3D formats. The ‘wow’ effect of the Axxeo technology sells my treatment.”

For more information about the full Dentsply Sirona portfolio, please contact your local representative.

Dentsply Sirona

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Omnican AF

The flexible tabletop unit. Now available in the Middle East & North Africa

By Dentsply Sirona

Dentsply Sirona is proud to announce the launch of the Omnicam AF intraoral camera, in the Middle East & North Africa region.

The portable Omnicam AF comprises the individual components of Omnicam, including camera tray and PC.

The camera can be easily taken from one treatment room to another – a big advantage for joint practices worldwide and is always up to date thanks to the continuous software updates.

Benefits of Omnicam:
- Comfortable handling
- Powder-free scanning
- Fast and precise full-arch scans
- Natural colour and easy shade analysis

Proven reliability. Your way.
With more than 7 million scans per year, Omnicam is one of the most widely used scanners on the market – now with the option of the Acquisition Center (AC) and the flexible tabletop unit (AF).

The Omnicam intraoral scanner gives you the flexibility to start your digital dentistry journey and develop as your practice grows.

For more information about the full Dentsply Sirona portfolio, please contact your local representative.

Medifil IX forte–glass ionomer filling material for a variety of indications

By PROMEDICA

Medifil IX forte can be used without conditioner or adhesive. Its main benefits are the non-sticky consistency and the perfect marginal adaption.

Optimal material characteristics and perfect handling
Medifil IX forte convinces by its great material properties, such as high compressive strength and abrasion resistance. Due to a variable mixing time the product’s consistency can be adjusted to a certain extend. The material can be modelled and polished immediately after the insertion without sticking to the instrument.

Benefits of the special capsule
Medifil IX forte comes in a special kind of capsule, which can be activated without an activator. Instead, the capsule is placed on a firm surface (e.g., a table) and pushed down by hand. The liquid containing flask is pushed into the powder chamber in order to combine powder and liquid.

After the ensuing mixing process, the capsule is immediately ready for use.

For more information, please contact
PROMEDICA
Dental Material GmbH
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Medifil IX forte–glass ionomer filling material

Glass ionomer filling material
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- Modulation is possible right after insertion
- Perfect marginal adaption
- High compressive strength and abrasion resistance
- Easy activation without the need of an activator

Light-curing micro-hybrid composite
- Applicable for various indications and all cavity classes
- High transpaency and a perfect colour adaption
- Polishable to a high gloss
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- High filler content
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When is too much light a bad thing in dentistry

By Hu-Friedy

The problem most hygienists don’t realize: glare

Dental hygienists rely on two senses to detect calculus: tactile sensitivity and an array of lights, lenses and mirrors to improve our vision.

One would think the more light, the better the view, right? That’s not necessarily. When light bounces off reflective surfaces and into our eyes, it can make it harder to see minute details introrally. And that can be a problem.

The problem with glare

Practical experience tells us there can be such a thing as too much light. If you’ve ever driven into the sun in the early morning or late afternoon, you know all too well how blinding light can limit your vision. Commutes at these times of day can become a driving nightmare as you squint, adjust your visor, and avert your gaze to avoid the sun’s rays. The moment the sun dips below the horizon is like sweet relief.

This demonstrates how unwanted, undirected light can become distracting visual "noise."

The impact of glare – reflected or refraction light – in dental care deserves more study. But what is clear is that there is a lot of light bouncing around the typical dental operatory. The light emitted by overhead lights and headlamps is stronger than ever, and banks of bright halogen bulbs illuminate many dental offices.

All this light can reflect off traditional metal instruments, limiting visibility. The next time you provide dental treatment, notice how often you shift your position to get a better viewing angle. The constant movement can add up, in terms of how long it takes to treat each patient and in the stress you inflict on your body. Every dental professional is already at risk for developing musculoskeletal issues, the DentistryQ article reports, "the ability to work with a high level of accuracy and improved control reduces treatment time and operator fatigue."

Glare may be more than a visual nuisance. A recent DentistryQ article pointed out that eye problems are the third most reported occupational health issue among dental professionals. Better vision promotes better posture (which is one reason loupes are recommended for practitioners over 40, the age when our ability to focus up close begins to degrade).

A 2013 study published in the Journal of the Tennessee Dental Association notes that the "white" LED headlamps gaining popularity with dental practitioners actually emit a combination of green and blue light. The hazards of retinal damage from blue light are well-documented, the study’s authors note. They also point out "the effect of high-intensity light reflective glare and magnification back to the practitioner’s eyes" is unexamined.

Reducing glare from mouth mirrors

Mouth mirrors are multifunctional instruments used in nearly every dental procedure. Mirrors are essential for visual inspection and oral examination. But a mirror can also be a significant source of glare.

Traditionally, mouth mirrors are held in place by stainless steel handles. Metal can be highly reflective, producing glare that obscures visibility.

Hu-Friedy has designed a new mouth mirror that addresses this issue. The new HD Black Line Mirror head and handle are coated with a durable matte black Diamond Like Carbon coating, which reduces glare up to 80% compared to shiny stainless-steel instruments. The matte finish cuts down on glare, while the black color provides better visual contrast in the mouth – both of which ensure superior visibility. This may mean you’ll find yourself needing to adjust your position less frequently to avoid unwanted shine.

It’s also worth pointing out that the material used in a dental mirror plays an important role in visibility, as well. Most mirrors are coated in rhodium or feature a resin (plastic) casing.

The High-Definition Mirror Glass used in the HD Black Line Mirror is 38.5% brighter than rhodium coated mirror glass and 50% brighter than other front-surface mirror glass. The matte finish of the handle means this brightness does not increase glare and instead facilitates a sharper, distortion-free image for quicker and more accurate visibility.

