IDS reaffirms its leading position as global dental trade fair

See the latest innovations at the 14th CAD/CAM & Digital Dentistry Conference & Exhibition on 12-13 April 2019 in Dubai, UAE

By Dental Tribune International

COLOGNE, Germany: The International Dental Show (IDS), which took place in Cologne from 12 to 16 March, fulfilled the high expectations of the global industry and once again underlined its position as the leading trade fair. With 2,572 companies from 64 countries participating, this year’s event welcomed 25,000 more exhibitors compared with two years ago, as well as 160,000 trade visitors from 166 countries. The overall number of visitors rose by 3.2 per cent (about 5,000 more people) and the number of foreign trade visitors by 6.0 per cent.

Gerald Böse, CEO of Koelnmesse, which stages the show, said: “IDS is a trade fair in a class of its own and always sets new benchmarks.” Both visitors and exhibitors are impressed by IDS: it is only here that one encounters supply and demand of such an extent, quality and level of internationality. “IDS is the undisputed leading global trade fair for the dental industry,” he continued.

The official figures confirm the high level of internationality at IDS: 73 per cent of the exhibitors and 62 per cent of the visitors came from 166 foreign countries, including Argentina, Australia, Brazil, Canada, Chile, Egypt, Japan, Korea, New Zealand, South Africa and the US. Regarding the 6 per cent increase in foreign visitors, IDS 2019 recorded significant growth in the number of visitors from Asia (+23.1 per cent), eastern Europe (+19.6 per cent), Africa (+17.0 per cent), Central and South America (+14.6 per cent) and North America (+5.3 per cent) specifically.

An independent visitors’ survey reported that the largest groups of visitors came from the dental industry. Schools and universities were strongly represented too. Almost 80 per cent of those who completed the survey stated they were satisfied or highly satisfied with the range of exhibition offerings. More than 93 per cent said that they would recommend visiting IDS, and 70 per cent of the respondents were already planning to visit the next IDS, in 2021.

Dr Markus Heibach, Executive Director of the Association of the German Dental Industry, which is involved in organising the event, was also pleased with the outcome of the trade fair.

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The 39th IDS is scheduled to take place from 09 to 13 March 2021.
Dr. Frank Thiel, you began working in the CAD/CAM business unit at Dentsply Sirona around 5 years ago. At around that same time, the Centre for Advanced Professional Practices and Labs was established. Could you share your experiences with CAD/CAM and digital dentistry, and your views on its significance today with our readers for the upcoming 146th year of this convention – a technological milestone?

Digital technologies and CAD/CAM systems in dentistry have undergone considerable growth. At Dentsply Sirona, we consider ourselves pioneers who moved early into the digital age. Our development of both the hardware and the software was responsible for making dentistry in the first place. We have always been convinced that digital impressions is the way forward.

Now, digital impressions are widely accepted, and competition has become stiffer. So this makes us even prouder that we are able to bring a solution to the market that underscores our pioneering spirit and allows us to provide a solution for an important issue in practice – faster, precise, and accurate digital impressions. It is easy to manage in the usual practice environment, which is reliable, well-documented, and automatically flawless, and which is simply fun to use.

And since you asked about the significance of digital technologies in dentistry – for us it is important to improve the day-to-day work in practices and labs. Digital technologies help us do this by enabling predictable treatment outcomes for many indications. Of course, the competence and skill of dentists and dental technicians will always be important – with our solutions, we want to help both the practitioner and the patient and ensure sustainable success.

Dentsply Sirona is starting a new era in digital dentistry with the introduction of the new intraoral scanner Primescan. What makes this product a technological milestone and how will Primescan change how dentists work? Is it a leap forward? Is it faster, more precise, and more accurate than any other intraoral scanner on the market? Why is that?

Primescan is an intraoral scanner that performs digital dentistry. We base this on four important points:

1. A scan made with Primescan is extremely accurate. Up to 1 million 3D data points are captured per second. With optical high-frequency contrast analysis, they can now be calculated more accurately than before.

2. A recent study by Prof. Albert Mehl from Zurich confirms that Primescan offers the best results with respect to accuracy and precision. According to this measurement, Primescan exceeds by far the highest level of accuracy, you can produce precisely fitting restorations without needing to rework them.

3. Scans can be made very quickly with Primescan. Upper and lower jaws can be scanned in less than one minute, including bite. The data is calculated and rapidly displayed on the monitor in high resolution. Practitioners and patients benefit equally from this speed.

4. Primescan is very easy to handle and can be quickly learned. Users do not need to follow a prescribed scanning protocol, but can scan intuitively and rescan certain areas easily and quickly. The touch interface makes the software easy to use. Artificial intelligence results in a high level of automation of the individual processes.

The question of conventional versus digital implants is hotly discussed for more than 30 years. Where are we today?

We already know that digital impressions are at least as good as conventional impressions. With Primescan, without the user having to make too much effort with the scanner. This is a real advantage. How do our customers react to Primescan?

The initial feedback from users has made us very optimistic. We have received a lot of compliments for the usability and convenience, which is also experienced by the patients. We have also heard that the hygiene safety of Primescan is perceived very positively.

What may your customers expect from you in the near future regarding the development in the area of digital dentistry?

