SEHA AHS educates 30 upcoming national dental professionals at its new medical facility in Abu Dhabi

By Dental Tribune MEA

ABU DHABI, UAE: SEHA AHS Academic Affairs educated 30 of its upcoming young dental professionals on various multidisciplinary topics in dentistry. The three days course was organized in close cooperation with Centre for Advanced Professional Practices and Tipton Dental Academy on the latest tips & techniques on Posts & Core, Restoration of Post Endo Treated Teeth and Veneer Cementation. The programme took place at the new flagship Sheikh Shakhbout Medical City which is expected to be the new hub for innovation and artificial intelligence.

The latest scientific content, tips, tricks and techniques were presented by the faculty lead Professor Paul Tipton, President of the British Academy of Restorative Dentistry (BARD) and his faculty support staff with a programme of three full days lectures and hands-on trainings tailor made to the needs of the SEHA dental professionals.

First day featured “Posts & Core – Modern Techniques in dentistry” consisting of a seminar covering posts and the afternoon session a hands-on practical covering shenker, duralay and fibre post preps. Following a steep learning curve, Dr Rola Al Hayek, Corporate Clinical Education Manager (Corporation Academic Affairs) and Dr Ali Al Obaidli, Chief Academic Affairs Officer of SEHA, Dr Sumaya Khalifa Al Rubei, Health Centre Manager - Specialist, Dr Ali Al Hayek, Corporate Clinical Education Manager (Corporation Academic Affairs), Dr Ali Al Hayek, Corporate Clinical Education Manager (Corporation Academic Affairs)

SEHA AHS Academic Affairs educated 30 of its upcoming young dental professionals in Abu Dhabi (Photograph: Dental Tribune MEA)
The young dental professionals had access to the latest reading materials, webinars and preparation ahead of their courses which were practiced on state-of-the-art Phantom Heads.

Dr. Ali Al Obaidi, Chief Academic Affairs Officer of SEHA stated: “The UAE is witnessing a rapidly growing health and medical infrastructure that comes from the belief in its importance and priority in building a human being, enjoying good health and physical integrity. SEHA is committed to providing a world-class education to our dentists.”

He added: “These workshops aim to up-skill our dentists’ competencies, keep them up-to-date with cutting-edge techniques and advancements as well as becoming accustomed with new materials.”

He praised the workshop which was structured around the latest dental technologies and their applications in modern dentistry. Dr. Sumaya Khalifa Al Rubai - Health Centre Manager - Specialist commented: “In line with SEHA’s strategic objective to continuously attract and retain qualified healthcare professionals & particularly UAE Nationals, AHS Dental Services at Ambulatory Healthcare Services are committed to embracing the latest technologies and upgrading the knowledge and the skills of our dentists, dental technicians and hygienists, in order to continue providing high quality dental services to the community.”

Dr. Rolu Al Harak – Corporate Clinical Education Manager (Corporate Academic Affairs) further indicated: “At SEHA, we are committed to the highest quality of care to patients which can only be delivered by well-trained and educated medical & clinical professionals. SEHA is keen to provide a variety of outstanding continuing education programs and training opportunities for our dentists. And so, these workshops are part of our efforts to bring the latest and best practices in prosthodontics.

Guests of honor included Dr. Sumaya Khalifa Al Rubai and Dr. Ali Al Obaidi.

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Introducing Primescan
Engineered for superior performance

By Dentsply Sirona

Innovation requires commitment to ambition. Primescan sets new standards in dental technology, making scanning more accurate, faster and easier than ever. It is engineered to enable all kind of treatments, from single tooth to full arch. Primescan produces highly accurate images and allows for fast scanning consolidating 50,000 images per second. The new patented “High Frequency Contrast Analysis” delivers perfect sharpness and an outstanding accuracy. With Primescan, introral scanning delivers excellent results like never before.

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The new Primescan gives not just one new point of view but one million. The innovative Smart Pixel Sensor processes more than 1,000,000 3D points per second, producing photorealistic and highly accurate data. In fact, Primescan is the most accurate intraoral scanner on the market. Its dynamic depth scan technology enables perfect sharpness and outstanding precision, even at a measuring depth up to 20 mm – a crucial advantage for deeper-lying indications.

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   - Supports full chairside workflows for single-visit dentistry
   - Flexible data export options
   - Automated workflow thanks to Artificial Intelligence

Learn more at: dentsplysirona.com/primescan

MEMOSIL® 2 - the expert for special indications

By Kulzer

MEMOSIL 2 is a transparent A-silicone for special indications. Its transparency allows optical control when positioning aids (e.g. X-ray pellets). Light-curing is possible for filling and inlay materials through placeholders with MEMOSIL 2.

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MEMOSIL 2
INTERVIEW

About the development of the first super quick polyether

Interview with Dr. Joachim Zech, Head of Research & Development of Dental Impression Materials, 3M Oral Care, Seefeld, Germany

By Elke Kopp, New Procedure Market, Indirect Business Team, 3M Oral Care, Germany

With the complexity of an indirect restorative procedure, the requirements concerning impression accuracy tend to increase. An error in an impression used to produce a crown may lead to a poor fit, but manual adjustments are usually sufficient to produce a satisfactory result. If a similar error occurs in an impression involving multiple prepared teeth or implants, a remake of the prosthetic work is often necessary.

Does that mean that it is sufficient to use a less accurate impression material for small cases? It does not, as optimizing impression quality means minimizing the risk that impressions need to be retaken and prosthetic work needs to be adjusted. This, in turn, will save valuable time and lead to a more efficient and economic treatment procedure.

For this reason, many dentists rely on 3M™ Impregum™ Polyether Impression Materials even for their small cases. So far, however, they had to accept a drawback – the comparably long setting time of polyether to produce a satisfactory result. If a similar error occurs in an impression involving multiple prepared teeth or implants, a remake of the prosthetic work is often necessary.

With the complexity of an indirect restorative procedure, the requirements concerning impression accuracy tend to increase. An error in an impression used to produce a crown may lead to a poor fit, but manual adjustments are usually sufficient to produce a satisfactory result. If a similar error occurs in an impression involving multiple prepared teeth or implants, a remake of the prosthetic work is often necessary.

Dr. Zech, why did you decide to develop a new super-perfect polyether impression material?

The main aim of the project was developed based on market research and user feedback. This gave us the insight that the general interest in conventional impression materials is still high – despite the availability and evolution of high performance intraoral scanners. In addition, we found that polyether users are generally very happy with the existing polyether properties, especially the great flow behaviour and reliable performance in the presence of moisture. At the same time, we identified a growing demand for a material that offers these benefits combined with a setting time ideal for small cases. This may be related to the fact that the number of single tooth restorations placed increases continuously and dentists simply want to obtain the best possible results in the shortest possible time.

How did you manage to reduce the setting time?

The reduction of the setting time was challenging, as we need to develop a new initiator compound.

It is always possible to adjust the setting times to a certain extent with fundamental changes, but we had exhausted this potential for the existing initiator. Thus, there was no other way to reach our goal than by altering the basic chemistry. We were able to successfully accomplish this task within a reasonable time span thanks to the possibility of collaborating closely with our skilled colleagues from the chemical synthesis plant and from production in Seefeld. In this way, we were able to streamline the complete process from raw material development to production.

You said that the basic chemistry was altered. Is 3M™ Impregum™ Super Quick Polyether Impression Material still a true polyether?

Yes, the new material is a true polyether. The new base paste also contains the antinidor-polyether – the beating heart of every polyether impression material. Hence, the reactive groups and the curing mechanism in this paste are still the same. In addition, the newly developed initiator compound is made of a molecule that is similar to the existing one. The small, but decisive difference lies in the substances which are larger and exhibit a higher reactivity. The result is a faster setting reaction – as a beneficial side effect – a more neutral taste of the impression material. Exchanging the initiator also required us to exchange or add a few other components mainly in the catalyst paste, including plasticiizers and pigments.

How is a high product quality ensured?

Extensive testing of the basic raw materials and the pastes in the development phase was carried out to ensure that the proven polyether properties are still offered. The raw materials undergo comprehensive chemical-physical analysis and physical-mechanical tests are usually used for characterization of the pastes. In the first step, the test results are used to identify the most promising formulations and to adapt and fine-tune the components for final product development. Later, they are needed to ensure that the internal quality standards are met, while some of the tests are needed, e.g. for FDA approval and CE certification of the final product. As a matter of course, every batch of polyether impression material produced in Seefeld is subjected to strict quality controls.

Is the high product quality the main argument for dentists to test the new material?

It is the well-balanced and proven material properties combined with the short setting reaction that make the material worthy testing in the practice environment. Many dental practitioners prefer polyether impression materials, however, intraoral moisture control is difficult. For those who are not familiar with the typical intrinsic hydrophilicity of polyethers and the clinical behaviour related to this feature, it might be a perfect occasion to find out more about it now. For existing Impregum users, it might be interesting to start using a true polyether for their small cases as well – or to increase their productivity by replacing a slower setting polyether in this situation. Many of those who have already tested the innovative addition to the Impregum family are enthusiastic about it and would recommend it to their colleagues.

Fig. 1: Decanting of the base paste of 3M™ Impregum™ Super Quick Polyether Impression Material into a storage container.

Fig. 2: View into the preparative laboratory.

Fig. 3: Employees at the chemical synthesis plant of 3M in Seefeld.

Fig. 4: Reaction tank in the laboratory.

Fig. 5: Automatic packaging of the cartridges.

*Source: 3M field evaluation with 447 participants from Europe and the US, 2017.

To learn more about 3M™ Impregum™ Polyether Impression Materials please visit: www.3M-ae.com (Gulf countries), www.3M.com (Europe), www.3M.com (U.S.), www.3MCanada.com (Canada) or contact us at 3MOralCareGulf@mmm.com.

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Looking forward to welcoming you at 3M Oral Care Booth #6B01 at ADIPEC, Dubai, on 5-7 Feb 2019.
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The next generation polyether.
Hu-Friedy and WeRestore.it release new restorative kit

By Hu-Friedy

FRANKFURT AM MAIN, Germany: Creating aesthetic restorations requires a significant amount of attention to detail, as well as the right tools. To aid dentists in performing their best possible work, Hu-Friedy, in collaboration with Dr. Gaetano Paolone and Salvatore Scolavino of WeRestore.it, has recently announced the release of a new and simplified basic set for direct and indirect restorative procedures, the 3SENTIAL KIT.

Until now, the maximum number of instruments in a kit was five, and with an array of instruments on the market, it has become increasingly difficult for practitioners to make the right choices. Aiming to create something more compact, essential and easy to use, the creators of the 3SENTIAL KIT settled on just three instruments: Anterior (red), Posterior (blue) and Spatula (grey).

Speaking about the new kit, Scolavino said: “The concept behind the Posterior is very simple: we wanted to go from a plug and play to a plug and sculpt method. One tip is used to plug the composite into the cavity and the other one can sculpt and model composite in additive and subtractive modelling techniques.” According to Paolone and Scolavino, the Anterior is referred to as a solid brush, since it models and spreads the composite just like a brush.

Giana Spasic, Manager of Key Opinion Leaders Strategy at Hu-Friedy, said the company is always looking to work with key opinion leaders, specialists, private practitioners, universities and educators, with the purpose of finding new ways to help clinicians to perform at their best.

The creators believe the kit is the most straightforward restorative kit ever made and is perfect for clinicians who want to save precious time in the dental office during restorative procedures and achieve remarkable aesthetic and functional results.

Visit us at 2019 AEEDC Dubai at booth 8P10.

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Web: www.mectron.com

Mectron prophylaxis

Full mouth periodontal treatment using the new perio anatomic inserts P15, P16R, P16L

By mectron S.P.A.

Mectron has recently launched on the market 3 new ultrasound inserts specially designed to perform gentle and safe periodontal debridement.

The inserts guarantee the maximum efficacy without risk of injury to the soft tissues and the periodontal ligament.

The inserts’ shape allows an optimal access to the areas difficult to reach and characterized by deep periodontal pockets (furcations, root surfaces, concavities).

The preserved tissues allow a new attachment formation.

The cavitation effect allows mechanical biofilm disruption, bacteria dispersion and periodontal pockets detoxification, thanks to the oxygen delivery.

The inserts in detail

P15: universal curette for supra and subgingival treatment. Easy access to canine and anterior teeth. Replaces manual curettes n° 2, 3, 4, 5, 6, 7, 8.

P16R – P16L: right (P16R) and left (P16L) angulated periodontal curettes for subgingival concrements and biofilm removal from furcations and deep pockets. Recommended for supra and subgingival interproximal spaces and for an efficient root planing on molars and premolars. Replace manual curettes n° 11-12, 13-14, 15-16, 17-18.

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Unlimited flexibility. 
HyFlex EDM NiTi System with additional files sizes allowing more flexible application

By Coltene

Due to limited access endo experts often want more flexibility from their instruments. Pre-bendable tools can extend the horizon into new dimensions. Particularly in a limited working space modular nickel-titanium systems display their full strength. From now on dentists can choose from a series of additional file sizes for a fast and safe instrumentation to the remotest parts of the root canal system.

21 mm Agility

With a total of seven highly flexible file variants, the Swiss dental specialist COLTENE is now expanding its file variants, the Swiss dental specialist COLTENE is now expanding its wide-ranging HyFlex NiTi program. In addition to the usual lengths of 25 mm, all preparation files of the popular EMD series are now also available in 21 mm working length.

The application of the more agile, shorter models is particularly recommended in the treatment of the posterior molars and in patients with cranio-maxillar problems. Being just about the size of a five cent coin, the new HyFlex EMD files enable comfortable work in insufficient interocclusal space. The secured working with the pre-bendable NiTi files becomes now a straight forward matter.

The new HyFlex EMD 20/0.04 augments the existing HyFle EDM line. The additional file enables fans of the flexible NiTi range to treat curved channels only with the efficient EMD files. After creating a glide path with the Glidepathfile 10/.10, the new file with the same taper allows minimal invasive, fast preparation of the canal. Subsequently the actual shaping can be done in the usual manner with the universal file HyFlex EMD. Onefile, size 25. Depending on the channel anatomy, apical preparation can be finished with EMD files up to ISO size 60. Even in these large sizes the files work safely and without transportation of the canal centre. The good cutting performance and fracture resistance of the flexible NiTi files, is due to a special manufacturing process referred to as “Electrical Discharge Machining” (EDM in short) based on their robust high performance they are ideal for both, endo specialists and general practitioners who want to produce reliable results with a reduced number of files.

Who invented it?
The Swiss dental specialist COLTENE already introduced its HyFlex files to the market in 2010, creating the new era of “Controlled Memory” (CM) files at a time when other manufacturers did not yet know the difference between austenitic and martensitic files. HyFlex EMD files also benefit from the so-called “CM” treatment and are thus supplement-ed with the classic HyFlex CM series. Apart from that, the COLTENE team of experts supports ENDO specialists as well as general practitioners to learn the optimal handling of well-designed working aids with a large selection of hands-on workshops, training materials and personal service offers.

For more information visit:
Coltene
Web: www.coltene.com

New Chiropro – Bien-Air Dental unveils its new implant motor

By Bien-Air Dental

A single control knob allows you to control the entire system. Simply turn the knob to navigate via the menus and adjust the settings, and press it to confirm the selected value. Moreover, the control knob - the only point of contact between dentists and the unit during procedures - can be easily removed and sterilised to simplify maintenance. Thanks to its clear and concise interface, the new Chiropro plainly displays all the information required for procedures to go smoothly: type of instrument, speed, torque, irrigation flow and direction of rotation. Pre-set operating sequences and the option to modify settings based on patients’ dental features, also make the new Chiropro easier to use.

Powered by the Chiopro, the new MIx micromotor and CA 20:1 handpiece combine to offer you the very best rotary technology for all your implantology procedures. Coupled with the MIx’s micromotor, the CA 20:1 handpiece provides an exceptionally stable speed, for precise and smooth procedures. As well as offering an unparalleled service life, the CA 20:1 handpiece is fitted with a brand-new internal irrigation system. The irrigation line will not inconvenience dentists when they are using the handpiece.

For further information, please contact:
Bien-Air Dental
Limmatquai 60, 2500 Bülach, Switzerland
Email: fanny.vongunten@bienair.com
Web: www.bienair.com
What do you call an endodontic file that is 700% more breakage resistant than others?

We call it

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Nothing is more annoying than a broken file, a perforated or deformed root canal and step formation. To prevent those issues as much as possible it requires not only great finesse, but also endodontic files with special properties. This is why the HyFlex EDM files have been developed with optimum cutting efficiency, perfect flexibility and extremely high breakage resistance of 700%. Upgrading an idea to a solution.
Interview: 3D Printing – Sustainable additive innovations transforming the dental industry

By Rik Jacobs, The Netherlands

It was about 12 years ago that I first came into contact with additive manufacturing technology, also known as 3D printing. Back then it was still a new—and astonishing—technology, mostly being used in applications related to hearing aids. I had been working in the dental industry for decades at this point, and it was clear to me that this technology should be adopted by the dental market. I became inspired.

This was also around the same time that "milling" technology became extremely popular in the dental industry, as well as in labs and clinics. This created an adopted market in terms of scanning and designing with software for dental applications. But, as I learned more about the additive dental technology, I knew that 3D printing stood to offer a more sustainable and productive technology that was also faster and more flexible.

I wondered whether or not I could successfully introduce 3D printing technology to the dental market. Could I be the first to do it by surfing on the “milling” wave and making use of the existing infrastructure which was more or less under implementation?

Along with my business partner, Mrs. Connie Peterse, I set out to learn about all of the different 3D printing technologies. We teamed up with TNO, The Netherlands Organization for applied scientific research and started to formulate a wide range of materials, which we printed countless times, year after year, until we found what we were looking for. We founded NextDent—"the next big thing in dental"—in 2012, and introduced these materials to the worldwide dental market in 2013. The goal was to develop, register, and launch a wide range of printable dental materials for as many different dental applications as possible.

From 2014 to 2016, we built partnerships with many additive hardware manufacturers and dental software companies. We learned so much about the workflow—from the scan to the final printed object for placement in the patient’s mouth.

At last, we had a winning combination with our peerless plug-and-play solution and the best possible training service and support, we were able to win trust from the vast majority of onlookers in this conservative professional market.

The milestones came in quick succession. First, we made national news on January 23, 2016, when Professor Dr. Daniel Wismeijer implanted a Micro Filled Hybrid (MFH) crown in my mouth that I myself had printed. Two months later, we were named the first company in the world to achieve Class 2A biocompatible certification. You have been a positive example of how dental technology could transform the clinical setting by 2024, and that 3D printing in dental will become a highly valued-added process that will dominate many of the dental segments in which it already has a share today.

Temporary crowns and bridges are printable in MFH resins used by Digital Light Processing (DLP) printers today. I truly believe that our current efforts to print long-term temporaries, dentures, try-ins, orthodontic retainers, splints, surgical guides and models will quickly prove successful and gain acceptance worldwide.

Based on the recently published analysis “3D Printing in Dentistry 2018” by SmartTech Publishing, it appears increasingly likely that the dental industry will transition to a majority additive—possibly even full additive—industry structure by 2027.

