Where Science Meets The Art Of Beauty

By Dental Tribune MEA/CAPPmea

"Where Science Meets The Art Of Beauty" is the theme for this years' fast approaching 9th Dental Facial Cosmetic Conference/Exhibition (DFCIC) to be held at the InterContinental Festival City, Dubai from 01-05 November 2017. The 9th DFCIC will host over 36 international dental experts from various countries and dental specialties, the experts will be there with a single goal to share their knowledge and expertise with our attendees.

Beyond the excellent scientific content that will be offered at the 9th DFCIC, we will also be hosting over 35 companies that have signed up for exhibiting their latest products, which you will not only be able to interact with but also purchase the latest tools, materials, trends and developments to help your practice advance further.

For the keen amongst you, CAPP Events has also organized 20 hands-on training courses pre- and post-conference between 01-05 November 2017. These hands-on courses have been designed in a way to appeal to both the General Dentists and the Specialists across the board with current hot topics. Ranging from Minimal Invasive Veneers to the Diagnosis and Management of Dentofacial Deformities and everything in between (full list provided below).

The conference will be accredited by DHA and HAAD and enjoys up to 35 CE Credits through CAPP as an ADA CERP Recognized Provider of Continuing Education.

Dental Hygienist Seminar
This years event is a continuation of the partnership between CAPP and Colgate Oral Care Academy with the support of the International Federation for Dental Hygienists (IFDH). In keeping with the current regional needs, the consortium wanted to highlight the needs of the Dental Hygienists who are a growing segment in the local dental profession. The specialized skills of a dental hygienist are necessary to keep our patients’ oral health on track.

For more information or to register, please visit www.cappmea.com/aesthetic.
cavity disease free and because of this fact and with the essential support of Colgate Oral Care Academy, we have arranged a whole day of education and with the help of experts from the field present to all our participants and talk on topics ranging from “Working Posture In Daily Life” to “Integrating Oral Cancer Screening Into Your Practice” and “Periodontal Assessment of Diagnosing” Considering the current move towards Implant Dentistry there is also a lecture on the current move towards Implant Dentistry.

Tooth Supported And Implant Supported Restorations - Aesthetic Indirect Restorations, By
Prof. Brian Millar & Bill Sharpling (7 CE Credits)

The All Ceramic Course: How To Choose the Best Ceramic Material and How to Prepare For the Different Type Of Crowns We Currently Have!, By Dr. Eduardo Mahn (7 CE Credits)

3. Advanced Restorative Masterclass – Aesthetic&Indirect Restorations, By Prof. Brian Millar & Bill Sharlashing (7 CE Credits)

4. Minimal Invasive And Non-Prep Veneers: Smart Smile Design With Porcelain Veneers, By Asst. Prof. Dr. Cagdas Kislaoglu, Part 1

5. Minimal Invasive And Non-Prep Veneers: Smart Smile Design With Porcelain Veneers, By Asst. Prof. Dr. Cagdas Kislaoglu, Part 2 (7 CE Credits)

6. Introduction to designing surgical implant guides by Dr. Alexandros Manolakos

7. Direct Veneers: How To Create The Right Shape And Texture And Achieve The Desired Shade, By Dr. Eduardo Mahn (7 CE Credits)

8. Enhanced Biofilm Management Using Modern Air Polishing Techniques, By Mary Mowbray (2 CE Credits)

9. Master Class With Novel Biocure, By Dr. Tristan Staas

10. ITOP: Individually Trained Oral Prophylaxis, By Dr. Manolakis (7 CE Credits)

11. Direct Veneers, By Dr. M近几年quli Safi (7 CE Credits)

12. The New Concept of ABB – Certification Course, By Dr. Andrew Wallace (2 CE Credits)

13. Class IV Restorations, By Dr. Mathew Holyoak (6 CE Credits)

14. Periodontal Instrumentation & Sharpening, By Mary Rose Pinellie Roglicen (5 CE Credits)

15. Working Posture, By Dr. Penelope Jones (3 CE Credits)

16. Veneers DeMYSTIFIED: A Masterclass Hands-On Workshop For Clinical Success, By Dr. Oscar Bandey (7 CE Credits)

17. New Concepts And Innovation In The Diagnosis And Management Of Dentofacial Malformations, By Dr. Ashraf Ayoub (7 CE Credits)

18. Endodontics for the 21st Century, The (International), By Prof. James Prichard (7 CE Credits)

19. Indirect Veneers, By Dr. M近几年quli Safi (7 CE Credits)

20. Veneers Vs Crowns: The Challenge In Smile Design, Dr. Eduardo Mahn (7 CE Credits)
Dentsply and Sirona have joined forces to become the world’s largest provider of professional dental solutions. Our trusted brands have empowered dental professionals to provide better, safer and faster care in all fields of dentistry for over 100 years. However, as advanced as dentistry is today, together we are committed to making it even better. Everything we do is about helping you deliver the best possible dental care, for the benefit of your patients and practice.

Find out more on dentsplysirona.com
Dental Tribune Middle East & Africa Edition | 5/2017

Class II Amalgam Replacement

By Dr. Robert Margeas, USA

About the Case
The patient presented with recurrent decay under an aging amalgam. Because of the presence of decay as well as the depth of the prep, Vitrebond™ Light Cure Glass Ionomer Liner/Base was chosen and applied to the deepest dentin. After application of the liner, the selective etch approach using Single Bond Universal Adhesive was chosen for its excellent seal on enamel margins while minimising the chance of post-operative sensitivity. Once the adhesive is cured, Filtek™ Bulk Fill Posterior Restorative was placed in a single increment up to 3mm. Post-operative photos taken two weeks after placement indicate a very pleasing result.

Challenge
A deep Class II restoration can be prone to post-operative sensitivity. Use of a liner/base such as Vitrebond™ Liner/Base, as well as a self-etch bonding approach on dentin, combines two techniques for keeping post-operative sensitivity to a minimum. Once the bonding agent is in place, the bulk fill approach allows for a fast, efficient placement technique for posterior restorations.

The 3M Difference
3M innovations such as Single Bond Universal Adhesive, Filtek™ Bulk Fill Posterior Restorative and Sof-Lex™ Spiral Finishing and Polishing Wheels provide an efficient and simple procedure while also reducing costly chair time. In cases where deep posterior restorations are presented, Vitrebond™ Light Cure Glass Ionomer Liner/Base can reduce the risk of post-op sensitivity.

Step by Sep

Fig. 1: Pre-operative condition
Fig. 2: After removal of failing amalgam
Fig. 3: Use of micro air abrasion to clean the cavity preparation
Fig. 4: Application of Vitrebond™ Light Cure Glass Ionomer Liner/Base
Fig. 5: Etchant applied using the selective enamel etch technique
Fig. 6: Application of Single Bond Universal Adhesive
Fig. 7: Placement of Filtek™ Bulk Fill Posterior Restorative in a single increment
Fig. 8: Polishing with Sof-Lex™ Spiral Polishing Wheel (white)*
Fig. 9: Immediately post-polishing; adjacent enamel is still desiccated
Fig. 10: Final restoration, two weeks post-op

*Replaced with the new Sof-Lex™ Diamond Polishing system consisting of two new wheels - pre-polishing spiral (beige) and diamond-impregnated polishing spiral (pink).

Dr. Robert Margeas, DDS
Dr. Robert Margeas currently serves as Adjunct Professor in the Department of Operative Dentistry at the University of Iowa College of Dentistry. He is also the Clinical Director and Instructor at the Center for Esthetic Excellence, Chicago, IL. Dr. Margeas has published numerous articles on aesthetic dentistry and is a highly sought after international lecturer on the subject. His credentials include board certification by the American Board of Operative Dentistry and he is a Fellow of the Academy of General Dentistry (AGD).

Dr. Margeas is on the Editorial Board for Contemporary Esthetics and is a consultant in Oral Health matters for the country of Canada. He maintains a very successful private practice, with a focus on comprehensive aesthetic restorative dentistry, in Des Moines, IA.

Total versatility
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By 3M

Simplifying the bonding step is no easy task. That’s why 3M developed 3M™ Single Bond Universal Adhesive. It’s a single-bottle solution that offers a simple one-step, one-coat, 35-second application—without compromising strength. Years of clinical evaluations have stacked the evidence: it can be used in all etching techniques, including total-etch, self-etch and selective-etch, in both direct and indirect applications; and on all dental surfaces, without any extra primer—taking versatility to a whole new level.

Virtually no post-operative sensitivity in total-etch or self-etch applications.

To learn more about 3M™ Single Bond Universal Adhesive please visit www.3mgulf.com/dental

Source: 3M internal data
3M Oral Care

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There are things in life you don’t want to miss. And the more complicated a procedure is, the greater chance there is for something to go wrong and disrupt your day. That’s why 3M Oral Care has simplified posterior restorations — the most frequently performed direct restoration. By using Filtek™ Bulk Fill Posterior Restorative with three other innovative products, you’ll move through posterior restorations with speed and simplicity. See how our Posterior Restorative Procedure can help keep you on schedule ... because we know your time outside of work matters.

www.3MGulf.com/espe
**Implant maintenance with guided Biofilm Therapy**

By E.M.S.

With more and more Implants placed, the challenges of the dental professionals increase to remove calculus and biofilm safely and efficiently. E.M.S., the inventor of Pi-ZON® and AIR-FLOW® technologies, offers a peek coated Implant tip which guarantees safe and efficient removal of calculus without leaving scratches on the Implant surface. Furthermore the PLUS powder for all EMS AIR-FLOW devices ensures easy and smooth removal of Biofilm in supra and sub gingival areas around the Implant.

How to best prevent and treat Mucositis and Peri-Implantitis? With PLUS powder and the Perio nozzle for AIR-FLOW it is simple, predictable and ensures superior clinical results. For more information visit the EMS booth at the 9th Dental Facial Cosmetic Conference in Dubai on 03-04 November 2017.

You can also look up more details at www.ems-dental.com or contact your regional distributor of EMS products.

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**Beautiful II LS**

By SHOFU

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Visit us @DFCIC booth no. 29 for a Hands-on trial of Beautiful II LS and the array of benefits that it offers for your practice.

**Super-Snap X-Treme Technique Kit**

By SHOFU

A comprehensive “new” technique kit from Shofu features the proven Super-Snap (Black-Contouring & Violet- Finishing) and the innovative Super-Snap X-treme (Green-Polishing & Red- Super-polishing) disks in both 12 mm and 8 mm diameter, colour coded for easy identification and sequential use to achieve a natural and lasting lustre on all direct resin composites. Unique 3D structure of the Super-Snap X-Treme Red disks imparts a satiny smooth and flawless surface on the resin restoration. Double sided Polystrips that correspond to the colour codes of the disks, enable easy interproximal finishing and polishing. The kit also contains Dura White stones, Composite and Composite Fine points to complement the disks and easily create detailed surface anatomy in direct aesthetic resin restoration.

Try these X-Treme disks and find how you can achieve the most natural polish on your direct aesthetic resin restorations @DFCIC, Booth no. 29.
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The ultimate goal of endodontic treatment is long-term retention in function of teeth with pulpal or periapical pathosis. Depending on the diagnosis, this therapy typically involves the preparation and obturation of all root canals.

Both steps are critical to an optimal long-term outcome. This article is intended to update clinicians on the current understanding of best practices in the two pillars of nonsurgical endodontics, canal preparation and obturation, and to highlight strategies for decision making in both uncomplicated and more difficult endodontic cases.

Prior to initiating therapy, a clinician must establish a diagnosis, take a thorough patient history and conduct clinical tests. Recently, judicious use of cone-beam computed tomography (CBCT) has augmented the clinically available imaging modalities. Verifying the mental image of canal anatomy is a long way to promote success in canal preparation. For example, a raised canal frequency is associated with endodontic failures.1 As many maxillary molars have two canals in the mesiobuccal root, case referral to an endodontist for mesial root treatment should be considered.-endodontics are increasingly using CRCT and the operating microscope to diagnose and treat anatomically challenging teeth, such as those with unusual root anatomy, congenital variants or iatrogenic alterations. The endodontist, using appropriate strategies, can achieve good outcomes even in cases with significant challenges.2

Preparation of the endodontic space

The goal of canal preparation is to provide adequate access for disinfecting solutions without making major procedural errors such as perforations, canals, fractures, instrument or fractures, or necrosis of tooth structure. The introduction of nickel-titanium (NiTi) instruments to endodontics almost two decades ago has resulted in dramatic improvements for successful canal preparation for generalists and specialists. Today there are more than 50 canal preparation systems; however, not every instrument system is suitable for every clinician and not all cases lend themselves to rotary preparation. Several key factors have added versatility in this regard, for example, the emergence of special designs such as orifice shaped and mechanced glide path files. Another recent development is the application of heat treatment to NiTi alloy, both before and after the file is manufactured. Deeper knowledge of metallurgical properties is desirable for clinicians who want to capitalize on these new alloys. Finally, more recent strategies such as minimally invasive endodontics have emerged.3

Basic nickel titanium metallurgy

What makes NiTi so special? It is highly resistant to corrosion and, more importantly, it is highly elastic and fracture resistant. NiTi exists reversibly in two conformations, martensite (M) or austenite (A), depending on external tension and ambient temperature. While steel allows 3 percent elastic deformation, NiTi in the austenitic form can withstand deformations of up to 7 percent without permanent damage or plastic deformation.4 Knowing this is critical for rotary endodontic instruments for two reasons. First, during preparation of curved canals, forces between the canal wall and advancing instruments are smaller with more elastic instruments, hence less preparation errors are likely to occur. Second, rotation in curved canals will bend instruments once per rotation, which ultimately will lead to working hardening and brittle fracture, also known as cyclic fatigue. Steel can withstand up to 20 complete bending cycles, while NiTi can endure up to 100,000.5 Recently manufacturers have learned to produce NiTi instruments that are in the martensite state and even more flexible than previous files. Figure 2 shows how instrument conditions (austenite vs. martensite) are determined in the testing laboratory, using prescribed heating and cooling cycles.6 The treated instrument is called a “fatigue tested or heat treated.” The instrument is then heat treated, again at 65 degrees C, and allowed to cool for 24 hours under controlled conditions. These NiTi instruments lead to better cutting planes to allow for more evenly distributed dentin removal. Instruments with cutting tips that guides the cutting planes to allow for more evenly distributed dentin removal. Rotaries with cutting, active tips such as dedicated retreatment files such may be used with caution to avoid preparation errors.

NITI instrument usage

As a general rule, flexible instruments are not resistant to torsional load but are resistant to cyclic fatigue. Conversely, more rigid files can withstand more torque but are susceptible to fatigue. The greater the amount and the more peripheral the distribution of metal in the cross section, the stiffer the file.6 Therefore, a file with greater taper and larger diameter is more susceptible to fatigue failure, while a canal curvature that is...
more coronal is more vulnerable to file fracture. Injectable bioactive glass has been shown to be associated with file fracture. For example, a lower rotational speed and a lower torque are achieved with less risk of overextension. In addition, the working length is slightly shorter than that of hand instruments, as visible on a radiograph.23, 27 Determination of apical canal anatomy is often necessary to prepare suitable for second molar morphologies that are in close proximity to the inferior alveolar nerve. This may be achieved by a specialist. Overfills are only not an impediment to healing but in the worst case can be associated with permanent nerve damage. In general, there is no clear evidence of improved outcomes of root canal treatment, identifiable on the final radiograph, using: 
- Excessive dentin removal during access and instrumentation.
- Preparation errors such as perforation, ledge formation and apical split.
- Presence of an instrument fragment left in the perforation.

Summary and conclusions
Root canal preparation with current methods is a predictable procedure in most cases for the clinician following the established guidelines. Cases with a recognized high degree of difficulty are best referred to an endodontist. While many cases can be treated successfully in routine practice, the disadvantages and limitations of endodontology of endodontics is necessary in cases that are beyond the typical scope of practice. The specific outcomes are obtained when a correctly placed, gutta-percha mass is filled, to verify a fit to within 5 to 7 mm of the apical constriction.