For digital processes, many things are possible certainly 1 addressed monitoring previously. With Primescan, there is no effort required for progress monitoring, for example, to see whether and how the teeth have moved since the last check and how the gums have changed. All of this can be documented easily and reliably.

The second point is artificial intelligence. There is useful data from which to develop solutions, for instance to specifically optimise treatment workflows. We already use learning algorithms in our products today, and there will be increased even more in the future of digital dentistry. In any event, Primescan is a fundamental step in this direction.

INTERVIEW

Interview: "...for us it is important to improve the day-to-day work in practices and labs..."
»Accuracy is what I want. And Primescan is my answer.«

Martin Wohanka, Hardware Engineer

Primescan
Engineered for superior performance.

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. Due to the innovative Smart Pixel Sensor, Primescan processes more than 1,000,000 3D points per second and therefore produces highly accurate and photorealistic data with great dimensional depth – even for very steep surfaces. With Primescan, intraoral scanning is as accurate as never before.

Enjoy the scan.

Learn more at: dentsplysirona.com/primescan
Overcoming the myths of bulk fill composite materials

Bulk fill composite materials were introduced for restorations more than a decade ago; however, many dentists were reluctant to try them due to the limitations and performance of earlier bulk filling materials.

By 3M Oral Care

In addition, most dentists were trained to use incremental filling materials that require a layering technique in order to minimize stress/shrinkage; achieve proper adaption and eliminate voids; and achieve proper depth of cure. Because of this, many dentists find it difficult to trust or incorporate bulk fill materials that seemingly contradict their training.

Older composite resin chemistries feature monomers that need to be layered in 2 mm increments to minimize shrinkage. This traditional layering technique requires more steps and means dentists spend more time working in a patient’s mouth.

Using a traditional layering technique requires multiple steps of packing, layering, and curing, which could increase the potential for voids and/or poor adaptation with each layer. The amount of time that this layering technique requires could also increase the potential to introduce contamination from blood or saliva.

“Since the introduction of bulk fill materials, a significant amount of technology has been dedicated to addressing shrinkage stress, but depth of cure issues persisted for some time,” says 3M Advanced Product Development Specialist Tim Dunbar, Ph.D. “Significant advances in materials science and chemistry in the past decade enable more translucent composites that allow curing light to penetrate to a depth of 5 mm with low shrinkage stress.”

3M™ Filtek™ One Bulk Fill Restorative is designed for the posterior so dentists don’t need to sacrifice wear resistance, strength and handling. It also has opacity equivalent to many typical universal composites materials used today, so dentists don’t need to sacrifice esthetics while working quickly and efficiently.

Unfortunately, despite the great advances made over the last few years, myths about bulk fill materials continue to persist. Let’s take a closer look at the science of Filtek One Bulk Fill Restorative — and break down the myths of bulk fill.

**MYTH 1**
Bulk fill materials are not aesthetic enough (too translucent).

In the past, bulk fill materials needed a relatively high amount of translucency (low opacity) in order to fully cure in a 4-5 mm increment. The concept is quite simple — if the composite needs to cure all the way through 4-5 mm of material then it needs to allow the light to penetrate to a greater degree.

In the decade or so since the introduction of the first bulk fill composites, the field of materials science has exploded. Research and development efforts in the past 5-10 years have yielded bulk fill composites that no longer require a choice between fast and effective depth of cure and esthetics. 3M designed Filtek One Bulk Fill Restorative with unique optical properties and improved opacity to provide the simplicity of one-step placement up to 5 mm, without compromising esthetic results.

3M leveraged its nanotechnology expertise to increase opacity without reducing depth of cure. Its nanoclustered Filtek One Bulk Fill Restorative has a higher opacity than other leading bulk fills restoratives, resulting in improved esthetics. 3M’s nanotechnology also provides superior wear resistance and excellent polish retention.

**MYTH 2**
It is necessary to layer bulk fill materials in order to minimize stress/shrinkage.

Stress is the amount of force exerted on a tooth due to polymerization shrinkage as it sets. This stress can break the adhesive bond, crack enamel and allow leakage at the margin. The amount of stress is determined by the shrinkage of the material and its stiffness.

3M™ Filtek™ One Bulk Fill Restorative excels less or equivalent stress on a tooth than some common incrementally placed universal composites, because it uses two new resin components to reduce polymerization stress.

One resin component is an addition-fragmentation monomer (AFM). During polymerization, the central group can fragment to relieve stress and the fragments can then polymerize in a lower stress state.

The other resin component is aromatic urethane dimethacrylate (AUDMA). Because it’s a larger monomer than found in traditional dimethacrylates, it limits the number of shrinkage zones. This helps reduce the amount of shrinkage and stress that occurs during polymerization.

**MYTH 3**
A bulk fill placed in a 5 mm increment won’t achieve the proper depth of cure.

One bulk fill placed in a 5 mm increment won’t achieve the proper depth of cure. This is a common myth in dentistry due to the depth of cure limitations in earlier generation bulk fill materials. However, recent advances in bulk fill technology have made it possible to achieve a very high depth of cure, even in 5 mm placements.

3M’s nanoclustered Filtek One Bulk Fill Restorative is an effective bulk fill composite. It’s necessary to layer filling materials in order to achieve proper adaptation and eliminate voids.