Our new additive solution powered by the Figure®4 technology is leading the change by helping dental laboratories and clinics redefine their workflow and achieve improved accuracy (within 0.25 millimeters), repeatability and productivity with a lower total cost of operation with the widest range of materials in the market. When used in conjunction with 3D Systems’ robust portfolio of certified NextDent materials, dental labs and clinics can address the broadest range of indications from a single printer available today. This plug-and-play solution integrates with the dental industry’s state-of-the-art intra-oral scanning and software solutions, delivering a much more precise result than is available with manual production. The benefits of this revolutionary solution also extend to the patient, as it reduces both the time required to produce orthodontic and prosthetic devices and the number of office visits needed to complete treatment. This end-to-end solution combining materials, technology, software and services will help dental labs and clinics revolutionize their businesses.

This transformation has been 20 years in the making, but its time has come. And I couldn’t be more excited as it continues to unfold.
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A step-by-step guide to a direct diastema closure

By Dr. Ayad Mouayad Al-Obaidi, Iraq

A 28-year-old female patient had the primary complaint of spacing in the upper front tooth region. The patient’s medical history did not reveal any systemic diseases and an intraoral examination revealed presence of midline spacing between maxillary central incisors (~2mm) (Figs. 1 and 2).

For a more conservative, economical, aesthetic, and quicker option, a direct diastema closure was considered.

All maxillary incisors were isolated with a rubber dam (Fig. 3) to ensure complete control of moisture to keep the area clean and dry whilst also suppressing the papilla to reduce the area clean and dry whilst also suppressing the papilla to reduce the space of the black triangle postoperatively.

The enamel surface was maximally prepared with a diamond fissure bur to increase the surface area for bonding and to remove aprismatic enamel (Fig. 4).

37% phosphoric acid was applied for 15 seconds on the mesial surface to be rinsed, then dried for 20 seconds (Fig. 5), and dried with air gently (Fig. 6). Then a universal adhesive system was used (Prim&Bond universal™), using a micro brush with a light scrubbing motion for 15 seconds (Fig. 7).

This was then gently air-dried for approximately 5 seconds. Blow to margin, or to thin if necessary, using a light application of air and then light cured for 20 seconds.

The key for papilla regeneration is to provide aggressive cervical curvature that starts subgingivally and this can be done with a mylar strip placed subgingivally with a high viscosity flowable composite or bulk flow composite injected to the contact point area as reference (emergence profile) (Fig. 8).

The key to success in diastema cases is to finish the first tooth completely before starting the second tooth (Fig. 9). Then some corrections can be made to the size of the first tooth so the final size of the centrals will be the same at the end of treatment (Fig. 10). In this case the proximal wall was completed with a single shade universal composite (ceram.x® SphereTEC™ one universal) and then began the emergence profile to complete the proximal wall of the second tooth (Fig. 11).

The teeth were then finished with polishing discs and rubber points. The rubber dam was then removed and as you can see there is a small black triangle in the cervical area (Fig. 12).

The recall visits in diastema cases are very important to see patient satisfaction, to check the periodontal health and to do some polishing and as you can see there is a small black triangle in the cervical area (Fig. 12). With time, the interdental papilla filled the space of the black triangle completely (Figs. 13 and 14).

The primary complaint of spacing in the upper front tooth region was reduced and as you can see there is a small black triangle in the cervical area (Fig. 12). With time, the interdental papilla filled the space of the black triangle completely (Figs. 13 and 14).

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Beverly Hills Formula enter 2019 on a High

By Beverly Hills Formula

2018 has been a truly stellar year for Irish oral care experts Beverly Hills Formula. At the beginning of the year, the brand had one clear objective in mind – to be the number one at home teeth whitening brand in the middle east. The well-established brand currently retails in UAE, Jordan, Lebanon, Oman, Qatar, Kuwait, Bahrain, Iran and Saudi Arabia and have been hugely successful in growing their presence there this year as well as across the globe.

The brand knew that further growth would be no easy, given that there are more teeth whitening products than ever available on the market today. They attribute their success to several factors – scientifically formulated products that are safe to use and truly make a difference, as well as devotion to continuously researching and providing highly innovative and first to market products. Last year, the addition of cutting-edge new products to their already hugely successful portfolio has allowed them to enjoy continuous success and growth in the region.

The brand has always kept a close eye on market trends and have ensured they are always one step ahead, releasing the latest formulations well ahead of the crowd. They are continuously seen as innovators, not imitators and are known throughout the middle east for their award winning, scientifically formulated products, as well as their bright stand out colours that are designed to make an impact as well as keeping the brand well ahead of their competitors.

New product development was huge for the brand last year, with three innovative products joining their hugely successful Perfect White Range. The products caused a huge hype within the oral care industry and have seamlessly integrated with the bold and daring range.

The Perfect White Range consists of Perfect White Black, the brand’s hero product. The toothpaste is scientifically formulated with Activated Charcoal known for its love of tannins – a compound found in coffee, tea, wine, berries and spices, all of which stain your teeth and helps remove these without harming the enamel. Also found in the range is Perfect White Black mouthwash, Perfect White Black Sensitive and Perfect White Gold – which contains real gold particles designed for their antibacterial properties.

Joining the Perfect White family were:

Perfect White Optic Blue
Using Blue Filter Technology, a market first, which forms a special layer over teeth during brushing to reflect the light which creates an optical whitening effect visible after one use. The time-tested formulation containing Advanced Hydrated Silicas and Pyrophosphates also provides effective stain removal, and the 1400 ppm Sodium Fluoride protects your enamel at the same time ensuring strong and healthy teeth.

Perfect White Gold Mouthwash
Made with real gold, known for its anti-bacterial, anti-inflammatory and blood flow regulating properties, this luxurious mouthwash eliminates bad breath and provides a long-lasting freshness. The new ‘shake to activate’ formula contains Pyrophosphates which help to remove surface and deep stains for a brighter and whiter smile, whilst the scientific formulation combats bad breath each time.

Perfect White Whitening Kit
Scientifically formulated to reduce plaque and harmful bacteria, the whitening kit includes 28 whitening strips and as well as a highly innovative whitening pen. The transparent and flexible strips are coated with tooth whitening gel which ensures whitening results after one use. The whitening pen is ideal for touch ups on the go. This ultimate whitening duo contains safe levels of Hydrogen Peroxide – ensuring a whiter, brighter smile!

2019 Plans
Building on the monumental success of 2018, this year will certainly catapult the brand to further heights. New product development is at the forefront of this year’s objectives, although for now the brand remain tight-lipped on what’s to come.

Beverly Hills Formula are delighted to be at this year’s International Dental Conference and Arab Dental Exhibition (AEEDC) and look forward to showcasing their latest products to dental professionals across the globe.

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<table>
<thead>
<tr>
<th>Product</th>
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Purity Laboratories Ltd

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Management of midfacial recession defects around adjacent maxillary implants using ‘screw tent-pole technique’

By Dr Bach Le, USA

Soft-tissue recession around dental implants often results in metal exposure and can present a major aesthetic challenge.1-3 Unfortunately, soft-tissue recessions around implants have been frequently observed, with one study reporting midfacial recessions greater than 1 mm were present in 64 percent of the cases.1 Treatment and coverage of perimplant soft-tissue recessions can be challenging; despite reports in the literature indicating that recessions up to 2 mm can be successfully grafted with a combination of coronally advanced flap and subepithelial connective tissue grafts.4 Long-term data on the success of these grafting techniques is limited.5-9

Thoma, et al, conducted a systematic review9 and reported that the combination of an apically positioned flap/ventiloplasty and soft-tissue augmentation using a free gingival graft, subepithelial connective tissue graft or collagen matrix resulted in a 1.4-3.3 mm increase in keratinized tissue. Overall, soft-tissue connective tissue augmentation resulted in the best gains in soft-tissue volume at implant and partially edentulous sites, and a combination of better papilla fill and higher marginal mucosal levels as compared to non-grafted sites immediately placed dental implants.8 A recent systematic review10 did not find a single acceptable randomized clinical trial (RCT) in the world literature to recommend the best incision designs, suturing techniques or materials to correct or augment peri-implant soft tissues.

One of the aims of soft-tissue augmentation procedures is to correct mucosal recession. To address bone loss and associated gingival recession around implants in the aesthetic zone, a combination of guided bone regeneration (GBR)11 and soft-tissue augmentation12 are often performed. When multiple implants are placed in the aesthetic zone, vertical and horizontal bone augmentation of more than 2 mm from the implant platform is often necessary to overcome the normal pattern of bone remodeling and soft-tissue recession.13 The use of coronally advanced flaps and coronally positioned grafts sometimes jeopardize the aesthetic appearance of the treatment site by altering the colour and thickness of the transplanted tissues.14

The use of a particulate mineralized bone allograft covered with a collagen membrane (GBR) for the correction of gingival recession has been reported in the dental literature by Le, et al.4 This case report demonstrates an innovative surgical technique to restore hard tissue and increase mucosal width and keratinized gingival height around maxillary implants in the aesthetic zone without the colour discrepancy associated with soft-tissue grafts.

Case report

The patient was a healthy 20-year-old male nonsmoker with a history of traumatic fracture of the maxillary right lateral incisor and two central incisors. The teeth were extracted with immediate placement of three external hex dental implants (Bi-omet 3i Dental, Palm Beach Gardens, FL). Three years after the latter was restoration, the patient presented with a chief complaint of: “I can see the metal portion of my implants.” Examination at this time revealed long unesthetic maxillary crowns with visible abutment metal and a dark shadow along the gingival sulcus (Figs. 1-3). Clinical and radiographic evaluations were conducted to assess the patient’s soft-tissue health, position and emergence profile of the implant relative to the alveolar housing and adjacent teeth, gingival contour, amount of gingiva visibility when the patient smiled, and the shapes of the prosthesis and clinical crowns. There were no active signs of inflammation or infection around the peri-implant mucosa and all three implants appeared to be in good three dimensional position.

A two-stage surgical approach was planned. The first stage would involve augmentation of the missing labial bone using guided bone regeneration with tenting screws (“screw tent pole” technique described by Le, et al), followed by a second stage surgery to remove the middle implant with additional bone augmentation to develop a pontic site. Following a healing period, provisional restorations would be used to sculpt the soft-tissue architecture prior to definitive restorations.

On the day of surgery, the patient was asked to rinse with 0.12 percent chlorhexidine gluconate (15 mL) prior to IV sedation. Acrestal incision and distal coronal, vertical incision that followed the gingival margins of the distal proximal teeth were made. A full thickness, subepithelial flap15 was elevated to expose two to three times the treatment area (Figs. 4-5). Significant labial bone loss was noted in the anterior maxilla with sufficient threshold exposure on two adjacent implants. Decontamination of the implant surfaces was not performed because the patient did not exhibit signs of mucositis, periimplantitis related infection or purulence around the peri-implant gingival sulci. The soft tissue was generously released and advanced to ensure tension-free closure.

Prior to graft placement, three roughened titanium tenting screws were placed 3.4 mm below the implant surface to create a tensile effect over the graft site and help reduce tension over the graft (Fig. 6). Mineralized bone allograft was placed over the defect sites and overcontour by approximately 20-30 percent to compensate for the anticipated apical migration and partial resorption of the augmentation material during remodeling (Fig. 7). Prior to use, the allograft material was hydrated according to the manufacturer’s directions and mixed with the patient’s blood, which served as a coagulant. After graft placement, the material was covered with a pericoronal membrane.

The mucoperiosteal flap was approximated and sutured in place. The patient was provided with an interim prosthesis to be worn during the four months of healing and was dismissed with postoperative instructions, antibiotics and analgesics until the follow-up visit seven to 10 days later.

After a four-month healing period, a second stage surgery was performed to remove the middle implant in the maxillary right central incisor position to create a pontic site (Figs. 8-9). The “screw tentpole” technique was again utilized with mineralized allograft and a collagen membrane for additional vertical augmentation of the pontic site (Figs. 10-11). A consolidation period of 21 months was allowed to ensure proper maturation of the bone and overlying soft tissue (Fig. 12). Screw-retained provisional restorations were utilized (Fig. 13) for six months to develop the soft-tissue architecture prior to delivery of the final restoration.

Figs. 1-2: Patient with gingival recession and discolouration due to exposure of the underlying dental implants (teeth No. 7, 8, 9) three years after implant placement. Note the lack of keratinized peri-implant mucosa. (Photos/Provided by Dr. Bach Le)

Figs. 3-4: Patient with gingival recession and discolouration due to exposure of the underlying dental implants (teeth No. 7, 8, 9) three years after implant placement. Note the lack of keratinized periimplant mucosa.

Fig. 5: Flap elevation illustrating labial bone dehiscence and implant exposure.

Fig. 6: Screw ‘tent-pole’ grafting technique: placement of three titanium tenting screws placed 3-4 mm below the gingival margin.

Fig. 7: Placement of a mineralized allograft material over the defect site with coverage with a peri-implant membrane.

Fig. 8: i. Entry of four months after grafting showing excellent graft healing and coronalization over the previous defect.

Fig. 9: The middle implant at the maxillary right central incisor position was removed in the second surgery to create a pontic site.

Fig. 10: The middle implant at the maxillary right central incisor position was removed in the second surgery to create a pontic site.

Fig. 11: The middle implant at the maxillary right central incisor position was removed in the second surgery to create a pontic site.

Fig. 12: Screw-retained provisional restorations were utilized (Fig. 13) for six months to develop the soft-tissue architecture prior to delivery of the final restoration.

Fig. 13: The middle implant at the maxillary right central incisor position was removed in the second surgery to create a pontic site.

Fig. 14: Final provisional restoration.

Fig. 15: Final restoration with gingival tissue in place.

Fig. 16: Final restoration in place.

Fig. 17: Final provisional restoration in place.

Fig. 18: Final restoration in place.

Fig. 19: Final provisional restoration in place.

Fig. 20: Final restoration in place.
the definitive restoration (Fig. 14).

Discussion

This clinical case reports on unex-
pected improvements in peri-im-
plant soft-tissue dimensions after GBR procedures to correct labial dehiscences around implants in the maxillary anterior jaw. Peri-implant bone loss can result in soft-tissue resorption followed by plaque at-
tachment at or near the implant-abutment interface. Thus, in turn, can trigger soft-tissue inflammation with additional bone loss and gingi-
val recession.20,23 It has been reported that gingival margin levels may be affected by the thickness of the gin-
gival tissues and that a thin tissue biotype may favour apical displace-
ment of the soft tissue margin.20 To maintain gingival health, maintain-
ing an adequate width (1–2 mm) of keratinised gingiva around dental implants has been suggested24–26; however, this has been disputed.27 A correlation has been reported be-
twixt the presence of keratinised tissue and plaque levels and the in-
cidence of mucositis.28 It has been suggested that sites with minimal keratinised tissue might be prone to a lower incidence of periodontal pocket formation.29

In the anterior maxilla, as labial bone thickness resorbs, there is a corresponding loss in labial soft tissue thickness and the implant-abutment interface. Moderate recession can make thin, pink gingival tissues appear dark be-
cause of the presence of the under-
lying metal abutment and implant, and further bone loss can cause un-
expected metal exposure above the gingival margin. In general, implants carried by bone loss require some type of com-
plcations when placed in thin tissue bio types or with labial inclinations when the labial implant thickness is <2 mm.30 Use of an approximating suture, such as zirconia, has been reported to produce the least amount of gin-
gival colour change when gingival thickness was 2 mm, whereas any abutment material resulted in satis-
factory aesthetics when gingival tissue thickness was >2 mm.31

The goal of the GBR procedures in the present case was to treat the fa-
cial bone defects as well as restore the aesthetic gingival margin. The efficacy of allografts and GBR surgic-
protocols in repairing alveolar defects has been depicted in the dental literature.32–33 While some allogen-
us34 and xenogeneic35 tissues have demonstrated efficacy in soft-tissue augmentation, the use of collagen membranes with a mineralized al-
lograft for soft-tissue augmentation is not well documented. In the present case, use of a collagen membrane in conjunction with the mineralized bone allograft resulted in gain in keratinised tissue width and gingival height. While the goal of the GBR procedure was to treat the bone defect in the present case, improvements were coincidently observed not only in the soft tissue dehiscence, but also in the keratinised tissue width and soft-
tissue thickness. The use of mineral-
ized allograft placed around 1.5 mm titanium screws (“screw tempode” to tent out the soft-tissue matrix and periosteum has been previously re-
ported for successful alveolar ridge reconstructions.36 Although there are no reports of a GBR procedure result-
ing in clinical increases in both of the latter soft-tissue dimensions, a lim-
ited number of retrospective stud-
ies37–39 have reported an increase in soft-tissue thickness around dental implants primarily in the anterior maxilla, after increasing the thick-
ness of the facial bone through GBR.40

Furthermore, the membrane placed over the particulate graft in the pre-
nent clinical case was essentially a collagen matrix similar to a connec-
tive tissue graft, which adds to the thickness of the overlying soft tissue. Scoring of the periosteum and un-
derlying bone tissue prior to grafting and foreign body reaction from placement of a graft and membrane may also result in scar tissue forma-
tion that augments the soft-tissue profile. The present technique is not ideal for restoring the gingival mar-
gins for poorly positioned implants or when there is significant thread exposure. For example, implant placed outside of the alveolar hous-
ing or with significant labial inclina-
tion associated with labial bone loss should be excluded. Zucchelli et al.41 reported on a sur-
geon-prosthetic treatment for im-
plants with baccal soft tissue dehis-
ence defects in the aesthetic zone. The technique involved removing the crown, shortening the abutment and then treating the dehiscence defect with a coronally advanced flap and connective tissue graft.42 After one year, mean soft-tissue dehi-

cence coverage was 96.3 percent with complete coverage in 75 per-
cent of the treatment sites.43 While patients were satisfied during short-
term follow-up, the ability to camouflage a bony defect with or without implant placed threads is highly limited without the support of the underlying bone, which is the main-
cause of soft-tissue recession.44–48

In addition to soft-tissue recession, marginal bone loss has been associ-
ated with increased peri-implant stress concentrations in the crestal bone region. Over time, elevated stress concentrations can trigger ad-

ditional bone loss and further soft-
tissue recession.49 If left untreated, increased stresses can result in screw loosening, metal fatigue and compo-

dent fracture over time.50–51 Implants placed in the anterior maxilla jaw with thin buccal plates are highly susceptible to the adverse effects of marginal bone loss.52–54

In summary, the use of a mineral-
ized bone allograft and a collagen membrane effectively increased al-
veolar hard- and soft-tissue dimen-
sions in the aesthetic zone of the anterior maxilla. Restoring the missing
bone grafts and decreased the risk of developing peri-implantitis from bacterial biofilm attachment to the underlying titanium components.55–56 Thirdly, guided bone regeneration also expectedly increased the width of keratinised tissue, which has also been reported to help provide a peri-implant soft-tissue seal against bacterial invasion, in addition to pro-
ducing resistance against recession.57–58 While increases in soft-tissue thick-
ness and keratinised tissue width have been reported after placement of connective tissue and free gingi-
val grafts,59 this phenomenon has not been previously reported after guid-
ed bone regeneration procedures around dental implants. The author has reported the results of using this same technique in 11 patients who achieved similar outcomes after short-term follow-up.60

The value of individual clinical case reports is that their anecdotal data can provide preliminary evidence for developing new hypotheses that lead to larger, randomized clinical trials,42 which are needed to deter-
mine if the present approach will effectively serve as an alternative for soft-tissue augmentation in instanc-
es where tissue thickness is needed.