Ultimately, light can be a friend or a foe to a dental hygienist. When unfocused and undirected, light becomes glare that can impede your vision and make it harder to do your work. But armed with the right tools, you can marshal the focused light you need to provide superior care for your patients.

* Data on File

Editorial note: A list of references can be obtained from the publisher.

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Calibra is an XTS (AlTiN)** coated composite instrument which helps to provide the proper anatomical curvature to the dentin material layer of a restoration and leaves the ideal space for the final layer of enamel material. The Calibra “IN” point is used to define the dentinal skeleton, while the Calibra “OUT” point helps to reduce the chances of excess composite material being placed during the final layer of the restoration.

Discover more!
www.HuFriedy.eu/Calibra
Three possible steps into a digital workflow

Starting with an intraoral scan, explore more about three innovative ways to implement a digital workflow in daily practice.

By Dentspy Sirona

Intraoral scanners are now becoming commonplace in dental surgeries, as dentistry moves increasingly towards a fully digital workflow. Impression taking has long been recognised as one of the more uncomfortable experiences for patients and a time-consuming process for dental practitioners. However, thanks to digital intraoral scanners such as the revolutionary Primescan® and well-established Omnicam from Dentspy Sirona, alongside major developments in CAD/CAM technologies, the digital workflow is now revolutionising the standards of restorative treatment.

Dentspy Sirona aims to help dental professionals streamline their workflow through three digital workflows. We refer to these as i) seamless, ii) validated and iii) open.

1. The seamless workflow

The seamless workflow refers to Dentspy Sirona equipment, software and materials as an end-to-end solution designed to meet the needs of both practices and laboratories. With the optimal interaction of hardware and software, even the most complex treatments can be planned and executed with confidence.

When planning for implant restoration for instance, having taken an intraoral scan with Primescan you can send the scan directly to your preferred laboratory partner to outpatient-source-specific CAD/CAM abutments. As an alternative, temporary or fixed prosthetic solutions can be seamlessly designed and milled at the chairside using CEREC, providing a restorative solution in a single visit and giving clinicians the distinct advantage of having full control of the restorative programme.

2. The validated workflow

The validated workflow works to the same principle, but involves using third-party solutions validated by Dentspy Sirona, to ensure specific safety and efficiency standards are maintained. This allows secure data transfer to approved laboratories or external service providers for a wide range of appliances including clear aligners, retainers and implant guides.

3. The open workflow

The open workflow offers clinicians total choice and flexibility. After taking an intraoral scan, the clinician can export an open STL file and use it on any equipment and workflow options including CAD/CAM design and manufacturing in practice, outsourcing to any chosen laboratory or milling centre as well as collaborative implant, orthodontic or restorative treatment planning.

Primescan opens doors

Designed to support a range of digital workflows, Primescan offers the choice of seamless, validated and open transfer options. The 3D data can be further processed using software as part of planning for specific treatment areas including clear aligners in orthodontics and guides for dental implants.

Thanks to Primescan’s unprecedented accuracy, powerful processing speeds and ease of use, not only is the taking of digital impressions now much easier, but every step along the preferred digital pathway is integrated and efficient. Transparently priced, open, validated and future-proof, Primescan is your exciting first step into any digital workflow.

ADA supports point-of-care COVID-19 testing by dentists

By Dental Tribune USA

CHICAGO, ILL., USA: According to a new policy from the American Dental Association, point-of-care testing to screen patients for chronic diseases and other medical conditions, including COVID-19, that could complicate dental care or put the patient and dental staff at risk is within a dentist’s scope of practice. “Yet currently, rapid and reliable COVID-19 tests are not available to dentists for in-office use, which makes no sense,” states ADA President Dr. Daniel Klemmedson.

Klemmedson, who holds degrees in both dentistry and medicine, points out that dentists are doctors of oral health. “It is well within dentists’ scope of practice to screen patients and help to identify those infected with the virus.”

Klemmedson pointed out that dentists’ areas of care include not only their patients’ teeth, gums and supporting bone but also the muscles of the head, neck and jaw, the tongue, salivary glands, the nervous system of the head and neck and other areas. When appropriate, dentists perform procedures such as biopsies, and screen for chronic or infectious diseases, salivary gland function and oral cancer.

In addition, according to 2019-2020 data from the U.S. Centers for Disease Control and Prevention, 7.7% of people (22.6 million) reported having seen a dentist in the previous 12 months but no other medical professional.

“It makes practical sense for COVID-19 point of care testing to be included in screening procedures dentists perform,” Klemmedson said.

The U.S. Food and Drug Administration includes dentists among those professionals who can test for COVID-19. In addition, the CDC recommends dental facilities consider implementing pre-procedure testing for COVID-19, particularly during PPE shortages.

The ADA and state dental societies are actively advocating state and federal regulatory authorities to:

- Publicly recognize that point of care testing for COVID-19 is within dentists’ existing scope of practice, and
- Make COVID-19 tests available for use in dental practices.

“With dental practices reopened across the country, dentists are already screening patients for signs and symptoms of COVID-19, and referring patients for appropriate medical follow-up when indicated,” Klemmedson said. “Unfortunately, such screening alone will not identify all individuals who are infected. Identifying infected patients is key to being able to protect both patients and dental team members from exposure to the virus.”

Given that patients receiving dental treatment may be pre-symptomatic (infected but will develop symptoms in the next 14 days) or asymptomatic (infected but will never exhibit signs or symptoms of disease), Klemmedson said it is critical to identify those individuals carrying the virus so that it is possible to minimize their contacting and potentially infecting others.