**MYTH 4**
A bulk fill placed in a 5 mm increment won’t achieve the proper depth of cure.

Methacrylate-based dental composites have the ability to achieve a very high depth of cure, but this has often come at the price of lowered opacity/esthetics (see myth 1). In order to achieve a high depth of cure while maintaining a tooth-like opacity, we must look at the interaction of light between the filler particles and the matrix.

The optical properties (refractive index) of the filler and matrix do not match closely. Light is scattered within the composite resulting in higher opacity. This will limit the depth of penetration of the curing light to effectively enable bulk curing. If the optical properties match closely, light penetrates the composite effectively, resulting in more translucency. This will allow for greater penetration of the curing light and allow for bulk curing. Traditionally, this resulted in more translucent restorations.

By manipulating the base chemistry that controls this behavior, we can control the active material out of its newly designed unit dose capsule, creates the necessary conditions for their training. This means the viscosity of the material temporarily decreases and the material flows into the cavity prep, resulting in excellent adaptation, as well as fewer defects (voids).

In an in-vitro simulated operator test with 79 dentists, restorations placed with Filtek One Bulk Fill Restorative in a 5 mm depth class II cavities had fewer defects compared to restorations made using incrementally placed composites.

For more information, contact your 3M Oral Care sales representative.

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**3M™ Filtek™ One Bulk Fill Restorative**

3M™ Filtek™ One Bulk Fill Restorative utilizes the science described above to achieve a uniform cure even at the bottom of 5 mm cavity, without sacrificing esthetics.

“With fewer defects, fewer voids, less chance of contamination, and less time than universal composites, dentists can make quality restorations with 3M’s bulk fill composites,” adds Dunbar.
You choose it for speed. Now it’s more esthetic, too.

You choose time-saving materials to be more efficient. But, as you know, while patients appreciate shorter appointments, their top concern when it comes to a restoration is how it looks—even in the posterior area. That’s why 3M created 3M™ Filtek™ One Bulk Fill Restorative. Designed for posterior restorations, it gives you the simplicity and speed of bulk placement up to 5 mm ... without compromising esthetic results. Now efficient restorations can be esthetic, too.

www.3M.com
Intraoral welding and linguised (lingual contact) occlusion: a case report

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By Dr Luca Dal Carlo, Dr Franco Rossì, Dr Marco E. Pazzalini, Dr Mike Shulman, Dr Michele Nardone, MD, Dr Tomasz Grotowski and Dr Shel-don Winkler

Intraoral welding was developed by Pierluigi Mondani of Genoa, Italy, in the 1970s to permanently connect submerged implants and abutments together using a wire or bar by means of an electric current (Fig. 1). The current is used to permanently fuse the titanium to the abutments in milliseconds, so the heat generated does not cause any pathology or patient discomfort.

If possible the implants are placed without flaps. The titanium wire or bar is bent and aligned passively to the contour of the labial and lingual surfaces of the implants before applying the electric current to permanently connect titanium implants.

The technique follows a strict surgical and prosthodontic protocol, which includes using a number of implants as close as possible to the number of teeth to be replaced, achieving primary stability by engaging both cortical plates (biconi-
culism), immediate splinting of the implants utilizing intraoral welding and immediate insertion of a fixed provisional prosthesis with satisfac-
tory occlusion. The technique provides for immediate loading and does not jeopardize the integration process.

Although intraoral welding has been used successfully in Europe, especially Italy, for many years, it has yet to achieve everyday use in the United States.

Members of the Italian affiliate of the American Academy of Implant Prosthodontics, NuovoGISI, have long and successful experiences with immediate loading of maxil-
dary implants connected together by intraoral welding.

By inserting the prosthesis with adequate retention and stability the same day as the surgery, patient complaints and discomfort can be avoided or substantially reduced. The instantaneous stability that re-
sults from the splinting can reduce the risk of failure during the healing period. Intraoral welding can also eliminate errors and distortions caused by unsatisfactory impression making, as the procedure is performed directly in the mouth.

Intraoral welding can fulfill a great need for business and socially active persons, as the surgical and prosthodontic procedures are accomplished on the same day. Patients can leave the dental office with a stable, esthet-
ic and retentive prosthesis.

Fig. 1. Schematic drawing of Mondani intraoral solder unit

Fig. 2. Preoperative panoramic radiograph of 50-year-old cauca-
sian woman

Fig. 3. Nonrestorable teeth visible after removal of the patient’s pros-
thesis

Fig. 4. Eight titanium one-piece implants are inserted

Fig. 5. Immediate stabilization of the eight implants and two additional implants previously inserted in the posterior regions, by welding each implant to a 1.5 mm supporting titanium bar

Fig. 6. Panoramic radiograph after 90 days suggests complete integration

Fig. 7. Healthy gingiva was observed after 90 days

Fig. 8. Lower implants welded together introrally

Fig. 9. Three-tooth mandibular fixed prosthesis

Fig. 10. Seven-year follow-up radiograph shows satisfactory pres-
ervation of bone surrounding all of the implants

Fig. 11. Intraoral photograph of the definitive prosthesis shows healthy gingiva

The answers and critiques published herein have been checked carefully and represent authoritative opinions about the questions concerned.

Articles are available on www.cappmea.com after the publication.

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The flapless technique, first proposed by Tramonti, can be performed when the bony crest is wide and an adequate amount of attached gingiva is present. The technique allows for uneventful healing, a reduction of postoperative inflammation and only moderate inconvenience for the patient, who can eat efficiently the same day.