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Editorial note: A list of references is available from the publisher.

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mCME article membership instruc-
tions are available upon request.

Dr. Bach Le, DDS, MD, FICO, FACO

He has completed his specialty training in oral and maxillofacial surgery at Oregon Health Sciences University. He is currently clinical associate professor of oral and maxillofacial surgery at the Herman Ot-
trow School of Dentistry at USC, where he has been on faculty since 2000. He has lectured internationally on bone regeneration and dental implant-re-
lated surgery and has taught on six conti-
nents around the world. He has authored or co-authored more than 13 chapters in textbooks on bone regeneration and dental implants and has published exten-
sively in professional peer reviewed journals. He served as editor of the Dental Implant section of the recognized Fonseca Oral & Maxillofacial Surgery textbook (third edition), which was recently released in 2017. His primary focus has been in hard- and soft-tissue regeneration for improv-
ing aesthetic outcomes.

Figs. 10-12: Screw tent pole grafting technique was again employed to enhance the vertical dimension of the pontic site. The mineral-
ized allograft was covered with a cross-link collagen membrane.

Fig. 12: Healing at 12 months after implant removal. Note im-
provement in the vertical ridge of the ridge and soft tissue de-
hiscence around the pontic of the prosthesis.

Fig. 13: Screw-retained provisional restoration.

Fig. 14: Delivery of definitive restoration.

Fig. 15: Eight years, follow-up.

Fig. 16: Eight years, follow-up.

Fig. 17: 13 years follow-up, illustrating continued tissue stability.

Figs. 18-19: CNCT and perioscal views at eight years after GBR procedure showing stable bone and healthy tissue thickness around both implants.
Predictable steps to Biomimetic Class IV restorations

By Dr Anand R. Nanevar, India

Introduction
Composite Artistry has become an important element of direct restorative treatment in dental practice today enabling clinicians to create life-like restorations with individualized characterizations to match the patient’s natural teeth.

Anterior restorations in the aesthetic zone tend to constantly challenge the clinician’s skill; therefore it is important to plan carefully by combining art and science. Adopting the Minimally invasive Cosmetic Dentistry (MiCD) concept, introduced by Dr Sushil Kotala in my treatment protocol with emphasis on preservation of natural tooth structure “Do No Harm Dentistry” has helped create predictable aesthetic restorations that exceed patient expectations.

Fractured upper central incisors are one of the most common cases of dentoalveolar trauma in the permanent dentition. The following clinical case highlights a simple technique to achieve predictable aesthetic restorations with natural optical characteristics in a Class IV restoration using a sculptable biomimetic direct restorative “Beautifil II LS”

Patient Case
A 35 years old male patient visited our dental office with a complaint of chipped upper front teeth (tooth #11,21) resulting from a childhood injury with no pain or sensitivity.

The patient requested to enhance his smile with minimally invasive treatment.

Treatment Plan
After Intraoral examination, photographs were taken (Fig 1) and a treatment strategy was formulated keeping in mind the patient high expectations for aesthetic restorations with less invasive treatment.

A direct composite restorative material with low shrinkage, predictable aesthetics, sculptable handling and easy polishability- Beautifil II LS was selected. High value translucent enamel shade was identified to create optical effects of youthful teeth.

Materials

Tooth preparation – Diamond Bur FG, Super Snap Coarse Disk (Black)
Restoration – Beautifil II LS – shade A20, A2, Beautifil Injectable - shade INC, Beautifil II Enamel – shade HVT (High-Value Translucent enamel shade)
Bonding system – Etchant and 2 step Adhesive system (FL Bond II)
Finishing & Polishing – Fine Diamond Bur (Red Band on Shank), Onyx, Super-Snap X’Treme, Direct Dia Polishing Paste, Super Snap Buff Disk

Step by Step Restorative Technique

Shade Selection
Vita Shade guide was used for shade selection while teeth was hydrated. Black and white photo is recommended for assessing value. Shade A2 was selected. (Fig 2)

Mock Up
An impression is taken and model poured using die stone material. Freehand build up of composite for both teeth to evaluate the final outcome. Both teeth were carefully analyzed and identified that each tooth required a different recipe for layering the composite material. (Fig 3)

Silicon putty index made from the plaster model to create an enamel shell to guide the build-up of the palatal enamel layer.

Tooth Preparation
- Rubber dam isolation from premolar to molar to premolar, Rubber dam in place. Both sides, labial and palatal with a round ended tapered Diamond bur (Fig 4)

Freehand build-up of composite for further retraction of gingiva to eliminate contamination with sulcular fluid (Fig 5)
- Infinite beveling of margins to blend the composite material on both sides, labial and palatal with a round ended tapered Diamond bur

Before and after

Fig 1: Fractured maxillary anterior incisal edge of tooth #11 and 21
Fig 2: Black and white photo taken with classic Vita shade guide for value assessment, Shade A2 matches with natural dentition compared to A1
Fig 3: Buccal view of the composite build-up on the tooth model, showing differences of a fractured incisal edges

Fig 4: Rubber dam isolation with floss ties
Fig 5: Labial beveling of fractured area
Fig 6: Smoothing incisal edge with the Super Snap Black disk

Fig 7: Putty index checked intra orally after placing rubber dam
Fig 8: Palatal shell made using Shofu Injectable INC enamel shade
Fig 9: Build-up of deep dentin with Shofu Beautifil II LS A20, note the different amount placed in each tooth

Fig 10: Thin layer of Beautifil II LS shade A2 placed after placement of Cominum anterior matrix band with silicon wedge between both central incisors for better contact and contour of the tooth
Fig 11: Final enamel layer build-up with Beautifil II Enamel shade HVT of high value translucent enamel shade
Fig 12: After contouring, finishing done with dura white stone

Fig 13: Final detail finished on the direct composite restoration

Fig 14: Final clinical result with natural tooth structure...
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Amongst the list of VIP attendees were representatives from over 30 countries, including EMA, and with the participation of the Emirates Medical Association, AOFCD, and the Dental Division of the Emirates Medical Colleges and Health Sciences. The University inaugurated the first regional conference in collaboration with the Asian and Oceanian Federation of Conservative Dentistry last December.

**Restorative Dentistry: Innovations for Conservative Dentistry.**

The event was under the patronage of Mr. Majid Al-Jarwan, Vice Chancellor of the University, and President of the University. The inauguration was done by Dental Tribune MEA.

By Dental Tribune MEA

SHARJAH, UAE: The University of Sharjah organized the first regional ConsAsia 2019 conference of the Asian Oceanian Federation of Conservative Dentistry last December. The event was under the patronage of His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi, Member of the Supreme Council, Ruler of Sharjah, and President of the University of Sharjah. The University inaugurated the first regional ConsAsia 2019 International Conference as part of the anniversary meeting of the Asian and Oceanian Federation of Conservative Dentistry (AOFCD). The conference comes under the theme "Contemporary Conservative Dentistry: Innovations for Tomorrow’s Practice." The University’s College of Dentistry organized the Conference in collaboration with the EMCD and the Dental Division of the Emirates Medical Association (EMA), and with the participation of over 100 local faculty and educational staff members.

Dental Tribune had the pleasure to interview Prof. Byeong-Hoon Cho, President of the AOFCD and ConsAsia 2019 to get his view on the conference in the Middle East and beyond.

Could you please share with us an introduction about yourself and your experience as president of the AOFCD?

I am Byeong-Hoon Cho, Professor of Department of Conservative Dentistry, Seoul National University School of Dentistry, Seoul, Korea. I am also the Founding President of the Asian-Oceanian Federation of Conservative Dentistry (AOFCD), the President of the Local Organising Committee for its inaugural scientific meeting, ConsAsia 2019, Seoul, Korea, the immediate past president of Korean Academy of Conservative Dentistry (KACD), and the Editor-in-Chief of the Restorative Dentistry & Endodontics. I am establishing the AOFCD and organizing its biennial scientific meeting, ConsAsia.

When the ConsAsia initiative was proposed by the KACD, 16 scholars from 9 countries joined the first preparatory meeting and showed interest in founding an international organization in the field of Conservative Dentistry. Although, the Conservative Dentistry is a very dynamic discipline, there had been no international organization, except ConsCD, which is hosted by European Federation of Conservative Dentistry (EFCD). I felt they were eager for a platform where they could collaborate and communicate with each other in education, research, and practice in the field of Conservative Dentistry.

Considering the dynamic features of conservative dentistry, we all needed to have a platform where we can meet and communicate with each other and collaborate for the innovation and the future of Conservative Dentistry, so it was possible to establish AOFCD and hold ConsAsia. The international ConsAsia scientific conference will promote academic pride and clinical excellence for scholars, researchers, students, and clinicians in the field of Conservative Dentistry, ultimately contributing to the quality of care and improving oral health in the region.

For our MEA audience, could you please provide more information about the AOFCD and ConsAsia?

It is established to contribute to the promotion of oral health in the public interest and to facilitate communication and cooperation amongst the members in the Asian and Oceanian regions by encouraging excellence in the clinical practice, teaching, and research to the benefit of the populations in these areas. Hence, the KACD proposed to establish AOFCD and to hold biennial ConsAsia scientific meetings.

At first, scholars from 9 countries (Australia, Hong Kong, India, Japan, Korea, Singapore, Malaysia, New Zealand, and Taiwan) agreed with the initiative and met first in Seoul, Korea, on October 21, 2016 (First AOFCD). Then the members established the initiative and met first in Seoul, Korea, on October 20, 2017 (First ConsAsia) and decided on the location of the first preparatory meeting, Seoul, South Korea, for the first ConsAsia conference in 2019. The second preparatory meeting was held in Kuala Lumpur, Malaysia, in October 2018. Hence, the ConsAsia scientific conference was held in Sharjah, UAE, in December 2019.

The participants can share the up-to-date knowledge about the subjects in the field of Conservative Dentistry.
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\textsuperscript{1} Composed of different material classes
INTERVIEW

Professor Stephen Dunne from Great Britain, the Immediate Past President of European Federation of Conservative Dentistry (EFC) and the President of European Federation of Conservative Dentistry (EFC) and the President of European Federation of Conservative Dentistry (EFC) and the President of European Federation of Conservative Dentistry (EFC), agreed that the ConsAsia initiative and supporting regional societies will promote interests in Conservative Dentistry.

As mentioned above, in order to promote interests in Conservative Dentistry, it is needed to have well-known keynote speakers and country representative speakers. With the help of EFC, we reviewed the draft of the constitution and by-laws. They supported the ConsAsia meetings and reflect its wide scope.

The LOC will organize social/tour programs as well as well-balanced scientific programs to make your trip to Korea very fruitful and interesting. (Please refer to the recent newsletter http://www.consasia.org/newsletter/issue_181227.html)

During the days of ConsAsia 2019, the Autumn color of Korea will be fantastic. ConsAsia 2019 Seoul Meeting will be attractive to the first time, and only conservative dentistry conference where the world of Conservative Dentistry comes together. It will be a part of the frontier of Conservative Dentistry in Asia and Oceania where creative ideas will be exchanged. Meet with new vendors and suppliers where the newest and best products and services will be introduced.

Fourth most famous international well-known keynote speakers will participate to the scientific programs to give lectures on the up-to-date knowledge about the recently most-attracted subjects in the field of Conservative Dentistry. More than 30 country representative speakers will give lectures in concurrent sessions. We invite researchers, clinicians, and students from all of the Asian and Oceanian countries to submit abstracts for presentation and discuss their latest findings. There will be choices to discuss serious issues with world famous speakers.

Fourth most famous international well-known keynote speakers will participate to the scientific programs to give lectures on the up-to-date knowledge about the recently most-attracted subjects in the field of Conservative Dentistry. More than 30 country representative speakers will give lectures in concurrent sessions. We invite researchers, clinicians, and students from all of the Asian and Oceanian countries to submit abstracts for presentation and discuss their latest findings. There will be choices to discuss serious issues with world famous speakers.

Consensus and Dental Tribune Middle East & Africa Edition | 1/2019

Professor Dean Hoon Chi Ngo proposed to continue organizing Conservative Dentistry societies and holding the Regional Conservative Dentistry meeting.

- ABSOLUTELY will do its best for success of ConsAsia 2019, Seoul, Korea.

How did ConsAsia 2018 come to Sharjah in the United Arab Emirates?

As mentioned above, in order to promote interests in Conservative Dentistry and organization of regional societies, Professor Dean Hoon Chi Ngo proposed the Middle East Regional Conference. Professor Hatem El Damoohany as Secretary General of the LOC for the ConsAsia 2018, Sharjah, UAE held the meeting successfully.

At first, the ConsAsia initiative was conceptualized in the KACD as a way to internationalize the academy and its member. As mentioned in the answer to the first question, although the Conservative Dentistry is a very dynamic discipline, there is no international organization, except ConsAsia, which is hosted by European Federation of Conservative Dentistry (EFC). The LOC felt the participants at the first preparatory meeting showed interests in founding an international organization of Conservative Dentistry and were very eager for a platform where they could interact and communicate with each other in education, research, and practice in the field of Conservative Dentistry.

Considering the dynamic features of Conservative Dentistry, we all need to be a part of a platform where we can meet and communicate each other and collaborate for the innovation and the future of Conservative Dentistry. The international ConsAsia scientific conference will provide academic pride and clinical excellence for scholars, researchers, students, and clinicians in the field of Conservative Dentistry, ultimately contributing to the quality of care and improving oral health in the region.

Therapy, diagnostics, prevention—what are your strategic recommendations?

As mentioned in the answer to the question, the main theme of ConsAsia is Conservative Dentistry. The path from Research to Practice to Clinical Care. Since the scope of the ConsAsia includes all the disciplines that aim to preserve teeth, there will be a significant link between dental materials and equipment and instrumentation, which can be a special interest in the object of the AOFCD. Individuals with interests in the area of Adhesive Dentistry will be accepted in the AOFCD.

The LOC will organize social/tour programs as well as well-balanced scientific programs to make your trip to Korea very fruitful and interesting. (Please refer to the recent newsletter http://www.consasia.org/newsletter/issue_181227.html)

During the days of ConsAsia 2019, the Autumn color of Korea will be fantastic. ConsAsia 2019 Seoul Meeting will be attractive to the first time, and only conservative dentistry conference where the world of Conservative Dentistry comes together. It will be a part of the frontier of Conservative Dentistry in Asia and Oceania where creative ideas will be exchanged. Meet with new vendors and suppliers where the newest and best products and services will be introduced.

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Digitalisation is changing the way we live and work. The UAE – in particular Dubai – is at the forefront of this transformation, led by the vision of His Highness Sheikh Mohammed bin Rashid Al Maktoum’s vision of Dubai becoming one of the most technologically advanced cities in the world by 2021.

The transformational influence of digital world is evident also in dental sector, with cutting-edge technology designed to make patients better – and help clinicians achieve more efficient outcomes.

Aesthetics, after all, play an increasingly important role. Studies have found that a genuine smile can help you land a job, close a sale transaction and even motivate others to perform better. In fact, recent report by the American Academy of Orthodontics, conducted on individuals who had had orthodontic treatment as adults, states that as many as 75 per cent of people surveyed have noticed positive effect of the new smile on their personal and professional life. More people than ever are realising the value of investing in orthodontic care as they are becoming more age-flexible, and they are looking younger and feel more self-assured in various situations.

Digital technologies may help more people smile with more confidence and we can certainly see the trend taking strong roots in the UAE and the wider region. In fact, digital dentistry has been a pioneer of sorts in today’s digital narrative. For example, with the advent of digital printing, dentistry is transforming the manufacturing process, assuring patients receive custom-made solutions, suited to their specific needs.

With the current focus of the UAE (especially Dubai) in ushering in 3D printing as a natural progression, expected to gain even wider acceptance in the years to come. From 3D printed vials, set to become a reality still in 2018, to the recently announced 3D Printing Institute, Dubai offers a perfect platform to strengthen advancement manufacturing using digital technologies for the dental sector. It also fits in with the industrial strategy of Dubai, whereby a significant focus is placed on customised manufacturing.

The practical application of 3D printing in the medical sector is well-documented. A report by Science Trends highlights that researchers are looking at using 3D printing as a means to create organs and other body parts, where bioprinters ‘manufacture’ tissues and organs from human cells. The pharmaceutical industry is also going full steam ahead, developing 3D pills, which can combine all patient’s medications into one personalised pill.

Digital dentistry is up to speed in this regard and the dental industry has announced plans to use 3D printing for dentistry, there is significant interest in digital dentistry, with 80 per cent of people surveyed, in Saudi Arabia, where the dental devices market is projected to grow at a CAGR of 6.58 percent by 2021.

The rise in demand for digital dentistry is driven by the cost efficiencies it can generate even for the more expensive dental procedures as by focusing growing dental providers to scale up their technologies to stay relevant in the era of fast pace changes. There is also, of course, the aesthetic value and comfort new technological advancements bring to the patients.

Most industries that are either digitally driven or disrupted have witnessed lowering the costs. Dental industry is no different. Imagine the benefit digital tools would bring to patients as well as to the clinic, as they provide better care at lower costs. This is even more relevant to the Gulf region, where insurence coverage of dentistry services is not a luxury available to all.

On the operational side, digital dentistry can help optimise processes and create more streamlined digitised workflow that covers every aspect of the patient journey – from diagnostics to planning and dental lab production as well as follow-up.

Globally, the restorative industry is set to reach US$2.9 billion by 2023, growing at a CAGR of 7.7 percent, according to a Grand View Research report. It states that growing consumption and the higher disposable income of patients are fuelling demand for cosmetic dentistry procedures and implantology. The advent of digital industry has been a key driver of this growth. Moreover, its positive impact is being reflected across the MENA region. The value of digital dentistry goes deeper than this, from helping patients get that ‘perfect selfie’ to undertaking both routine and more complex procedures, such as intraoral imaging, radiography, caries diagnosis and computer-aided implant planning, which all contribute to improved precision and accuracy.

The Invisalign system has been in the driver’s seat in adapting digital technology to achieve state-of-the-art solutions in modern dentistry. Align Technology, a global medical device company engaged in the design, manufacture and marketing of the Invisalign system, is home to one of the largest dedicated 3D printing facilities in the world, creating about 300,000 units daily of custom aligners through 3D printing and other 405 million aligners made to date. All part of the company’s global net revenues from Q1 2018, which clocked over US$456 million, come from clear aligners. Having ramped up our operations in the Middle East, we are now facilitating direct provision of our advanced suite of digital solutions in orthodontics.

Our clear aligners help move teeth without the use of braces, mini-screws or mini implants. Clear aligner technology is developed through a combination of proprietary virtual modelling software, rapid manufac- turing processes and mass customi- zation using highly innovative mate- rials. With the Middle East and Africa orthodontic supply market valued at US$66 million in 2016, the growth prospects are bright.