Recent developments in root canal treatment have suggested that accessory cones themselves; each method is best referred to an endodontist. The thought process for this was the finding that most root canal treated teeth are either fractured or non-re- treatable for other reasons.23, 25 In consequence, a smaller coronal dimension of root tips is considered while maintaining apical sizes 0.02 mm in diameter for more efficient root canal filling. The coronal working length is slightly shorter than that of hand instruments, as visible on a radiograph.23, 27 Determination of apical canal anatomy is often necessary to prepare suitable for second molar morphologies that are in close proximity to the inferior alveolar nerve. This may be achieved by a specialist. Overfills are only not an impediment to healing but in the worst case can be associated with permanent nerve damage. In general, there is no clear evidence of improved outcomes of root canal treatment, identifiable on the final radiograph, using:
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Primary stability vs. viable constraint: A need to redefine

By Michael R. Norton, UK

Any regular reader of the journal of Oral & Maxillofacial Implants or indeed of any other publication on dental implants could not fail to have noticed how much attention has been focused on Primary Stabilisation and the contribution to torque from bone cutting, etc., is neglected. Yet manufacturers persist in providing a single target value of insertion torque across the range of implant diameters they offer.

It is therefore reasonable to discuss the virtues of insertion torque and ask the pivotal question: Is insertion torque an appropriate measure of rotational friction as it pertains to the viability of the bone? The most simple definition is one that reflects this loss of stability at the third or fourth week regarding bone density.

That said, we still need to define what constitutes primary stability, i.e., which sets apart from biological integration. As interpreted through manual perception, primary stability is one where a friction resistant torque at the time of insertion occurs. This resisting torque is proportional to the effort required to seat the implant or peak insertion torque, they are in essence one and the same and depend largely on the characteristics of the implant, the density of the bone and the differential size of the osteotomy as it pertains to the diameter of the implant. Mathematically, it can be defined as follows:

\[ \text{Resisting Torque} = \mu \cdot F \cdot l \]

Where: \( H \cdot s \cdot D_2 = \text{Surface Area of implant in contact with bone} \)
\( H = \text{Height of the implant cylinder} \)
\( s = \text{Bone density in gcm}^{-3} \)
\( P = \text{Critical pressure on the bone} \)
\( \mu = \text{Coefficient of friction} \)

The important factor in this equation is \( P \), the critical pressure on the bone, as high pressure results in unfavorable bone strain, particularly within the cortical compartment. However, the formula indicates that the resisting torque is proportional to the diameter \( (s) \) raised to the power of 2. This means that if you double the diameter the resisting torque becomes four times higher. Put another way, if we use the same insertion torque for a 5 mm wide implant and a 6 mm wide implant, then the critical pressure \( P \) will be four times lower, i.e., a lower insertion torque.

For example, an implant of 5 mm diameter inserted into 1 mm thick cortical bone with a torque of 20 Ncm will transfer the same pressure to the bone as an implant of 6 mm diameter inserted into 2 mm thick cortical bone with a torque of 40 Ncm. (This assumes that 100 percent of the torque originates from the pressure on the cortical bone, and the contribution to torque from bone cutting, etc., is neglected). Yet manufacturers persist in providing a single target value of insertion torque across the range of implant diameters they offer.

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‘It’s a game-changer’: Prime&Bond universal™ with Active-Guard™ Technology

By Dentply Sirona

Dentply Sirona has introduced a new universal adhesive designed to ensure complete coverage and penetration for a reliable bond even if the preparation is overly wet or dry. We spoke with Dentply Sirona polymer chemist Dr. Christoph P. Fik to learn about the remarkable properties of this revolutionary dental adhesive and how Prime&Bond universal™ with Active-Guard™ Technology was developed.

Dentply Sirona: Dr. Fik, can you tell us about a new research and development effort that got started? For example, did the marketing team develop a list of requirements that dentists are looking for in a next-generation adhesive like Prime&Bond universal™?

Dr. Christoph P. Fik: The marketing people do conduct market research and develop a set of requirements based on the voice of customers. As chemists, we also have our own insights into the physical and chemical properties that would improve the product and simplify its use for our dental customers. The clinical team also provides significant input, so it’s a collaboration between all three departments to define the platform requirements for a new product.

We have a series of discussions, document our agreed-upon objectives, and then lock off the actual development effort with a clear set of goals in sight that we believe are both beneficial and achievable. Talk to us about those goals. What does the ideal dental adhesive need to accomplish?

I see the dentist as a kind of craftsman, and we want to help them achieve a higher level of craftsmanship. Every dentist has preferred techniques to achieve a good restoration for every case, and we’re not necessarily changing that. We want to help enhance craftsmanship with a universal adhesive that dentists can rely on, a product that makes a difference in the way they see and feel, every day they work with it.

Dentists want a universal adhesive that’s more convenient, easier and faster, while ensuring a reliable bond. It needs to provide robust performance across all the different cases a dentist encounters, including direct and indirect restorations. It needs to be simple and predictable to use in every scenario.

What are the limitations of competing adhesives, and how does Prime&Bond universal™ overcome them?

There are six or seven universal adhesives on the market based on chemistry that is at least 20 years old. Most of these established adhesives have very high viscosity. Some dentists may regard that as a benefit in certain cases, but more often it’s a significant drawback. Prime&Bond universal™ is the first universal adhesive that offers low viscosity with a surface tension directly adjusted to dental substrates and related materials, making it easier for the adhesive to spread evenly across the substrate and to quickly wet and fully penetrate the dental tubules.

Other universal adhesives show what I would describe as a passive behaviour. They polymerise, but beyond that they don’t exhibit any active properties to help the dentist achieve optimum results. They can resist spreading, they tend to pool and they don’t mix with water spontaneously – so it can be difficult to achieve complete even coverage.

By contrast, the ‘active’ in Prime&Bond universal™ with Active-Guard™ Technology refers to the property that you can actually see working when you apply it to the prepared surface. It actively spreads to help ensure complete and uniform coverage across the substrate. It actively mixes with any excess water that may be present, which is important for achieving complete penetration on wet dentin. During air drying, the adhesive solvent and excess water evaporate together to actively create an even, homogenous layer, with low film thickness.

The active properties you’re describing are completely new in the market for universal adhesives. Active-Guard™ Technology is patented. What is it and how does it work?

Active-Guard™ Technology is a resin component. Other universal adhesive systems are based on two parts – they combine a very hydrophilic, low viscosity compound – so-called reactive diluent – with a very viscous hydrophobic compound, trying to find a balance. With Active-Guard™ Technology, we’ve created a new resin component that combines hydrophilic and hydrophobic properties in one monomer. So you don’t have to deal with two parts and reactive diluents – you simply find the balance within a single chemical structure.

Could it be described as ‘amphiphilic’? Is that what you mean by a balance of hydrophilic and hydrophobic within a single resin molecule?

Yes, but it’s important to distinguish the amphiphilia of Active-Guard™ Technology from the more familiar use of this term to describe surfactants. With these, you have separate hydrophilic and hydrophobic parts in one molecule, and that’s what allows you to disperse oil in water, for example. But with Prime&Bond universal™, the whole molecule in itself balances hydrophilic and hydrophobic properties without separate hydrophilic and hydrophobic domains of the molecule. That’s unusual in chemistry, and it allows us to balance several benefits. For example, enamel is hard, dry and quite brittle, while dentin is porous, wet and spongy, and the amphiphilicity of Active-Guard™ Technology allows us to achieve exceptional bond strength with both substrates. We’ve also achieved an optimum balance between the properties needed for direct and indirect restorations, between high and low viscosity, and between the requirements for all etching methods.

What are some of the additional benefits of Prime&Bond universal™?

The adhesive layer is extremely thin, compared to other universal adhesives, which can really help avoid fitting problems with indirect restorations. This thinness, combined with a mild pH of about 2.3, also practically eliminates the most common causes of post-operative sensitivity. And it minimizes the risk of pooling, which can otherwise be misinterpreted as a void or decay on a radiograph.

We also thought about simplifying the dentist’s workflow. Prime&Bond universal™ can be stored at room temperature and remains usable for 30 minutes in a closed Cliddish™, so it’s really designed to minimize waste and help streamline procedures, especially when doing multiple restorations in a single visit. And we make sure our products work together, so dentists can have a complete and reliable solution with no risk of product incompatibilities. We designed Prime&Bond universal™ to work optimally with Calibra® Ceramic cement. With this combination, there’s no need to apply a separate activator, and the two products have the right pH values to fuse perfectly, providing much greater shear bond strength compared to other adhesives.

In all you have accomplished to develop Prime&Bond universal™, what gives you the most pride? How will this change the practice of dentistry?

Our patented Active-Guard™ Technology platform is completely new. It introduces a new level of robustness along with much simpler, more reliable handling properties for virtually any case, any substrate and any preparation. It’s a future-oriented technology that I’m convinced will lead to more groundbreaking products based on this platform in the future.

I’m very proud of that. It’s a game-changer.

For more information on Prime&Bond universal™, please contact your local Dentply Sirona representative.

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GLUMA® Bond Universal – The all-in-one drop

By Kulzer

Based on our long-term bonding expertise, we developed GLUMA Bond Universal – a universal bonding agent answering to all your bonding needs. It is a reliable and highly effective adhesive that ensures successful long-term restorations.

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Charisma® Topaz – Innovative chemistry for day-to-day natural restorations

By Kulzer

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HyFlex™ EDM

- Up to 700% higher fracture resistance
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OneFile

Glidepath File

OneFile
By Dental Tribune MEA / CAPPmea

DUBAI, UAE: Recently the Dubai Dental Clinic (DDC), Dubai Health-care City (DHCC), has received a major facelift and upgrading to a state-of-the-art dental clinic. The clinic which is situated in the heart of Dubai Health-care City Building 34 is the latest addition to the various specialty dental departments, a dental laboratory and its very own imaging de- partment. The highly qualified dental team provides multidisciplinary dental healthcare treatments all under one roof. Dental Tribune MEA had the pleasure to interview Dr. Khawla Humaid Belhoul, Director of Dubai Dental Clinic.

Dr. Khawla Humaid Belhoul: We are currently working on a major expansion project for the clinic which will include new clinical areas for Pediatric Dental Care, Endodontics, Periodontics, Orthodontics, Oral Surgery, Cosmetic and Restorative Dentistry, General Dentistry and Oral Hygiene. The expansion will also include a radiology department equipped with world-class 3D imaging technology, an in-house dental laboratory and a centralized sterilization services department. This upgrade will further enable us to offer a comprehensive range of specialized services under one roof.

Having operated the clinic for several years now, what are some of the achievements, challenges and opportunities you have faced?

Achievements: We pride ourselves to have passed the Dubai Healthcare City Regulatory accreditation with a 97 per cent score. This is a clear indication of the clinic’s high quality care and patient safety performance.

Furthermore, DDC screened 3000 workers as part of the Oral Hygiene Initiative for workers which was launched in 2015 by His Highness Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, Crown Prince and Chairman of Dubai Executive Council.

We also treated more than 14,000 patients in 2016.

Challenges: We in DDC, just like any other business of dental practices globally, are increasingly facing market compe- tition. However, to overcome this challenge we constantly develop our operation and keep up with industry trends to ensure an competitive advantage in the market.

Opportunities: DDC provides the highest standards of dental care, for the community and serves as a primary and secondary referral center for simple and complex dental cases and oral diseases. The Clinic is the clinical partner of Hamdan Bin Moham-med College of Dental Medicine, the first college under Mohammed Bin Rashid University of Medicine & Health Sciences (MBRU).

What sets the Dubai Dental Clinic apart from the many other dental clinics in Dubai, particularly within Dubai Health-care City?

Today DDC prides itself on being a multi-specialty service provider and having highly qualified specialists and clinical staff. The clinic has advanced equipment for 3D imaging, CAD/CAM and Nitrous Oxide. Furthermore, our affiliation with a strong academic institution (MBRU) allows constant improvement in healthcare delivery based on an evidence-based best practice approach. We also have individualized care and continuous feedback to patients starting from their first interaction with the DDC.

What role does the clinic play in the overall plans of Dubai Health Care City?

DDC takes part in the overall plans of DHCC through different sectors. In the health sector, we provide quality patient centered dental healthcare services for the residents of Dubai and the region through developing a robust quality assurance mechanism to meet both national and international standards of quality care.

While, in the Health Education and Research sector we are supporting and facilitating specialized clinical training through our partnership with Hamdan Bin Mohammed College of Dental Medicine, the first college under Hamdan Bin Rashid University of Medicine and Health Sciences (MBRU). DDC also supports MBRU’s dental research through providing quality clinical data as well as clinical facility support for MBRU students. The research is conducted in a safe and ethical environment leading to the development and improvement of dental services and technology in the UAE and the broader region.

What is your take on the overall oral health in the UAE?

According to many published studies, the prevalence of caries and oral disease in the UAE is higher than other parts of the world. This is partly due to the limited public knowl-edge and a general lack of awareness about oral health. Therefore, there is a profound need to raise awareness of oral health and how best we can protect our teeth. This can be done through targeted community outreach programs.

Another challenge we face in the UAE is the shortage of highly-qualified dental professionals. Therefore, it is important to focus on the education and training of dental professionals. Through its facility, DDC provides the support required to train the future dental specialists for the UAE and the wider region.

Looking at the fast-paced development within the dental industry, how do you see modern day dentistry being affected?

Dentistry, like any other discipline within healthcare, has tremendously evolved in the past years. The intro- duction and emphasis on practicing evidence based dentistry has revolu-tionized dental practice. It is no longer acceptable to provide dental care for patients that is not evidence based. The fast-paced advances in dental equipment and materials is now allowing high quality treatment alternatives. This has generally led to the provision of a higher quality of dentistry.

What is your take on the overall oral health in the region? Is there a need for improvement?

Dentistry in the Middle East has evolved tremendously in recent years. The region is producing highly quality general practitioners and specialists. State of the art equipment and procedures are also being well utilized. However, more emphasis on an evidence based approach in all undergraduate and postgraduate dental degrees is still needed. Also, there is a need for local institutions to conduct high quality re- search in the different disciplines of dentistry.

Thank you very much for the interview.

Dr. Khawla Humaid Belhoul
Director of Dubai Dental Clinic
Dubai Healthcare City – Medical

INTERVIEW

Interview: “Dentistry in the Middle East has evolved tremendously in recent years”

"The region is producing high quality general practitioners and specialists."
Interview: “The world is becoming a noisier place each year”

By Kristin Hübner, DTI

Although noise exposure in dentistry may appear to be minimal, the potential for noise-induced hearing loss is an issue in the field. Various studies have shown that a significant number of dental professionals are affected each year. Aiming to address this matter is US dentist Dr Sam Shamardi, who developed noise reduction earplugs especially designed for use in the dental office. He recently introduced the product, first launched in 2014, at Dental Expo South in Christchurch in New Zealand, where the company signed a new distribution deal. Dental Tribune Online had the opportunity to talk with Shamardi about noise pollution in the dental practice and the unique technology used in the DI-15 earplugs.

Dr Shamardi, what sounds in the dental office are damaging to hearing?

All of them! We as dental professionals are exposed to constant dangerous levels of noise that have a long-term, permanent effect on our hearing. Most usually identify with the high-speed handpiece, but high-speed suction, ultrasonic instruments and cleaners, laboratory machines and model trimmers all cause damage.

Sounds that are 85 dB and above result in hearing damage and are directly related to the duration and frequency of exposure, among other factors. Thus, extreme noise exposure for short periods can be as damaging as mild exposure for prolonged periods. Considering that as dental professionals our average careers are 35 years long and typically 40 hours a week, our exposure time spent in this chronic noise environment is substantial.

The dental literature shows values for dental equipment that clearly exceed 85 dB and in many cases even 100 dB. Noise standards further illustrate that, at these ranges, as little as 15 minutes per 2 hours of exposure daily can lead to permanent damage, thus, it is no surprise that we all suffer.

It really is not a question of will our ability to hear be affected through occupational exposure to sound, but more a question of when and to what extent, and the best way of preventing this from occurring is by using hearing protection.

Is it important to protect one’s ears at all times or just during noisy procedures?

It is always best to protect oneself at all times, do we wear gloves, masks, gowns and loupes during major procedures only or for all examinations and routine treatments?

Certainly, some procedures will have a greater noise output and exposure than others, but a dental office is in a constant state of action and there is always something noisy going on in another room even if one is not involved in a noisy procedure oneself.

You developed the DI-15 earplugs. How do they work?