Provisional prosthesis and tooth arrangement

During the surgical session a temporary resin prosthesis is inserted. Ocularal plate height must be correct. A lingualized (lingual contact) scheme of occlusion is recommended. The upper anterior teeth are best arranged without any vertical overlap. The amount of horizontal overlap is determined by the jaw relationship. A vertical overlap for appearance can be provided, provided that an adequate horizontal overlap is included to guard against interference within the functional range.

Lingualized (lingual contact) occlusion

Lingualized (lingual contact) occlusion maintains the esthetic and food penetration advantages of anatomic teeth while maintaining the mechanical freedom of nonanatomic teeth. Among the advantages of a lingualized occlusion are occlusal forces centered over the ridge crest. Occlusal interference, mandibular force is effectively transferred more lingual to the ridges during working side excursions, the “mortar and pestle” type of occlusion minimizes the occlusal contact area providing for more efficient food bolus penetration and elimination of the excessive intercuspation that can complicate the arrangement of anatomic denture teeth.

Lingualized occlusion also prevents cheek biting by holding the buccal mucosa off the food table by eliminating occlusal contacts on the maxillary buccal cusps. Minimizes occlusal discrepancies created from errors in jaw relationships, denture processing changes and settling of the denture base, and simplifies setting of denture teeth, balancing the occlusion and any subsequent occlusal adjustment procedures.

Clinical report

A healthy 50-year-old caucasian woman presented for treatment at the office of one of the co-authors and reviewed at all future appointments

References


Dr Luca Dal Carlo and Dr Franco Rossini are in private practice in Venice, Italy.

Full program 2019


14th edition

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16:45 - 17:30 | Dr Daz Singh, UK
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New PIEZOSURGERY® inserts for sinus lift by lateral approach

By Mectron S.P.A.

After 15 years, Mectron re-defines the sinus lift technique by lateral approach launching on the market 5 new PIEZOSURGERY® inserts developed in collaboration with Professor Tomaso Vercellotti, Italy.

Thanks to the new inserts shapes, the revisited protocol makes the technique easier and safer, minimizing the risk of membrane perforation.

Particularly:
- the new SLC insert allows to perform the osteoplasty of the sinus vestibular wall with maximum safety and unparalleled intra-operative control.
- the new high-efficiency SLO-H insert permits to execute the osteotomy procedures with the maximum safety
- the new thin SLS membrane separator is more efficient in comparison with the old generation “elephant paw” shape.
- the new elevators SLE1 and SLE2, the first one to start the sinus membrane elevation from the sinus floor and the second one to finalize the sinus membrane elevation from the palatal wall, are featured by a sharp tip allowing to cut Sharp-e’s fibers from the endosteum with the maximum safety, protecting it thanks to the convexity of the tips.

The precision and the maximum evidence-based safety guaranteed by these piezoelectric inserts make this kit a wonderful addition to the surgical armamentarium for both novice and expert surgeons.

The inserts will be available separately as well as in a kit with all five inserts dedicated to sinus lift by lateral approach.

Flow variations – The flow variant of the universal composite BRILLIANT EverGlow makes filling extremely simple

By COLTENE

Undercuts, sharp angles or cervical levels present particular challenges when placing conventional composites. Therefore clinicians will benefit substantially from an innovative dental material with an optimum thixotropic property and allows effortless positioning. The flowable consistency is particularly suited for treating areas with difficult access and saves valuable treatment time.

Rapid, voidless fillings

To complete the classical presentation form, the Swiss dental specialist COLTENE now additionally offers its BRILLIANT EverGlow submicron universal composite in a flowable variant. The low viscosity filling material combines convenient application with high stability. Among other things, BRILLIANT EverGlow Flow is ideally suited for filling areas with difficult access as well as for sealing fissures. Due to its flow properties, the restorative material fully comes into its own when filling cavity linings. The flow variant can be applied directly from the syringe to the bonded surface which saves material and time. The composite, which flows under pressure, can then be comfortably brought into the required position until curing. The exceptionally smooth consistency of BRILLIANT EverGlow high performance composite has already captivated many clinicians. Owing to its sophisticated composition of special fillers, the pliable material can be applied easily into all classes of cavities without sticking to the instrument. Not only that, it has long-term stability and excellent polishability.

Find out more

BRILLIANT EverGlow Flow is a user-friendly and highly aesthetic flowable, round-off the programme. Depending on the indication, dentists can in future choose a suitable variant from the extended product range.

For further information, please contact:

colbene@colbene.com

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ONE COAT 7 UNIVERSAL!
All-purpose universal bond

By COLTENE

State-of-the-art, self-etching adhesive systems are easy to apply and boost the success rate significantly, especially when used in restorations in the posterior area. Simultaneously they stand for predictable results, independent of the applied basis or the preferred application technique of the dentist. Coming to reliability and user-friendliness, research and development has now set new material standards.

Reliably adhesive agent on dentin and enamel

The new ONE COAT 7 UNIVERSAL was developed on the basis of the favored ONE COAT 7.0, and is a reliable All-in-One Bond for every indication. Whether self-etch, selective enamel etch or total etch technique, a single drop bonds light curing filling materials quickly and is long-lasting. ONE COAT 7 UNIVERSAL is an excellent adhesion promoter on enamel and dentin, thus is a guarantee for safe restorations even in extraordinary cases. With only a single bonding layer it provides consistent high bonding strength, excellent marginal sealing and excellent marginal integrity. These exceptional clinical values are convincing, even when compared with conventional system adhesives.