(Source: ADA)
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  - Bridge Preparation Techniques | Articulator selection in Restorative Dentistry | Porcelain Inlays & Onlays | Tooth Wear: Diagnosis & Management of Tooth Surface Loss

- **Module 6** | November 2021 | Prof. Paul Tipton, Dr. Adam Toft & Dr. Ashish Rayarel
  - Smile Design | Veneer Cementation Techniques Practical | TMD, It’s Diagnosis and Treatment | Adhesive Bridge Preparation Techniques

- **Module 7** | February 2022 | Prof. Paul Tipton, Dr. Elaine Halley, Dr. Rami Haidar, Dr. Adam Toft & Dr. Ashish Rayarel
  - Botox & Dermal Fillers – A Dental Facial Aesthetics | Digital Smile Design (DSD) & Photography | Digital Dentistry, Orthodontics & Invisalign | Occlusion 3 Seminar, Treatment of the Worn Dentition, Vertical Dimension and Facial Aesthetics

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Minimally invasive endodontics: challenging prevailing paradigms

By A. H. Gluskin, C. I. Peters and O. A. Peters, USA

The primary goal of endodontic therapy is the long-term retention of a functional tooth by preventing or treating apical periodontitis. However, there are many other factors that impact endodontic outcomes such as the quality of the restoration and structure. The extent of root surface area exposed to the root canal preparation. Contemporary research efforts are currently directed to better understanding dentin behaviour and structure during aging and function. An alternative approach is to minimise structural changes during root canal therapy, which may result in a new strategy that can be labelled ‘minimally invasive endodontics’. This review addresses current clinical and laboratory data to provide an overview of this new endodontic paradigm.

Introduction

Technological advances in optics, instrumentation, materials, robotics, and computer systems over the last decades have introduced new strategies and possibilities to the medical profession. These innovations are clearly beneficial to patients by dramatically improving morbidity and mortality outcome associated with many surgical procedures.

Compared to medicine, such a shift to a non-invasive approach to surgery in dentistry has been more moderate and cautious, perhaps with the exception of endodontic and periodontal microsurgery. It is difficult to directly compare operative procedures done to the human body to those done on a tooth; however, a rational approach to dental procedures aimed at repairing or reversing disease should be to conserve maximum structural integrity. This in turn has the potential to increase the functional prognosis for any given tooth.

Preserving structural integrity

It is apparent that remaining structural integrity of the tooth (Fig. 1) is a key factor that determines prognosis as it relates to future function of the tooth after restoration. Maintaining strength and stiffness of the tooth resists structural deformation becomes the recognized goal of all restorative procedures, especially in endodontics. Appreciation for the biomechanical behaviour of dentin as the limiting strength factor of any restorative complex, requires the recognition that dentin is weakened uniquely by our restorative procedures.

The concept of minimally invasive endodontics deals with prevention and preservation of pulpal pathoses and apical periodontitis, while causing the least amount of change to the dentinal hard tissues. This preserves the strength and function of the PAPER endodontically treated tooth with the intent that it will last the patient’s lifetime. Just as in medicine, the dental surgery treating endodontic disease must develop new skills and dexterity in order to adapt to a limited working environment within the confines of the pulpal space. These skills include working with new instruments and irrigants for cleaning the system, utilizing advanced imaging modalities and computer software for demonstrating both the complexities of the root canal system and improving the accuracy of techniques, employing increased magnification and lighting for visualising the pulpal space as well as applying new materials that enhance the prognosis for restoring structure and retainer the natural tooth. There are, however, currently no debris-free methods available that enhance the prognosis for restoring structure and retaining the natural tooth. There are, however, currently no debris-free methods available that enhance the prognosis for restoring structure and retaining the natural tooth. There are, however, currently no debris-free methods available that enhance the prognosis for restoring structure and retaining the natural tooth.

Another fundamental understanding of dentin behaviour within remaining structure comes with the abandonment of the widely held clinical perception that endodontically treated teeth are more brittle and hence more vulnerable to fracture. An early investigation that demonstrated moisture loss of 5% after root treatment gave credence to this hypothesis. While animal models have some transition to human, there is currently an abundance of studies in human teeth showing that the dentin properties of endodontically treated teeth do not differ in any meaningful way. Conversely, the predominant reason that endodontically treated teeth are prone to fracture relates more to any other attribute to the structural loss of those root treated teeth regularly identified as comprising 20% of loss of tooth strength with each prepared surface. These findings highlight that marginal ridges are a key factor in retaining tooth strength.

Unfortunately, structural loss alone cannot answer every clinical question that relates to dentin fracture. The failure mechanism for tooth fracture and root resistance of dental tissues to both the initial propagation of cracks is an important research area. Recently, investigations have focused on the influence of intrinsic factors such as irrigants and medications on dentin, the effects of post and core restorations and the results of age changes in dentin. Of note, there is a reduction of up to 50% in dentin tensile strength and fatigue strength of cored dentin in seniors (over 55 years) when compared to that of young adults. Similarly, the resistance to propagation of fatigue cracks in dentin decreases with increasing patient age and the increments rate of crack extension is up to 100 times greater in seniors.

Biomechanical behaviour of dentin

When endodontically treated teeth fail due to fracture, the outcome is determined primarily by two aetiological factors. Those causes stated most simply are: (a) the degree of stress experienced by the tooth under load, and (b) the inherent biomechanical behaviour of the tooth. Collectively, these studies show minimal dehydration effects from pulpal removal and demonstrate biomechanical behaviours in strength and toughness that are similar to vital dentin.

More than two decades ago a study was designed to compare the impact of endodontic versus restorative procedures on tooth strength. The study identified approximately 5% impact on tooth stiffness as opposed to any restorative preparation that removes the tooth’s marginal ridges (for example, a MOD preparation) reducing curvular stiffness by 63.5%. Another study identified approximately 20% loss of tooth strength with each prepared surface. These findings highlight that marginal ridges are a key factor in retaining tooth strength.