The DI-15 high-fidelity electronic earplugs are revolutionary and the first of their kind in dentistry. They utilise patented advanced circuitry in a tiny microchip that provides a protection against all damaging sounds in the dental environment, as needed, while still allowing for 100 per cent clear hearing. Thus, one’s ability to communicate clearly with patients and staff is not compromised, and hearing damage is prevented.

Think of them almost as smart earplugs: damaging sounds are instantaneously identified, isolated and compressed to safer levels, while normal sounds pass through naturally, as if nothing is in one’s ears. Imagine the sound of a blasting radio in the car, now imagine turning the volume down to a comfortable setting, one still hears everything but without the strain!

What gave you the idea to develop them?

It was not long after starting to practise that I recognised the irritation and additional stress I experienced from the shrill of the handpiece and, even more, the high pitched shrieks from the suction, it can truly drive one nuts. I also noticed how many of my colleagues complained of tinnitus symptoms and hearing difficulties, and I knew there was a serious problem that was not being recognised.

Once I started looking for solutions, I realised that nothing existed, and the only options, such as foam earplugs, were not practical because sounds were muffled and I could not speak with my patients or staff. Thus, I started looking into technologies that could address this issue and wanted to tailor a product that would focus on the sounds and frequency exposures in dentistry. Fortunately, after much research and testing, I was able to team up with the pioneers of in-ear technology to create the DI-15.

Should dentists and their assistants start wearing the earplugs from early on?

Dentistry is known as the field of prevention, yet when it comes to protecting our hearing, we have completely ignored our motto. With iPods and other technologies, studies have conclusively shown that hearing loss is now starting at earlier ages than in previous generations, and even children are starting to experience permanent damage as well.

Dental professionals are bombarded from the first day of university when sitting with 35- to 50-year-old classmates in a room practising for hours, not including regular noisy daily activities outside of the dental setting. Thus, the earlier one starts, the more of one’s hearing can be preserved. The world is becoming a noisier place each year, so protection and prevention are essential.

Thank you very much for the interview.
Interview: “Giving a hand to Oral Health”

By Dental Tribune MEA / CAPPmea

Dental Tribune MEA/CAPPmea had an opportunity to ask Aboubakr several questions about plan of Kulzer here in Middle East region.

Can you tell us what is the story behind Kulzer?

Aboubakr Eliwa: The company was first known as Heraeus Kulzer, then changed to "Kulzer" from July 2017. In 2013, the Japanese Mitsui Chemicals Group, which included the Dental division, "Heraeus Kulzer", which includes the Division of Industry, by the name, we are now completely separated from our previous owner.

Even with a new name and a new look, "Kulzer" remains your reliable partner! Kulzer is one of the world’s leading dental companies with its headquarters in Hanau, Germany. As a trusted partner, the company supplies dentists and dental technicians with an extensive range of products covering cosmetic dentistry, tooth preservation, prosthetics, periodontology and digital dentistry. More than 15,000 employees at 26 locations worldwide are driven by their expertise and passion for the dental market and embody the name Kulzer stands for, quality, service, and innovation.

Kulzer has been part of the Japanese Mitsubishi Chemicals Group since July 2013. Mitsubishi Chemicals, Inc. (MCI) is based in Tokyo, and has 170 affiliates with more than 14,000 employees in 27 countries worldwide. Its innovative, practical chemical products are as much in demand in the automotive, electronics, and packaging industries as they are in other fields such as environmental protection and healthcare. Since many decades, Kulzer is leading in the development and production of resin products on highest quality level for the medical as well as the technical area.

Our wide and stable product portfolio, our service orientation and our know-how in development of high performance resins bring us closer to the aim of being the most favored partner of our customers.

Our Mission

As a preferred partner to dental professionals, we help our customers restore patients’ oral health and well-being in a safe, more convenient and cost-effective way. Our mission is to develop and provide restorative products and services that create reliable solutions.

Our Vision

Our Vision is to be "The Lifetime Partner of our Customers". We will achieve this by deeply understanding the evolving needs of dental professionals and their patients in order to create a unique value proposition.

"Giving A Hand To Oral Health", could you explain this slogan and what does it mean for the dental profession?

Kulzer is dedicated to providing the best solutions to Dentists, Dental technicians as well as to patients.

At the end of the day it is all about improved patients' care. How do your products benefit patients?

The world health organization declared, Dental caries and periodontal diseases have historically been considered the most important global oral health burdens. Accordingly, at present, Kulzer is ready with a wide range of our restorative materials that cater to this need and leave the patient with a pleasant experience and the brightest smile.

Why is Middle East important for Kulzer’s development?

Middle East is a high growth market. A region with more than 150 dental schools graduating thousands of dentists every year along with a great increase in the patients’ oral health awareness. This combination makes the Middle East a very interesting region for any dental company. The market is getting wider and it’s potential is increasing year over year which triggers a great challenge to our R&D department to drive innovation and cope with the potentiality of the market.

What are the key product categories that Kulzer is focusing on in Middle East?

1. CAD/CAM and Lab lines
2. Restoratives
3. Dental Pharma.

What are your expansions plans for the region?

The sky is the limit, we established our Kulzer office in the Middle East based out of Dubai with very optimistic and consistent plans to hire professionals, we help our customers with an extensive product range, prosthetics with a strong focus on various aesthetic dentistry, tooth retention and periodontics, and prosthetic digitization.

Kulzer is dedicated to providing the best solutions to Dentists, Dental technicians and...
Interview: "It is the responsibility of each and every dental professional to stay abreast of all new materials, techniques and equipment..."
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Make it to the church on time

Dr Andrew Wallace explains how he achieved rapid, aesthetic results – to a very important deadline

By Dr. Andrew Wallace, UK

A new female patient came for routine dental treatment. She said that she was unhappy with the appearance of her smile. She had gaps between her upper anterior teeth, which made her self-conscious (Fig. 1 and 2).

She was already aware of the traditional treatment options, but did not want fixed orthodontics and declined the offer of a referral to a specialist colleague. She was well-informed of the destructive nature of some restorative procedures and the possible need for elective root canal therapy, if crowns or veneers were chosen.

Planning and preparation

The option of quickly and safely aligning the front teeth was very attractive to the patient. The main alternatives open to her were clear aligners or Inman Aligner therapy. The options for completing the space closure included direct composite bonding or minimal preparation porcelain laminate veneers. The patient’s desire for the least invasive treatment meant direct bonding was her preference.

Orthodontic treatment

Over eight weeks, retraction of the upper anterior teeth was completed using the Inman Aligner (Fig. 3 and 4). The labial bow was used for the first five weeks. The palatal bow was only inserted for the final few weeks to complete the alignment.

Once the teeth were in position, a direct mock-up was done freehand, using composite. This allowed the patient to visualise the incisal edges and proportions of the proposed direct bonding. Following patient approval, a silicone putty matrix was made to guide the final restoration. The composite stage in the treatment process took place one week later.

The next phase was to add a blue opalescence in the incisal areas of the central incisors. This small amount of retraction facilitated an optimal emergence profile. A minimally invasive approach was adopted for enamel preparation. A very light bevel (less than 0.5mm across) was placed on the incisal edges.

The enamel areas to be bonded were sandblasted with aluminium oxide. A very light bevel (less than 0.5mm across) was placed on the incisal edges. The enamel opacity effect was created using composite. This allowed the OM to be brought facially to enhance the incisal edges and the palatal surface. The shelves of the interproximal areas were outlined with a very thin layer of Venus Diamond A2 composite. The dentine was then replicated using a veneer substrate.

Results

A combination of alignment and bonding has given this young lady the smile she didn’t think was possible. It is a non-invasive, fast, predictably and inexpensive alternative to both restorative treatment and orthodontics.

The patient endorsed that the treatment was ideal for her because she was soon to be married. She emphasised that while wearing the aligner, she could talk and go about her normal life. She said: ‘The results were even better than I expected and in such a short amount of time. I was able to smile, no longer hiding my teeth, in all my wedding pictures!’ (Fig. 8).

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Peri-implantitis: from the diagnosis to the treatment

By Dr Magda Mensi, Italy
Dr Annamaria Sordillo, Austria

Peri-implant disease diagnosis is as fundamental as controversial. Although the progress made during the last decades, it’s still hard to find universal definitions and unambiguous diagnostic criteria. The parameters used to define peri-implant disease usually are: Probing Depth (PD), Crestal Bone Loss (CBL), Bacterial Overgrowth (BOG), and presence of suppuration and/or fistula.1 Peri-implant mucositis is characterized by soft tissue inflammation witnessed by CBL with or without PD deepening but no effects on the crestal bone while peri-implantitis is characterized by crestal bone loss rate, basing on longitudinal clinical studies, it’s rational to choose the time of prosthetic installation as a reference from which the PD can be diagnosed and followed. Baseline on ALlorentz and Zarb review, 30.7% of bone loss in the first year and less than 0.2% annually are considered success criteria. A CBL, exceeding this rate testifies the risk of implant failure. Don’t forget that intra-oral x-rays allow to evaluate the interproximal bone level only losing an issue for the buccal/lingual sides, where probing becomes essential. Baseline on Probing is the key parameter for peri-implant disease diagnosis. Presence of PD can be found in 97% of implants with peri-implantitis and its absence is regarded as a reliable predictive parameter of implant health. An appropriate diagnostic can be set only if a proper probing is possible. Malpositioning, implant and abutment design (eg, platform switching), lack of surface smoothness, device, sign, overcontouring and extension of suprastructure must make probing difficult and puts the risk of underestimation. Underestimation of PD can lead to underestimation of CBL. If undiagnosed, peri-implantitis may lead to complete failure of osseointegration and implant loss. The epidemiology is not comforting: in a recent systematic review the authors concluded that 45% of the implants included in the meta-analysis were affected by mucositis, whereas the prevalence of peri-implantitis was estimated to be 27%. Peri-implantitis lesions are different from periodontal ones, both in their extent and composition of the inflammatory infiltrate. Peri-implantitis is known to progress faster than periodontal disease. This is enough to affirm that prevention is of major importance for the success of implant restorations. The prevention starts with patients framing into risk categories1 Subjects with a history of periodontal disease are at greater risk to develop MBIL and peri-implantitis. This risk is increased in case of rough implants, poor oral hygiene, smoke habits, diabetes and poor metabolic control.13,14 The clinician must be able to diagnose and treat periodontal disease and have the duty to work on patients’ habits, giving them support in a change that can bring benefits not only to the implant therapy but to their health as well. Second step of prevention can be carried out during the surgical phase: a correct positioning of the fixture can help the technician in constructing a correct prosthetic and, consequently, the periodontist in checking the implant health, the hygiene in cleaning effectively the peri-implant area and the patient in keeping an high standard home-care. An infective care leads to the development of inflammatory reactions of which can be kept hidden under the prosthesis and be unveiled until their removal. Particular attention should be given to reach an appropriate amount of keratinized peri-implant tissue: its presence can be beneficial for the maintenance of an adequate oral hygiene. Long abutments and implant placement at sub-mucosal level cannot be considered a good choice from the periodontal point of view since they may create a deep probing depth since the very beginning of the implant-borne restorations life. Third milestone of the peri-implantitis prevention is Supportive Peri-implant Therapy: the lack of a regular and effective SPT is a risk factor for the development of peri-implantitis. Every recall should be accompanied by a proper examination and probing15 to detect and effectively treat any case of peri-implant mucositis, since it can early progress to peri-implantitis. Sometimes it might be necessary to reverse the overlying pathologies in order to achieve a more effective treatment and, in some cases, a better resolution of the inflammatory disease. The objective of the SPT should be the absence of peri-implant inflammation witnessed by absence of PD. But what should we do in case peri-implantitis diagnosis? Being an infective pathology, biofilm and calculus removal is the key of peri-implant treatment: A gold standard non-surgical treatment still does not exists.14 Up to now no clinically relevant advantage of one treatment over the other can be found and only limited improvements accompanied by a tendency for recurrence have been reported.16 What has been happening during the last decades is the transposition of periodontal therapy strategies and technologies to the implant world. The use of curettes and mechanical devices can be reasonable since it’s proved that peri-implant diseases are caused by a complex biofilm that has to be disrupted15 but becomes disputable given the structural differences between a tooth and an implant. Scaling and Root Planing makes little sense on a titanium surface with its particular micro and macro structure. An implant should not be planed but detoxified and decontaminated without alteration of its smooth and rough surfaces and with recovery of the biocompatibility.17 Erosion with liberation of ions and metal particles is an under-estimated issue in dentistry. Wear...
debris have been described to be one of the responsible factors for aseptic loosening of orthopedic implants. They can be phagocytosed by macrophages, inducing the expression of pro-inflammatory cytokines activating osteoclasts maturation. On the surface of titanium implants we can find a self-repairable layer of TiO2 that shows an high chemical stability and prevent the diffusion of metallic ions. Scratching of the implant or abrasture surface could lead to the temporary removal of the TiO2 layer and to release of metal ions. Scratching of the TiO2 that shows an high chemical plant biocompatibility. In order to overcome these limitations of smooth surfaces. The downside is that sodium bicarbonate can be harmful for soft tissues and can increase roughness of smooth surfaces. This problem has been overcome thanks to low-abrasiveness powders such as glycine and erythritol, proven to be respectful of oral soft tissues. Good in-vitro results are reported: glycine seems to be effective in removing bacteria from both smooth and rough surfaces. Repeated use of glycine powder was not associated with any surface alterations, making its use feasible for life-long implant maintenance. Schmage et al. proved glycine powder to be as effective as ultrasonic instruments with PEKK tip in cleaning both smooth and structured surfaces. Drago et al. analysed the in-vitro effect of erythritol powder finding that it shows even a stronger antimicrobial and antibacterial activity than glycine. The detoxifying, Erythritol powder has a lower granulometry although the abrasive power is high. This may help reaching the micro-infractuosity of the implant and, in conjunction with the antimicrobial activity, help detoxifying the surface. Schmidt et al. analysed the effects of different instrumentations (stainless steel and plastic curettes,
stainless steel and plastic coated ultrasonic devices, two types of glycine powders and one of erythritol on implant necks through a scanning electron microscope. They found out that air-polishing treatment resulted in the least surface modifications. Among the powders tested, the erythritol was proven to be the most respectful of the implant surface. Furthermore, the introduction of specifically designed flexible nozzles able to reach the deeper portion of the pockets has increased the decontamination power of this kind of device. Routine et al. in an in-vitro study simulated different peri-implant defect morphologies around rough implants with simulated biofilm and tested the cleaning efficiency of different types of steel curette, ultrasonic device with steel tip, air-powder abrasive device with glycine powder and nozzle for sub-gingival use. The air-abrasive device provided a superior cleaning efficacy, followed by ultrasonic instrumentation. The major advantage of the sub-gingival nozzles is the flexibility that eases the access to the peri-implant pockets and to the implant surfaces, mostly when the access is hindered and the removal of the protheses is not possible.

Even in the in-vitro results are encouraging, in-vivo evidence is still insufficient. Salm et al. in a randomized controlled clinical trial showed that the treatment of initial/moderate peri-implantitis through an air-abrasive device with glycine powder can achieve the same PD reduction of carbon cures and chlorhexidine digluconate. It could also achieve a significantly higher PD reduction in randomized controlled clinical trials are required to assess the real in vivo efficacy of air-polling devices for the resolution of peri-implantitis, focusing on severe cases. Antibacterial and anti-angiogenic molecules have been proposed to boost the bacterial elimination and to help decontaminating the implant porous surface. Chlorhexidine has shown to be ineffective in peri-implant lesions decontamination. Porsm et al.24 could not find any PD reduction and only a limited BOP reduction after additional use of local 0.12% chlorhexidine irrigation and gel plus 50 days of 0.12% chlorhexidine mouth rinse. Antibiotics constitute an additional option. Since peri-implantitis is a very localized disease, we wouldn’t take into consideration systemic antibiotic therapy with all the side effects it can bring. It’s important to notice that, to date, there are no controlled clinical trials evaluating the effects of any systemic antibiotic therapy. Locally delivered antibiotics can be released in a high dose for many days, killing the bacteria in the un-removed biofilm. Tetra-cyclines have been widely investigated in periodontology given their broad action spectrum. Mombelli et al.24 tested locally delivered 25% tetracycline as monolithic ethylene vinyl acetate fibers to be located around implants after a scaling phase with plastic curette and to be removed after 10 days. Clinical, radiographic and microbiological parameters improved in a good part of the subjects. Unfortunately, the lack of control group does not allow to understand the real magnitude of the antibiotic action. Amongst the difficulties met by the authors, it’s notable the struggle in assuring a contact between the fibers and all the implant surface, in particular in narrow and deep defects. The use of different biodegradable carriers can give a better and easier contact with the implant structure and can cut out the need of fiber removal. Reveret et al.20 tested a single dose of locally delivered minocycline as a coadjuvant of manual debridement with curettes, compared to chlorhexidine gel application. The additional effect of minocycline was small but significantly higher both on PD and BOP. Butcher et al.25 investigated biofilm supression with a slow-release 8.5% doxycycline as an adjuvant to debridment with plastic curetes plus motivation and oral hygiene instructions. The results were promising showing a significantly greater gain in mean attachment level PD and BOP improvement for the doxycycline group. Minocycline seems to be the most effective local antibiotic available.