In conjunction with ONE COAT ACTI-VATOR it is optionally also possible to use a chemically cured product. You will always be making the right choice with the light-curing single-component adhesive ONE COAT 7 UNIVERSAL!

Ergonomic triangular bottle and single dose – Safe and easy

The universal bonding agent also comes with a new presentation form. The special triangular bottle with its excellent ergonomic handling lies comfortably in the hand and the precision dropper allows precise and economical working.

ONE COAT 7 UNIVERSAL is available as introductory kit with a 5ml bond bottle including etch gel and accessories. There are also practical single dose units for one-off use. These are also offered as refill packs in addition to the 5ml bond bottle.

For more information contact:

mectron S.P.A.
Via cento, 16/A
16042 Casnigo (SO) – Italy
Tel: +39 0385 351374
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Fig: Surgical kit sinus
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2019 AEEDC show hailed a success for Beverly Hills Formula

By Beverly Hills Formula

Once more, oral care experts Beverly Hills Formula were the stand out brand at this year’s AEEDC in Dubai. Each year, the Irish based company takes the trip to the three-day long exhibition, ensuring their bold and eye-catching branding helps them to attract thousands to their stand.

The brand maintains a strong presence at the exhibition show, which gives the team a valuable opportunity to access and engage with dental professionals and stockists in this region, showcasing their impressive portfolio of oral care products.

Currently retailing in UAE, Jordan, Lebanon, Oman, Qatar, Kuwait, Bahrain, Iran and Saudi Arabia, interest in the range of products has always been high and unsurprisingly this year was no different. Already a market leader in the Middle East, the Irish based company have been expanding rapidly, thanks to their wide range of products that have truly made a difference to people’s lives.

It is more than just bold packaging that has attracted a loyal fan base across the globe - the brand has developed truly ground-breaking and fascinating scientific formulations for each product ensuring they are low abrasive yet perform at the highest level. Whether it’s real gold particles or first to market activated charcoal, they have set the precedent for superior and safe teeth whitening in the comfort of one’s home.

This year saw the brand showcase their two hugely successful ranges – The Professional White Range and the Perfect White Range. The Professional White range includes Black Pearl whitening toothpaste, Pink Pearl Sensitive Whitening Toothpaste, Award Winning Professional White Whitening Kit, and the brand at this year’s AEEDC in Dubai.

The Activated Charcoal Whitening Strips offer professional dental whitening in 5 in simple and easy to use steps that only takes 30 minutes.

Thanks to years of dedicated scientific research, Beverly Hills Formula’s cutting-edge products are often on the receiving end of highly prestigious awards. They may be a small company, but their ranges certainly continue to impress – they are confident they are the best in the business, and it is difficult to disagree.

By Ivoclar Vivadent AG

Ivoclar Vivadent is introducing four new milling machines which, together with the innovative materials and coordinated processes offered by the new Ivoclar Digital product portfolio, fulfill the exacting standards of modern dental laboratory and clinical technology.

**PrograMill One**

**the new benchmark**

The PrograMill One is the world’s smallest 5-axis milling machine. It combines industrial manufacturing quality with high precision and modern design. In the innovative 5-axis turning-milling technique, the workpiece rotates around the tool. The feed remains constant; the tool never leaves the block. This ensures short milling times and minimal tool wear. Various validated process strategies are available for different materials and indications. The machine’s wireless capabilities allow it to be operated from any location with the help of a special app for tablets and smartphones.

The optical status display shows the current status of the machine. PrograMill One is coordinated with the scanners and the software in a package.

The unit has been developed for milling IPS e.max in particular.

**PrograMill PM7**

dynamic flagship machine for laboratories

PrograMill PM7 is capable of milling a large variety of materials in a wet and dry state. It is suitable for a wide spectrum of indications. The 5-axis milling process is controlled by means of an integrated PC with a touch-screen monitor. The material and tool changers work in unison so that the fabrication process proceeds independently and without interruption. The centralized management of the contents of the material changer and the tool magazine ensures that the correct milling strategy is used. An on-screen reduces the cleaning requirements when PMMA materials are processed. All in all, the PM7 offers a future-proof solution for manufacturing prosthetic restorations.

**PrograMill PM3/PM5**

economical and precise

PrograMill PM3 and PM5 are designed for wet-grinding and dry-milling procedures. They are capable of processing a wide range of materials for many indications. The fully automated materials management checks the compatibility of the tools and milling strategies. The tool changer ensures consistent, uninterrupted manufacturing. The integrated 8-disc material changer of PrograMill PM5 allows you to accomplish several milling jobs involving different materials and indications at the same time. Individual machining strategies offer short process times for the respective restorations.

**Comprehensive range of accessories**

A comprehensive range of accessories supplements the new machine portfolio. It comprises software programs, a common base station, innovative colour coding to ensure the reliable handling of materials as well as a wide range of tools and special attachments.

IPS e.max® is a registered trademark of Ivoclar Vivadent AG.