One area where digital dentistry has transformed dental care is the digital orthodontic system, of which Invisalign has been the pioneer for over 20 years now. Assuring quicker and higher quality results in teeth straightening with minimal inva- sion, the Invisalign clear aligners are increasingly being sought after by customers in the MENA region.

Created using 3D imaging and print- ing technology, the Invisalign sys- tem helps move teeth step by step until they reach to the correct final position. A 3D simulation treatment plan is created for every patient to ensure that the clear aligners produced are the precise fit for the individual. Each aligner shifts the teeth slightly, moving them horizontally and vertically, and even rotating them when needed.

The aligners are also engineered to use the right amount of force in the right place at the right time.

Our clear aligners are comfortable, removable, easy to clean, and made of an advanced, patented, medical grade SmartTrack material, which differentiates them from traditional braces and alternative clear aligner offerings. Suitable for teenagers and adults alike, the Invisalign system also helps address several other problems such as overbite, underbite, cross bite, crowding and gaps between teeth.

This builds on Align Technology’s role as a pioneer in the invisible or orthodontics market, a history that goes back to 1999, when the Invisi- align system was first introduced. Within the next two years, one mil- lion unique clear aligners were man- ufactured. Today, the number of us- ers has crossed over five and a half million, including 13 million teenage patients, and the system is offered in over 100 countries.

We are also driving the evolution from analogue to digital with the Trio Intraoral scanner – helping to modernize today’s practices by re- placing physical impressions, creat- ing digital treatment planning, and leveraging the potential to revolu- tionise almost every type of dental treatment offered. We believe the fu- ture of dental industry is digital.

Maintaining healthy teeth is very important for one’s well-being – un- derpinning how digitalisation of dentistry services is contributing to the all-round wellness of individuals. By offering doctors and patients our digital, end-to-end solutions, we give all a reason to smile.
Roughness and loss of substance of tooth surfaces after biofilm removal with different processing methods

By Michael Haas, Martin Koller, Behrouz Arefnia, Austria

Aim
To assess the roughness and loss of substance of tooth surfaces after instrumentation with AirFlow, ultrasonics, hand instruments and polishing methods or their different combinations. This was a pilot study.

Materials and methods
Post extraction, impacted 3rd molars were marked and stored teeth were then divided and subjected to the following treatments:

- **1A** – Airflow EMS PLUS powder at 2mm distance for 5 sec with a pressure of 1.8 bar at an angle of 45° with a wiping movement
- **1B** – Airflow EMS PLUS powder+conventional polishing with rubber cup and polishing paste of varying RDA 700>200>40
- **2A** – Ultrasonic EMS with PS instrument for 60 sec/surface, brush-stroke movements, pressure ~ 30p
- **2B** – Ultrasonic + Airflow EMS PLUS powder used as above
- **2C** – Ultrasonic + conventional polishing used as above
- **3A** – Hand scaler/ curette. On enamel scaler curved. On root Gracey curette from Deppeler blue, scaling movement per position one stroke
- **3B** – scaler/ curette + Airflow EMS PLUS powder as above
- **3C** – scaler + Airflow EMS PLUS powder + Conventional polishing as above
- **3D** – scaler + conventional polishing as above

Substance loss and roughness were assessed 2 control groups: enamel untreated, cementum untreated

Results
On enamel: Group 1: Airflow
• There are no additional benefits in conventional polishing and Airflow in comparison to using AirFlow alone
Group 2: Ultrasonic
• In comparison to Air-Flow, all other instrumentations produced small roughness values. Additional conventional polishing does not alter the overall results.
Group 3: Hand instrument
• Hand instrument scaler also causes a loss of substance in the enamel. No additional improvement by additional instrumentation with AirFlow, conventional polishing or a combination of both.

On cementum: Group 1: AirFlow
Slight roughness due to additional conventional polishing.

Conclusions
• Airflow is the most efficient solution providing maximum tooth preservation
• Repeated instrumentation, too high pressure and too long exposure times lead to high substance loss with all systems.
• Use of conventional instrumentation leads of unnecessary over instrumentation especially in use on ceramics or restorations
• Airflow is the most efficient solution providing maximum tooth preservation
• Ultrasound and hand instruments enable a stripe-shaped cleaning pattern through punctiform contact with the tooth surface. A planar pattern is achieved with AirFlow. This makes it easier to achieve a homogeneous result on large surfaces. This is much more difficult with ultrason and hand instruments and quickly leads to grooves and furrows.

Recommended treatment approach is:
• Assessment followed by disclosure for motivation
• Deep cleaning with AirFlow followed by ultrasonic if necessary
• Quality check for remaining stains, biofilm or calculus

E.M.S. Electro Medical Systems S.A.
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Mob: +41 79 569 12 14
Web: http://www.ems-company.com
Web: http://www.ems-dent.com
CEREC and Single Visit Dentistry

Interview with Dr. Khaled Ibrahim Mattar
Prosthodontist and Operational Manager Andalusia Dental Center, Jeddah, Saudi Arabia

By Dentsply Sirona

Please briefly explain how long you have been working at your clinic and your background in dentistry.
I’ve worked as a dentist from 15 years now. I joined Dr. Rizk Girgis’ clinic as a general dentist in 2005, before travelling to Saudi Arabia in 2011 to join Andalusia Dental Group in Jeddah working as a prosthodontist.

Please tell us about your specialisms within your practice?
During my early years, I worked as a general dentist. Now I focus solely on prosthodontic procedures.

What triggered your initial interest in digital dentistry?
The digital impression and CAD/CAM systems

How long have you been working with Dentsply Sirona products?
More than 10 years now.

When did you invest in your first piece of Dentsply Sirona equipment, and what was it?
The first pieces of equipment that we bought was a Cone Beam SL, Omnicam and MCXLI milling machine.

Your practice uses Dentsply Sirona products and equipment predominantly. What would you say is the advantage to your workflow and your practice by making this decision?
Ultimately it means that the end product that I am delivering to my patients becomes more accurate, faster and safer. I trust the technology and the quality of the equipment.

How do you find the CEREC workflow? From scanning, designing, to grinding/milling and sintering/finalisation.
Put simply, it’s more than perfect.

Why did you choose CEREC over other CAD/CAM systems?
CEREC is the most accurate chairside CAD/CAM system I’ve encountered. The software is easy to use and versatile, and the speed of digital impressions with the Omnicam is fantastic.

Can you explain your experience with the Dentsply Sirona sales process, from initial interest through to purchase and after sales support?
The service from all at Dentsply Sirona has been excellent throughout each stage.

What are the types of cases you do with CEREC? E.g. restoration, implantology, orthodontics.
Primarily we are focusing on crowns, onlays, crowns, veneers and implants — for now.

How has CEREC, and single visit dentistry, affected the satisfaction of your patients?
Single visit dentistry has had a significant effect on my patients satisfaction. It gives them their time back in the week, and it also helps me to have more time for additional patients.

How has CEREC and digital dentistry impacted your business?
Most importantly I save my time. I stop using impression material and I save on lab costs. Again this gives me more time to see more patients and have quality time with them and their procedures.

In your opinion, can you achieve a high return on investment with CEREC and digital dentistry?
It can certainly be achieved but you must have a turnover of patients using the equipment, which is more often than not.

What would you say was your goal with CEREC, and would you say you have achieved this yet?
I can definitely say that I’ve achieved my initial goals of saving time, increasing accuracy, and moving chairside to avoid lab costs and errors.

What do you think your biggest achievement was in your career to this point and how did Dentsply Sirona help to make that a reality?
When I was child I loved drawing, then in my faculty I loved the carving. My biggest achievement now is that I can draw and carve up to the finest of details for my cases very easily. In the past I had to go to the lab and carve the wax or build the porcelain which for me took too much time and effort, but now my dreams have come true and I can draw and carve my crowns very easily without losing my time.

I would like to say thanks to Dentsply Sirona for letting me achieve this.

Find out more about the benefits of CEREC by reaching out to your local Dentsply Sirona representative.

Dr. Khaled Ibrahim Mattar, Saudi Arabia
• Graduated from Ain Shams University (Faculty of Dentistry), 2002.
• Master’s degree in Prosthodontics from Ain Shams University, 2010.
• Advanced International CEREC course 2013 - 2018 • Certified CEREC trainer 2018.
In 1998, the London hospital dental schools at the Royal, Guy’s, St Thomas’ and King’s merged with the university of King’s College London, uniting their rich histories and legacies to lead the way in dental education and oral & craniofacial research.

The Faculty of Dentistry, Oral & Craniofacial Sciences at King’s College London celebrated the 20-year anniversary of this merger in November with a party in London’s Science Gallery, a commemorative video, and the launch of an Inaugural Lecture Series.

Professor Jenny Gallagher, Dean for Science Gallery, a commemorative video here: https://bit.ly/2ANnydo

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By King’s College London
Bluephase G4: Ivoclar Vivadent has developed the first ever intelligent Bluephase

Stylish, reliable and clever: that’s Bluephase G4 – the first Bluephase curing light featuring an automated assistance system. For even better results.

By Ivoclar Vivadent AG

Sound materials and reliable equipment are indispensable for achieving successful direct and indirect restorations. Here is something that many are not aware of: though the precision with which the light-curing process is performed also has a substantial effect on the durability of composite restorations. This is where the Bluephase G4 – the latest curing light from Ivoclar Vivadent – comes in. The fourth generation of the Bluephase family does not only look stylish but it also offers a new and uniquely user-friendly feature: Polyvision technology.

Vibration alerts users to application error

Polyvision technology enables the Bluephase G4 to detect if the handpiece is moved during the exposure process and if the restoration can no longer be cured reliably. If this happens, the light emits a vibration alert to inform the operator of the error and, if necessary, automatically extends the exposure time by 10 per cent. If the handpiece moves too much – for example the light guide slips out of the oral cavity – the light automatically switches off so that the curing procedure can be repeated correctly. The advantages for the operator are: easy handling, discreet assistance, reliable curing results and satisfied patients.

A curing light that communicates with the operator

With its automated assistance system, the Bluephase G4 represents a whole new generation of curing lights that can do both: cure reliably and communicate with their operators. The curing light offers a light output of 1200 mW/cm², polywave LED technology in a broadband spectrum of 385 to 515 nm and a 10-mm wide light guide with a homogeneous beam profile. These features allow an exceptionally efficient application to achieve high-quality results in very short times.

Bluephase is a registered trademark of Ivoclar Vivadent AG.

Bluephase G4: carefree light curing thanks to intelligent Polyvision technology

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3. At the end of the spin, Platelet Rich Plasma (PRP) is almost completely separated from the other blood cells (RBCs & WBCs).
4. PRP is then transferred through closed system into a tube having certain quantity of calcium chloride (which acts as an anticoagulant).
5. Calcium chloride converts PRP into PRF (gel) within 15 minutes, which can be used for rapid wound healing or can be transferred into PRF membrane through PRF tray within 1 minute.
6. Prizmah PRF releases growth factors or cytokines gradually on the site (VEGF, PDGF, TGF Beta, IGF etc). The expected objective of these growth factors is to accelerate the soft tissue healing.

Steps to Prepare Liquid PRGF, PRF Gel & PRF Membrane for Dentistry

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3M Oral Care Dental Programme Highlights

Impressions from the 3M Oral Care Symposium dental programme which took place in Abu Dhabi on 04-05 October 2018. Over 200 dentists and orthodontists attended.

Robert Nichols, Managing Director at 3M Middle East and North Africa opened the symposium with an overview of 2018.

Walid Feghali, General Manager at 3M Health Care Business Group during the introduction of the 3M Oral Care Symposium.

Dr Samer Aouad, Division Manager - Oral Care Solutions Division Gulf region introducing the speakers.

Prof Ivo Krejci, Switzerland lectured on Dental Fitness - A modern type of Dentistry aimed to keep the patient in good oral health.

During the questions and answers session, a large number of delegates stayed behind to get more information from the speakers.

Prof Louis Hardan from Lebanon presented a masterpiece workshop on Composites.

The 3M Oral Care team was the driving force behind the success of the symposium.

Dr Rasha Ahmed - Scientific Affairs Manager was the conference programme chair

Dr Galip Gurel, Turkey was the keynote speaker of the symposium lecturing on his famous The State-of-the-Art in Aesthetic Dentistry.
THE COMPACT MAKES A BIG CHANGE

To help any user of air driven handpieces convert to electric and enjoy the full benefits of its high functionality. A big change in treatment environment is brought with only a minor addition to the current equipment in your office.

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Dr. Verena Freier, Dentist

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Innovation requires commitment to ambition: Primescan sets new standards in dental technology, making scanning more accurate, faster and easier than ever. It is engineered to enable all kind of treatments, from single tooth to full arch. Primescan produces highly accurate images and allows for fast scanning consolidating 50,000 images per second. The new patented “High Frequency Contrast Analysis” delivers perfect sharpness and an outstanding accuracy. With Primescan, intraoral scanning delivers excellent results like never before.

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Learn more at: dentsplysirona.com/primescan
How to give a second life to third molars: A case series with follow-up

By Drs. Pio Bertani & Paolo Generali, Italy

Introduction
Dental autotransplantation entails extracting and repositioning a tooth into a different site in the mouth of the same patient. A successfully transplanted tooth offers several advantages, given the preservation of the periodontal ligament, the proprioceptive function is maintained, the alveolar bone volume is preserved, orthodontics can be included in the treatment plan, and the dentoskeletal development and growth of the jaws are not impaired. Moreover, pulp regeneration and continued root development can be expected when the donor tooth with incomplete root formation is chosen and infection of the pulp tissue is prevented.1

History
Tooth transplantation has been carried out for centuries. The earliest reports of tooth transplantation involve slaves in ancient Egypt who were forced to give their teeth to their pharaohs. In the late eighteenth and early nineteenth century, transplants of teeth between people were relatively common at specialized dental practices in London. Surprisingly, tooth allografts have been found to last six years on average in Scandinavia during the 1950s and 1960s. Autotransplantation of teeth began to be carried out under increasingly controlled conditions.2

Success and survival rates
The success of autogenous tooth transplantation depends on the vitality of the periodontal ligament. High success and survival rates have been reported for autotransplantation if proper case selection is done and a proper surgical technique is used. A prospective study by Meier et al. reported a cumulative survival rate of 88.4% over a four-year follow-up, while other studies have reported survival rates ranging from 70% to 90% for up to ten years of follow-up.2 The success and survival rates reported are similar or even better than those of implants.

Indications
The first permanent molar is very prone to caries because of its anatomical structure, with deep pits and fissures, and early eruption in the mouth. They sometimes need to be restored very early, and the standard of care is often suboptimal. Therefore, in adolescents, it may happen that they become chronically infected and root resection is mandatory, but the patient is often too young for an implant or a three-unit fixed dental prosthesis. Waiting means mental migration of the second and third molars, and perhaps extraction of the maxillary molars. Even worse, space maintainers have a high failure rate. Consequently, hopeless first molars in young patients are among the most suitable and most frequent indications for third molar autotransplantation. Indicators include compromised or non-restorable second molars and another indication. Autotransplantation from premolars to lateral or frontal regions is a procedure that has been in use in the Scandinavian countries since the end of the 1950s. This technique can be used also in the case of ectopic mandibular canines.

Preoperative factors
Favourable prognostic factors include a young age (15–23 years old), a donor tooth with an open apex and root length ranging from two-thirds to complete development, possibility of traumatic extraction and repositioning of the donor tooth (root morphology, position and size of the crown), suitable recipient site conditions (absence of inflammation, and good bone volume and quality).

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XP Endo® Shaper
Adapted to Nature
Single-file system
Shape memory alloy
Adaptive Core
Preserves dentine, easy and safe

ENDO DONE!
CLINICAL CASE 1

Employment of a suitable protocol (traumatic technique, minimal extranasal time; type of stabilization, adequate follow-up, and timing of the eventual endodontic treatment). The key factor is the healing of the periodontal ligament. Periodontal ligament remnants on both sides of the wound are a favourable condition. Transplantation of a tooth into a newly created socket means that periodontal remnants are only on one side, the one without vascularisation, and so the likelihood of success is reduced. The ideal recipient site should be free of inflammation, but a hopeless tooth scheduled for extraction often presents with a periapical lesion.

The authors’ opinion is that a balance of peroperative factors should guide the practitioner in making the best clinical decision. When most prognostic criteria are met, such as young age, good general health, shape of the third molar roots, keratinised tissue and ease of extraction, the presence of inflammation at the recipient site can be tolerated. This approach is suggested by Shin et al., while Niederau et al. suggest extraction of the dislocated tooth two weeks before transplantation. This approach, however, multiplies the costs and discomfort. If the balance of peroperative factors is positive, the authors of this paper prefer to carefully extract hopeless tooth and transplant the donor tooth immediately after bleeding has stopped.

Technique

Dental alveolus transplantation is effectively a planned avulsion and replantation in the least traumatic way. Local anaesthesia is administered and prophylactic antibiotic administration is also recommended. Preparation of the recipient site includes extraction of any root remnants and debridement, and then the donor tooth is anatomically extracted. A loose fit of the transplanted tooth in its new socket is generally recommended. In some cases, when the donor teeth fit is satisfactory, no further preparation of the new socket is required and the donor tooth is directly placed into the tooth extraction socket. If this is not the case, an anatomical preparation of the new socket using surgical drills or implant drills is performed. The transplanted tooth is then tried in the recipient socket and relative adjustments are made if needed. In the meantime, the tooth is kept in the donor socket or in saline solution. The transplanted tooth should be placed slightly below the occlusal plane. Once proper fit and position have been achieved, the transplanted tooth is fixed with horizontal mattress sutures crossing over the occlusal plane. Postoperative care consists of oral hygiene and dietary instructions; a recall appointment is usually scheduled for after seven to 14 days for the removal of the sutures.

Follow-up

The transplanted tooth is positioned in infraocclusion, and eruption occurs during healing. Subsequently, the tooth makes contact with the opposing teeth. This is a sign of periodontal healing. In not entirely successful cases, a partial alveoloplasty develops, preventing the eruption. Some restorative work may be needed to take care of the occlusion and eventually of proximal contacts. A complication is root resorption with roots. While in these uneventful cases, most often the tooth is functional for many years, and eventually an optimal implant site develops. In teeth with open apices, after the transplant, the root formation will continue and the root maturation will lead to the obliteration of the pulp, which can be observed on radiographs as part of the healing process. The tooth remains vital, but not sensitive, except for the prosthesis of the periodontal ligament. Clinically, a recall is needed at one week to check eruption stability. At two weeks for suture removal, after two to three months for endodontic treatment, at six months, at one-year for radiographic follow-up, and at two years for radiographic follow-up.