The most recent evidence about peri-implant disease treatment through plaque modification and adjunctive alternative measures. Regarding peri-implantitis, a meta-analysis showed that air-polishing devices can improve biofilm removal measure and local antibiotic therapy as an adjunct to mechanical debridement allow to achieve a higher BOP reduction over resective or control treatments. There are the reasons why we decided to bring in our clinical experience the use of PEEK ultrasonic tips associated with supra- and sub-gingival air-polishing systems with glycine or erythritol powder and a controlled release 14% doxycycline hyclate (Ligase®).

So far, there is no scientific evidence supporting the efficacy of this coadjuvant. The tested protocol consisted of a Multiple Antifungal Non Surgical Therapy (MANST) that involves the use topical 14% doxycycline to solve the peri-implantitis acute phase and, after 7 days, a session of Full Mouth Air Polishing Therapy (FM-APAPT) through the optical powder (Fig.9), a piezo-ceramic device with a PEEK tip (Fig.8), the curettage of internal to external surfaces of the implant with Curette (Fig.7), a piezo-ceramic device and a second application of Doxy. The patients were further followed with quarterly maintenance sessions carried on with the same FM-APAPT protocol. Up to 12 months BOP and mean PD decreased significantly and successfully, accompanied by a gain of attachment level and the results are encouraging. So far, there is no scientific evidence supporting the efficacy of this coadjuvant. The tested protocol consisted of a Multiple Antifungal Non Surgical Therapy (MANST) that involves the use topical 14% doxycycline to solve the peri-implantitis acute phase and, after 7 days, a session of Full Mouth Air Polishing Therapy (FM-APAPT) through the optical powder (Fig.9), a piezo-ceramic device with a PEEK tip (Fig.8), the curettage of internal to external surfaces of the implant with Curette (Fig.7), a piezo-ceramic device and a second application of Doxy. The patients were further followed with quarterly maintenance sessions carried on with the same FM-APAPT protocol. Up to 12 months BOP and mean PD decreased significantly and successfully, accompanied by a gain of attachment level and the results are encouraging.

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DUBAI 2018-2019
From digital planning to the mock-up and final restoration

Presentation of a modern work concept on the basis of a veneer fabrication

By Dr Cyril Gaillard and Dr Jérôme Bellamy, France

The demand for cosmetic treatments is also increasing in dental practices. Today's communication media provide patients with virtually limitless access to a wealth of information on this topic. And with it comes an increase in expectations. This can pose a conundrum to the dentist: patients want to be promised the desired results yet they should not be given undue expectations in the run-up to the treatment.

The challenge

One of the challenges in day-to-day dentistry is the fact that the mock-up presented to the patient is produced from a wax-up and is often not consistent with the final outcome of the treatment (e.g. ceramic veneers). Several research studies have been initiated to overcome this problem. The SKYN concept is a result of this research.

The solution

The SKYN concept is based on a unique approach: it uses natural tooth shapes to create a mock-up directly in the patient's mouth. A wax-up is created on the basis of tooth shapes that reflect the anatomy and morphology of natural teeth in terms of height, width, curvature and surface texture.

The predictability of the result is ensured by using SKYN CAM technology to scan the mock-up, make adjustments in the oral cavity and then mill the veneers to achieve life-like results.

The reproducibility of the mock-up and the accuracy of the result arise, among others, from the performance of the furthermore, the restorations present an accurate copy of the esthetic wax-up. The different working steps involved in the SKYN concept are demonstrated below on the basis of a clinical case.

Clinical case

Preparative situation

The patient visited the practice with a request that mainly concerned esthetic criteria. She felt that her anterior restorations looked too yellowish and their shape did not fit in. The restorations had been in her mouth for several years. They should now be replaced.

First, a series of digital pictures was taken to examine the situation more closely. The patient had a high smile line. However, the fact that her gums were visible when she smiled and her upper lip was asymmetrical did not bother her (Figs 1a and b). The periodontal apparatus was healthy. The soft tissue did not show any signs of abnormalities either.

Treatment planning

We recommended the patient to have the anterior region restored with veneers stretching from teeth 15 to 25 and advised her to have the premolars included in the restoration to achieve a harmonious appearance. The patient agreed with our proposal. We drew up the following treatment plan:

- Wax-up using composite veneers to reproduce the natural shape and texture of the teeth.
- Mock-up according to the SKYN concept using a light-curing nanohybrid composite (IPS Empress® Direct).
- Increased digital data scan of the mock-up.
- Preparation of the teeth with the help of the mock-up.
- Digital impression of the preparation using an optical camera.
- Fabrication of the temporaries.
- Machining of the glass ceramic veneers (IPS Empress CAD).

Fabricating the wax-up

The aim of the ceramic veneers was to give more volume to the teeth. The teeth should appear stronger and longer. Adjusting the dental proportions was requisite to create a harmonious appearance between the teeth and the smile on the patient's face. To create the wax-up, we used the SKYN models (Ante- rior Model Set“ by Dr Jan Hajol) as reference (Fig. 2). This is a reproduction of natural teeth. Upon request by the patient, tooth selection was performed with the help of both the DSD program (Digital Smile Design) and the Visagist® design and visualization software.

Transfer to the mock-up

We created a silicone key of the vestibular surfaces with the help of the wax-up and applied a thin layer of composite material into the key using a spatula (IPS Empress Direct) (Fig. 3). Once light cured (Bluephase® with Polywave® LED), the resulting composite veneers for teeth 15 to 25 were placed on the model and stabilized with wax (Fig. 4). Once the wax-up was finalized, it was duplicated and cast in stone. We created a silicone key from this model to assist the dentist in the fabrication of the teeth. The silicone key was created in two steps using two different silicate materials, one with a high hardness (Silico Dur, Cerecero-Mittaus) and the other with a low hardness (3M ESPE Express). The silicone key served to create the mock-up and the temporaries.

Tooth preparation and data transfer to the lab

The mock-up was inserted with the help of the silicone key and the surface texture was reworked using a polishing system (Astropol®) (Fig. 5). The esthetic effect was validated with photographs and videos. The patient could also inspect the pictures (Figs 6 and 7).

Then, the teeth were prepared using a ball-shaped bur whilst the mock-up was in place (Galip Gurel 2003) (Fig. 8). This procedure meets the requirements of intraoral digital dentistry. An impression of the prepared teeth (Fig. 9) was taken using an intraoral scanner and the temporaries were fabricated with the help of the silicone key. At this point, the dentist is required to take two optical impressions: first, an impression of the prepared teeth and, second, an impression of the temporaries in the mouth. In addition, a conventional silicone impression of the prepared teeth is taken. The dental technician will use this impression to produce a physical model to check the fit and contact points of the milled ceramic veneers.

CAD/CAM technologies have brought about a revolution in dentistry. They enable the efficient manufacture of customized ceramic veneers with high accuracy and within a short period of time.

“Never promise what you can't deliver!” Particularly when undergoing esthetically motivated dental treatment, patients should be given a realistic visualization of the final outcome to avoid raising undue expectations.
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Creating the final restoration

For the CAD construction, the two data sets (temporaries, prepared teeth) were superimposed in the software (Fig. 10). Subsequently, the shape of the temporaries was matched to the preparation margins. Each component was examined (preparation margin, thickness, contact points, etc.) separately before the data was transmitted to the milling unit for machining (Fig. 11). For the fabrication of the veneers, we decided to use the IPS Empress CAD Multi blocks, which feature a lifelike shade transition from the dentin to the incisal. Each veneer was positioned in the block in such a way that the translucency of the incisal area matched our requirement. Once the veneers were milled, we checked their fit on the prepared dies of the model and assessed their contact points with each other. The surface texture was lightly reworked (Fig. 12). To achieve a highly esthetic result, we additionally characterized the veneers with Stains and Essence materials (IPS Ivocolor®) before we glaze-fired them (Fig. 11).

Seating the ceramic veneers

At the try-in, the shade and fit were checked. All ten veneers showed an excellent fit in the mouth. The next step was adhesive bonding. Prior to the bonding procedure, a rubber dam was placed to isolate the treatment field and keep it dry. As the natural teeth were not discoloured, we were able to use a translucent luting composite (Variolink® Esthetic) to insert the veneers (Fig. 13).

The veneers were seated using the following protocol:
- The restorations were etched with hydrofluoric acid for 60 seconds, rinsed under running water and dried with compressed air.
- The prepared teeth were etched with 37% phosphoric acid gel (Total Etch) and rinsed.
- Fluoride-releasing Excite® F DSC adhesive was applied (without light-curing).
- The veneers, which were coated with luting composite, were seated.
- The luting composite was tack-cured for 1 to 2 seconds (Bluephase with Polywave LED) to facilitate the clean-up of excess luting composite.
- Final light curing of all veneers for 40 seconds.
- Removal of the rubber dam and occlusal check. At the last step, the restorations were polished.

The ceramic restorations show an appealing esthetic appearance in the mouth and harmonize beautifully with the smile of the young patient. The planned situation was accurately transferred to the final restoration (Figs 14 to 16).

Conclusion

Modern materials in esthetic dentistry allow pleasing results to be achieved with considerably more ease than before. It may be considered a substantial progress that the resulting restorations meet not only high esthetic requirements but also essential functional criteria. State-of-the-art planning tools, digital auxiliaries, CAD/CAM supported manufacturing and promising materials lead to excellent results and ensure high patient satisfaction. However, never mind the CAD/CAM technologies, the skills and experience of a seasoned dental technician will remain indispensable.
High performance polymers. Part one

In the first of a series of articles, Professor Paul Tipton gives us an introduction to high performance polymers in dentistry. Here he discusses polyether ketone (PEEK), a new material for framework fabrication in prosthodontics.

By Prof Paul Tipton, UK

The high-performance polymers (HPPs), or the group of materials, possesses better temperature and chemical stability and mechanical properties than the commodity plastics, but typically being manufactured in lower volumes and costing more. The family of HPFs that have entered dentistry are called the Polyaryletherketones (PAEKs), of which there are several members with varying characteristics. Many of us in the dental industry are inadvertent-ly familiar with the family member called PEEK. PEEK was first introduced through its use in healing caps, tem- porary abutments and scan bodies. However, the reason for the recent enthusiasm surrounding PAEKs has been their potential for use as a metal-alternative in broader cases such as removable dentures (Figures 1 and 2) and implant borne prosthet-ics (Fig. 3). It is here that the shock absorbing characteristics of the ma-terial could be extremely interesting for immediate loading or long term frameworks (Fig. 4).

In this series, the first article of a series of six, the background to these materials will be described. This will be fol-lowed by a second article de-scribing their use in removable and implant borne prosthetics.

The PAEK family

PEEK is the most well-known and most widely used PAEK family member. PEEK was invented in the USA in 1978 (ICI – now as Victrex plc) and was selected by aerospace, semi-conductor, automotive and medical industries as a standard material of use in all these sectors. It is typically used as a metal replacement, due to its strength to weight ratio and corro-sion resistance. Other family mem-bers include the following, each with variations of the chemistry (eg PEK and PEKK), and these materials can also be filled with different biomaterials. In their unaltered, unaltered state the materials are beige in colour.

PAEKs in medical

Several of the properties of PEK that were being exploited in industry (eg strength-to-weight ratio, chemical and wear resistance, radiolucent, and reduced stiffness versus met-als) were naturally intriguing for implant-borne prosthetics. In their unaltered, unfilled state the PAEKs have appeared as materials for use in indication and reproducibility of a digital process. The most common frameworks and the framework manufacture can be done in lower volumes and cheaper. This manufacturing route avoids all the capital equipment necessary for re-melting the polymer. The manufacturing process should only be done by a competent laboratory and by using the equipment recommended by the supplier.

(II) The alternative framework route is the CAD/CAM technology. This manufacturing route avoids all of the risks mentioned previously for re-melting the polymer. The ma-terial properties remain consistent and the framework manufacture can also benefit from the increase precision and reproducibility of a digital workflow. Although it does require a significant capital investment by the laboratory, many laboratories are finding it is necessary to align with other industries and adopt dig-itation to increase efficiencies.

PAEK materials further extend these CAD/CAM efficiencies when com-pared to milling metal substra-tures, since there is typically less tool wear and faster milling times and the metal is also necessary to mill them does not need to be as expensive as machines for milling metal. Interest in the material is high. It is the author’s view that the op-timum use of these materials comes from the use of CAD/CAM milling process as opposed to the injection moulding process.

However, PAEKs also additionally possess sufficient strength to be con sidered as a metal alternative.

Conclusions

The high-performance polymers called PEEK and PEKK have exciting potential in dentistry as a metal alternative for removable and implant prosthetics. These stiffness properties confer promise as a substitute that could add an element of shock absorption. This may have benefits for patient comfort, addressing parafunction and damage limitation. In the following series of case studies, I shall describe the use of a PEEK high performance polymer as a framework replacement and implant prosthetics.

References

FONA Stellaris – the flagship of digital intraoral imaging

By FONA Dental

FONA Stellaris intraoral sensor is the latest entry in the FONA digital imaging Solutions range. It is one of the most advanced intraoral sensors currently available in the market.

We have asked Dr. Alzbeta Kršáková, who had the chance to try it out, what her thoughts are on the intraoral sensor and digital intraoral imaging in general.

You had a chance to try the Stellaris intraoral sensor, how would you describe it in a few words?

Dr. Alzbeta Kršáková: If I had to describe the experience in one sentence, I would say that it is a user-friendly technology which produces high quality images.

What do you perceive to be the biggest benefit of digital intraoral imaging?

I really appreciate the speed of digital imaging. The processing of images is quick and I can work faster. It is also about convenience as digital images are easier to archive.

Which dental cases can you not imagine diagnosing or treating without an intraoral sensor?

Sensor is very useful, for example, during endodontic treatment – whether for diagnosis, measurement or assessment of administered therapy.

Do you have a tip or a trick to share when working with an intraoral sensor?

When working with a digital sensor, always plan sensor position and be mindful of cable management before placing the sensor inside the patient’s mouth. You will avoid difficult manoeuvring and the procedure will be much faster with better image results.

What do you think is absolutely essential to know when working with an intraoral sensor?

You need to know and use the recommended settings for your X-ray machine and your intraoral sensor. I can obtain the best images only with the correct settings and proper sensor positioning technique.

Have you tried other intraoral solutions (plates, film, or other sensors) and if yes, do you have a favourite feature Stellaris does better?

I use both plates and Stellaris sensor in my practice. I like that with the sensor technology I get images very quickly on the screen and if I need more images at once I don’t need to wait to take another exposure.
Digital Dentistry, From Smile Design to Occlusal Analysis

A case report

By Dr. Mohamad Kiswani & Dr. Iman Said Nazzal, Jordan

Digital dentistry refers to the application of dental technologies or equipment to perform dental procedures rather than using mechanical and electrical tools. The use of digital dentistry can make carrying out dental procedures more efficient than using mechanical tools.

The digital era has brought countless benefits to dentistry. An organized and systematic approach is required to evaluate, diagnose and resolve aesthetic problems predictably. It is of prime importance that the final result is not dependent on looks alone. Our goal as clinicians should be to achieve a pleasing composition in the smile by creating an arrangement of various aesthetic elements.