For more information contact:

Ivoclar Vivadent AG
Bendererstrasse 2
9494 Schaan, Liechtenstein
Tel.: +423 235 35 35
Fax: +423 235 35 69
E-mail: info@ivoclarvivadent.com
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Dental Tribune Middle East & Africa Edition  |  2/2019

2019 AEEDC show hailed a success for Beverly Hills Formula
Cutting-Edge Oral Care Products From The Teeth Whitening Experts

- Formulated to achieve great stain removal results without damaging the enamel
- Developed to help you achieve professional results in the comfort of your home

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage Stain Removal</th>
</tr>
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<tbody>
<tr>
<td>Beverly Hills Formula Professional White Black Pearl</td>
<td>23.2%</td>
</tr>
<tr>
<td>Beverly Hills Formula Perfect White White</td>
<td>32.8%</td>
</tr>
<tr>
<td>Beverly Hills Formula Perfect White Black</td>
<td>32.8%</td>
</tr>
<tr>
<td>Beverly Hills Formula Professional White Pink Pearl</td>
<td>32.8%</td>
</tr>
<tr>
<td>Colgate Sensitive Pro Relief &amp; Whitening</td>
<td>39.4%</td>
</tr>
<tr>
<td>Colgate Max White One</td>
<td>51.0%</td>
</tr>
<tr>
<td>Arm &amp; Hammer Advanced White Extreme Whitening</td>
<td>40.5%</td>
</tr>
<tr>
<td>Colgate Max White with microcrystals (crystal mint)</td>
<td>34.7%</td>
</tr>
<tr>
<td>Sensodyne Rapid Relief</td>
<td>27.9%</td>
</tr>
<tr>
<td>Oral-B 1-2-3</td>
<td>29.1%</td>
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<tr>
<td>Sensodyne Repair &amp; Protect</td>
<td>24.3%</td>
</tr>
<tr>
<td>Oral-B Pro Sensitive</td>
<td>14.7%</td>
</tr>
<tr>
<td>Curaprox Black &amp; White</td>
<td>12.3%</td>
</tr>
<tr>
<td>Sensodyne Pro Enamel Gentle Whitening</td>
<td>9.4%</td>
</tr>
<tr>
<td>Denturex Water</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
New PIEZOSURGERY® inserts for sinus lift by crestal approach

By Mectron S.P.A.

Mectron introduces a new piezoelectric technique for sinus lift by crestal approach, launching on the market 3 new PIEZOSURGERY® inserts developed in collaboration with Professor Tomaso Vercellotti, Italy.

Thanks to the new inserts shapes, the new Piezo-lift technique facilitates the sinus lift by crestal approach making the technique even safer, minimizing the risk of membrane perforation, guaranteeing a safe membrane detachment and fewer post-operative complications for the patient.

This new protocol allows the membrane elevation by utilizing the cavitation effect (Piezo Lift) and the bone grafting into the sinus cavity, which is the least invasive technique for elevating the maxillary sinus floor prior to implant placement.

Particularly:
• the new PL1 insert allows the sinus floor reaching and a safe bony ring removal
• the new PL2 insert permits to execute the sinus floor consumption and the initial membrane elevation
• the new PL3 insert allows the removal of the sinus basal cortex and the elevation of the sinus membrane using the cavitation effect.

Thanks to its shape, PL3 insert works like a piston inside a cylinder. This safe and predictable technique (at times no longer blind) allows to overcome the limitations of current methodology that highly depend on the individual operator’s skill.

The application of Piezo-Lift protocol allows treating even the most difficult cases, which present severe reduction of residual crest bone volume.

The inserts will be available separately as well as in a Kit with all three inserts dedicated to sinus lift by crestal approach.

IPS e.max ZirCAD Prime: redefining zirconia

Ivoclar Vivadent presents a highly aesthetic zirconium oxide in a “one-disc solution” for dental laboratories

By Ivoclar Vivadent AG

Only few brands have actually managed to revolutionize the dental market. IPS e.max is one of them. Now, Ivoclar Vivadent launches IPS e.max ZirCAD Prime, a material that is redefining zirconia.

Is there a disc that features high-strength and high aesthetics? A disc suitable to faithfully reproduce the seamless progression of natural dentition? A disc with a broad range of indication? Yes, there is a disc that fulfills the requirements of state-of-the-art all-ceramic restorations: IPS e.max ZirCAD Prime from Ivoclar Vivadent.

Gradient Technology (GT) is the secret
IPS e.max ZirCAD Prime complements the current zirconia portfolio of the successful and most-sold all-ceramic system in the world and is based on an all-new type of manufacturing technique. The Gradient Technology (GT) is the heart of the new material, combining three innovative processing steps in one product: Ingenious powder conditioning of the raw materials Y3-TZP and Y5-TZP; innovative filling technology and top-quality manufacturing allow for highly aesthetic results to be achieved with outstanding accuracy of fit. The sintering times among other things have also been streamlined to, for example, ≥ 3h 26 min for single crowns in the Programat SI 1600.