Root canal anatomy and the complexity of endodontic systems provide significant challenges for endodontic therapy. The first priority of effective therapy is to access the pulp chambers of teeth with ‘straight line’ access to the orifice(s) of the root canal. Access cavities were to be prepared and expanded so that their smallest dimensions were dictated by the separation of the orifices on the root canal. The study identified approximately 5% impact on tooth stiffness as opposed to any restorative preparation that removes the tooth’s marginal ridges (for example, a MOD preparation) reducing curvular stiffness by 63.5%.
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the pulpal floor and their widest dimensions were at the occlusal. In this era of enhanced lighting and magnification, as well as highly flexible rotary instruments, this approach to a doctrinaire access paradigm is being questioned as perhaps overly invasive of the tooth and an approach that may condemn a tooth to structural failure.22,23

Recently, maintaining structural integrity of the peri-cervical area of the tooth (about four mm above and below the alveolar crest) has been emphasised. Maintenance of the peri-cervical dentin (PCD), especially in molars is felt to be critical to their long-term survivability and optimum function.23 Some argue that in treatment planning for endodontics, on a molar tooth especially, clinicians must consider the significantly higher overall compressive forces that create a situation requiring a different set of rules for the calculation of ferrule, post and core design, resistance to fracturing, and most importantly, endodontic access (Fig. 5) and removal of radicular dentin during endodontic shaping.23–25

In keeping with this philosophy of minimal invasion of bulk dentin structure, the use of round burs and Gates-Glidden burs is now discouraged. While both of these types of instruments have been essential in endodontics for decades, they are now recognised in endodontic treatment as instruments that commonly gouge the endodontic access and the coronal third of the root canal (Fig. 4). Those areas adjacent to the cemento-enamel junction (CEJ) of the tooth with critical structural prerequisites (gouging of the access and coronal canal space) must be avoided in order to preserve maximal resistance to structural flexure and ultimate failure.20–22 By directing the conservation of dentin and protecting dentin above and below the PCD the practitioner ensures a more viable and proven method to reinforce the endodontically treated tooth. No man-made material or technique can compensate for tooth structure lost in these key areas.

Shaping the root canal space Root canals are sometimes depicted as smooth hollow tubes that are more or less tapered in shape. These misleading images do not reflect the intricate anatomical structure and complexity of root canal systems. They are often asymmetrical or oval in cross section, they branch, dilate and divide and the canal walls show concavities and convexities.24 Complex root canal anatomy should be considered one of the most significant challenges in creating root canal shapes that will support good obturation outcomes and leave sufficient remaining strength in the root. After biomechanical instrumentation, the completed root canal shapes need to withstand the internal compressive forces of obturation, provide sufficient resistance form to contain softened and compressible filling materials and retain enough strength for strengthening (Fig. 5).

In a series of morphometric measurements on anterior and posterior teeth, Kerikes and Tronstad23–25 found a wide range of measurements at the apical constriction of all teeth, thus creating two separate philosophies for practitioners, each focused on its own set of evidence-based protocols supporting a position on how to clean these apical diameters and ultimately shape the root.

In another study that questioned our understanding of the true horizontal diameters necessary to clean the terminus, Josu et al.46 coined the term ‘working width’ to alert clinicians to the critical need to understand the horizontal dimension of apical size and its clinical implication in cleaning the apical terminus.

Consequently, current shaping strategies employed by today’s clinicians align with two general trends in contemporary endodontic practice. A significant number of practitioners believe that enhanced apical instrumentation and larger apical diameters with minimal taper in the canal shape leads to weakening of the root structure and a loss of control over the obturation component of treatment. They advocate smaller apical preparations, continuous taper, and
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a preparation that promotes resistance form, a tight apical seal and a conservative approach to creating sufficient shape for adequate disinfection (Fig. 6). Smaller apical sizes preserve dentin. The arguments are strategic and technique-driven, albeit often supported by inferred outcomes. The impetus for smaller apical sizes has been directed at the disinfected and obturated phase of endodontic therapy.4–6 On the other hand, there is a significant body of literature that presents evidence that larger apical canal diameters (Fig. 7) are important to shape the apical canal wall, flush debris, allow deeper irrigation to the terminus and decrease remaining bacterial contamination in the system.6,7 Studies vary on which size diameter will accomplish maximum cleaning. Some researchers have suggested file diameters ranging from 15–35 to accomplish significant bacterial reduction. Others have shown that minimal sizes can accomplish this task as adequately as larger diameters.4–6 What is remarkably clear from the evidence is that no matter which school of thought one ascribes to, it is not possible that any apical preparation technique will render the terminus entirely free of bacterial contamination in an infected canal.4–6 In essence, structural considerations in shaping continue to remain a compelling argument for conservative shapes.

Weine et al.8,9 and others10–12 have described and elucidated the structural damage and preparation errors that can occur while shaping root canals with stainless steel instruments to large sizes. Transportation, ledging, apical perforation and loss of the original canal position are all well-recognized shaping errors that often lead to loss of working length, ledging and damage to the apical terminus leading to weakening of the root structure at its most fragile levels.

There is now a large body of conclusive research quantifying the use of rotary and hand nickel-titanium instruments in combination with stainless steel, including sonic, taper, flow and maintenance of original canal position. Most of these studies have recorded the degree of change from original position and have measured the loss of original canal positions based on the definitions by Weine.13 In comparing stainless steel versus nickel-titanium, researchers have focused on both the metallurgy of the systems and the systems themselves.10,11 Collectively these studies suggest that nickel-titanium technology alone or in combination with the conservative use of stainless steel instruments provides shapes that are better centered, maintaining the original canal positions with greater conservation of dentin and safe radiographic preparations.