Digital dentistry requires that the dentist follow precise protocols in order to obtain a standard and predictable result that corresponds to an optimal clinical result. Nowadays many digital technologies have been added to dentistry, but three new innovations in Digital Dentistry that have introduced major transformation in clinical practice:

1. Digital Smile Design - Digital/Optical scanners - Digital Occlusion Analysis

The case

The patient was a 26-year-old female, she came complaining of stained restorations and gaps in her upper anterior teeth. After clinical and radiographic examination, the teeth 21 and 22 had large composite restorations with open margins, the teeth 21 and 22 were root canal treated and all upper anterior teeth required crowns (Fig. 1).

Digital Smile Design

The Digital Smile Design is a multi-use tool that can assist the restorative team throughout the treatment, improving their understanding of the aesthetic issues and increasing patient acceptance of final results. The placement of reference lines and ability to draw over extra and introral digital photographs widens the dental team’s diagnostic vision and helps to evaluate the limitations, risk factors, and aesthetic principles of a given case. These critical data will lead to improved results in all phases of treatment.

The greatest challenge of smile design lies in the conversion of 2D photographs into 3D images. Today, the use of 2D and 3D software for photograph editing and digital image editing allows us to process data and customize parameters for each specific clinical and aesthetic requirement of the smile makeovers.

Many digital programs and protocols have been introduced to the dental market in the last five years. Some of them focus on the style of imaging and producing a virtual simulation to the patient, helping the patient better visualize imagine what her smile will look like after the planned dental treatment. Others may have lesser virtual results but more precise measurements and tools. It depends on the practitioners’ choice of treatment and the aim of smile design to choose a suitable software for his clinical practice, some clinicians prefer to use more than one software to achieve all treatment goals. Most of companies do aim to be the first choice for the dental professional, but some do fail to achieve some critical characteristics in their product.

In this case, we started with designing her smile digitally using “Smile Designer Pro” software. We tried to use other systems but this system showed the easiest mode of transferring the final result of the design to the CAD system, using the template outline and then trace it to get a similar result. (Fig. 2a, 2b, 2c) Show the steps of smile design.

After presenting the virtual simulation for the patient, she accepted the treatment and we started with replacing old composites and prepared with teeth preparation. (Fig. 3)

Intraoral Digital Scanners

Intra-oral mapping technology is one of the most exciting new areas in dentistry as 3D scanning of the mouth is essential in almost all clinical practices in every dental office. The first dental digital scanner was introduced in the market in the 1980’s with limitations including low precision and high cost. New technologies were then introduced which lead to the creation of enhanced in-office scanners which were considered much more “user-friendly”. The new scanners have become easier to use for the clinician, give more precise digital impressions, and offer technological advances compared to earlier versions. All systems work to capture 3D virtual images of teeth which can be used to create precise models on which the restorations can be developed in a dental laboratory.

The use of these products is rapidly increasing around the world and presents a paradigm shift in the way in which dental impressions are made. Several of the leading 3D dental digital scanning systems are presented and discussed in this article.

Using the technology of optical scanners with Trios from 3Shape, we recorded the digital impression for the prepared teeth. (Fig. 4a, 4b, 4c)

The crowns were designed using the Trios Dental System Software for the CAD step. What is unique about this system is that we could upload the patients 2D facial photograph and test our design on the 3D model of the patients facial smile. (Fig. 7a, 7b, 7c) In this case, we tried to make it twice; first with the DSD virtual template (Fig. 6a), and second with her natural smile without smile simulation (Fig. 5a) and then we aligned these photos with the 3D digital jaw impression. We aligned it by choosing 2 similar points on each side (right and left) on the 2D photo of the patient facial smile and on the 3D digital impression, the system then aligns them together as noticed in photos attached. After this, we started to design a relatively similar design of the suggested DSD by tracing the outline of the simulation template. After making sure of the 3D design outline, labial shape of teeth, width and incisal length, and shape, it was adjusted to the marginal finish lines, contact with adjacent teeth was checked along with occlusion while routine lab work took place. Eventually, the final result was shown on the patient facial smile in 2D/3D mode. Further adjustments can be easily done per the patients functional and aesthetic requirements.

Shade measurements were taken.
firmed digitally using the Trios shade tool that is embedded within the scanning technology (Fig. 8a, 8b). We have also confirmed the result using the Vita Easy-shade spectrophotometer. However, shade-matching devices could help clinicians and technicians achieve a better shade choice.8

Digital Occlusal Analysis

The only tool available in the market for digital occlusal analysis is the T-Scan from Tekscan. The T-Scan system is a valuable tool that aids in the diagnostic process of analysing a patient’s bite and showing what is and what is not functioning properly by Digits and Numbers. When a patient bites on the HD sensor, data is transmitted into the T-Scan software, which captures a video of the occluding and non-occluding contact points.

T-Scan system provides dynamic occlusal measurement - revealing the level and timing of force on individual teeth and the occlusal stability of the overall bite - bringing articulation paper marks to life. T-Scan is a digital occlusal analysis system consisting of a patented sensor, USB-based handle, and proprietary software that reveals the level and timing of force on individual teeth and the stability of the patient’s bite. When used in conjunction with articulating paper, T-Scan’s precise and actionable data gives you the ability to diagnose and treat occlusion accurately and with confidence. There is evidence to support that T-Scan system is rapid and accurate in identifying the distribution of the tooth contacts and has shown great promise as a clinical diagnostic screening device for occlusion and for improving the occlusion of various dental treatments.

In the try-in session, we tested the marginal fit, shape, colour, contacts, and correction of occlusion using T-Scan. We noticed almost 50% to 50% occlusal balance with a balanced force distribution between anterior and posterior teeth (Fig 9a, Fig 9b). No other adjustments were needed at all. Crowns were sent back to the lab to be glazed and then cemented in the patients mouth in the next session (Fig 10a, 10b).

Conclusion

The future of dentistry is digital. Accordingly, dental professionals need to change the way they think, communicate and work to adapt to this new challenging scenario. Wanting to adapt or integrate these new digital technologies will eventually leave them behind.

In the coming months and years there will be further, innovative and improvements in this area. Digital technologies will dramatically change the world of dentistry and eventually changing the patients’ expectations towards dental treatment.

References


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Taking on work in progress in practice transaction

By Amanda Maskery, UK

When purchasing a practice, among the many factors clinicians need to consider is the situation regarding work in progress (WIP), an area that can be particularly complex in finalising the details of the transaction. Ongoing work that has not yet been completed, though it will have been at least partly paid for, could well take up a significant proportion of one’s capacity in the early stages of ownership, so it is vital to know exactly what one is taking on. Furthermore, from the outset, buyers will need to be clear about the level of WIP against any payments already received, as well as the payments outstanding.

From the seller’s point of view, it is therefore important that an up-to-date list of WIP be kept in the run-up to completion. The situation is easier regarding WIP if the seller is remaining with the practice, but if exiting completely, then careful determination of exactly what is to be inherited needs to be made at the earliest point. It also needs to be set out in the sale agreement the terms on which the buyer can claim fees for the work. Some WIP will have been partly paid for by the time the transaction is completed, but there must be a consideration of how that will be structured. For example, if 75 per cent of the fees for the WIP have been paid by the patient, but only 50 per cent of the work carried out by seller, it must be determined whether the buyer will keep the 25 per cent balance or whether this will remain with the seller at completion.

In many situations, the buyer will be able to claim a proportion of money in respect of the percentage of work he or she will be carrying out to complete the treatment. However, in other circumstances, a decision may be made not to pursue this. It could be deemed that cases paid up at the outset or partly paid and those paid at the end of treatment will balance out at completion, rather than carrying out complex calculations on each piece of WIP.

WIP can indeed be a complex area, so it is important that all parties involved in the transaction sit down and work through an up-to-date list of WIP shortly before completion and work out exactly what is happening with each piece of unfinished work. A carefully drafted sale agreement is extremely important in this scenario, and consulting specialist dental advisers is strongly recommended.

Both the seller and buyer need clarity on how WIP will be transferred and who will retain what percentage of fees. Establishing this will enable a smooth transaction to the benefit of the business and patients alike.

Amanda Maskery
Amanda Maskery is a leading dental lawyer. She is Chair of the Association of Specialist Providers to Dentists (ASPD) in the UK and a Partner at Sintons law firm in Newcastle. Amanda can be contacted at amanda.maskery@sintons.co.uk

Professor Paul Tipton named within ‘The Dentistry Top 50’ for 2017

By Tipton Training

The founder of Tipton Training, Professor Paul Tipton, has been named at #12 in ‘The Dentistry Top 50’ for 2017 – only two places behind British Prime Minister Theresa May.

It’s the ninth time the prosthodontics expert has been featured in the annual list from Dentistry.co.uk, which ranks UK dental professionals in order of influence.

“I’m thrilled to again be named in The Dentistry Top 50 for 2017. To have an established presence in this list gives me great satisfaction – and it inspires to keep helping the next generation of dentists,” says Professor Paul Tipton.

As President of the British Academy of Restorative Dentistry, Professor Tipton now divides his time between operating private referral clinics in Manchester and London, along with teaching other dentists the skills and techniques needed for a successful career. He also has a training academy in Dubai with another soon to follow in Singapore.

With an international teaching career spanning over 25 years, his private dental training academy – Tipton Training – is now one of the top dental training institutions in the country, leading the way in professional dentistry training. To date over 3,000 delegates have attended Tipton Training courses to boost their skills, knowledge and income.

As the author of over 100 scientific articles for the dental press, Professor Paul Tipton is also one of the leading media commentators in UK dentistry.
Phobia of dentists leads to more decay and tooth loss

By King's College London

People who have a severe fear of the dentist are more likely to have tooth decay or missing teeth, according to a new study from King’s College London.

The study, published in the British Dental Journal, compared the oral health of people with and without dental phobia. The results showed that people with dental phobia are more likely to have one or more decayed teeth, as well as missing teeth.

In addition, the study found that those with dental phobia reported that their quality of life is poor.

Researchers combined genomics and novel bioinformatics to identify aspirin as a candidate drug with properties that stimulate existing stem cells in the tooth to enhance the regeneration of the damaged tooth structure. Treatment of stem cells from teeth with low-dose aspirin significantly increased remineralisation and the expression of genes responsible for forming dentine.

According to the study, this new discovery, coupled with the known anti-inflammatory and pain-relieving effects of aspirin, could provide a unique solution for controlling dental nerve inflammation and pain while promoting natural tooth repair.

Lead researcher Dr Ikhlas el-Karim said, “There is huge potential to change our approach to one of the biggest dental challenges we face. Our initial research findings in the laboratory suggest that the use of aspirin, a drug already licensed for human use, could offer an immediate innovative solution enabling our teeth to repair themselves.”

Caries is the most common dental disease worldwide and places a large financial burden on the NHS. This strain on the system is a particular concern in Northern Ireland, which has the highest prevalence of tooth decay in the UK.

“Our next step will be to develop an appropriate delivery system to test the drug efficacy in a clinical trial. This novel approach could not only increase the long-term survival of teeth but could also result in huge savings for the NHS and other healthcare systems worldwide,” said el-Karim.

The research findings were presented on 7 September at the British Society for Oral and Dental Research Annual Scientific Meeting in Plymouth in the UK.

Study shows aspirin could repair dental caries

By DTI

BELFAST, UK: According to a new study by researchers at Queen’s University Belfast, aspirin could reverse the effects of dental caries. According to the research, aspirin can enhance the function of dental stem cells, thus aiding self-repair of the tooth—a result that could drastically reduce the need for one of the most common types of dental work. In England alone, the National Health Service pays for about seven million fillings each year.

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In addition, the study found that those with dental phobia reported that their quality of life is poor.

In the study, researchers suggest that this could be that because many people with dental phobia avoid seeing a dentist on a regular basis to address preventable oral conditions. The team also found that once a visit has been made, the phobic patient might also prefer a short-term solution, such as extraction, instead of a long-term care plan.

Anxiety about visiting the dentist is common and becomes a phobia when it has a marked impact on someone’s well-being. Researchers analyzed data from the Adult Dental Health Survey (2009), where out of 10,900 participants, a total of 1,367 (344 men and 1,023 women) were identified as phobic.

“This phobia can have a major impact on a person’s quality of life, including on their physiological, psychological, social and emotional wellbeing. Other research has shown that people with dental phobia express negative feelings such as sadness, tiredness, general anxiety and less vitality. An action as simple as smiling will be avoided due to embarrassment of their poor teeth.”

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By DTI

BRISBANE, Australia: In light of the ageing population, dentists need to be aware of the risks posed by retained dentition and exposed root surfaces in elderly patients, whose oral health problems are multifactorial. A recent article has recommended a maximum interception approach involving all members of the health care team and promoting evidence-based self-care, taking into account salivary, plaque and lifestyle risk factors.

Dental professionals must be prepared for the sheer number of older patients, especially among the baby boomers (the generation born between 1946 and 1964), retaining their natural teeth for longer, stated article author Prof. Laurence James Walsh, from the School of Dentistry at the University of Queensland in Australia. Particular problems include root surface caries in patients with a strong history of coronal caries and those who suddenly develop salivary hypofunction. Furthermore, elderly patients suffer from more chronic diseases and are medically more complex.

Treatment options need to be adjusted to each patient’s situation. This includes considering how treatments can maximise the patient’s quality of life and make him or her comfortable and pain-free, as well as treatment being within their economic reach, argued Walsh.

Older patients sometimes cannot maintain sufficient oral health, owing to a decline of fine motor skills and reduced sight. Hence, Walsh advised a multidisciplinary approach with doctors, nurses and carers working together to provide good oral health for patients living in long-term care facilities. A key message must promote oral health as part of overall health, he said.

“A central tenet of modern preventive dentistry is to avoid intervening before prevention has been given a chance to work,” emphasised Walsh.

The older population is at risk of falling into the cycle of dental neglect or worsening oral disease. Carers might be reluctant to perform oral hygiene, since they may feel they lack the necessary knowledge and skills to do so safely, wrote Walsh. This adds to the perception that the mouth is an intimate personal space. Consequently, many carers believe that patients should be looking after their own teeth and dentures. In the case of patients who develop dementia, these barriers to oral care can magnify.

“Protocols for oral care must be tailored to the patient’s needs and be realistic given the limitations in time, finance and energy which can be expended,” said Walsh. Furthermore, the lack of education is a need that should be addressed.

The article, titled “Minimal intervention management of the older patient”, was published online on 11 August in the British Dental Journal.
Combating pregnancy gingivitis: EFP and Oral-B launch joint campaign at FDI

By DTI

MADRID, Spain: At a press event on Wednesday, long-standing partners Oral-B and the European Federation of Periodontology (EFP) announced that they have joined forces in a Europe-wide campaign to raise awareness of the importance of oral health during pregnancy. The initiative aims to educate and support expectant women, as well as health care and dental professionals, by introducing guidelines for both audiences, among other measures.

Owing to hormonal changes, pregnant women have a higher risk of developing periodontal disease—a link that has been well established through research. However, according to a new US study, gingivitis affects far more pregnant women than previously thought, its occurrence and severity substantially exceeding US national averages.

Presenting the findings of the Oral Hygiene and Maternity Outcomes Multicenter Study, Dr Robert Gerlach, a research fellow in clinical investigations at P&G, which supported the research, said that moderate-to-severe gingivitis was very common among the 648 women evaluated. The study found a substantial disease onset across broad demographic and socio-economic subgroups beginning in the first trimester of pregnancy. Moreover, severity was extraordinarily high, averaging 1.12 bleeding sites, which represents nearly one-third of the gingiva.

Highlighting the fact that gingivitis is a preventable and manageable disease, Gerlach said it should be every expecting mother’s priority to avoid excessive plaque accumulation to prevent gingivitis becoming an issue. He stressed that many pregnant women, especially in their first pregnancy, are willing to seek advice and will actively change their behaviour, which is why this is an optimal time to reach them in raising awareness of the risk.

Supporting the educational purpose of the campaign, three reports will be published. One will shed light on the various aspects of women’s oral health during pregnancy, another will highlight the mechanisms of pregnancy gingivitis, and a third will cover treatment options and their effects on expecting mothers’ health and that of their children.

“We want to have an impact,” said Prof. Mariano Sanz, Chairman of the EFP Workshop Committee. “We believe that the mission of the EFP without the power of our partners—in this case Oral-B—would not be efficient, so partnership is key!”

Giving a preview on the new guidelines to be published, Sanz remarked that the FDI World Dental Congress is the perfect platform by which to reach dental professionals worldwide, since the federation represents the unified voice of the dental industry. The guidelines will be available by mid-September at www.oralhealthandpregnancy.efp.org.