A new era in zirconia technology
Unlike the Multi zirconium oxide disc, the IPS e.max ZirCAD Prime disc is not built up with layers. A continuous, seamless progression of the shade and translucency and optimized translucent properties ensure high-end aesthetics. The new disc is setting new benchmarks in the aesthetic appearance of zirconium oxide, irrespective of whether the monolithic, cut-back or veneering technique is used. IPS e.max ZirCAD Prime covers a wide array of indications – ranging from single tooth crowns to 14-unit bridges. The material features a biaxial flexural strength of 1,200 MPa (dentin) and a fracture toughness of > 5 MPa · m1/2 (dentin). IPS e.max ZirCAD Prime is available in 16 A-D shades and 4 BL shades and is compatible with the IPS e.max system.

IPS e.max and Programat are registered trademarks of Ivoclar Vivadent AG.

For more information contact:
Ivoclar Vivadent AG
Bendervorweg 2
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A clinical case using the Palodent® V3 Sectional Matrix System

By Prof Dr A. Lussi Bern, Switzerland

Objective

Cutting and finishing approximal preparations with conventional instrumentation and methods may produce iatrogenic damage in adjacent tooth surfaces which subsequently requires restoration. The objective of this investigation was to determine the occurrence of iatrogenic damage and whether, under everyday working conditions in dental practice, such damage could be reduced significantly by using an alternative method and instrumentation designed especially for the purpose.

Method

Dental practitioners were asked to take impressions of teeth scheduled for Class II amalgam restorations. One group (control) prepared the teeth with conventional rotary instrumentation (\(n = 71\)), while the test group used a new method and instrumentation (\(n = 63\)). These comprised a set of files, a right-angle handpiece with reduced stroke, 36 fixed (rotation-locked) positions for the files and a cylindrical bur with a recessed front-end cutting surface. Damage to the adjacent teeth was assessed under a stereomicroscope.

Results

Using conventional methods, all adjacent tooth surfaces showed damage, often exposing deep layers of dental tissues. There was a clinical and statistically significant reduction of incidence and severity of iatrogenic preparation trauma in the test group.

Conclusion

It appears that conventional approximal box preparation results in significant damage to adjacent tooth surfaces. With the system tested, damage to adjacent tooth surfaces during preparation of proximal boxes can be significantly reduced. This should have an impact on the subsequent rate of restoration for the adjacent surfaces.

1 Palodent® Plus was re-branded to Palodent® V3 in 2015.

Insert Palodent® V3 WedgeGuard before starting preparation

WedgeGuard protects adjacent tooth during preparation

Remove plate from WedgeGuard, wedge remains

Palodent® V3 WedgeGuard showing damage caused to the WedgeGuard (and not the adjacent tooth) after tooth preparation

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Dentaply Sirona
21st Floor, The Bay Gate Tower
Business Bay, Al Sa’ada Street
Dubai, United Arab Emirates
Tel.: +971 (0)4 523 0600
Web: www.dentsplysirona.com/en
E-mail: MEA-Marketing@dentsplysirona.com

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• Precision due to micro-fine film thickness
• Translucency for an aesthetic result

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• High filler content
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dietmar.goldmann@coltene.com  
everglow.coltene.com | www.coltene.com
Digital workflow and application of PRF and ozone therapy in oral rehabilitation

By Dr Miguel Stanley, Dr Ana Paz, Dr Catarina Rodrigues & Dr Diogo Mendes, Portugal

There are numerous technologies that simplify the daily work, such as intraoral, extraoral and face scanners, CBCT (cone beam computed tomography) with a low radiation dose, and software processing and production, better known as CAD/CAM (computer-aided design/computer-aided manufacture) which together with new aesthetic materials and prototyping tools (milling machines and 3D printers) are rapidly transforming dental medicine. This case report has the aim of presenting an example of prosthetic digital workflow, with the integration of several technologies that help us achieve treatment success.

Introduction

The digital revolution has changed the world and dental medicine is no exception. We live in the digital era, we have the materials and techniques that allow us to develop a totally digital workflow, allowing dental medicine to grow to a new level, becoming faster and more efficient, when combined with scientific and clinical knowledge.

Clinical case

In November 2017, a 39-year-old female patient came to an initial appointment at White Clinic owing to tooth pain (tooth #16). A clinical and radiographic examination were performed, including a periapical radiograph, CBCT scan (Carestream 9500, Carestream Dental), and intra- and extraoral photographs (Fig. 1).

In the clinical and radiographic evaluation, it was observed that tooth #16 presented an invasive cervical resorption at the mesiobuccal root. The treatment plan established was to remove the tooth, in order to perform an extraction surgery, prosthetic phase was planned, along with a monolithic zirconia crown. Due to the current protocol in White Clinic is to perform an extractions of resistant teeth in one session, the patient agreed to the treatment plan. This was planned as an example of prosthetic digital workflow, with the integration of several technologies that help us achieve treatment success.

Once the implant bed had been prepared, a 7 × 10 mm implant (Any-Ridge) was placed. After placement, the implant was covered with a bone graft of porcine origin (Gen-Os, Os- teohealth, Kyoto, Japan) and a plug of a PRF (platelet-rich fibrin, PRF process by Choikoun, Figs. 5a & b). Afterwards, bone densification was performed through a sequence of Denafel drills (Denafar, Burn, Vernah, Fig. 6a). This type of drill allows the clinician to perform a bone densification process.

One week after the preparation, the definitive crown in monolithic zirconia (Lab, where a crown was designed using a CAD program. After the design of the crown had been finished, the information was sent to a milling machine (Amann Girrbach) and the crown had been finished, the information was sent to a milling machine (Amann Girrbach) and the crown was milled (Fig. 12).