Disinfection and other considerations in minimally invasive endodontics
In order to address the microbiologic aetiology of endodontic disease, that is, periapical inflammation, disinfection is and will always remain, a key element of the treatment strategy. At first glance, any minimally invasive approach to root canal treatment is at conflict with disinfection. Microbiological studies in vitro, however, do not provide a definitive answer as to the required preparation size for aseptic exposure of efficacy. Table 1 shows selected studies suggesting a wide range of apical sizes. More recently a clinical study refined the notion of a preparation ‘three sizes larger than the initial size’16 however, a large clinical data set does not support any specific canal shape as being associated with apical healing27 or retention of a root canal-treated tooth.18

Current cleaning and shaping methods appear to be unlikely to predictably remove all biofilm from the root canal system. Therefore, and particularly under the conditions of smaller apical preparation sizes, the search continues for new techniques to enhance irrigation efficacy. The possibilities for physical means that enhance endodontic disinfection vary from ultrasonic or sonic activation to including laser activation.27,28

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In the absence of adequate models for clinical outcomes, only direct clinical studies assessing anaerobic bone fill and tooth function/survival will provide convincing evidence regarding canal disinfection in teeth. The effect of a modified access cavity design has only recently been evaluated in extracted teeth. Using a combined micro-computed tomography and load-to-failure approach, Kris et al. found that in premolar shape, was not impacted and load to failure was significantly higher for teeth with minimal access cavity design. While the idea of minimally invasive endodontics has been promoted recently, there is a scarcity of independent evaluations for a strategy. For example, root canal preparation instruments sometimes associated with this strategy such as V: Taper (SS White, Lakewood, NJ, USA) and Endo-EZE AET (Ultradent, South Jordan UT, USA) and Endo-EZE AET (Ultradent, South Jordan UT, USA) have not been associated with this strategy such as V: Taper (SS White, Lakewood, NJ, USA) and Endo-EZE AET (Ultradent, South Jordan UT, USA) have not been associated with any clinical relevance in an infected canal. The use of this super-elastic metal alloy offers certain be termed minimally invasive treatment. A restored tooth may be structurally sound and the sealed state of the root canal system must be maintained. Most endodontically treated teeth today are restored with adhesive materials. Restorative treatment by Dr Till N. Göhring; (a) Periapical radiograph of teeth prepared for adhesive build-up; (b) Corresponding clinical view of one mm of vertical tooth structure exists for a ferrule. The use of posts in endodontically treated teeth provides a protective ferrule that lessens the destabilising impact of one mm of vertical tooth structure. These materials are generally used with or without apical enlargement preparation technique. It may be premature to describe adhesives as ‘reinforcing’ or ‘root strengthening’ but in terms of distributing forces throughout the remaining dentin structure it may certainly be deemed protective.

Tooth

A list of references can be obtained from the March 2014 issue of the British Dental Journal.

Table 1 Summary of selected evidence in the last decade to suggest apical preparation geometry. Note the very wide variation for favoured apical sizes and several studies with inconclusive findings.

<table>
<thead>
<tr>
<th>Size</th>
<th>Conclusion</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>There was no significant difference in intracanal bacterial reduction when Ni-Ti rotary preparation with NaOCl and EDTA irrigation was used with or without an enlargement preparation technique. It may therefore not be necessary to remove dentin in the apical part of the root canal when a suitable coronal taper is achieved to allow satisfactory irrigation of the root canal system with non-toxic agents.</td>
<td>in vitro</td>
</tr>
<tr>
<td>&gt;#25</td>
<td>Root canal enlargement to sizes larger than #25 appeared to improve the performance of syringe irrigation.</td>
<td>in vitro</td>
</tr>
<tr>
<td>#30</td>
<td>The minimum instrumentation size needed for penetration of irrigants to the apical third of the root canal is a #30 file.</td>
<td>in vitro</td>
</tr>
<tr>
<td>&gt;#30</td>
<td>Root canal preparation to apical size #30 and tapers 0.04, 0.06, or 0.08 did not effect canal diameters.</td>
<td>in vitro</td>
</tr>
<tr>
<td>#40</td>
<td>The degree of root canal curvature decreased the volume of irrigant at the working length for a given apical size and taper. An apical preparation of #40.06 significantly increased the volume and exchange of irrigant at the working length regardless of curvature.</td>
<td>in vitro</td>
</tr>
<tr>
<td>#40</td>
<td>An increase in apical preparation size and taper resulted in a statistically significant increase in the volume of irrigant. In addition, an apical enlargement to #40 with a 0.04 taper will allow for tooth structure preservation and maximum volume of irrigation at the apical third when using the apical negative pressure irrigation system.</td>
<td>in vitro</td>
</tr>
<tr>
<td>Large</td>
<td>Endodontic levels of dental root canals could be predicted by increasing the apical enlargement size. The diameters compared were two sizes #25, 06, 04, 06, 04, 04.</td>
<td>in vitro</td>
</tr>
<tr>
<td>Large</td>
<td>Better microbial removal and more effective irrigation occurred when canals were instrumented to larger apical sizes. Although bacteria may remain viable in dentinal tubules proper instrumentation and adequate irrigation significantly reduces bacteria from the canal and the dental tubules.</td>
<td>review</td>
</tr>
<tr>
<td>Inconsecutive or statistically insignificant</td>
<td>When comparing ProTaper size #30; tapers 0.08, 0.06 and Hero Shaper size #30, taper 0.04, both to the full WL, the difference between changes in bacterial activities achieved with two instrumentation techniques was statistically not significant.</td>
<td>in vitro</td>
</tr>
<tr>
<td>Inconsecutive or statistically insignificant</td>
<td>Root canals with mild curvature prepared with the #45.02 instrument to the full WL showed the highest values for extruded material to the periapical region (0.87±0.22). It seems more reasonable to establish final instrument diameters based on the anatomic diameter after ProTaper preparation.</td>
<td>in vitro</td>
</tr>
<tr>
<td>Inconsecutive or statistically insignificant</td>
<td>An appropriate apical sizing method can help the operator avoid unnecessary enlargement of the apex whereas predictably reducing intracanal debris. Method: During crown-down preparation, the first crown-down file to reach the apex during instrumentation was noted, CDF. Teeth were then divided into three master apical file size groups of CDF + 1, CDF + 2, and CDF + 3.</td>
<td>in vitro</td>
</tr>
</tbody>
</table>