New Oral-B toothpaste launched

Complementing the event was the introduction of Oral-B’s latest addition to its portfolio, the Oral-B Gum & Enamel Repair toothpaste. Already available in most European markets, the toothpaste is intended to help restore gingival health and prevent enamel erosion. According to the company, its ActivRepair Technology (with stannous fluoride and stannous chloride) actively remineralises weakened enamel and builds a protective smear layer that protects teeth against acid erosion even beyond a pH < 3.5. With continued use, Oral-B Gum & Enamel Repair will make the teeth stronger against enamel erosion while increasing bacterial control through the inhibition of plaque accumulation, the company said.

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Cleaning is key

By Aws Alani, UK

Completely disinfecting the canal system is challenging when all factors are considered. If we are looking at the nano level there are approximately 76,000 dentinal tubules per square millimetre of dentine. Each of which can harbour a colony of bacteria. Then there may be inaccessible anatomy such as lateral canals, apical deltas or fins. These are factors that need considering outside of canal curvatures that may or may not be entirely visible in the plane of the radiograph. It is clear that outside of the contact our files make with the walls of the root canal there needs to be chemical disinfection to further reduce bacterial load. Irrigants disinfect as well as lubricate instruments and they dissolve the pulp. Sodium hypochlorite has been the mainstay irrigant for decades. During the 1980s, Bystrom and colleagues investigated the effect of mechanical instrumentation with and without adjunctive use of hypochlorite. They found, unsurprisingly so, that when compared to pure mechanical instrumentation, the use of hypochlorite in combination with hand filing significantly reduced bacterial load. As such chemomechanical instrumentation was shown to be crucial for endodontic success. They compared irrigation with saline, 0.5 % and 5 % hypochlorite over a sequence of 5 appointments. Interestingly they found no difference in the reduction of bacterial load between 0.5 and 5 % hypochlorite. Despite what was likely to be a comprehensive protocol for these teeth, 7 of the 15 specimens in this study still had bacteria that they could grow at the end of treatment. The presence of cultivable bacteria does not necessarily mean we have failure—it merely means that there may be a cohort of bacteria that have resisted treatment. Mechanical instrumentation does reduce bacterial load by itself—this is by way of physical removal of tissues where bacteria reside, while also facilitating the dispersal of the irrigant into the canal. Siqueira and colleagues found that enlarging the canal from size 30 to 40 resulted in a significant decrease in endodontic pathogens.

It seems that irrigation and instrumentation are both highly intertwined in canal disinfection. Take washing your car for instance, purely covering it with soapy water and rinsing won’t remove the motorway bugs and bird produced projectiles. A good scrubbing with a sponge is needed, or if you are really serious about cleaning, a pressure washer! This begs a further question—how would your patients feel if they knew that, more or less, the same or very similar liquid they use to clean bathroom suites is the same that we use to clean the inside of their teeth? On recent evidence of a dentist to the “stars” appearance on national TV not much—he advocated using charcoal to whiten teeth, which you may be able to buy from your local pet shop for barbecues.

Hypochlorite is an effective bactericidal but does not remove the smear layer. The smear layer is a mix of organic material (protein, pulp remnants, saliva, microorganisms) with an inorganic components consisting of minerals from the dentine. The smear layer prevents bacteria residing in the dentinal tubules from being exposed to the irrigant as well as reducing the contact between the dentine and sealant during obtura...
tion Hence, utilising EDTA to remove the smear layer prior to obturation but after completion of preparation and irrigation is sensible. A penultimate rinse with EDTA then a final rinse with hypochlorite prior to drying has been advocated heavily in the literature.

Bacteria and the biofilms

Unlike what we once thought, bacteria do not tend to just sit alone and remote from each other. If only they were this antiscocial and could be picked off one by one, bacteria join forces and create symbiotic groups, share resources and protect each other from external influence. This is commonly known as a “biofilm”, which has a thin but robust layer of mucus that adheres to a solid surface housing the community of microorganisms. They not only share resources, they also share information that promote each other’s survival. As usual in the human anatomy, both the jaws and teeth are commonly exposed to bacterial contamination and subsequently form a biofilm. There are many shapes to biofilms, but in the case of the root canal therapy, the biofilm is confined to the occlusal surface, as the root canal system is the final chamber of tooth tissue. Due to endodontic treatment, the bacteria not only live around a fast moving oscillating instrument but also develop. As the name already indicates, the HyFlex EDM is a “highly flexible” NITI file as it (through a unique design) can prove to be incredibly fracture resistant in close cooperation with the clinician. As the description of the canal biofilm that has seen a lot of development over the last year or so. Much in the same pressure washer can clean more quickly and efficiently than a sponge, energising the disinfectant results in improved cleanliness.

Energising the irrigant

This can take many forms. The simple and straightforward form ensures appropriate exchange of the fluid and displacement into the recesses where airlocks may reside. This can be achieved through applying a GP point into the prepared canal to displace and dispense. Ultrasonic irrigation transmits energy by an oscillating instrument. This results in two different phenomena. Cavitation is the growth and subsequent collapse of small gas bubbles due to a drop in pressure. Acoustic streaming is the bulk movement of fluid when pressure waves are projected, resulting in vortex motion around a fast moving oscillating instrument. This results in shear stress to the biofilm apex.

Keeping the canal clean

Once irrigated and prepared, the clinician has a choice—to obturate or to dress. Some may argue that the endodontic specialist COLTENE for cleaning and shaping the canal. As the name already indicates, the HyFlex EDM is a “highly flexible” NITI file as it (through a unique design) can prove to be incredibly fracture resistant in close cooperation with the clinician. As the description of the canal biofilm that has seen a lot of development over the last year or so. Much in the same pressure washer can clean more quickly and efficiently than a sponge, energising the disinfectant results in improved cleanliness.

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Severe double curvature a favourable side effect to the actual bone and dentine tissue, which was as they stimulated the rebuilding of added to the regeneration process, place. The bioactive components teeth 45 and 46 had already taken away from the main canal (Fig. 10). Moreover, in the follow-up session, we noted that healing of the affected number 45 showed the ob- line in the postoperative radiograph of tooth number 45 and 46, while it gets pushed further down into the canal by the slightly melted gutta-percha on top. The fine white in the postoperative radiograph of tooth number 45 and 46, the ob- turated small lateral canal leading away from the main canal (Fig. 10). Moreover, in the follow-up session, we noted that healing of the affected teeth 45 and 46 had already taken place. The bioactive components of the obturation material further added to the regeneration process, as they stimulated the rebuilding of bone and dentine tissue, which was a favourable side effect to the actual sealing of the canal (Fig. 14).

Case 3: Severe double curvature to finish off Last but not least, we come to the extraordinary S-shaped canal as mentioned in the introduction. With strong curves it is always good to know that NiTi files with a so-called “controlled memory” (CM) effect can be prebent like classic stainless steel files, but do not bounce back. Using their unique material properties, you can work comparatively stress-free even under difficult conditions. This time, the patient with the rath- er challenging canal anatomy was a 40-year-old female patient with complaints in her right side mandible. In our analysis, the clinical diag- nosis revealed an irreversible pulpitis in tooth 47. The radiograph indicated that we needed to get around a very sharp angle in the mesial root (Fig. 12), endo specialists know how dis- tant molars are notorious for their winding root canal system! We used the following sequence to get to the length very quickly without straight- ening the canal at all:

Hyflex EDM 25/12, 10/05 and the afore-mentioned Hyflex EDM Orifice File 25/.12 (Figs. 4, 13, 14). The flexible files can even find their way around tricky anatomies and are virtually unbreakable. They move perfectly in the centre of the canal, therefore I have never come across any perfora- tions or ledges during my numerous treatments so far. After using “CM”- treated NiTi files, they can be quickly regenerated by autoclaving and are ready for their next application until they reach the end of their life cycle by displaying an uneven, bent shape. As long as they are not unwound they can be re-used safely, otherwise they have to be discarded.

After drying and successfully obtu- rating the canal, we were able to dis- miss the patient with a very promis- ing prognosis. The immediate postoperative radiograph showed the naturally formed, filled mesial canal with its striking double curva- ture at the end (Fig. 15). We are very glad that even in more challenging cases like the present one we can rely on the versatility of the last gener- ation of rotary instruments.

Conclusion
The latest generation of nickel tita- nium files adapt easily to all shapes of root canals thanks to their flexible design and unusual cutting power. Whatever way you choose to reach the apex, prebendable NiTi files like the Hyflex EDM help you to follow the natural path of the root canal and quickly remove debris for chemical cleansing and long-term obturation of the various root canal structures.
Now, everyone in your dental team can **SHOOT**!

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Many ways with one material

By Dan Krammer, Germany

At this unusual event, twenty participants were asked to treat a real patient by using three different treatment approaches. At the end of the session, the patient had to decide which type of restoration she preferred: the IPS e.max® CAD restoration made with a chairside method and completed by the dentist, a conventional CAD/CAM-fabricated restoration, or a restoration made of IPS e.max Press. The attending dentist and representative of the chairside approach, Dr Petr Hajný looked like he was going to break out into a sweat once he fully understood the implications of this challenge. The contestants were not to be underestimated. His preliminary work and the needs of his patient would set the standard for his fellow contestants (Figs 2 to 3g). In actual fact, the task turned out to be more complex than was initially anticipated. A wide array of fabrication options was available. The participants were able to choose between IPS e.max CAD (lithium disilicate); highly translucent IPS e.max Press full-contour or anatomically reduced press and subsequently stained/veneered restorations; or a combination of all these versions. The choice was extremely wide because of the exceptional versatility of the all-ceramic product portfolio of Ivoclar Vivadent (Fig. 4). For those of you who find your head spinning at the thought of all these possibilities, you will be relieved to know that the solution actually turned out to be quite simple.

This contest offered a number of possibilities for comparing different methods, such as the CAD/CAM and the conventional fabrication techniques, and analyzing them according to a number of critical aspects. Nevertheless, the patient would be the deciding factor in this challenge. She would be the one who would make the final decision, irrespective of whether the restoration was fabricated chairside, stained, veneered or fabricated with the conventional or CAD/CAM technique. Which group would get the job done first? The conventional or the CAD/CAM representatives? The dentaltechnicians or the dentist? And at what esthetic price?

All these issues would be addressed and the debates over many different matters resolved. Could the simplest restoration perhaps be the most attractive one? How important is the number of powders and colours that are used? What is the significance of the shape and surface structure of the restoration for the overall esthetics? How important are listening skills to find out what the patient really wants?

In any case, the event offered the participants a wonderful opportunity to find out all the answers to these questions and more from the most important person in this case: that is, the patient.

Now, let’s join the contestants at the ICDE in Vienna (Fig. 5) and accompany them on this exciting journey...

Recently, nineteen dental technicians from all over the world and one dentist from the Czech Republic convened at the International Center of Dental Education (ICDE) in Vienna. They were invited by Ivoclar Vivadent to take part in a very special educational session, where they were given the opportunity to compare their expertise with other seasoned dental professionals. The title of the challenge was “One aim, three solutions”; the material they would be using was IPS e.max.
Fig. 4: The materials portfolio from Ivoclar Vivadent is immense. Therefore, the selection and combination possibilities are extensive. While this stage is easier for the conventional group, since they are using IPS e.max Press and the associated ingots, the CAD/CAM team should also be thinking about using monolithic and individually characterized IPS e.max ZrCAD zirconium oxide restorations.

Fig. 5: Ready, steady, go. At ten o’clock sharp the participants are allowed to see the models of the case. These include a study model of the provisionally restored upper jaw and a silicone matrix, a sawcut model of the prepared upper jaw as well as model of the lower jaw.

Fig. 6: The CAD/CAM laboratory group has selected the digitalized situation and generated the case in the system. In other words, the teeth to be restored and the restorations have been defined in the software. The picture shows Danor Markovic studying the case.

Fig. 7: The dental technicians provide the photographer with a lot of very interesting material. The dies are prepared for the creation of the restorations and the silicone matrices have been adjusted accordingly.

Fig. 8: The patient is prepared for the digital capturing of the intraoral data in the practice facilities of the ICDE in Vienna. Dr Petr Hajný, the dentist, and Vjekoslav Budimir, the dental technician, prefer to pursue a digital approach. As a result, scans are conducted with two different systems.

Fig. 9: Dr Petr Hajný and his assistant scan the patient’s jaw with the CEREC Omnicam (Sirona Dental Systems GmbH, Bensheim, Germany), an intraoral dental scanner which, like the Trios machines (3Shape), does not use powder. He takes advantage of chairside workflows to design the crowns and mill them from IPS e.max CAD MT A1.

Fig. 10: CAM software of the Wieland Zer DISC selects CAD/CAM system with the IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 11: Completed, milled crown made of IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 12: Busy and highly concentrated contestants in the training laboratory of the ICDE in Vienna: The CAD/CAM group in the front and the conventionally working group at the back.

Fig. 13: There’s also time to have some fun. The contestants from the different teams and countries get on very well with each other.

Fig. 14-17: The modelled crowns, reduced crowns and frameworks are conventionally invested, placed in the preheating furnace, pressed, divested and then completed. The participants are well-versed in this technique and achieve the desired results in no time at all.

Fig. 18: “Look, I’m a human milling machine!” Velimir Žujić (right) jokes around with Vinko Iljidica and Alen Avč (left).

Fig. 19 and 20: Manual finishing techniques: Velimir Žujić sprinkles dentin powder on an IPS e.max Press framework that has been coated with IPS Ivocolor® Mixing Liquid allround. In the wash firing cycle, the bond is reinforced and produces a sound base for the subsequent ceramic layers.

Fig. 21: Irrespective of whether a conventionally or CAD/CAM fabricated framework is used, these types of restorations, in contrast to monolithic ones, have to be manually layered and fired multiple times.

Fig. 22a and 22b: From the computer to the hand. Some of the technicians of the CAD/CAM group decided to choose the monolithic route. Nevertheless, they are doubtful about being able to outcompete the manual group. They would have to wait until the end to find out if their doubts were justified.

Fig. 23: Dr Petr Hajný adds fine surface details to his milled lithium disilicate crowns before he finalizes them in a modified crystallization and glaze firing cycle. His chosen workflow makes him the fastest contestant and leaves him with enough time to take care of other business.

Fig. 24: The patient is prepared for the digital capturing of the intraoral data in the practice facilities of the ICDE in Vienna. Dr Petr Hajný, the dentist, and Vjekoslav Budimir, the dental technician, prefer to pursue a digital approach. As a result, scans are conducted with two different systems.

Fig. 25: CAM software of the Wieland Zer DISC selects CAD/CAM system with the IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 26: Completed, milled crown made of IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 27: Busy and highly concentrated contestants in the training laboratory of the ICDE in Vienna: The CAD/CAM group in the front and the conventionally working group at the back.

Fig. 28: There’s also time to have some fun. The contestants from the different teams and countries get on very well with each other.

Fig. 29-32: The modelled crowns, reduced crowns and frameworks are conventionally invested, placed in the preheating furnace, pressed, divested and then completed. The participants are well-versed in this technique and achieve the desired results in no time at all.

Fig. 33: “Look, I’m a human milling machine!” Velimir Žujić (right) jokes around with Vinko Iljidica and Alen Avč (left).

Fig. 34 and 35: Manual finishing techniques: Velimir Žujić sprinkles dentin powder on an IPS e.max Press framework that has been coated with IPS Ivocolor® Mixing Liquid allround. In the wash firing cycle, the bond is reinforced and produces a sound base for the subsequent ceramic layers.

Fig. 36: Irrespective of whether a conventionally or CAD/CAM fabricated framework is used, these types of restorations, in contrast to monolithic ones, have to be manually layered and fired multiple times.

Fig. 37: From the computer to the hand. Some of the technicians of the CAD/CAM group decided to choose the monolithic route. Nevertheless, they are doubtful about being able to outcompete the manual group. They would have to wait until the end to find out if their doubts were justified.

Fig. 38: Dr Petr Hajný adds fine surface details to his milled lithium disilicate crowns before he finalizes them in a modified crystallization and glaze firing cycle. His chosen workflow makes him the fastest contestant and leaves him with enough time to take care of other business.

Fig. 39: The patient is prepared for the digital capturing of the intraoral data in the practice facilities of the ICDE in Vienna. Dr Petr Hajný, the dentist, and Vjekoslav Budimir, the dental technician, prefer to pursue a digital approach. As a result, scans are conducted with two different systems.