Case series

Clinical Case 1

A 47-year-old male patient in a good medical condition and a non-smoker was referred to our dental practice for endodontic retreatment of the right maxillary second molar. The dental history revealed that the tooth was endodontically treated three months before because of acute pulpitis. After the treatment, the patient complained of pain on chewing. Antibiotics and a non-steroidal anti-inflammatory drug were prescribed, but the pain remained. After a month, a sinus tract appeared. The tooth was retreated in another practice without success. The clinical inspection revealed the presence of a sinus tract near the apical region of tooth 77. The tooth had been prepared for a full crown, but was without even a temporary crown, and the access cavity had been closed with temporary filling material. Crevices were evident on the buccal and mesial surfaces. Periodontal probing showed a deep pocket (>15 mm) on the distal aspect of the root trunk (figs. 1 & 2). The periapical radiographs showed a radiolucency between the roots of the second and third molars. The radiographic appearance of the endodontic treatment was good, without clear evidence of periodontal radiolucencies (fig. 3). A perforation of the pulp chamber floor was suspected. A CRCT scan was performed (figs. 4-7), and it confirmed the suspicion of perforation, along with the presence of a large periradicular radiolucency and an unerupted root apex.

The treatment plan was discussed between the authors of this paper. According to the prognostic classification of Grönvall and colleagues, it was a tooth with a modified anatomy due to previous endodontic treatment with a 41.5% possibility of successful retreatment. The prognosis is dependent on the presence of bacterial infection of the perforation site, and successful treatment depends mainly on immediate sealing and

CLINICAL CASE 2

Fig. 33a: Pre-op panoramic.
Fig. 33b: Immediately after transplantation.
Fig. 33c: One year recall.
Fig. 33d: Twelve year recall.

Fig. 34a: Pre-op.
Fig. 34b: Teeth #39 positioned in extraction site #47.
Fig. 34c: Extracted, fractured tooth #47.
Fig. 34d: Control after one month.
prevention of infection, perforation of the furcational region of molars is especially troublesome because this causes considerable mechanical damage. In this case, bacterial infection had been present for almost one year. The prognostic factors did not recommend any initial attempt, and the surgical option was ruled out because of anatomical considerations. However, the root morphology, position and size of the crown, good bone volume and quality, and possibility of traumatic extraction and repositioning of the donor tooth recommended endodontic and transplantation of the adjacent third molar. After a discussion with the patient, a detailed informed consent form was signed and the procedure was scheduled.

After local anaesthesia with 2% mepivacaine with 1:80,000 adrenaline, the right maxillary second molar was traumatically extracted. Initially with a size 15 surgical blade, the periosteum was realized and then the tooth was extracted after separating the roots to avoid unnecessary trauma to the alveolar bone. Then the donor right maxillary third molar was extracted after periosteum as described and transplanted into the adjacent site. Because of the slight differences in the root anatomy, it was necessary to remove the intracoronal bone septum of the receiving site to allow tooth positioning and a model of the donor tooth crown was performed to maintain it in orientation. An antibiotic (amoxicillin/clavulanic acid, 1 g, by mouth twice a day for five days) was prescribed, along with rinses with 0.12% chlorhexidine. The tooth was kept stable with sutures (Fig. 9). A periapical radiograph was taken (Fig. 9). At the suture removal after two weeks, the tooth showed good stability, and positive adaptation of the soft tissue was observed (Fig. 10). At four weeks, the tooth was stable and the soft tissue looked healthy (Fig. 10). The patient did not show any adverse effects and stated that the tooth was fully functional. Examination of the avulsed second molar showed the extent of the perforation (Figs. 12 A & B).

Clinical Case 2
The left mandibular second molar of a 33-year-old female patient had been compromised because of a vertical root fracture and a large periapical lesion was present. After examination and informed consent, the treatment was scheduled. The right mandibular third molar was preferred as a donor to the left mandibular third molar because of a more compatible anatomy and for an easier stabilization. After local anaesthesia of both the donor and the recipient sites with 2% mepivacaine with 1:80,000 adrenaline, the left mandibular second molar was extracted and the alveolus debridged. Then the donor tooth was traumatically extracted, quickly repositioned in the recipient site and stabilized with sutures at about 1.5-2.0 mm of infrabone. An antibiotic (amoxicillin/clavulanic acid, 1 g, by mouth twice a day for five days) and a non-steroidal anti-inflammatory drug (ibuprofen, 600 mg, by mouth twice a day for five days) were prescribed, along with rinses with 0.12% chlorhexidine. The sutures were removed after two weeks and the endodontic treatment was performed after two months. The tooth was still in function after 11 years (Figs. 16 A-D).

Clinical Case 3
A 23-year-old female patient presented with a vertical root fracture of tooth #47. Tooth #48 was transplanted to site #47. The tooth was fully functional after eight years (Figs. 17 A-D & 18 A-D).

Conclusion
The advantage of autotransplantation over implants is that it is a biological replacement, in which a vital periodontal ligament remains. This makes it possible to move a transplanted tooth orthodontically after the operation and to effect bone regeneration if necessary. In contrast to implants, a transplanted tooth normally erupts in harmony with the neighbouring teeth during further growth and development. The surrounding gingiva and interdental papillae are thus retained. Autotransplantation can be considered an established treatment option with very high success rates. In addition to moving developing teeth, the autotransplantation of fully formed teeth could be considered an alternative to implant placement when suitable donor teeth are available.

Dr. Paolo Bertoni obtained his MD from University "La Sapienza", Rome, Italy, and his DDS from University of Perme, Italy.

Dr. Paolo Genovese obtained his MD from the University of Perme in Italy in 1993 and DDS from the University of Perme in 1997.

Fig. 20: Tissue removed from the endodontic space three months after transplantation (H&E stain, 2× magnification).

Fig. 21: Tissue removed from the endodontic space three months after transplantation (H&E stain, 4× magnification).
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The new Propex IQ® apex locator from Dentsply Sirona

Cutting-edge technology for more efficient root canal treatments

By Dentsply Sirona

With Propex IQ®, Dentsply Sirona is now launching the first apex locator on the market that can be combined with a smart handpiece—the X-Smart IQ®—and that can be fully integrated into an iPad platform—the Endo IQ® application. The apex locator offers clinicians the latest technology for root canal treatment to the highest standard.

In root canal treatments, it is important to work with extreme accuracy and precision. For every root canal that needs shaping, the dentist must determine the working length. The new Propex IQ® apex locator from Dentsply Sirona Endodontics brings state-of-the-art technology to endodontic practice. The accurate and reliable detection as well as the visualisation of the progression of the endodontic file in the root canal, which can be compared to a parking sensor in the car, provide security for the dentist and enable him to focus more on the patient.

Propex IQ® offers the most comprehensive package of tools when the apex locator is used together with the X-Smart IQ® handpiece and the Endo IQ® application. It is a complete ecosystem where Endo IQ® is the core and Propex IQ® and X-Smart IQ® are the functional supplements. When the devices are used together, they allow clinicians to customize individual settings before the treatment of the canal they want to treat. If the feature ‘Shaping Target’ is activated, the X-Smart IQ® handpiece automatically changes the motions of the file and reverts them back. A further advantage—when using the app—clinicians can monitor the progression of the file on the tablet throughout the full course of the treatment.

Digital technologies can bring real added value to clinicians in endodontic practice today,” says Valetta Barbat, Group Vice President Global Endodontics, Dentsply Sirona. “At Dentsply Sirona we are pleased that our new Propex IQ® apex locator combines latest technology with our many years of experience in endodontics. This way, we help clinicians to treat the root canals even more efficiently and accurately.”

With a weight of just 80 grams, the apex locator is lightweight and portable. The device can be placed on the tray during treatment. Propex IQ®, X-Smart IQ® and Endo IQ® can be used together for 16 treatments without having to recharge the batteries. The smart handpiece is ergonomically shaped and meets the highest demands of everyday practice. It is connected to the apex locator with a cable. The communication to the Endo IQ® app takes place wirelessly. Firmware upgrades for using the Propex IQ® apex locator and X-Smart IQ® handpiece are fully integrated into the Endo IQ® application and can be easily installed by updating it. Propex IQ® can also be used modularly, without the smart handpiece and the app.

For more information about the Propex IQ® please contact your local Dentsply Sirona representative.
The many characteristics of a long-term hybrid abutment crown

Viteo Base is the basis for the production of implant-supported single tooth restorations

By Marie Reinhardt, Liechtenstein

This article presents the new titanium bonding base Viteo Base for implant-supported single tooth restorations. The prefabricated prosthetic component is available in two diameters: MD (Medium Design) and SD (Small Design). In the present case, the working steps involved in producing a pressed implant crown and the advantages of the Viteo Base will be shown.

Implant prosthetics is an ever growing segment. It is becoming more and more popular to close single tooth gaps with an implant and the corresponding restoration in order to preserve the surrounding tooth substance. Modern prosthetic concepts and state-of-the-art materials enable the fabrication of functional and aesthetic restorations. Titanium bonding bases unite the advantages of a prefabricated component with those of a custom-made abutment. In a comparatively simple manner, the natural oval shaped emergence profile of the tooth is adapted to the round emergence profile of the implant. The design of the restoration and its connection to the underlying titanium bonding base are ultimately the elements which are essential for the success of the restoration.

Many characteristics, specifically incorporated to enhance the restoration material

With the new Viteo Base, the dental technician is provided with a titanium bonding base which ideally complements press and CAD ceramics (Fig. 3). This has numerous advantages, which will be discussed further throughout this article. The special soft edge design without sharp edges and protrusions, the recessed rotation protection and the precondtioned bonding surface of the titanium bonding base are responsible for these benefits. The connection between the titanium bonding base and the implant is certified and co-ordinated with the most commonly used implant systems. Viteo Base is available in two diameters: MD (Medium Design) and SD (Small Design). The chosen implant system determines the diameter to be used. Information on which implant system is suitable for which Viteo Base, which scan abutment is to be used, which restoration material can be applied and which Viteo Base components are available, is provided in a special combination table. This is available on the Ivoclar Digital website.

Shortening from 6 to 4 mm

Depending on the prosthetic situation, the Viteo Base can be shortened from 6 mm to 4 mm. This is carried out easily using a separating disc. A special tool, the Viteo Base Trimmer, restores the soft edge design (rounded design for even force distribution) after the shortening process. The following case study illustrates this procedure. A hybrid abutment crown is produced using the press technique in the usual manner. The crown is created in wax on the titanium base according to the respective clinical situation, then converted into press ceramic and cemented to the Viteo Base before being screwed into the patient’s mouth.

Starting situation in the laboratory

An osseointegrated implant in region 46 required a full ceramic crown. The soft tissue was optimally shaped during the healing phase with a temporary restoration (Telio CAD). This was the ideal preparation method for an implant-supported crown made from IPS e.max Press. A screw-retained crown was selected in order to avoid any risk of marginal cement. The master model was produced from the implant impression. A gingival mask was created to allow an exact assessment of the soft tissue situation and the emergence profile. The press technique was selected for this case, which meant that the modelled tooth shape and the occlusion could be transferred directly into the ceramic. In order to benefit from a high degree of material strength and good aesthetics, a monolithic restoration was selected.

Preparation

The titanium bonding base Viteo Base was chosen according to the implant system in size MD, then placed on top of the laboratory implant and screw-fixed with a torque of approx. 5 Ncm (Fig. 2). The recessed anti-rotation protection (vertical groove) was positioned distally in the jaw for the production of the restoration. The Viteo Base can also be positioned in a mesial direction. The recessed anti-rotation protection is located vertically throughout the entire length of the shaft. It ensures that the titanium bonding base is situated correctly when it is cemented to the restoration material and it acts as a “guide”. In addition, the minimum thickness of the restorative can be maintained, the cement gap is even throughout the restoration. Stress can therefore be avoided.

The space available in relation to the antagonist tooth was ideal for the full ceramic crown supported by a 6 mm titanium bonding base (Fig. 3). In other cases, it may be necessary to reduce the height of the Viteo Base to 4 mm with a separating disc. The shaft height must be no less than 4 mm. This is laser-marked on the abutment shaft.

The Viteo Base Press Sleeve, a modelling aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a Viteo Base Press Sleeve, a moulding aid made from acrylic, is used to support the wax crown. The adhesive surface of the titanium bonding base is preconditioned, which means it is too rough for the wax to be applied directly. This is where the Viteo Base Press Sleeves come into play. As with the titanium bonding bases, they are available in two sizes (SD, MD). In this case the sleeve diameter was size MD, to suit the selected Viteo Base (Fig. 4). The Viteo Base Press Sleeve was then shortened with a
Transferring the wax crown into ceramic

Lithium-disilicate glass ceramic IPS e.max Press is well proven for good press results in ceramic: High strength of 470 MPa, exceptional esthetics and excellent light-optical properties ensure a life-like restoration. The polychromatic press ingot IPS e.max Press Multi, with lifelike graduating colour and translucency from the dentin structure to the occlusal surface, gives monolithic restorations the desired aesthetic appearance. In general, after pressing, the restoration only requires glazing or it can be customized with the IPS Ivocolor stains.

The versatile Press Multi ingot

The IPS e.max Press Multi ingot has significantly more chroma in the lower region than in the upper third. A special spraying technique is used in order to ensure that the ingot’s colour layers are in the correct position on the crown after pressing. For this purpose, the pressed crown was connected to the side of the ring base. Instead of wax rods, a prefabricated precision wax pattern (IPS e.max Press Multi Wax Pattern) was used. The wax crown was positioned vertically centered to the wax pattern and attached at the mesio-buccal side, so that an optimal colour graduation could be achieved in the visible area (Fig. 10). The crown was sprued onto the 200 g IPS Multi ring base. The occlusal surface of the wax crown was pointed towards the bottom of the ring base. The spuer position was checked with the IPS Multi Sprue Guide 200 g (a type of template) (Fig 11).

New investment material used

The object was invested using a new investment material IPS PressVest Premium. After mixing, investing and setting, the ring was placed in a preheating furnace (850 °C) for 60 minutes. The press ingot (IPS e.max Press Multi, shade A 3.5), the disposable plunger and the aluminium oxide plunger (IPS e.max Press Multi One Way Plunger and IPS Alox Plunger) were then placed into the preheated furnace (Fig. 12). The ingot and the plungers were not preheated. After placing the assembled press ingot into the preheated press furnace (Programat EP 600), the pressing program was started. After pressing, the ring was removed from the furnace and allowed to cool slowly (Fig. 13). Using glass blasting beads, the ring was first diverted (4 bar pressure) and then finelly (2 bar pressure).

Trying-in the hybrid abutment crown in the mouth

Before the ceramic crown was permanently cemented with the Viteo Base, there was a clinical try-in. The two parts were temporarily attached to each other with a thin flowing impression silicone (Virtual Extra Light Body Fast Set). The titanium bonding base was screwed to the laboratory implant. In this case, the Viteo Holder made the handling easier.

The ceramic structure was then placed correctly on the Viteo Base and the position was marked with a water-resistant pen. The two parts were then separated from one another and cleaned with the steam jet. Then the screw channel of the Viteo Base was closed with the Viteo Screw Channel Pin. The silicone (Virtual Extra Light Body Fast Set) was applied to the adhesive surfaces of the Viteo Base and the pressed ceramic structure. Both objects were then reconnected into the correct, previously marked position (Figs 13 to 15). Excess material was carefully removed with an instrument after the silicone had set (Fig. 17).

The try-in confirmed the good fit

In the clinical try-in, the dentist checked the emergence profile, the proximal contacts and the occlusal surface of the crown. The try-in in the patient’s mouth confirmed the good fit of the restoration. Note: The light-optical properties cannot be assessed during the try-in. Finally, the ceramic is still matt at this time as it is still unfinished. Secondly, the permanent luting composite (Multilink Hybrid Abutment) has different degrees of translucency, through which the Viteo Base visually “disappears”. Regardless of these limitations, it was apparent that IPS Ivocolor stains would be needed to optimally adjust the shade of the crown’s occlusal surfaces to adapt to and harmonize with the surrounding teeth.
Finishing the crown/individualization

The pressed IPS e.max crown was stained with the universal stain and glaze range of IPS Ivocolor (Fig. 18). A warm colour was applied to the central fissure to give the impression of depth. The cusps tips were accentuated with white (Fig. 19). A wash of blue stain was gently added to the initial area to intensify the translucency of the crown. After the stains had been fired, the IPS Ivocolor Glaze Paste was applied to the crown and Glaze firing was carried out. The contacts were then checked again in the articulator.

Permanent cementation of the prosthetic implant restoration (Fig. 20)

The cementation process of a ceramic crown and titanium bonding base is a delicate working step which requires high precision. Since the Viteo Base is already preconditioned, it does not have to be sandblasted before cementation. This saves one working step and therefore saves time. Nevertheless, this does not apply if the abutment was shortened.

The shortened surfaces have to be re-sanded in order to achieve an ideal bond and a good marginal seal. In this case, however, the Viteo Base was used with a 6 mm shaft height and was not shortened. The titanium bonding base was immediately cleaned in the ultrasonic bath and then additionally steam cleaned. In doing so, all wax residue and other impurities could be removed thoroughly prior to the bonding procedure. A uniform matt surface colour showed that the drying and conditioning process was successful.

As with the temporary placement procedure, the titanium bonding base was cemented on the laboratory implant and placed in the Viteo Holder for easy handling. The ceramic object had been previously marked with a water-resistant pen for correct positioning and subsequent bonding with the Viteo Base.

The universal primer Monobond Plus ensures optimal bonding to the metal. It was applied to the bonding surface of the Viteo Base and allowed to act for 60 seconds (Fig. 25). Any excess was dried with oil-free compressed air. Etching gel was applied to the bonding surface of the ceramic object (IPS Ceramic Etching Gel) (Fig. 22), then the area was thoroughly rinsed and dried. Next, Monobond Plus was applied to the ceramic surface and allowed to act for 60-seconds. Any excess was blown away. Alternatively, the innovative single-component primer Monobond Plus & Prime can be used here. Etches and silanizes the glass ceramic surfaces in one working step. Before cementation, the screw channel had to be closed in order to prevent composite residues from falling into it. The Viteo Screw Channel Pin was used for this purpose. For easier handling, this was shortened and then inserted into the Viteo Base screw channel.

The IPS e.max Press ceramic structure was bonded to the Viteo Base using the Multilink Hybrid Abutment self-curing luting composite, which is specially designed for the permanent cementation of ceramic structures to titanium/titanium alloys. It is available in two levels of translucency. In this case we used the version with a higher degree of opacity (SD 01) (Fig. 23). The Multilink Hybrid Abutment composite was applied to the bonding surface of the Viteo Base and to the inner surfaces of the ceramic object. Thanks to the previously applied pen mark, both components could be easily placed in the correct end position. The restoration protection, which runs along the entire length of the shaft, acted as a guide.

Both components were firmly pressed together for five seconds. Any excess composite – a gel-like consistency – was removed with an instrument during the setting phase (Fig. 24). The application of Liquid Strip glycercine gel on the joint prevented an inhibition layer from forming during setting. After seven minutes, the glycercine gel was rinsed off with water and the Viteo Screw Channel Pin was removed from the screw channel. Finally, the joint was carefully smoothed over with a fine rubber polisher at low speed (4,000 rpm) and gentle pressure. In order to leave the connection to the implant as untouched as possible, it is advisable to leave the Viteo Base in the Viteo Holder, or at least screw it onto a laboratory implant. The restoration was polished with goat hair brushes and universal polishing paste (Fig. 26). A smooth and homogeneous surface is important, so that the gingiva can adapt properly to the restoration.