The past decade has seen a considerable change in clinical strategies for using and placing posts. An advancing principle promoting minimally invasive therapy directs the norm of use of posts in endodontically treated teeth. That principle, based on evidence, affirms that retain- ing tooth structure is more valuable than the use of a post in almost every circumstance where adequate structure exists for a ferrule. The long-term success of endodontic treatment has always been highly dependent on the restorative treatment that follows. A restored tooth must be structurally sound and the sealed state of the root canal system must be maintained. Most endo- dentically treated teeth today are restored with adhesive materials. Adhesive bonding provides an im- mediate seal of the pulpal spaces and some immediate toughening of the tooth, while the ferrule is considered rather than dependent on gross mechanical retention, so tooth structure can be maintained and then restored in the long-term performance of restored root treated teeth.

When it comes to severely dam- aged teeth with little or no coronal structure, in order to provide space for a ferrule, orthodontic extrusion can be used to correct the resistance frac- ture compared with teeth restored without a ferrule. Even if the cli- nical situation does not permit a cir- cumferential ferrule, an incomplete ferrule is considered a better option than a complete lack of ferrule. However, it can be generally con- cluded that providing an adequate ferrule lessens the destabilising impact of the post and core system and the final restoration in the long-term performance of restored root treated teeth.

Another aspect of this discussion is the finding of micro-cracks induced in extracted teeth during intracanal procedures in an effort to lessen additional loads on a structurally weakened root. Micro-computed tomography studies of restorative shear forces on can- nal shaping outcomes92,93 have also demonstrated that hard tissue debris is compacted into unshaped canal areas rendering them poten- tially inaccessible to irrigation. It is likely future root canal preparation techniques will have to focus on balancing disinfection capacity and intracanal damage with enhanced debridement and disinfection.

Restoration strategies for maximum protection and minimal invasion

Patients are not well served if the endodontic treatment is successful but the tooth fails, especially with the emergence of implants into the mainstream of dentistry and their choice as an alternative to saving the natural dentition. In extensive reviews of endodontic treatment, examining the restoration of endodontically treated teeth, preserving intact coronal and radicular tooth structures, especially maintaining the peri-cervical struc- ture that follows. A restored tooth may be more predictable explanations.

Conclusions

The causes for post-treatment loss of teeth after endodontic therapy, when the therapy itself has been successful, have been described in this article by citing many diverse authorities. The loss of a tooth after successful endodontic therapy can invariably be attributed to one or more predictable explanations. Often these sequelae are clinically avoidable and the result of an apical approach to therapy that is far more in- vasive than required to remove and cure the causes of apical periodontitis. These outcomes include:

• Poor access cavity design and ex- traction
• An iatrogenic or procedural mishap weakening peri-cervical integrity
• Instrumentation errors such as a edging, perforation, transportation from the centre
• Coronal leakage and recontamina- tion of the pulpal space

Crown and root fracture

As practitioners of the art and science of dentistry, poor outcomes in the course of endodontic treatment should encourage reflection on the careful and prudent practice of endodontics that safeguards against undesired consequences. Our obliga- tion as experts is to protect patients from iatrogenic harm. This responsi- bility is not met when we as a profession can provide advanced and sophis- ticated therapies in a safe and con- trolled manner with preservation of the denition as an overarching prior- ity in all aspects of our treatments.
Introduction

Aesthetics has become one of the most important out-comes of dental treatments. Regardless of the condition of the case, patients are seeking better-looking smiles. For many years, we, as dentists or laboratory technicians, have been using all the basic aesthetic rules in order to properly create a smile design. These rules should be fundamental to the design. At the end of the treatment, the patients should feel happy. If one can evoke this feeling with a smile design, both the dentist and the patient will be satisfied giving and receiving more than standard, well-aligned teeth. However, the final aesthetic results may often fail to meet the patient’s expectations, owing to a disharmony between the smile design and the patient’s identity. Patients’ demands and the level of information needed have driven the profession to question itself regarding the customisation of smile designs, which if ignored may lead to dissatisfaction with the aesthetic outcome, even though all the aesthetic rules in order to create the most natural, minimally invasive, personalised smile design.

The mock-up

Visualisation of the smile design will have a great impact on the patient’s identity. Patients’ demands and the level of information needed have driven the profession to question itself regarding the customisation of smile designs, which if ignored may lead to dissatisfaction with the aesthetic outcome, even though all the aesthetic rules in order to create the most natural, minimally invasive, personalised smile design. Patients’ demands and the level of information needed have driven the profession to question itself regarding the customisation of smile designs, which if ignored may lead to dissatisfaction with the aesthetic outcome, even though all the aesthetic rules in order to create the most natural, minimally invasive, personalised smile design.

The personalised smile design

Every human being is unique and special and the design of his or her smile should reflect his or her personality. Shape, texture, colour and combination of teeth convey direct messages, and when it comes to creating smile designs, dentists must consider the unity of the whole, which means bringing the biology, structure, function and aesthetics together with a fifth element, personality. Personality is the quintessential part here, because the other square dental shapes, weak dominance (current symmetry), horizontal incisal edge and angled (3-D) dental positioning on the arch.

Case presentation

The patient had short teeth and was not happy with the narrow buccal corridors and the yellowish colour of her teeth (Figs. 2a–c). Aesthetic analysis and Rebel Simplicity

Aesthetic design can be challenging for dentists. Rebel (Visagism) is a recent digital previsualisation technique that allows the clinician to:

- Efficiently design the new smile;
- Improve the communication between the dental team members involved in the treatment;
- Obtain better communication and achieve better patient motivation; and
- Visualise the final aesthetic result even before the treatment is started.