Fig. 40: CAM software of the Wieland Zer DISC selects CAD/CAM system with the IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 41: Completed, milled crown made of IPS e.max CAD MT blocks in the CAD/CAM milling machine.

Fig. 42: Busy and highly concentrated contestants in the training laboratory of the ICDE in Vienna: The CAD/CAM group in the front and the conventionally working group at the back.

Fig. 43: There’s also time to have some fun. The contestants from the different teams and countries get on very well with each other.

Fig. 44-47: The modelled crowns, reduced crowns and frameworks are conventionally invested, placed in the preheating furnace, pressed, divested and then completed. The participants are well-versed in this technique and achieve the desired results in no time at all.

Fig. 48: “Look, I’m a human milling machine!” Velimir Žujić (right) jokes around with Vinko Iljidica and Alen Avč (left).

Fig. 49 and 50: Manual finishing techniques: Velimir Žujić sprinkles dentin powder on an IPS e.max Press framework that has been coated with IPS Ivocolor® Mixing Liquid allround. In the wash firing cycle, the bond is reinforced and produces a sound base for the subsequent ceramic layers.
Fig. 24a and 24b: The press technique is also highly efficient when the restorations are pressed to full-contour and then minimal layers are applied to add fine details. Since only a minimum amount of layering ceramic is applied, there is hardly any shrinkage and the results are highly predictable.

Fig. 25: The contestants in the conventional group brought out the best in the IPS e.max materials. Here, one of the participants builds up the incisors to full-contour on IPS e.max Press MO frameworks.

Fig. 27: Checking the length and alignment of the all-ceramic crowns in the articulator. The marks on the wax-up serve as a guide. It’s difficult to believe that all these steps can be accomplished by a machine.

Fig. 28: Analog version of the try-in. A good first impression was obtained by just fooling around.

Fig. 30: Ondrej Adam hard at work. In order to faithfully recreate the translucent edge of the lower front teeth in the upper jaw, he completely veneers the upper incisors. The result after the first firing cycle is shown in the picture.

Fig. 31 to 36: Not to worry, the members of the CAD/CAM group aren’t spending all their time staring at their computer monitors. They’re also having fun and taking care of some steps manually. In the end, it’s not the method that counts, but the result, which has to look as natural as possible.

Fig. 39 to 42: And the winner is... the Slovakian dental technician Martin Ebringer from the conventional fabrication group. The patient immediately fell in love with his crowns. They are sparingly layered. Martin Ebringer focused on imitating the surface characteristics and the tooth shape. When he was asked about how he had managed to produce such a fantastic result, he simply said that he had talked with the patient and tried to create what she wanted. In other words, very bright, monochromatic teeth. Consequently, he tried to impart the teeth with a natural appearance by incorporating morphological details.
inLab MC X5: Open 5-axis production unit for dental laboratories

By Dentsply Sirona

inLab MC X5, the five-axis milling and grinding unit newly developed especially for the demands of dental laboratories, completes Dentsply Sirona’s inLab system. Dental technicians benefit from the greatest flexibility for the entire production process of esthetically pleasing restorations and the largest selection of materials available on the market. An independent choice of production processes and materials and complete control of the work process – these are the primary demands dental technicians make of in-house production with modern CAD/CAM systems. Dentsply Sirona’s new five-axis laboratory unit inLab MC X5 fulfills these demands and gives users new freedom – with wet and dry processing, a wide range of indications, and the free choice of materials.

Developed especially for dental laboratories

“The new laboratory unit sends a clear signal from Dentsply Sirona to dental technicians,” says Reinhard Pieper, Director of inLab Product Management at Dentsply Sirona. Users benefit from 30 years of experience with CAD/CAM in wet processing of various materials combined with new dry processing techniques – in one machine. “We implemented all of our know-how as a pioneer and innovation leader of dental CAD/CAM technology to develop a CAD/CAM laboratory machine tailored specifically to meet existing and future demands,” added Pieper. “This ensures that inLab MC X5 will be a good investment in the long term.”

inLab MC X5 is Dentsply Sirona’s first open production unit and is suitable for use with various existing CAD/CAM equipment in dental laboratories for laboratories with scanners and CAD components from other manufacturers. STL restoration data can be imported easily and quickly to the CAM software module newly developed for inLab MC X5 and processed with inLab MC X5. In combination with the inLab X5 scanner and inLab software, the new laboratory machine is the optimal complete solution for new users of Dentsply Sirona CAD/CAM production.

Productive laboratory unit for all common processing jobs

Depending on the indication and material, the five-axis inLab MC X5 can be used for wet or dry processing. In addition, for the first time it is possible to switch automatically from dry to wet processing when working on one part. Tools used include cutside cutters and diamond grinders as well as standardized disks with a diameter of 98.5 millimeters and a height of up to 30 millimeters. Users can ensure efficient utilization of material by using the disk management function and extensive nesting functions. The specially developed multi-block holder uses CAD/CAM materials in block form. It can be loaded with up to six blocks of different materials at the same time.

inLab MC X5 is thus designed to be a universal laboratory unit for a number of indications and for processing zirconium oxide, polymers, composites, wax, glass ceramics, hybrid ceramics, and prepared for metals. The machine allows the dental laboratory a free choice of all material suppliers and it benefits additionally from the material competence of Dentsply Sirona’s material partners VITA Zahnfabrik, Ivoclar Vivadent, Dentsply, Melt Dental, 3M ESPE, and GC.

Open, user friendly and cost effective

Thanks to the combination of the wide range of indications, free choice of materials, and open interfaces for external restoration data, dental technicians can use the machine flexibly from the start. The high-quality, functional design of the chamber of the laboratory unit ensures easy maintenance and makes it fast and easy to clean with the specially developed “easy-clean” concept. It can quickly switch among various materials and between wet and dry processing. This flexibility combined with the reasonable cost and the fact that there are no additional dongle fees makes inLab MC X5 very cost effective. The unit is delivered with its own inLab-CAM software module and can be ordered from dental dealers immediately.

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Unique worldwide Dental Hygiene Conference on Social Responsibility a Huge Success

By IFDH

ROCKVILLE, MD, USA: The International Federation of Dental Hygienists (IFDH) held a Global Oral Health Strategy Session and a Social Responsibility Conference-Workshop in Florence, Italy from July 7-8, 2017. The meeting was attended by leaders in the area of social responsibility from all over the world and representatives from 20 IFDH country association members, all with the goal of improving health worldwide.

The meeting was opened by IFDH President Robyn Watson, who welcomed the group and said: “It is a great pleasure to see the realization of our efforts in bringing together experts from around the world to help us create projects, develop leaders, and change the emphasis of oral health care to prevention. This is the beginning of our journey.”

Professor Raman Bedi, Chair, Global Child Dental Fund and WFPHA Oral Health Committee said: "Developing leadership and advocacy within the dental profession will ultimately lead to improved oral health understanding among the global population."

The message is that “we need to be the change we wish to see in the world” (Gandhi). The importance of care for the unserved and underserved in all phases of life was emphasized during the conference.

If you would like more information about this topic, please contact Peter Anas, Executive Director at International Federation of Dental Hygienists, or email at director@ifdh.org.
According to the Centers for Medicaid and Medicare Services, only about one-third of California’s 6.1 million children and adolescents enrolled in the California Medical Assistance Program (Medi-Cal) are eligible for preventive dental care each year. These services help maintain good oral health, reduce the need for costly treatment in hospitals and emergency departments, and therefore enhance the quality of care for young people. The UCLA-led project—the largest of 15 such programs recently approved by the state’s Department of Health Care Services—is part of the Medi-Cal 2020 Dental Transformation Initiative and will run through December 2020. It will focus on three primary goals: using information technology to ensure continuity of care; developing new ways to expand preventive services, and integrating oral health care services across dental, medical and community care providers.

“The Dental Transformative Initiative provides an incredible opportunity to expand UCLA’s recent work with local community partners to improve the oral health of children at greatest risk for dental disease throughout Los Angeles County,” said project director Prof. James Crail, Chair of the Division of Public Health and Community Dentistry at the UCLA School of Dentistry.

Dean Prof. Paul Krebsbach added: “This is an excellent opportunity for UCLA Dentistry to further engage the Los Angeles community and improve oral health care for generations to come.”

Crail said that the dental school will also seek partnerships with Los Angeles County agencies, organizations and community programs focused on improving the health and well-being of children and families.

This year’s crop includes six new policy statements, which address advertisement in dentistry, CAD/CAM dentistry, lifelong oral health, odontogenic pain management, quality in dentistry and sustainability in dentistry. Three statements on continuing dental education, dental practice and third parties, and promoting oral health through fluoride have undergone extensive revision. Many FDI policy statements are the result of projects carried out by the FDI Science Committee, Dental Practice Committee and Public Health Committee, sometimes in collaboration with entities such as the World Health Organization.

“The science of dentistry is continually evolving and FDI policy statements should always reflect the latest thinking based on the latest research and development,” said Science Committee Chair Dr Harry-Sam Selikowitz, from Norway. “Developing new texts to address new issues and keeping current texts up to date is one of the pillars of our committee work.”

“Policy statements are one of the FDI’s greatest contributions to world dentistry and have a practical role to play in supporting national regulations in many parts of the world,” added Dental Practice Committee Chair Dr Michael Sereny, from Germany. “Dentists are practical people and need practical advice—and this is what we are providing in our policy statements.”

“FDI’s role has always been to share knowledge and experience among members of the dental community to support and advocate the development of effective national public oral health policies,” said Public Health Committee Chair Jo Frencken, from the Netherlands. “Policy statements evolve from debate among dentists from around the world and thus constitute an international consensus.”

More information on the FDI policy statements is available at fdiworlddental.org/policystatements.
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Address the pain and discomfort of hypersensitivity resulting from periodontal therapy by recommending Colgate® Sensitive Pro-Relief™ to your patients – clinically proven to treat hypersensitivity and relieve pain fast.

* When toothpaste is directly applied to each sensitive tooth for 60 seconds.

References:
Teeth whitening devices set to increase oral hygiene market

By Beverly Hills Formula

With a surge in new teeth whitening devices the oral hygiene market and teeth whitening industry shows no signs of slowing down and is expected to reach USD 53.97 Billion by 2022 from an estimated USD 43.31 Billion in 2017.¹

The growth of the market is mainly driven by growing awareness regarding oral hygiene, a rise in dental caries and other periodontal diseases, and technological advancements in oral care products.

But whilst teeth whitening toothpastes are globally popular, oral hygiene brands are constantly developing new products to keep up with the growing consumer demands for more effective, quicker and safer teeth whitening results, which can easily be used in the comfort of their own homes.

The use of teeth whitening strips, kits and pens is on the increase and oral hygiene experts Beverly Hills Formula recently launched their own new Professional White whitening kits at the Dubai Beauty Show in May which was hosted by Enterprise Ireland. Beverly Hills Formula oral care brand is based in Dublin, Ireland, and currently sells in the UAE, UK, Europe, North Africa and Asia Pacific. The company aim has always been to make the “Hollywood” smile attainable for everyone with their safe, affordable and effective toothpastes and award-winning mouthwash.

The new Professional White range kits and products will soon be available to buy in the Middle East and follows on from the success of Beverly Hills Formula’s current range, Perfect White. The kits consist of whitening strips and a whitening pen and the new products have been in development for over two years, ensuring only the highest quality ingredients are included to actively achieve a whiter, brighter, healthy smile.

Chris Dodd, CEO of Beverly Hills Formula explains that the main active ingredient is PAP - Phthalimido-Peroxy-Caproic Acid, a non-peroxide teeth whitening ingredient which breaks down discolorations on the teeth without affecting the tooth structure. Additionally, PAP supports dental hygiene and health by eradicating bacteria which can harm teeth. Since PAP is only active on the tooth surface, no irritation is caused to the gums and mucous membranes in the mouth.

Chris Dodd, said they put safety, testing and results at the forefront of all new product development.

“Beverly Hills Formula are innovators, not imitators. We believe in our products because we know they work. We may not be the largest oral hygiene brand globally, but we are one of the most established. Our team is constantly evaluating our products and looking at ways to improve the formulas, working alongside the best people in the oral hygiene sector.

“Beverly Hills Formula are really excited about our teeth whitening kits because it’s an expansion to our whitening toothpastes and mouthwash in to new devices. Our teeth whitening kits are designed to be used alongside our entire new range of Professional White products which offer a solution for every oral hygiene concern, be that teeth sensitivity, gingivitis, decalcification and enamel protection. We can’t wait to make these products available in the Middle East and were delighted to reveal them first at the Dubai Dental Show and then at the Dubai Beauty Show.

Roisin White Barrett, Market Advisor Enterprise Ireland, added: “Beverly Hills Formula are a great example of the many Irish brands who have found a welcoming home in the Dubai marketplace. In a market renowned for high customer expectations, both retailers and consumers from across the GCC are increasingly turning to Irish products. The high volume of visitors to the Ireland stand at the recent Beautyworld Middle East show emphasises the reputation held by Irish health and beauty brands amongst Middle East consumers.”

References


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Interview: “Clip Mirror improves dental hygiene treatment”

By Julia Maciejek, DTI

PEMBROKE, Canada: Dental hygienist Patricia Blundon is the developer of a mirror that clips on to a saliva ejector to aid dental hygienists, therapists and assistants in treating patients. In response to growing demand for the Dental Hygiene Clip Mirror, she has introduced the device to the U.S. market and plans to expand her business globally. Dental Tribune Online spoke with Blundon, who has 30 years’ experience and graduated from the Algonquin College of Applied Arts and Technology in Ottawa, Ontario, to learn more about the mirror.

Helping to improve treatment has always been important in dentistry. Why did you decide on developing the Clip Mirror and setting up your business, D.H. Essentials?

The Clip Mirror idea came to me about ten years into my career. I was working on a patient with a super strong lower lip and a protruding tongue. With a scaler in one hand and mirror in the other and the patient’s tongue pushing out the saliva ejector, I thought to myself, “Why does this need to be so hard?” I thought about having a mirror clip directly on to the saliva ejector to free up a hand and wondered why no one had invented this. Then I thought to myself, “Who better to invent a dental tool than a dental hygienist?”.

When designing the Clip Mirror, what did you pay attention to?

I knew the design I wanted and I visited a multitude of hardware stores to see what clips were available. The steel for the clip had to be medical grade and 400 series so that it would not rust or corrode with sterilization, and the clip itself was designed to snap securely to the saliva ejector while still allowing rotation if needed. I designed the rolled clip ends so one can feed a line of floss through and attach the Clip Mirror to the saliva ejector using sterile tape as an added precaution in hospital settings or compromised patients. I chose the brighter size 5 titanium mirror, as the standard rhodium pales in brightness and quality in comparison, and then decided to have the clip electron beam welded by hand for the best results.

What is the importance of good ergonomics for dental hygienists and clinicians?

The key reason I designed the Clip Mirror was to make the job of dental hygienists and clinicians easier on their body and more efficient. As the population ages, dental clinicians may find themselves using a less than ideal posture while craning their necks and contorting their bodies to complete the necessary treatment. I would encourage dental care providers to try various products to find what works best for them to help maintain proper posture, as we all know dentistry can take a huge toll on one’s body.

What has user feedback been so far?

Feedback on the Clip Mirror has been great, and for those who have struggled in the past, like I have, with no help from a dental nurse or assistant, it has been a great body and time saver. Many report finding it very helpful when they have a patient who cannot recline and need to scale the maxillary lingual surface. I have received some feedback requesting a smaller mirror size for use with patients with a narrow or smaller arch and will be introducing the Clip Mirror MINI in the near future.

Dental hygienists have been asking about the Clip Mirror, stating they wish their employers would purchase them for their hygiene tray setups. Many have seen the value of the Clip Mirror in increasing their productivity and easing the daily physical stressors of providing dental hygiene treatment. The majority of purchases are by dental hygienists who are already suffering from a career of dental hygiene.

How has the success of the Clip Mirror been globally?

I decided to introduce the Clip Mirror to the U.S. after years of market research and positive feedback from my Canadian customers. I have had customer interest from Australia, Ireland and the UK and would love to team up with a partner to serve those markets and many others. Dentistry is worldwide, so the sky is the limit.