Inserting the prosthetic implant restoration

The assembled and cleaned hybrid abutment crown was prepared for insertion in the mouth. It is advisable to autoclave the hybrid abutment crown prior to intraoral insertion. The temporary Telio CAD restoration in region 46 was removed by the dentist, the implant lumen was washed (Cervitec Liquid) and the peri-implant tissue (emergence profile) was examined. The crown was screwed to the implant using the originally packed Viteo Screw. It was tightened according to the torque specified by the manufacturer. By screwing the crown in place instead of cementing it, the risk of cement residues in the peri-implant area could be excluded. The screw channel in the occlusal area was sealed with the light-curing esthetic composite IPS Impress Direct.

The restoration adapted harmoniously to the surroundings in the mouth in terms of its shape, shade and function. The emergence from the soft tissue corresponded to that of the natural dentition thanks to the prepared emergence profile and the individual design of the structure (basal).

Conclusion

Ideally coordinated with ceramic materials

The Viteo Base is ideally suited for use with ceramic materials. It helps to avoid chipping problems, the lack of or weakness of a bond or inadequate force distribution. One of the advantages of the Viteo Base is the special soft edge design without sharp edges and protrusions, which on one hand strengthens the restoration material and on the other hand provides optimal force distribution under pressure.

The preconditioned, in other words sandblasted surface saves an additional working step and therefore saves time. In combination with the appropriate composite system, it ensures a secure connection of the titanium base and the restoration material. This is a key factor for the longevity of the restoration and its integration into the oral environment. Due to the industrial preconditioning the surface of the Viteo Base is very uniform. Together with the appropriate composite (e.g. Multilink Hybrid Abutment), it ensures a permanent marginal seal.

The recessed rotation protection means the cement gap is very even. Compressive or tensile stresses are avoided. The restoration material is strengthened.

In addition, the Viteo Base’s shaft height can be easily adjusted to suit the prosthetic restoration. It can be shortened from 6 mm to 4 mm. As a result, optimal support of the restoration material is achieved by the titanium bonding base. The restoration material and the Viteo Base together form a coordinated unit and are the basis for clinical success.

In the production of an implant-supported single-tooth restoration, the Viteo Base components enable a smooth manufacturing process. In this present case, a hybrid abutment crown was produced in IPS e.max Press using the press technique. The ceramic crown, produced in the conventional manner, was cemented to the Viteo Base. The recessed rotation protection acted as a guide. An ideal bond was achieved with the appropriate materials for conditioning and placement. The hybrid abutment crown was screwed in place in the mouth. It fits harmoniously into the overall appearance of the mouth.
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Interview: “It is not magic—it is not going to make the diagnosis for you...”

By Dental Tribune MEA

The Ortho Forum Dubai 2018 took place from 06 to 08 December 2018 at Palazzo Versace, Dubai, UAE.

Dental Tribune had a pleasure to ask the key speakers of the Ortho Forum Dubai 2018 about the Damon System.

Could you please share more about yourself?

Dr Firas Hamzeh: I am simply an orthodontist working in a private practice in Dubai, who has a special interest in digital orthodontics and all the new concepts in orthodontics. I am always willing to give the best treatment options to my patients. Over the past few years, I have become an educator for Damon System and Insignia and I started spending more time educating other doctors and sharing my clinical experience with them.

Dr Bill Dischinger: I am a licensed orthodontist in the United States of America and I received my certification in 1999. I have two private orthodontics practices in the northwest area of America. I also teach at the University of the Pacific’s Orthodontics Department in San Francisco.

Dr Matias Anghileri: I am from Buenos Aires, Argentina. I am married to a dentist and we have been together since our first year at university. We have two kids, aged 6 and 8. I have been a full practice orthodontist for the past 16 years. I am the third generation of dentists in my family and I enjoy my work every day in my office, as well as my work as an educator.

When did you first hear about the Damon System?

Dr Hamzeh: It was in 2003 and I started using the Damon System in 2004. A few years later I became an exclusive Damon user.

Dischinger: I first heard about the Damon System—as presented by Dr Firas Hamzeh—during my residency in 1999. It was an amazing paradigm shift with regards to my way of thinking about orthodontics. Anghileri: It was 15 years ago at a conference. I was 3 years ago at a conference. I was completely amazed by the system and its results.

What prompted you to provide it as a solution in your practice?

Hamzeh: It is the quality of treatment that we got at the end and the entire Damon System philosophy that made me change my mindset of how I was treating my patient. I especially like the concept of using light forces, reducing the number of extractions in my practice and the quality of the finishings.

Dischinger: Immediately after hearing Dr Hamzeh talks about his system, I decided that it was how I was going to treat my patients. From the viewpoint of pure biology—of how to move teeth in a healthy, non-invasive manner—the system just made sense to me and I wanted to use that effect in my practice.

Anghileri: I felt that by using the Damon System I was going to provide better results to my patients in a shorter time.

Could you explain what Damon Braces are?

Hamzeh: I do not call them Damon braces, in fact, I call it the Damon System. I do not deal with the braces as a new product or as a new bracket with special features—it is a philosophy and a new treatment concept. If we use the Damon braces, we should use the Damon protocol and the Damon mechanics, because if we use the Damon braces with traditional or conventional mechanics, we will not obtain the results we are aiming for. With the Damon System, we apply very light forces to the teeth that are very close to the physiological forces. Considering both aesthetics and functionality at the same time, we reduce the treatment time with less discomfort. One more point worth mentioning is that we do not only treat teeth and jaws, we treat faces, which is why we call it "face-driven orthodontics".

Dischinger: Damon braces are a type of brace that holds the wire in place using a gate or a door system rather than the wire having to be "tied into" the brace. By doing this, the amount of friction that the brace and the wires have within their system is reduced. If the system has less friction within it, then the wires do not have to be so strong or have to apply as much force to move the teeth, since they do not have to overcome all that friction. It is kind of like moving furniture on a carpet, compared to moving furniture over hardwood or tile flooring. Think about the force you would need to push the furniture across in each of those instances.

Anghileri: Damon braces are, from my point of view, a turning point in modern orthodontics. Undoubtedly, self-ligating brackets are the present and future of orthodontics. Since the launch of the first version in 1996, we have seen that every company has developed this type of bracket.

What are the main advantages of the system?

Hamzeh: The main advantages of the Damon System are a reduction in treatment time with less sessions and a reduction in the number of extractions. No headgear or expanders are required (as with traditional braces) and the improved aesthetics and functional results of the system.

Dischinger: As mentioned above, the force required to move the teeth with the Damon System is much lower than with traditional braces. This leads to less inflammation within the teeth, bone and gums, which allows the teeth to move more efficiently, with little or no damage done to the body during the process.

The teeth hurt less with this process (I know as I have had both types of braces in my mouth). This leads to a healthier, more biologically sound way of moving the teeth, in my opinion.

Anghileri: Well, I think in your question is the answer. It is not just a bracket with a door. It is a system with three pillars—the three main concepts of the Damon philosophy—using low forces and prioritizing facial features, using high technology Copper NiTi archwires and finally, the solid bracket with more than 20 years of evolution behind it.

What is the main difference between the Damon System and other traditional braces?

Hamzeh: A lot of the mechanics are different from traditional braces, but the main difference lies with the philosophy of the Damon System. For example, with Damon System braces we use very light elastics from light wires from the very beginning, which we cannot do with traditional braces. We also use variable torque for the front teeth—based on each individual’s case—which we cannot do with traditional braces.

Anghileri: We have to understand that the biology is always the same. A bracket or a system will not change that. However, I see the same positive results every day in each and every one of my patients, teeth move faster and healthier, because of the low forces acting on them. The treatments turn out to be simpler and more comfortable for the patient—with reduced treatment time.

What are the overall results of using the Damon System in a practice, not just clinically, but also in terms of patient loyalty?

Hamzeh: Using the Damon System improves the entire patient journey during their orthodontic treatment. You will also end up treating more patients, because you spend less time and less sessions on the treatment, which affects the practice’s productivity, allowing the orthodontist to treat more and more new patients, which would result in a better reputation.

Dischinger: When we explain the Damon System process to patients, it just makes sense to them. They often ask us why it is that everyone does not use this system. Our answer is that it is more expensive than traditional braces and there is a learning curve required to get comfortable and knowledgeable in using the system because of these reasons, some doctors are hesitant to change. We have many patients coming to our office, because they are searching for a more natural way—a healthier way—of moving teeth or they have heard of the Damon System or have done research on it online. It has helped our practice to be known as one of the foremost Damon System practices in the world.

Anghileri: Many patients come to my clinic asking for the Damon System, because they have seen the results on other former patients. When they start a Damon treatment with me, they know there is a guarantee of success.

What would you say to your colleagues who are hesitant about using the system?

Hamzeh: I would encourage every orthodontist to use the Damon System, not with the same conventional mechanics that were used before. Follow the Damon System’s treatment protocol and use its mechanics and compare the results and treatment time with previous results. Of course you cannot apply it only to a few cases, you need to treat more and more Damon cases. We keep learning from our mistakes and the mistakes of the others, which is also why we attend the Damon courses.

Dischinger: Look at the biology of moving teeth. We are in the health care world and we need to do everything we can to move teeth in the most efficient, healthiest way we can. Take courses that teach you how to use the system and try some cases with it. You will immediately see the difference in how the teeth move, in the comfort to the patient and the overall efficiency of the cases being treated. Do not be afraid to make a change.

Anghileri: It is not magic—it is not going to make the diagnosis for you—but I can assure you that if you are a good orthodontist, with the Damon System in your hands, you are going to achieve wonders in your patients.
Six keys to effectively using alveolar corticotomy
A different perspective on surgically assisted tooth movement

By Dr Raffaele Spena, Italy

Introduction

Alveolar decortication (corticotomy) has long been used with orthodontic treatment in order to accelerate orthodontic tooth movement (OTM) while reducing the undesired effects of root resorption, loss of vitality, periodontal problems and relapse of the corrections. The acceleration of tooth movement should shorten the therapy. However, the scientific and clinical assumptions of the early days were totally different from the more recent ones: we moved from a pure mechanical approach to a biological and physiological one.

In 1983, Suya proposed a great improvement of the surgical approach described in 1959 by Kole modify- ing the horizontal osteotomy in a corticotomy, avoiding the alveolar crest in the vertical cuts and elimi- nating the luxation of the blocks. He proposed this “corticotomy-facili- tated orthodontics” to treat adult pa- tients, angled teeth and crowded malocclusions to avoid premolar extractions. Like Kole, Suya believed he was creating bone blocks and suggested accomplishing most of the movements in the first three to four months of treatment before the fusion of the blocks (healing of the bone).

The concept of corticotomy-assisted OTM, drastically changed in 2000 after the publication of Wikko et al.1 In this key case report, two adult patients received a selective corticotomy, along with alloplastic resorb- able grafts, to increase the bone level and avoid the risk of reabsorptions. An accurate evaluation with CT scans before and after treatment, and histological sections in one case, al- lowed the authors to formulate a new hypothesis about what really happens at the bone level after corti- cotomy. No movement of tooth- bone blocks, but a transient reduc- tion of mineralisation of the alveolar bone and modifications similar to those described by Fratta-7 during the healing of fractured bones and named “regional acceleratory phe- nomena” (RAP) most likely occur. The surgery-orthodontic protocol proposed by Wikko et al.1 has been subsequently patented as Periodon- tally Activated Osteogenic Ortho-dontics (PAOO). The claims of PAOO are (a) accelerated tooth movement with reduction of the total treatment time, (b) osteogenic modifications with transportation of the bony ma- trix, and final improvement of hard- and soft-tissue support of the teeth treated orthodontically, (c) increase of the short- and long-term stability of the orthodontic treatment. So far, scientific evidence has been given only on the acceleration of tooth movements, but the effect of the RAP on the bone has not been clearly demonstrated at least as long as there is a RAP modification in the alveolar bone surrounding the teeth.

After more than one and a half de- cades of clinical experience with al- veolar corticotomy, in light of the current literature published on this topic, six rules have been established that should be taken into account when considering using alveolar cor- ticotomy in a complex orthodontic case. These rules are the best way to ensure effectiveness and reduce the risk of producing no positive effect or, worse, causing damage. The six keys are as follows:

1. Alveolar corticotomy is to facilitate OTM
2. Alveolar corticotomy has limited effect in time
3. Alveolar corticotomy has limited effect in space
4. A proper surgical protocol must be followed
5. Proper orthodontic management after corticotomy must be per- formed
6. Proper patient selection for corti- cotomy is essential

A detailed description of each rule follows.

1. Alveolar corticotomy is to facili- tate orthodontic tooth movement (Periodontally Facilitated Ortho-dontics)

Speed is a fascinating issue in life. We like to go fast in cars, motorbikes, boats, airplanes and so forth. Speed is orthodontics is a different matter. It is one of the main objectives of modern orthodontics to reduce treatment time, but we must recog- nise that a great number of variables may affect it8-11:

- The initial difficulty of the maloc- clusion and tooth malposition, the age of the patient, the variability of the individual response to the treat- ment, the quality of the end result, and the patient’s compliance are just a few of the variables that should be considered. Numerous case re- ports have been published showing how treatment time can be reduced when patients are treated with corti- cotomy. Case reports, however, have limited scientific validity.

- The predictability and quantifica- tion of treatment time reduction are still not scientifically possible.

- The additional expenses and mor- bidity associated with the use of alveolar corticotomy should always be carefully evaluated to determine whether they are worth the saving of a few months. A shorter orthodontic treatment is desirable, but certainly not at the expense of a high-quality end result.

Regarding OTM, numerous studies have shown that its speed is influ- enced by bone turnover and the indi- vidual response to mechanical forces and it is not related to the force12-15. Clinical experience con- firms this: there are slow movers and fast movers, but we are still far from recognising them. In additional to this variability, there is the temporary ef- fect of alveolar corticotomy, which we will discuss under the third key. A faster treatment may be a secondary advantage and may be obtained in a substantial way only in those “sim- ple” orthodontic cases that require a naturally short treatment.

In conclusion, alveolar decortica- tion should not be combined with orthodontic treatment with the only objective of accelerating OTM and reducing treatment time: the risk of not obtaining either as desired may be high.

Despite this scientific evidence against its major claims, alveolar cor- ticotomy has its place in orthodontic therapy. Let us consider the surgical insult and the associated RAP frac- tion produced at a biomechanical level: the increased metabolism, the transient reduced density (stored energy) created by the increased osteoelastic activity, the reduced un- dermining resorption and hyperal- lisation (we still do not know exactly what happens in humans) facilitate OTM. The decorticated tooth is less resistant to orthodontic forces and will be easier to move and will re- quire less anchorage. Spena et al.12 in two studies conducted on a total of 12 adult patients with Class II malocclusions treated with distalisation of the mandibular molars showed how max- illary molars could be bodily distal- ised with simple buccal mechanics and no anterior anchorage.15 17 Cor- ticotomy was performed only on the teeth to be moved, thus reducing the anchorage needs and their resistance to distal forces.

The term “Periodontally Facilitated Orthodontics”, instead of “Periodon- tally Activated Osteogenic Ortho-dontics”, is used to describe a pro- cedure that has the primary goal of simplifying, enhancing and improv- ing OTMs that are difficult or risky, from a biomechanical and biological point of view. The surgical procedure and the associated orthodontic treat- ment and biomechanics depend on the initial problems and the goals of every single specific treatment. This is in agreement with Oliveira et al.18 who argue that micro- osteoperforations should be used to “... facilitate the implementation of me- chanically challenging orthodontic movements and enhance the correc- tion of moderate to severe skeletal malocclusions”.

2. Alveolar corticotomy has limited effect in time

Since the early studies of Frost on the biology of fracture healing, it is...
known that the altered metabolism of bone after a traumatic (or surgical) event has limited duration: it is the natural search for equilibrium or homeostasis.

The burst of hard- and soft-tissue remodelling starts a few days after the insult, peaks at the first or second month, and returns to a normal pace after a maximum of four to six months. This RAP reaction, when applied to the alveolar bone, causes an accelerated/facilitated movement of the teeth subjected to applied orthodontic forces. The effect lasts for as long as there is this reaction, so for a limited part of an orthodontic therapy. This has been confirmed by experimental studies on animals and by clinical studies on patients.

Clinically, this temporary phenomenon leads to the need to perform the alveolar corticotomy when the RAP is necessary. Timing is fundamental. Alveolar corticotomy may be repeated during the treatment with the objective of prolonging the effect. The effective benefit, cost and risks must be taken into account. Sanjideh et al. in a split-mouth study on foxhounds found that a second corticotomy performed after 28 days in the mandible produced a higher rate of tooth movement and a greater total tooth movement. However, they concluded that proper timing for a second corticotomy needed to be better determined.

Wilcko, Dibart, and Murphy claimed that continuously activated orthodontic forces applied after decortication may maintain a constant mechanical stimulation, and allow a prolonged osteopenic state during which teeth can be moved rapidly. In order to achieve this effect, they recommended seeing patients frequently (every two weeks) and continuing the activation of the applied orthodontic forces. If not, remineralisation would complete the healing process and bring the bone metabolism to a normal level. It must be said that these claims have never been demonstrated either clinically or histologically.

3. Alveolar corticotomy has limited effect in space

The effects of alveolar corticotomy are localised to the area immediately adjacent to the site of injury. Different surgeries may affect differently the resulting OTM. Glenn et al. and Tuncay and Killany, in two experimental studies on animals published before the new trend on corticotomy, found that fiberotomy (a corticotomy limited to the crestal side of the alveolar bone) affected the rate of OTM and shifted the centre of rotation toward the apex of the roots, thus modifying the biomechanical behaviour of the teeth under the orthodontic forces. If the surgical insult is applied to a limited area of the alveolar bone (i.e. middle third and only buccal surface; Fig. 1), the RAP reaction will not be extended to the entire root area. The modifications at the bone level will be limited at the area of the decortication, and control of the apical and lingual sides will not be influenced as desired.
As a general rule, if a mesiodistal bodily movement or better control of the apical area are biomechanical needs of the OTM to be achieved and enhanced (i.e. intrusion/extrusion), the decortication needs to be extended to the entire alveolar bone surrounding the roots of the teeth, buccally and lingually (Fig. 2), if the movement is less complex or anatomical limitations of the surgical site impede an extended decortication, the cuts may be limited in the direction of the OTM. These biomechanical needs determine the type of procedure in both the open flap and the flapless surgeries.

4. A proper surgical procedure must be followed

Several surgical protocols for performing alveolar corticotomy have been proposed. Most of them have been tried in the last 15 years on several patients. These surgeries may be divided into two groups: the open flap and the flapless corticotomies (Tab. 1).

The original corticotomies were performed after raising a flap. This type of surgery is still preferred when an extended or critical area of decorticataion has to be managed and when an extended grafting is planned.