Fig. 2a–c: The aim of this aesthetic treatment was to enhance the patient’s smile. However, additional all the aesthetic smile design basics, the facial analysis and the personality of the patient should be reflected in this design, in order to create the most natural, minimally invasive, personalised smile design.

Fig. 3: Once the mock-up on the central incisor has been completed, it should be digitally scanned. It can be scanned with any intraoral scanner that can produce an STL file. Most intra-oral scanners convert the 3-D scan into an STL file automatically. However, if the dentist does not have an extraoral scanner in the dental practice, an analog impression of the upper jaw (preferably with the direct mock-up done on the central incision) is taken and sent to the nearest dental laboratory that owns a scanner (lab technician) that work within a CAD/CAM machine will have a digital scanner). The dental technician can digitalise this impression for the dentist and upload it to Rebel in order to complete the order via a provided link.

Fig. 1: When the dentist initially evaluates a new patient with aesthetic concerns, many critical factors may be overlooked. The verbal information exchange should be translated into a visual representation in order to aid in understanding what the final expectations should be at the end of the treatment, for the patient and the dentist. The basic means of this communication starts with a 3-D preview of the design in the patient’s mouth (APT: Aesthetic Pre-evaluative Temporaries) even before the rest of the treatment is planned. No matter what clinical difficulties a dentist will face and how problems will technically be solved, if the patient does not like the final aesthetic outcome, the treatment will be considered a failure.

The combination of lines generates the most basic forms, transferring to them their own expressions. Thus, vertical rectangle expresses strength by the pre-dominance of the vertical element on the horizon.
Figs. 4a–f: The forehead and the ears of the patient should be visible. It is crucial to keep the head upright (not tilted to the right or left, or up or down). The eyes should preferably be positioned parallel to the horizon.

These are the three mandatory steps:
1. a single mock-up on a central incisor to be digitally scanned;
2. a full-face photographic protocol, and
3. a simple questionnaire.

Single central incisor mock-up and intra-oral digital scanning
A composite mock-up is performed on one (or two) of the central incisors in order to identify the incisal edge position vertically and the position of the facial surface buccolingually (Fig. 3). This is no different from creating any direct mock-up; however, the greatest advantage of creating this mock-up for Rebel is that the dentist does not need to concern himself or herself with the perfect design of this mock-up, meaning that he or she does not need to choose the shape of the teeth (square, triangular, round, etc.), the angulations of the axes of the teeth, surface texture, etc. These details of the smile design will be provided by the Rebel artificial intelligence-based software, according to the facial analysis and the personality of the patient. Therefore, this will allow any dentist at any level to start working with mock-ups and end up with high-level wax-ups.

If the dentist does not wish to make a mock-up, then he or she can alter the data immediately to the dentist and/or the technician will have a full idea of the facial analysis and the personality of the patient.

3D Rebel smile design plays an important role in the entire treatment planning and will guide the actual clinical treatment. This approach makes it possible to share the treatment plan among team members and to create a 3D visualization of the case in the patient’s mouth. The treatment plan will be presented to the dentist to present the treatment solutions.

The Rebel workflow
Rebel offers probably the simplest steps for transferring all the necessary information to the Rebel digital laboratory.
way is to keep the patient in the same position and ask him or her to incline his or her face 45° forward while giving a full smile, taking the photograph so that it shows the relationship to the maxillary central incisors and the displayed arch position to the lower lip line. The dentist can also move the patient to a supine position on the dental chair and to the 12 o’clock position, ask him or her to smile fully, and take the photograph from a 45° angle.

IV. Full-face photograph with mouth closed and lips retracted. The patient should be asked to hold the full-mouth retractors, again keeping the position of the eyes parallel to the horizon and his or her head upright (not tilted to the right or left, up or down), and keeping his or her teeth closed and the occlusal plane parallel to the horizon.

V. Full-face photograph with mouth open and lips retracted. The same protocol as for the mouth closed should be repeated, but this time with the teeth (upper and lower jaws) separated.

Figs. 7a–d. After the STL file has been 3D-printed (a), the dentist can easily transfer this design to the patient’s mouth by making a silicone impression of the digital wax-up (b). The harder this silicone transfer impression, the more precise this transfer will be, in order to duplicate all the details, such as the line angles that give the ideal shape of the teeth, as well as surface texture. This transfer should be done prior to everything. The dentist should evaluate the new design well before starting the tooth preparation with the APT (Aesthetic Pre-evaluative Temporaries). The Rebel system is actually a virtual laboratory that converts the 2D design into 3D and creates a digital wax-up immediately. The 3D design is created by relating the facial perception and the personality of the patient to the smile design, by applying algorithms for computing the optimal combination of the initial silhouette, tooth axis, dominance of the central incisors and the combination of individual tooth shapes out of thousands of possibilities. It may sound complicated; however, it is the simplest way of creating one of the best 3D digital wax-ups possible. Rebel employs very sophisticated artificial intelligence based software with algorithms; however, it provides great simplicity to the end users, the dentists and dental technicians (Figs. 6a–d).

Back to chairside/3D printing
This STL file is then sent to the dentist via e-mail, ready to be 3D-printed (Figs. 7a–d).

Tooth preparation through the Aesthetic Pre-evaluative Temporaries
The design of the APT (Aesthetic Pre-evaluative Temporaries) creates a very solid reference for the tooth preparation. With the use of a depth cutter, the dentist can start prepar...
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Porcelain laminate veneers are tried-in and after the aesthetic acceptance of the patient and the dentist, they are bonded to the teeth under rubber dam isolation (Figs. 8a–d).