Thank you very much for the interview.

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KYOTO, Japan: With the launch of its novel saliva-testing device, Japanese company ARKRAY has introduced a system that measures multiple parameters associated with oral health within 5 minutes. The measuring instrument is complemented by a testing kit, ST Check, and is to be distributed internationally, Aiko Hitomi from the ARKRAY marketing team told Dental Tribune Online.

Using a small sample of saliva, the SPOTCHEM ST ST-4910 device screens parameters such as cariogenic bacteria, salivary acidity, buffer capacity, leukocyte count, traces of blood, protein status and ammomia values applying the dual-wave-length reflectance method, Hitomi explained. The patient’s individual results are visualised in an easy-to-analyse chart that is printed about 5 minutes after the saliva has been applied to the test strip.

Through analysis of the individual parameters, dental professionals may be able to recognise early warning signs of conditions such as caries or periodontal disease, according to the company. For example, studies have shown that gingival inflammation increases leukocytes in the saliva. Therefore, a high leukocyte count may be an indicator of gingivitis even though the patient is not experiencing obvious symptoms of the condition yet.

Since its launch, the palm-sized device has already attracted a great deal of interest in the market. Having promoted it at several dental exhibitions, the company has received positive feedback from regional and foreign dentists, hopefully indicative of the device’s successful distribution worldwide, according to Hitomi.

Although there are some competitors in the field, he emphasised that the company’s system is unique in that it can assess seven items at once—more than any other saliva test on the market. Aimed at professional use, the technology is targeted for stand-alone diagnostic purposes, it is to be used for reference, but not for stand-alone diagnostic purposes, Hitomi explained.

Since saliva screening with devices such as the SPOTCHEM ST ST-4910 system has not been standardised yet, there is no compatibility between the ARKRAY kit and saliva test systems from other companies, Hitomi said. Currently, the device is available in Europe and selected Asian countries. More information can be found at www.arkraydental.com.

With a lightweight design and palm-sized dimensions, ARKRAY’s saliva test system aims to facilitate the measurement of multiple parameters in daily dental practice.

(Photograph: ARKRAY)

By DTI

HELSINKI, Finland: In a new study recently carried out by researchers at the University of Helsinki, it was found that the common periodontal pathogen Porphyromonas gingivalis may inhibit conception in young women. According to the Global Burden of Disease Study, severe chronic periodontitis is the sixth most common medical condition in the world. Up until now, no data on the influence of periodontal bacteria on conception has been available.

The study investigated whether microbiological and serological markers of periodontitis are associated with conception and involved 236 women aged between 19 and 42 who had stopped contraception in order to fall pregnant. The participants were initially interviewed on their medical history, smoking habits, oral hygiene habits, previous dental visits and socio-economic status. Oral examinations established the presence of carious lesions and periodontal disease (based on pocket depth, visible plaque, bleeding on probing and clinical periodontal attachment loss). In order to detect periodontal pathogens and the associated antibodies, the researchers analysed collected serum and stimulated saliva.

Periodontal pathogens may interfere with conception in young women

For the diagnosis of bacterial vaginosis, gynaecological speculum examinations were performed and vaginal swabs were taken. The participants were followed for 12 months to establish whether they had become pregnant.

According to the results, P. gingivalis in the saliva was significantly more common among those who did not conceive than among those who did (8.3 per cent compared with 2.1 per cent). Levels of salivary and serum antibodies against the pathogens were also significantly higher in the women who did not become pregnant.

The study investigated whether microorganisms and delayed conception needs to be confirmed in other settings and a larger material, and the mechanisms explaining this association need to be clarified. The present data, however, encourage women in fertile age to maintain good oral hygiene and to attend periodontal evaluations regularly in order to avoid periodontal infection, the authors said in their research report.

The study, titled “Porphyromonas gingivalis and delayed conception in women,” was published online on 12 June in the Journal of Oral Microbiology.
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*vs potassium-based toothpaste. †Patient Experience Study, EU 2015, IPSOS.
A proven heritage

By Dr Shyam Bhat, India & Dr Shankar Iyer, USA

Advances in technology have enhanced clinicians’ comfort and accuracy by minimizing the margin of error. We have seen a paradigm shift from using only a radiograph to using cone beam CT scans for diagnosis. A cone beam CT scan now has become the standard of care in treatment planning for dental implants. Traditionally, implants have been placed free hand or aided by the use of static guides derived from a CT scan. Although using well-planned surgical guides have all the same advantages, they are usually bulky and do not provide adequate information regarding angulation of the drill degree of deviation from the planned position, implant delivery in a three-dimensional perspective and often precludes irrigation to the osteotomy sites. A possibility of error always exists, no matter how thoroughly the guide is planned.

Using a static surgical guide along with a specific guided implant surgery instrumentation can result in less than 2 mm of crestal and apical deviation and an angulation error of less than 1 percent. However, implant placement without any guide results in significantly more error than either guiding modality. This article is an attempt to explain the instrumentation and procedure involved in placing implants under dynamic computer navigation.
The position of the implant is repro-
duced from the surgical guide through the virtual implant placement per-
method. The static approach refers to
the position of the osteotomy and
implantation site. The static approach
refers to the use of a surgical navigation system that reproduces the virtual
implant position directly from computer-
tomographic data and allows intra-operative changes of the desired im-
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implant position directly from computer-
tomographic data and allows intra-operative changes of the desired im-
plant.

Conclusion
A significant learning curve involved in using a dynamic guide for implant placement. Further studies with a larger number of patients and a more comprehensive analysis of the data are necessary to confirm these findings.

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There are many reasons why cement-retained implant restorations gained popularity over the last few years, which can be attributed to aesthetics, ease of use and familiarity with cementation techniques. However, Paulotto, Cupisti and others reported that cement excess was problematic; then Wilson’s study established a positive relationship between excess residual cement and peri-implantitis. Surveys on cements used for implant restorations indicated a diversity in material selection, application technique and volume. This suggested a lack of conformity and understanding of cement usage within the dental profession. To overcome the cement problem, it became evident that improved understanding was required for cement material selection, abutment design and the determination of cement margin depths. Even with the best intentions, however, residual excess cement can lead to disease, affecting the health of the implant/tissue interface and remains a dominant risk factor. The association of residual excess cement and peri-implantitis has resulted in the need to re-examine alternatives such as the screw-retained implant crown. For many implant systems, the ability to use a screw-retained implant restoration is limited to regions where the screw access channel emerges in an aesthetically ‘safe’ site. Usually the anterior maxilla and mandible present the greatest challenges, as the long axis of the implant often projects through the proposed incisal edge or even facial to the final restoration (Fig. 2a). Occasionally, when the surgeon places the implant in a compromised site—or the implant is inappropriately placed—the traditional screw-retained implant restoration may seem to provide more of a challenge than a solution (Fig. 2b).

The synthesis of aesthetics, health and structural stability

The advantages of using the Angulated Screw Channel (ASC) abutment system

By Dr Chandur Wadhwani, USA

Fig. 1: Failed, removed implant restorations. The anterior teeth present a challenge to the screw-retained restoration unless an Angulated Screw Channel (ASC) abutment system is used (a). In cases where the surgical placement is less than ideal, the ASC may help further compromise to the site (b).

Fig. 2a & b: The anterior teeth present a challenge to the screw-retained restoration unless an Angulated Screw Channel (ASC) abutment system is used (a). In cases where the surgical placement is less than ideal, the ASC may help further compromise to the site (b).

Fig. 2a & b: The anterior teeth present a challenge to the screw-retained restoration unless an Angulated Screw Channel (ASC) abutment system is used (a). In cases where the surgical placement is less than ideal, the ASC may help further compromise to the site (b).

Fig. 2: The ASC shows the angle redirection of the screw access channel. The ASC provides for an active synthesis of health, aesthetics, and excellent structural and mechanical abutment joint stability.

Mechanical stability

CAD/CAM utilisation (Fig. 6a–c) allows for optimised screw access site planning and the machining of components provides a precise, dedicated connection, optimised for the implant-abutment joint. As with all implant-to-abutment connections, the optimised passive fit results when these surfaces are in intimate contact and forces are distributed universally. Casting abutments cannot always provide an even connection with joint contact, as they are often inadvertently damaged through cleaning and polishing, which alters the connective fit (Fig. 7). When this occurs, the joint connection may fail, with screw loosening or even failure of the implants as a result.

Fig. 3: The ASC saves the day. An innovative solution to the off-axial implant is the Angulated Screw Channel (ASC) abutment system developed by Nobel Biocare (Fig. 3).

Angulated Screw Channel saves the day

An innovative solution to the off-axial implant is the Angulated Screw Channel (ASC) abutment system developed by Nobel Biocare (Fig. 3). The ASC provides for an active synthesis of health, aesthetics, and excellent structural and mechanical abutment joint stability.

Health

With use of the ASC abutment system, cement extrusion into the fragile peri-implant soft tissues is eliminated. The ASC puts an end to the onslaught of cement fluid pressure and unset chemicals from the cement material. It also gets rid of the potential for foreign bodies being pushed around the implant site, which can jeopardise implant health (Fig. 4). In addition, the use of zirconia abutment superstructures in combination with titanium bases provides optimised materials for biocompatibility and health.

Aesthetics

With the ASC, the screw access channel can be projected away from high-aesthetic-risk areas and placed appropriately at a variety of different angles. CAD/CAM design enables the restorations to be efficiently designed and quickly manufactured at Nobel Biocare’s production facilities (Fig. 5). Milled zirconia is highly aesthetic, thus especially useful in the soft tissue emergence site.

Conclusion

The benefits of the ASC abutment system are numerous, reflecting a multiple symbiosis of engineering ingenuity and biocompatible materials, and allowing for the combination of good aesthetics and excellent health.

References

Oral hygiene in orthodontics

By Curaprox UK Ltd

During orthodontic treatment, many patients seek advice on how to clean their braces effectively and gently. Since ordinary toothbrushes and interdental brushes are not suitable for orthodontic appliances, Curaprox UK is now offering the new Ortho Kit. This specialised kit contains the CS ortho ultra soft toothbrush, the CS 1009 single brush, the CPS 07, CPS 14 and CPS 18 interdental brushes, and ortho wax. The Ortho Kit is a perfectly combined set of products and gives dental professionals the best option for improving orthodontic patients' oral hygiene.

When used correctly, the right toothbrush should dislodge and remove plaque through small circular movements along the gingival margin. Demonstrating the right balance between comfort and effectiveness, the CS ortho ultra soft toothbrush is specifically designed to clean both teeth and orthodontic appliances. With 5,460 filaments, the compact brush head allows for easy cleaning of the brackets' outer surfaces and its shape helps patients brush at the right angle. Each filament has a diameter of 0.1 mm, allowing the production of a head with many fine, though durable, bristles. The groove in the middle of the brush head accommodates the brackets and wires to allow the brush to clean the teeth better. In addition, the octagonal handle facilitates brushing at an angle of 45°. The CS ortho ultra soft toothbrush cleans efficiently and thoroughly and has gained an outstanding reputation among orthodontic practices and patients.

Patients wearing orthodontic appliances have to exercise particular care in their oral hygiene, since bacteria can accumulate more easily around the brackets and wire surfaces. A single-tufted toothbrush, the CS 1009 is particularly suited for use on wires and brackets. The brush adapts to the contours of the brackets, can easily be moved from the top to the bottom, and is gentle on the gingivae. The CS 1009 also adapts to the anatomy of the gingival margin, making it an indispensable expert tool that every orthodontist should use.

How to use interdental brushes in orthodontic care

Interdental brushes allow for effective prevention of dental caries and periodontal disease and should ideally be used before, during and after orthodontic treatment. To maximise the potential foratraumatic, effective and acceptable cleaning without harm to the papillae, CURAPROX offers ultra fine bristles, extra thin wire cores and a durable system for all of its interdental brushing systems. Developed to suit the orthodontist’s needs, the CPS 07, CPS 14 and CPS 18 interdental brushes are especially capable of cleaning wires and brackets. With an accessibility of 2 mm and an effectiveness of 8 mm, the CPS 18 allows for excellent cleaning of the outer wires, whereas the CPS 14 is especially suitable for the inner wires. The CPS 07 allows for complete cleaning of the gaps between the teeth.

Another key element of the Ortho Kit, the ortho wax helps patients become used to their appliance and protects the oral mucosa from abrasion and injury by bracket edges. The transparent and tasteless wax can easily be placed on to the brackets once warmed and is available in a convenient carrying case. Finally, the Ortho Kit contains a brochure with tips and advice on how to clean teeth and appliances effectively. It provides specific oral hygiene instructions for each product, as well as information about proper nutrition.

Buy the Ortho Kit now at shop.curaprox.co.uk/professional.
Insignia™ Resolves Adult Open Bite with Straight-Wire™ Finishing
Case Study

By Dr. David González Zamora, Spain

Pretreatment Diagnosis
Adult female, mesofacial, skeletal class I, open bite. Patient suffered from frequent headaches.

Treatment Plan Objectives
Close her open bite while maintaining vertical relationship of upper anterior incisors.

Appliance Used:
Insignia SL

Treatment plan notes submitted with this case:
- Insignia Archform
- Laterals should be shorter than centrals
- Align marginal ridges
- 3mm of overbite
- Expansion through molars and premolars
- IPR between premolars

TREATMENT SEQUENCE

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*Stock round wire

Treatment Discussion
The patient had a complete open bite due to the habit of atypical swallowing. To perform a bite closure, it is necessary to achieve perfect alignment and leveling of the teeth as well as obtaining accurate torque. Only then can we face the upper and lower occlusal planes. In addition, the two arches have been expanded at premolars and molars. The key to making a bite close quickly and easily is applying forces mesial to the arcade center of resistance, just so get a rotation of both occlusal planes.

Despite using an extrusive mechanics with previous elastics, you can see in the photo finish smile that the relationship of the upper incisors has not worsened, thanks to the relative position of the brackets at the time of cementation. The patient also followed a rehabilitation treatment neuromuscular speech pathologist, to ensure the future stability of the case.

Finishing Notes
No debonds, no wire bends. Just occlusal adjustment.

APPOINTMENT 3
2 WEEKS

APPOINTMENT 7
57 WEEKS
Interview with Dr Sherif Kandil, experienced practitioner, CEO of K Line Europe GmbH

We all heard about 3-D printing, what does 4-D stand for?

Yes, that is true that we have been hearing lately only about 3-D printing, nowadays 4-D represents the dimension of time. 4-D refers to additive manufacturing or printing of special materials that have certain memory characteristics built in a specific layering system on a 3-D printer, yet was designed or using CAD on a software that dictates the material reshaping and response to stimuli by time.

Can you tell us more about your recent activities in concern to 4-D technology?

After I patented the idea of 4-D printing in orthodontics, I moved on to applying this technology in our R&D labs in K Line Europe in Düsseldorf, Germany. 4-D printing technology has been shifting engineers’ opinions and even many in the medical field on the possibilities and chances that have been unleashed after the introduction recently of this technology. I have been focusing on applying this science to clear aligners and also on orthodontic wires using advanced 3-D printers and re-engineered Meta materials.

Since I would consider myself as an experimenter, I am currently applying the 4-D printing concept of therapy on my own teeth to manufacture clear aligners, I am strictly recording my experiences. Most of all, the precision of force application and distribution is way more precise as with the software, the exact force amount and time will be controlled. Furthermore, the aligner thickness can be altered depending on the need and can be controlled throughout the whole treatment to keep the force and anchorage distribution absolutely stable and avoid the variability that we experienced with previous clear aligner systems.

When do you think this technology will be available on the market?

We hope we can bring this technology into light very soon, yet a rational expectation would be to expect it to enter the market in 2021 to change many applied current treatment concepts in orthodontics.

Technology is shifting really quickly these days, how do you see it evolving in the next few years in orthodontics? I see 4-D printing and augmented reality to be one of the game changers in medicine in the upcoming years.

How could we get more information and even follow up this upcoming high technology?

Currently, the internet contains many approaches in 4-D tech, yet for orthodontic application you could follow up more on the following webpage www.kline-europe.de/orthob. Thank you for the valuable input and we hope to hear even more about the new inventions soon.

Thank you for this opportunity and I hope that this advanced technology can bring more welfare to our patients.

“With 4-D printing we will be able to provide much more precise treatments”

By Dr Sherif Kandil, Germany

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