The flap can be designed according to the periodontal characteristics of the site and has to be full thickness in the area of decortication and split thickness below this area to ensure a good blood supply. Interproximal and subapical cuts of 2 mm in the cortical bone (Figs. 3 & 4) are performed together with a light scraping of the external cortex in between the cuts. This extended surgical insult will produce a wide RAP reaction and prepare a bleeding bed for any grafting material eventually placed in association with the decortication. Piero-surgical or calibrated micro-saw are preferred to rotating surgical burs because of their selective, safer, microcromatic and more precise cuts, better irrigation/cooling effect from cavitation, better comfort for the surgeon, and better healing for the patient. The open-flap corticotomy procedure is routinely used in orthogonathic surgery, when exposing impacted teeth, to treat transverse maxillary deficiencies and periodontally involved cases.

Flapless surgery has been proposed as an alternative way of performing a corticotomy. Corticision31 and Pi-zocision32 have been an attempt to reduce the invasiveness of the decortication and the possible periodontal damage and postoperative discomfort with raising a flap. Even if attractive, they seem to have surgical and biomechanical limitations.

The surgical limitations include risks when performed in crowded arches, limited visibility when cutting the cuts, limitation of the cuts to the interproximal areas and to the middle third of the roots, difficult control of the grafting in the apico-coronal direction and need for optimal extension of the attached gingiva in the area of decortication. The biomechanical limitations are strictly related to the fact that corticotomy is performed only on the buccal side and middle third of the roots.

They are definitely not minimally invasive surgeries as claimed and are quite expensive for the patient, since only a well-trained periodontist/oral surgeon can perform them and they often require complex planning with digitally designed 3D surgical guides.

The Micro-Osteo-Percorations (MOPs) described by Alikhani et al34 and Tenenst et al35 are an effective and minimally invasive way of producing insult to the cortical alveolar bone. These MOPs may be created with manual instruments (Excellerator, Propel Orthodontics) or with dedicated burs on a reduced speed electric handpiece (Fig. 5).

MOPs are produced with a penetration in the cortex of a maximum of 0.5 mm. Instead of conventional local anesthesia, a strong anesthetizer gel placed on the mucosa for three minutes is sufficient to control the patient’s pain and discomfort. It is advisable to produce two to three MOPs in each interproximal area of the teeth and between buccally and lingually (Fig. 6), to ensure that the metabolic changes are extended around the entire radicular alveolar bone. Manual MOP is usually created in the posterior and lingual areas (Figs. 7–9). The procedure and the precautions are similar to the insertion of mini-screws. Orthodontists can easily create MOPs at the chairside, and the cost is a great deal more affordable for the patient. Finally, they can be easily repeated during treatment if additional bone metabolism is needed. No packing and no sutures are necessary after MOP. The limit is that no grafting can accompany MOP.

Whenever possible and desirable, grafting may accompany alveolar corticotomy. The grafting is usually planned before surgery, based upon initial clinical and radiographic evaluation, the desired OTM, and the short and long-term periodontal considerations. In situations of thin bone and a thin gingival biotype, with risky movements like expansion, labial proclination or antero-posterior movements in reduced bone volumes, grafting may be indicated to reduce/eliminate fenestration and dehiscence, produce additional support for the roots, and improve final aesthetics and stability.

Grafting may include hard-tissue, soft-tissue and autologous growth factors. Quality and quantity may be modulated at the surgery depending on the planning of the surgical site. As a general rule, composite bone grafts where allogenic bone (bone from human cadaver) that is freeze-dried to reduce anti-genicity and demineralized to expose the osteoconductive collagen and its growth factors, like bone morphogenetic protein (BMP) with osteoinductive properties, is mixed with xenogenic bone (bone usually from bovine animals that provides a physical matrix or scaffold suitable for deposition of new bone and that prevents its rapid resorption) with osteoconductive properties are preferred (Fig. 10).

Soft-tissue grafts are added to bone graft when a thin biotype or gingival recession is present. If the area to be regenerated is small, an autologous connective tissue graft is the gold standard procedure. Large areas may be managed with allogenic human acellular dermal matrices, that are available in different sizes and thicknesses (Fig. 11).

Soft-tissue grafts are sutured with absorbable sutures. Both bone and soft-tissue grafts are coupled with autologous growth factors. With aging, the number of stem cells rapidly decreases. These cells are important in case of injury and healing processes. Studies have shown that growth factors from platelet-concentrated plasma (platelet derived growth factor, vascular endothelial growth factor, transforming growth factor beta 1 and 2) may rapidly increase the number of the available stem cells, stimulate their activity, as well as reduce inflammation and pain during the healing processes.36 Platelet-rich fibrin (PRF),37 PRF rich in growth factors (PRF/gf),40 are prepared via two different protocols in which blood centrifugations are performed together with a light compression of the centrifuged fraction.

The process for preparing PRGF allows the separation of three fractions with different concentrations of platelets. They may be mixed with bone grafts (increasing the graft’s vascularity) and adherence to the surgical site, thus facilitating its application) and soft-tissue grafts. Activating and
heating the PRGF fraction produces clots/monofilaments of fibrin that are placed on the bone grafts, stabilising their position (Fig. 12). When using grafts along with alveolar corticotomy, a tension-free flap closure must be achieved at the end of the surgery, to provide optimal coverage of the decorticated area and the grafted material, and to enhance final soft-tissue healing. Non-resorbable sutures are left for at least 14–21 days.

5. Proper orthodontic management after corticotomy must be performed

Orthodontic treatment associated with periodontally facilitated orthodontics may be carried out with any fixed or removable appliances. It is the clinician’s choice to combine periodontally facilitated orthodontic procedures with fixed, active self-ligating appliances (In-Ovation) with periodontal surgery. According to the patient’s needs, it may be performed with hard- and soft-tissue grafting. Further studies are still needed to evaluate indications, contra-indications and risks. The procedures described here will certainly evolve and improve with the improvement of the materials, devices and appliances utilised.

Effect of orthodontic treatment on the mandibular molar to molar and general hard- and soft-tissue grafting (Figs. 23a & b). Treatment started a week after the surgery and continued with visits every two to three weeks. Once anchorage had been slowly achieved with 0.019 × 0.025 in. stainless-steel archwires (Figs. 25a & b), followed by 0.021 × 0.025 in. stainless-steel archwires (Figs. 26a and 27a & b), the anterior open bite spontaneously closed (Figs. 28a & b). The CBCT images before and after treatment reveal the increased volume of the maxillary alveolar bone that allowed the successful expansion of the upper arch, despite the age of the patient and the initial periodontal problems (Figs. 29a & b).

Conclusion

Alveolar corticotomy (or periodontally facilitated orthodontics as we prefer) is an effective procedure in which alveolar decortication is associated with orthodontic treatment with the primary goal of enhancing OTM and reducing anchorage needs. By accelerating the rate of OTM and reducing the complexity of a clinical case, bone decortication may reduce treatment time. However, this effect is considered a side-effect and not the primary reason for using this periodontal surgery. According to the patient’s needs, it may be performed with an open-flap or a flapless procedure and may be associated with hard- and soft-tissue grafting. Further studies are still needed to evaluate indications, contra-indications and risks. The procedures described here will certainly evolve and improve with the improvement of the materials, devices and appliances utilised.

Editorial note: A list of references is available from the publisher.

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Align Technology reaches 6 millionth Invisalign patient milestone with tween patient from China

By Align Technology Inc

Align Technology, Inc. (NASDAQ: ALGN) today announced that over 6 million patients have started treatment with Invisalign - the most advanced clear aligner system in the world, including 1.4 million teenage patients*. This is a significant milestone for the company and the over 150,000 Invisalign-trained doctors worldwide, reflecting accelerating adoption of Invisalign treatment by adults and teens alike.

The 6 millionth Invisalign patient, Yuzhe, is a 12-year-old student of the International School of Beijing, who began treatment in October 2018 using Invisalign Comprehensive with Mandibular Advancement treatment with Dr. Jiawei Wo from Yuxueyuan Dental clinic. Dr. Wo is a Gold Invisalign trained doctor based in Beijing, China who specializes in pediatric orthodontics.

Dr. Wo prescribed Invisalign clear aligner therapy to his patient Yuzhe to address her class II type of teeth misalignment and because it fits well into her busy student lifestyle: “Invisalign treatment with Mandibular Advancement is great, because it moves the lower jaw forward, while simultaneously aligning the teeth. With Invisalign clear aligners, my patients need much fewer appointments than with traditional orthodontic appliances. This allows them to continue their studies and daily activities without interruption.” We are delighted to be celebrating another significant milestone with Invisalign trained doctors and their patients. This achievement is a reflection of growing demand for Invisalign clear aligners from international markets, especially China, which is our second largest country market, nearly doubling each year since the Invisalign system was launched in China back in 2011. I would like to thank Dr. Jiawei Wo and all of the Invisalign trained doctors around the world for helping us make Invisalign treatment the clear aligner orthodontic method of choice among teens such as Yuzhe, as well as for giving our patients a chance to have beautiful, straight teeth and smile with confidence.” - said Joe Hogan, Align Technology president and CEO.

I would like to thank Dr. Wo for his confidence in treating Yuzhe with the Invisalign system, and Yuzhe’s parents for trusting that it is the best solution for their daughter.

In support of this major milestone for the company, Yuzhe will be featured in an upcoming Invisalign global campaign, entitled “6 Million Invisalign Smiles” that will follow Yuzhe and her family through her Invisalign treatment journey. The campaign will highlight key reasons why she and her parents decided to choose Invisalign clear aligners to help her achieve a new, beautiful smile.

By Dental Tribune MEA

Dental Tribune MEA had a pleasure to speak with Dr. Ramy El Zoghby, Regional Sales Director – Dealers EMEA at Ormco.

Dr. Ramy, congratulations on yet another successful year. The highlight of the year must have been the 3rd ORMCO Forum Dubai. How do you reflect on this unique event for the regional Orthodontists?

I have to say that 2018 has been an exceptional year for Ormco in the region and the 3rd Ormco Forum in Dubai was the great highlight of this success through the whole EMEA region. It was another new and exceptional record of participation with more than 350 Orthodontists & 8 International speakers coming from more than 15 countries all over the world, sharing their knowledge and scientific experiences using the most advanced techniques in Orthodontics and definitely our unique products.

How important is it for ORMCO to have such annual events and be close to your regional partners and clients?

Ormco partners are a crucial part of our success in the region. We do our maximum efforts to ensure the best customer service experiences to all our clients especially in terms of continuous products availability and on time delivery.

Moreover, keeping our clients’ satisfaction at the highest level possible is one of our major goals within the whole Ormco organization.

What was the base for the choice of your scientific speakers and content for the event?

We tried to diversify the scientific content, and the speaker’s background taking the participants through an exciting journey during the three days. The delegations could discuss their concerns and find out all the new updates in conventional esthetic systems, self-ligating techniques and digital orthodontic which is our future blighting trend in Ormco.

The past year have been very dynamic, not only for ORMCO but also the dental industry. How do you manage to continue delivering top quality products, services and education to your client base, distributors and partners in the Middle East?

I agree with you that 2018 was one of the most challenging and dynamic years for the whole industry in the region; however, we successfully completed the year smoothly by continuing to focus on the best products we sell in Ormco globally. In terms of education, more than 25 international scientific courses were conducted successfully, keeping our clients updated with the latest techniques and products. It also makes our partner’s job easier to deliver Ormco’s message to the largest, most number of clients in the shortest possible timeline.

In the year of IDS Cologne 2019, what can we expect from ORMCO and your Middle East partners?

We will continue to commit to our clients the best orthodontic customer service experience in the industry whilst continuing to focus more and more on educating orthodontists.

What are your plans for the region in the coming year?

This year, we have an ambitious plan to increase our educational courses by more than 20% in comparison to last year, strongly participating in the big regional orthodontic conferences (i.e.: Saudi Orthodontic Society meeting – 20% in Jeddah/ KSA). Moreover, we will be having our 2nd Ormco Forum in Saudi Arabia in November 2019 with more and more exciting speakers and topics.

After the success of the 2nd MEA Symposium in 2015, Ormco has recently launched their 3rd edition of the Dubai Forum, that took place in Palazzo Versace Hotel between the 6th-8th of December 2018.

Interview: “We will continue to commit to our clients the best orthodontic customer service experience in the industry…”

For additional information about the Invisalign system or to find an Invisalign doctor in your area, please visit www.invisalign.com. For additional information about Ormco’s digital scanning system, please visit www.itero.com.

This is considered the biggest Ormco scientific event EMEA region with more than 300 participants and 8 international speakers from around the globe. Not only International speakers but also international deleges from 15 different countries including Middle East, E. and East Europe, Russia and Africa all gathered to attend the big event as well as the launch of the 2 new products Damon Q2 and Symmetry Clear and Insignia 2.0 technology in the world of digital Orthodontics.

Looking forward for more success in the next edition of the Ormco Forum
Ormco Forum Dubai 2018 Impressions
06-08 December 2018 | Palazzo Versace | Dubai | UAE

After the success of the 2nd MENA Symposium in 2015, Ormco has recently launched their 3rd edition of the Dubai Forum, that took place in Palazzo Versace Hotel between the 6th-8th of December 2018.

This is considered the biggest Ormco scientific event EMEA region with more than 300 participants and 8 international speakers from around the globe. Not only international speakers but also international delegates from 15 different countries including Middle East, Europe, and East Europe, Russia and Africa all gathered to attend the big event as well as the launch of the 2 new products Damon Q2 and Symetri Clear and Insignia new technologies in the world of digital orthodontics.

Looking forward for more success in the next edition of the Ormco Forum.
3M Oral Care Ortho Programme Highlights
Impressions from the 3M Oral Care Symposium orthodontic programme which took place in Abu Dhabi on 04-05 October 2018. Over 200 dentists and orthodontists attended.
Taking care of our teeth is a fundamental part of good health

Dental problems can affect what we eat, and the aesthetics of our teeth has a major impact on how we see ourselves and others.

By Neoss Ltd.

Taking care of our teeth is a fundamental part of good health. Dental problems can affect what we eat, and the aesthetics of our teeth has a major impact on how we see ourselves and others.

Dental implants replace the roots of teeth and can be used to anchor a single dental crown(s), a bridge or a denture. Neoss has an approach to dental implants that keeps both the patient and the practitioner in mind.

Intelligent Simplicity

Whilst every patient - and their dentist - is different, they ultimately want to achieve good results, spend less time in the chair, and for the final implants to last. Practitioners want the process to be straightforward and worth the investment of the patient.

Neoss answers all these needs with patented technology, including the Beoluc Implant Abutment connection and the Neoss ProActive surface. This creates one of the strongest and the most favourable prognosis which offer market-leading functionality.

Its products are available internationally and the continuous business development programme has resulted in expanded geographical coverage - with reversals being developed in the major Asia markets including China and Japan - and the development of a significant presence within the MEA region.

Simplicity is something we work very hard to achieve for our customers, says Neoss’s Chief Operating Officer Ruth Keeling. “What we hear from patients is that they wish they had sorted their dental problems sooner.”

Dr Karott Shah, Dental Surgeon and Specialist in Prosthodontics, says:

‘When we are working in a clinical environment on patients, the situations can sometimes be fairly tense, fairly stressful and highly pressurised. A system that is simple, straightforward and easy to use minimises the risks throughout the clinical procedures, not only for us as dentists but also our assistants.”

Implant retreatment

By Dr Philippe Leclercq, France; Jean-François Martinez, France & Michael Bruch, Germany

When working with dental implants, a number of specific rules must be followed regarding both the implant surgery and the prosthetics itself (fixed prostheses tending to have a more favourable prognosis than overdentures). If these rules are not adhered to, the results are often unsatisfactory, requiring retreatment.

In such cases, and despite the patient’s desire to quickly forget the previous treatment, a very strict protocol must be followed, specifically concerning the length of healing periods. Despite an increase in the overall treatment duration, this will ensure success of each stage of treatment. The implant retreatment case outlined in this article will emphasise these different stages in this type of clinical situation.

Initial case

At the age of 28, the patient was involved in a traffic accident, which resulted in significant trauma to her maxilla, including the loss of her central and lateral incisors and left canine. The shock also led to the loss of alveolar bone in the same area. The first premolars were absent, probably owing to previous orthodontic treatment.

The original treatment consisted of placing two implants in the residual bone and an anchorage reinforcement screw retained bridge to maintain a removable prosthesis, which included five teeth and a large false gingiva (Fig. 1).

Disappointed with the treatment, the patient was re-examined three years after the initial treatment. The patient’s smile showed an infiltration at the right lateral incisal level and the prosthetic teeth were placed off-centre. The lip support, ensured by a large false gingiva, was correct. The cosmetic material of the right maxillary canine was fractured (Figs. 1 & 2).

Once the patient’s prosthesis had been removed and an examination of the site conducted, an extremely negative prognosis was determined for the implants (Fig. 3), which is often the case with maxillary overdentures. The right implant showed a loss of the majority of its vestibular bone, causing significant recession. The tissue was hyperplastic; making hygiene difficult. The framework was off-centre and easy to use minimises the risks throughout the clinical procedures, not only for us as dentists but also our assistants.”

Neoss has a range of products that take the patient’s desire to quickly forget the previous treatment into account. By adhering to a very strict protocol, the results are often satisfactory, requiring retreatment.

Neoss continues to innovate and invest in Research and Product Development - designing, manufacturing and selling products of the highest quality which offer market-leading functionality.

When we are working in a clinical environment on patients, the situations can sometimes be fairly tense, fairly stressful and highly pressurised. A system that is simple, straightforward and easy to use minimises the risks throughout the clinical procedures, not only for us as dentists but also our assistants.”

Fig. 1 & 2: Initial prostheses. Lip support was ensured by a large false gingiva, and fractured cosmetic material at the right maxillary canine was evident. The patient’s smile showed the prosthetic teeth placed off-centre and an infiltration at the right lateral incisal level.

Fig. 3: Examination after three years revealed a negative short-term prognosis for the implants owing to significant recession at the right implant and hyperplastic tissue.
gingival inflammation as a reaction to using implants for this indication. Engquist noted a gingival increase in 25 per cent of the cases; Naert et al. showed that out of 86 overdentures (6 maxillary, 80 mandibular), 8 observed gingival hyperplasia, primarily in the maxilla (9.3 per cent); and Jemt et al. observed that after one year out of 92 maxillary overdentures, 19 patients showed gingival hyperplasia (20.9 per cent), 13 patients had one gingival correction and five had two corrections. In a 1993 study on maxillary overdentures, Smedberg et al. observed: “The results show that the prevalence (p < 0.05) for Lactobacillus, Prevotella (subspecies) and yeasts in the subjects with removable prostheses was significantly higher than in subjects with fixed prostheses. Removable prosthetics were accompanied by a more aggressive peri-implant plaque.” In view of our patient’s unsatisfactory treatment results, it was thus decided to restart treatment completely.

**Retreatment**

The retreatment followed an extremely precise protocol, especially regarding the length of the healing periods. To begin, dental impressions were taken to create a resin-based temporary removable prosthesis. The prosthesis included palatal support to relieve the vestibular gingival tissue as much as possible. An aesthetic fitting of the appliance was conducted to straighten the axis of the incisors.