Conclusion
The combination of the basic rules of aesthetics together with the reflection of the facial analysis and the personality of the patient in the smile design creates a more natural and personalised smile. This principle presumes harmony between the smile design and the patient’s personality. However, in the dental practice, its application has been limited owing to the lack of an objective method for assessing the patient personality and incorporating its results into the smile design.

Currently, Rebel can help the clinician to provide smile designs that consider patients’ emotions, sense of identity, behaviour and self-esteem. Combining modern digital technologies with the classic treatment rules can be used to achieve predictable aesthetic results.

The Rebel concept, which can be applied very easily and rapidly, can help the dentist or ceramist to achieve this goal in the most simplistic, practical and personalised way. The authors’ clinical experience shows a minimum of 80 per cent success in the acceptance of the final smile design treatment. Finally, before any further investigation and research is done, if the result by applying this technique does not satisfy the patient owing to the subjectivity of the matter, the dentist can always make minor alterations in order to adopt this design according to the patient’s desires.

Editorial note: A list of references is available from the publisher. This article was first published in the Clinical Masters magazine, volume 6, issue 2020.

What is the ClearSmile Aligner?
ClearSmile Aligner employs a series of plastic appliances, called aligners, to gently reposition and align the teeth creating a beautiful new smile.

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- One file to remove the root filling material
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has been found to reduce gingivitis, and DIT has previously reported on a study that showed that vitamin D supplementation during pregnancy improved the oral health of offspring during childhood.

The role of vitamin D deficiency in SARS-CoV-2 infection

Vitamin D has been shown to have a beneficial impact in preventing infection with bacterial and viral diseases. In a recent study conducted by University Hospitals Birmingham NHS Foundation Trust in the UK, researchers analysed blood samples from 392 healthcare workers who were recruited in May 2020, testing them for the presence of SARS-CoV-2 antibodies and establishing the concentration of vitamin D in their blood.

They found that 15.6% of the participants infected with SARS-CoV-2 were deficient in vitamin D. Additionally, those who were deficient in vitamin D tended to report body ache, pain and fever, but not the respiratory symptoms associated with COVID-19, such as breathlessness or a continuous cough. The researchers noted that the majority of the workers with low-level vitamin D came from Black, Asian and minority ethnic backgrounds or were in junior doctor roles. Vitamin D levels were lower in younger participants and male participants, as well as in those with a high body mass index.

The findings also suggested an increase in the development of detectable SARS-CoV-2 antibodies in 72% of individuals with vitamin D deficiency compared with 51% in participants with low-level vitamin D. Additioanally, those who were deficient in vitamin D tended to report body ache, pain and fever, but not the respiratory symptoms associated with COVID-19, such as breathlessness or a continuous cough. The researchers noted that the majority of the workers with low-level vitamin D came from Black, Asian and minority ethnic backgrounds or were in junior doctor roles. Vitamin D levels were lower in younger participants and male participants, as well as in those with a high body mass index.

The UK study, titled “Vitamin D status and seroconversion for COVID-19 during the 2020 pandemic”, was published online on 6 October 2020 in JAMA Network Open. The US study, titled “Association of vitamin D status and COVID-19”, was published online on 3 September 2020 in JAMA Internal Medicine.
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Dentsply Sirona World 2020 moves to localized in-person and global virtual programs

By Dentistry Sirona

In addition to a robust general session, numerous opportunities for networking and always-expected exceptional entertainment, the new program will feature dynamic industry speakers in real time and on-demand, with a varied range of engaging course topics, making it an expanded individual and personalized training event for all attendees.

Dentsply Sirona, the world’s largest manufacturer of professional dental products and technologies, announced today that Dentsply Sirona World 2020 will be reimagined into dynamic localized in-person and globally available virtual events. The new formats – certain to delight attendees – will offer expanded opportunities for earning CE credit and feature the best and brightest speakers in dentistry presenting engaging educational sessions across 12 unique tracks. The in-person program originally scheduled October 3-5, 2020 in Las Vegas, NV will be postponed to a later date.

“The current circumstances prevent an event the size and quality of Dentsply Sirona World to take place in person,” said Senior Vice President Eric Bruno. “Though we are postponing the event in Las Vegas, the localized in-person programs and the new and expanded virtual event will be packed with the same great content expected of The Ultimate Dental Meeting presented in a new, innovative format. We are taking a stand that dentistry is essential and that digital dentistry is the future, so we are doubling down on our digital efforts for Dentsply Sirona World and complementing those with localized in-person programming in collaboration with our industry partners.”

At its core, Dentsply Sirona World is a celebration of dentistry combining incredible professional development courses, ample opportunities to connect and network with thousands of dental professionals and world-class entertainment in an exciting, inspiring atmosphere. The online event will feature a full program with a general session and cutting-edge breakouts tailored to individual needs, with introductory to expert-level courses ranging from specialties such as implantology, to laboratory courses, to hygiene topics. “The Dentsply Sirona World 2020 localized in-person programs and virtual event will bring an exceptional experience to attendees, with our continued commitment for delivering healthy smiles through healthy practices” added Bruno. “The virtual and local in-person programs will allow attendees to interact with our speakers, products and latest technologies in an entirely new way while continuing to shape the future of dentistry.”

The specific dates and more details of the localized in-person programs and the virtual Dentsply Sirona World event will be announced in the coming weeks.

Everyone already registered for Dentsply Sirona World 2020 receives registration for the virtual program; no action is required on registered attendees’ part to register for the virtual program. Current registrations for the in-person Dentsply Sirona World 2020 will automatically transfer to the new in-person 2021 date when it is announced. Additional details regarding the virtual event will be forthcoming in the next few weeks.

For more information: dentsplysirona.com/practiceprotect

For updates and announcements regarding the virtual Dentsply Sirona World program, visit www.dentsplysironaworld.com often.

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