**Implant removal**

Owing to insufficient osseointegration, the removal of the implants was fairly easy (Fig. 4). Removal was accomplished with the aid of an implant removal tool. Immediately after implant removal, the temporary removable resin prosthesis with palatal support was inserted.

**Assessment after implant removal**

Three months after implant removal, clinical and radiographic assessment was performed.
assessment was conducted. The assessment showed further significant vertical bone loss and loss in bone volume (Fig. 5). Significant vertical bone loss is difficult to correct owing to random gingival recovery. It was thus decided to augment the bone volume by performing a chin bone graft.

Bone graft

Anaesthetic was administered in the maxillary and mandibular anterior region. For the mandible, the sample was taken from the cortical bone and a section of the cancellous bone by piezoelectric surgery. The grafts were harvested from the chin symphysis, as close as possible to the mandibular inferior ridge to avoid disturbing the incisor’s sensitive innervation, which can be a frequent complication of the procedure. The vestibular cortical bone scar was perforated with a small round bur, allowing for rapid revascularisation of the grafts. The grafts were then positioned and secured in place with mini-screws (Figs. 6 & 7).

To increase success, a blood sample was taken and centrifuged according to the Choukroun platelet-rich fibrin (PRF) technique5 in order to recuperate the fibrin clots. The clots...
were compressed between two com- presses to evacuate the serum and to form the membranes which were then applied to the surgical site and in the mandibular harvesting sites (Figs. 8 & 9).

Pre-implant prosthetic study
After four months, according to ra- diographic examination, the tissue had healed and the bone mass ap- peared stable (Fig. 10). New impres- sions were taken to prepare for the next step in treatment: the implant drilling guide. After four months of healing, the increased vestibular bone volume allowed positioning the teeth at the crestal bone and re- duction of the false gingiva using additional wax (Fig. 12). A key of the added wax was then taken and fabricated in clear casting resin. The implant post was driven in and, for mini- misation of the lip support, the im- plantation technique was validated by Bros et al. All of the implants were equipped with threaded cover screws and the surrounding tissue was sutured (Fig. 16).

To minimise risks, the implants were loaded immediately after the im- mediate loading of a site such as this one could have proved to be prob- lematic.

Implant loading and impressions
After four months, the implants were loaded using an apically posi- tioned flap. The healing abutments were placed and the flap sutured around them (Fig. 17). Radiographic analysis and especially a percussion test showed the implants’ perfect osseointegration. After 15 days of gingival healing around the abut- ments, they were removed and the impressions were poured and secured with a self-curing resin (Fig. 18). Impressions were taken and the healing screws were reinserted (Figs. 19 & 20).

Validation prosthesis
Rather than calling the appliance at this stage a “temporary prosthesis” or “provisional prosthesis”, it is more appropriate to call this temporar- ily placed prosthesis, a “validation prosthesis of the implant-occlusal in concept recommended to the patient”. Over the course of several months, this prosthesis vali- dated — the osseointegration of the implants,

— the aesthetic aspect, especially for the anterior teeth,

— phonation, which is also impor- tant for the maxillary anterior re- gion,

— the patient’s ability to correctly clean the prosthesis, and occlusion and, in this case, the ability of the an- terior to guide the division of the canine groups in protrusion.

This prosthesis serves as a model for the idea of an easily modifiable material like resin, but with a metal framework to guar- antee a certain level of rigidity. In the first step, a model of the framework, which temporally included the ca- nines to increase stability, was cast in pattern resin (Fig. 21). The model was then scanned (Adeva, GC Tech.Eu- rope; two cameras, 2 MP, precision 10 µm) before being transferred to a machining centre 30100 (GC Tech.Europe, Figs. 22 & 24). Once back from the machining, the titanium framework was tested on the working model and its stability was veri- fied (Figs. 25 & 26).

The cosmetic material (UNFAST III resin, surface rendering: OPTIGLACE colour, GC Tech.Europe) was then placed on the framework (Fig. 27). The bone graft permitted a maxi- mum reduction of the vestibular false gingiva.

In the following step, the prosthesis was attached in the mouth with screws and the necessary occlusal verification was conducted, includ- ing maximum intercuspation, pro- trusion and lateral excision. The natural canine on the right was also equipped with a verification tooth. It should be noted, that in lateral excision on the left, with the an- tagonist being the original tooth equipped with its periodontal liga- ment receptors, the canine function was retained; however the group function, which is usually preferred, was neurophysiologically inept (Figs. 28 & 29).

The patient’s smile showed that the incisors were now well balanced and in line with the face’s sagittal plane. Lip support appeared to be correct and, as often is the case, this would all be validated by the patient’s sur- rounding friends and family (Fig. 30).

After three months, the validation prosthesis was removed in order to monitor in the areas where mucosa had been compressed and dental hy- gene difficult. These areas were cor- rected and the validation prosthesis reinstated (Fig. 31).

Final prosthesis
After six months, all of the param- eters were validated. The final prosthesis was then fabri- cated as an exact copy of the valida- tion prosthesis, but in a more durable material: zirconia for the framework and ce- ramic for the aesthetic material. As with the titanium validation prosthesis, the framework and the coping for the right canine were scanned and transmitted to the machining centre. They were then tested on the working model (Figs. 32 & 33). After fitting of the zirconia framework, the ceramic was cast using the exact parameters validated by the resin prosthesis (MB Dentaltechnik, Figs. 34 & 35). In the following step, the final prosthe- sis was installed and the correct occlusion verified: maximum in- tercuspation, protrusion and lateral excision. The screw channels were filled with composite (Figs. 36 & 37).

The final cosmetic check-up, validat- ed by the resin prosthesis, showed the lip support with the new ex- tremely reduced false gingiva to be correct (Figs. 38 & 39). This was achieved owing to the bone graft.

Regular check-ups
Retreatment was regularly moni- tored with patient check-ups (Figs. 40). All implant treatments, no mat- ter of what type, must be rigorously monitored in all treatment phases, but a retreatment requires even more diligence. A patient affected by the failure of a previous treatment will not accept even the smallest problem. To this end, the role of healing periods is thus essential to retreatment suc- cess.

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Implants – Immediate loading with NO patient selection

By Vivek Gupta, UK
At EAO 2017, Dr Göran Urde present- ed a paper titled “Evolution of surgical protocols in implant dentistry” as part of the oral surgery and prosthetics. Dr Göran Urde, is the Program Lead for Tipton Training’s PG Certificate in Dental Implantology and is the President of SIOPA (Society for Oral Implantology and Applied Prosthetics). As part of the scientific programme, Dr Göran Urde presented his students in oral surgery and prosthetics. He appreciates the bene- fits of immediate loading, but warns that patient selection is very impor- tant and often not appreciated.

Implants – Immediate loading with NO patient selection

Considering this, patients for decades have not taken care of their natural dentition, they are now being treated in accordance with concepts like im- mediate loading. Within an hour, any remaining decayed teeth are removed and replaced with implant- supported crowns and bridges in the glint that the patients will start tak- ing care of their new teeth. Unfortu- nately, this is not realistic!

In his opinion, this is a ticking time bomb. It is just a matter of time be- fore patients will come back with problems like peri-implantitis and failing implants. Who is going to sort that out? Think litigation: That is why training courses are so im- portant. Placing implants is a great skill and income generator, however, there is no substitute to Patient Se- lection and Treatment Planning.
Gain a child, lose a tooth?

By Prof. Nicole Arweiler, Germany

The most important physiological, hormonal and perhaps also most beautiful changes in a woman’s life occur during pregnancy. And the mouth is one of the main areas involved in these changes. Although gingival inflammation during pregnancy tends to increase—even with correct oral hygiene—pregnancy gingivitis does not normally cause lasting damage to the periodontium. In the post-partum phase, even women with periodontitis who did not receive periodontal treatment during their pregnancy show an improvement in all clinical periodontal parameters. So all is well, right? Unfortunately not. The research agrees: pregnant women require special oral hygiene instructions, owing to hormonal changes, in order to avoid periodontitis. This is because periodontal tissue can be nerve-racking, time-consuming and bad for their health.

How important is periodontal health for pregnancy really? Its significance is actually increasing with current research findings. Pregnancy gingivitis is one of the most important periodontal diseases. Like other forms of gingivitis, untreated it can lead to periodontitis. No specific type of periodontitis is linked to pregnancy, but the awareness has to be a potential risk factor for negative pregnancy outcomes. However, how are the changes in the periodontium and negative pregnancy outcomes like premature birth, low birthweight and pre-eclampsia really? More on that later.

The legislature has already known for decades about the importance of proper dental care for expectant mothers. The maternal health passport guides women in Germany and Austria through pregnancy. Federal committees and health insurance companies also require that gynaecologists and dentists speak about the importance of oral hygiene for mothers and children in the last trimester as needed. Unfortunately, the reality is that only 3–50 per cent of pregnant women worldwide see a dentist during pregnancy. Certainly, socio-economic status, fear and perhaps also apathy mean that many patients avoid the dentist. Many expectant mothers say they do not have time to go to the dentist several times. “Gain a child, lose a tooth,” as your grandmother used to say.

What is pregnancy gingivitis?

Various environmental factors, including pregnancy gingivitis, granuloma gravidarum (pregnancy tumour, also “equine granuloma”) and periodontitis, affect the (oral) health of pregnant women. Pregnancy gingivitis is therefore among the classical gingival diseases. Besides plaque-induced gingival disease, pregnancy gingivitis ranks among the diseases altered by systemic factors. This includes hormonal influences, like puberty, menstruation, pregnancy and diabetes mellitus or even blood disorders.

In appearance and form, pregnancy gingivitis does not differ from classical gingivitis, but it does differ in prevalence. Already in 1913, Ziskin et al. spoke of a 30–100 per cent occurrence: “In more recent studies, this varied between 38 per cent and 93.7 per cent. Gingivitis has been found to correlate with hormone level and plaque. In the second and third trimester, pregnant women generally notice an increase in gingivitis and bleeding, since the body produces the steroid hormones progesterone and oestrogen more strongly. The more plaque, the higher the risk of gingivitis alone does not lead to negative pregnancy outcomes. First, a pre-existing periodontal condition in the woman can exacerbate periodontitis during pregnancy. Second, after the birth, the periodontal status of women with periodontitis improves without active periodontal therapy. However, the disease does not disappear and can even worsen after the birth. Third, pregnancy gingivitis alone does not lead to negative pregnancy outcomes.

Mechanical and professional plaque control

Mechanical plaque control has always been the focus of pregnancy prophylaxis. Brushing with a toothbrush with soft bristles and fluoride toothpaste, and using instruments for interdental care and, if necessary, chemical plaque control are key instruments for the prevention of gingivitis and periodontitis even before pregnancy. That is why, for example, Oral-B recommends electric toothbrushes with oscillating rotations. At the same time, every system of mechanical plaque control is suitable in principle, whether manual or electric, as long as the correct technique is used regularly and with persistence (20 seconds).

In the dentists’ office, pregnant patients should learn everything important about the development of dental caries, routes of infection and nutrition; however, the emphasis here is not just on the information, but also on targeted, preventative therapy. Expectant mothers who become enthusiastic about prophylaxis pass this experience on to their children. This way, prophylaxis for the child, the first primary prophylaxis even before the birth, becomes the focus of dentistry.
Gingivitis, patients should use chlorhexidine therapeutically for a short time, best in a concentration of 0.1–0.2 per cent or 1 per cent. Different meta-analyses have found that chlorhexidine can be used with confidence during pregnancy. Long-term chemical plaque control is suitable for pregnant women with nausea and poor oral hygiene, particularly in the molar area. Other alternatives, such as tea tree oil and propolis, have not shown any effectiveness in studies.

What to keep in mind with periodontal therapy
If the practice team has to treat pregnant patients for periodontitis, neither has any special procedures to be considered first. Research shows that non-surgical periodontal therapy is safe and sensible during the second trimester. Scaling and root planing are quite possible during pregnancy. Radiographs can be taken and local anaesthesia can be administered without additional risk to the foetus or the mother. Articaine is the agent of choice in this case. Periodontal therapy does not reduce the occurrence of negative pregnancy issues. However, it can lower the frequency of negative pregnancy outcomes in women at high risk of pregnancy complications or who respond better to periodontal treatment.

Modern pregnancy prophylaxis
Professional tooth cleaning as part of modern biofilm management is an indispensable component of gingivitis and periodontal therapy in the context of a prophylaxis session. Professional tooth cleaning, in combination with oral hygiene products and instructions, clearly reduces moderate or severe gingivitis. The second trimester is therefore best suited for professional tooth cleaning. At this point, nausea has usually disappeared and the patient can stay lying down for a whole hour.

An optimal pregnancy prophylaxis also includes nutrition from a dental point of view. Here patients should not limit themselves, but enjoy their pregnancy. Nevertheless, patients should forgo acidic foods and beverages. A craving for sour and sweet foods, often in high frequency, also increases the risk of caries or an erosive change in the tooth enamel. In addition, the buffering capacity and rinsing function of the saliva is reduced during pregnancy, the mouth tends to be dry, which promotes the development of dental caries. Even allegedly healthy foods and drinks, like fruits or fruit juices, which are acidic, can quickly damage the tooth enamel.

Speaking of erosion, morning sickness also leads to the production of gastric acid, which can again lead to dental erosion of varying intensity. Toothbrushing should be avoided after an episode. The pellicle needs 2 hours to reform after vomiting. Helpful means of neutralising are the consumption of milk, cheese and, above all, chewing gum. Instead of brushing right after, antibacterial mouth rinsing solutions and fluoride rinsing solutions are suitable first.

Pregnancy is a major challenge with regard to teeth and gingivae. The main task of periodontal treatment during pregnancy is to improve the periodontal and overall health of pregnant women. Oral hygiene training and nutrition advice reduce plaque and gingivitis and thus periodontitis. With respect to affecting negative pregnancy outcomes, intervention even before pregnancy may be more effective. If the practice team controls the gingivitis and avoids periodontitis, it has made its contribution to a problem-free pregnancy. In all cases, prevention is better than cure and every tooth counts.

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

This article was originally published in prevention international magazine for oral health, issue 2/2018.
New Technology Briefing: New Colgate Total®

The next generation toothpaste for Whole Mouth Health - pathway to everyday prevention

Colgate® announces the launch of its next generation Colgate Total® toothpaste designed to proactively protect hard and soft oral tissues - tongue, teeth, cheeks and gums - against the most prevalent oral diseases: gingivitis and caries.

Periodontal disease and caries are both preventable in their early stages (Gingivitis and White Spot Lesions, respectively). Yet, despite the efforts of the dental profession to improve oral hygiene, these diseases continue to be a public health concern, with 50% of the global population estimated to be affected. Moreover, patients are looking for guidance and support from their dentist to make sure they are being as proactive as possible for better oral health.

**Reducing periodontal disease and caries offers societal benefits**

Reducing the incidence and prevalence of caries and periodontal disease has the potential not only to improve health and wellbeing in the general population, but also to reduce the growing financial pressure on publicly funded healthcare systems.

The economic burden of these untreated diseases is likely to increase due to population longevity which is an important aspect to policy makers. Attention has focused on controlling bacteria in dental plaque, while the value of Whole Mouth Health has been underestimated.

**Whole Mouth Health and the role of dental biofilm**

The concept of Whole Mouth Health is based on the importance of achieving more than just healthy teeth - all oral tissues need to be healthy. Teeth, the hard tissue, account for only 20% of oral structures, while the soft tissue, tongue, cheeks and gums represent the 80% majority. To retain a healthy mouth, protection of all surfaces is needed.

**Disrupting the cycle**

Bacteria can colonize on the teeth, initiating the formation of dental biofilm, but they also adhere to soft tissues in the mouth. From here they recognize on the surface of teeth that have been brushed, rebuilding the dental biofilm causing diseases to reoccur. Protecting the soft tissues prevents adherence of bacterial biofilm and so protects the soft tissue and hard surfaces from bacterial colonization.

Regular fluoride toothpaste is not enough to achieve Whole Mouth Health - it only protects hard surfaces with fluoride. Regular fluoride toothpaste does not prevent the hard surfaces from repopulating with bacteria harbored in the soft tissues.

**Clinically proven whole mouth antimicrobial protection**

Studies show that new Colgate Total reduces bacteria on teeth, tongue, cheeks, and gums (TTGC) by up to 38.3% on Teeth, 39.7% on Tongue, 35.4% on Cheeks, and 25.9% on Gums.

Clinically proven to reduce plaque and gingivitis

New Colgate Total is clinically proven to reduce plaque (by 30.1%; p < 0.001) and gingivitis (by 26.3%; p < 0.001) when compared to ordinary non-antibacterial fluoride toothpaste after 6 months.†

**A toothpaste designed to work with the chemistry and biology of the mouth**

The formulation of dual zinc plus arginine effectively controls biofilm, through:

- Weakening to kill bacteria by interfering in bacteria metabolism and reducing their nutrient uptake
- Slowing bacterial growth
- Enhancing soft tissue’s natural defense with a protective barrier that adheres to tongue, teeth, cheeks and gums
- Limiting bacterial adherence to hard and soft tissues for 12-hour protection**

Clinically proven whole mouth protection for Whole Mouth Health

- Prevents tooth decay/cavities
- Superior plaque reduction †
- Superior reduction in gingivitis†
- Superior reduction in gum bleeding†
- Fights bacteria to keep breath fresh
- Superior reduction in sensitivity
- Superior reduction in tartar
- Reduces stains and stain intensity
- Protects against erosive damage
- Helps repair weakened enamel

Additional benefits:

- Long lasting freshness†
- For 12 hours fresh breath**
- The fluoride level meets with the international standards for toothpaste efficacy in caries prevention

New Colgate Total is the advanced way to achieve Whole Mouth Health by proactively controlling and protecting against bacteria on 100% of mouth surfaces, Teeth, Tongue, Cheeks and Gums. By recommending new Colgate Total to your patients, they will have an advanced solution for better, more complete oral health.

More research: examples of studies that show the benefits of Colgate Total are available here: [New Colgate Total](www.colgateprofessional.com).

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8. If you would like more information about the clinically proven benefits and efficacy of new Colgate Total®, visit our website at: www.colgateprofessional.com

www.colgateprofessional.com  www.colgatetalks.com

* defined as non-antibacterial toothpaste
** after 4 weeks use, 12 hours after brushing
† vs ordinary non-antibacterial fluoride toothpaste
‡ with continuous use, after 3 weeks.
New Colgate Total® with Dual-Zinc + Arginine for Whole Mouth Health. Reinvented to proactively work with the biology and chemistry of the mouth.

Protects teeth, tongue, cheeks, and gums

- Superior reduction of bacteria on 100% of mouth surfaces, 12 hours after brushing*¹
- Weakens to kill bacteria
- Creates a protective barrier on hard and soft tissue to protect against bacterial regrowth

NEW | Next generation technology

For better oral health outcomes,† advise your patients about New Colgate Total®

*Statistically significant greater reduction of cultivable bacteria on teeth, tongue, cheeks, and gums with Colgate Total® vs non-antibacterial fluoride toothpaste at 4 weeks, 12 hours after brushing.
†Significant reductions in plaque and gingivitis at 6 months vs non-antibacterial fluoride toothpaste, p<0.001.