Discussion

The main success indicator for dental implants is primary stability, which is one of the prerequisites for achieving osseointegration. This is affected by factors such as bone quality and quantity, surgical placement procedure, and implant shape and coating.

This stability can be measured with a device that analyzes the resonance frequency of the implant after its placement. The software converts the received hertz waves to a numerical value called ISQ on a scale ranging from 1 to 100. The manufacturer’s instructions suggest that a stable implant has an ISQ higher than 65 and an unstable implant less than 50. However, these values differ from one author to another.

Nowadays, we have several options that can help us achieve a successful rehabilitation with implants. One of them is the use of a fibrin membrane (Cylons, Platelet-Rich Fibrin, i-PRF) during implant surgery. This new concept of centrifugation, resulting in A-PRF and i-PRF. These new protocols seek to obtain a greater number of platelets, in order to increase the healing capacity, and leukocytes, therefore also increasing the regenerative capacity.

Oncio and Aladddinoglu evaluated the impact of platelet coating with L-PRF (leukocyte- and platelet-rich fibrin) on the stability of the implant was measured by ISQ. The use of L-PRF in the implant insertion resulted in statistically significantly higher ISQ values that continuously increased over time. Boora et al reported early bone remodeling around implants coated or not with L-PRF at the insertion. Implants coated with L-PRF showed 50% less initial bone loss after both one and three months, respectively. Nowadays, centrifugation protocols have been optimised, the low speed concept of centrifugation, resulting in A-PRF and i-PRF. These new protocols seek to obtain a greater number of platelets, in order to increase the healing capacity, and leukocytes, therefore also increasing the regenerative capacity.

Furthermore, positive effects on bone regeneration and implant surgery have been suggested when PRF is applied. Given its ease of preparation, low cost and biological properties, PRF can be considered as a reliable treatment option. Although the software application of PRF during implant placement or for the treatment of peri-implant defects is quite recent, several studies have already shown clinical benefits, such as higher ISQ values and marginal bone resorption.

Another technique that has proven to be an asset in the success of oral rehabilitation with implants is ozone therapy. This ozone-based tool has an antibacterial effect resulting from the oxidative action on cells, damaging the cytoplasmic membranes of certain organisms, such as bacteria, viruses, fungi and parasites. Without, however, the ability to damage healthy human cells. Thus, ozone has the following advantages: accelerates the healing of soft tissue (accelerates the rate of physiological healing), controls opportunistic infections, reduces scarring time after extraction (forms a pseudomembrane over the alveolus and protects it from physical and mechanical aggression) and aids in bone regeneration.

The literature suggests that after extraction, the socket must be prepared conventionally and disinfected with ozone for about 40 seconds, followed by placement of the implant. In this way, we avoid infections and improve bone regeneration. Furthermore, in modern digital dentistry, the four basic phases of work are image acquisition (through scanning), data preparation/processing (through CAD software), production (CAD systems) and clinical application on patients. The dental preparation can...
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be scanned outside the oral cavity, on the plaster model, or inside the oral cavity by an intraoral scanning system. Optical impressions have several advantages over conventional impressions. Among them, the most important is the reduction of patient stress and discomfort. Moreover, optical impressions are time-efficient and can simplify clinical procedures for the dentist, especially for complex impressions (in patients with undercuts and/or in oral implantology, when multiple implants are present). In addition, optical impressions eliminate plaster models, saving time and space, and allow for better communication with the dental technician. Finally, optical impressions improve communication with patients and are therefore a powerful marketing tool for the modern dental clinic.

Regarding accuracy as compared with conventional impressions, optical impressions are equally accurate for individual restorations or three-to-four-unit bridges on natural teeth and on implants. Conversely, conventional impressions still appear to be the best solution currently for long-span restorations, such as fixed full prostheses on natural teeth and implants with a higher number of prosthetic abutments. Significant differences in trueness have been found among different optical impressions. For each scanner, the trueness was higher in a partially edentulous model than in a fully edentulous model.

Conversely, the disadvantages of using optical impressions are the difficulty in detecting deep margins in prepared teeth and in the case of bleeding, the learning curve, and the purchasing and maintenance costs. Nowadays, we also have the possibility to superimpose the information related to the teeth and gingivae, received from the intraoral scan, over the bone-related information acquired with CBCT. It is therefore possible to plan the optimal positioning of implants with software to guide the surgery. Planning data is transferred to a surgical template that can be physically fabricated in various ways and with different materials. This guide will help the surgeon correctly position the implants without needing to raise a flap.

Conclusion

The use of new technologies in dentistry, such as the application of PRF, ozone therapy and intraoral scanners, has contributed significantly to the success of rehabilitation with dental implants, reducing the time for implant placement and for their restoration.

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

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Dr. Miguel Stanley
Rua Dr. António Loureiro Borges, ed. 5, 1o Andar Arquiparque
Miraflores
1495-131 Algés, Portugal
Phone: +351 21 396 2727
info@whiteclinic.pt
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Programme outline: Introduction to contemporary endodontics. Understanding of instrument design and its effect on prevention of iatrogenic errors.
Hands-on: Hand filing and lateral compaction techniques.

Module 2  |  19-22 June 2019 (4 days)  |  Aetiology and Diagnosis of Endodontic Disease
Programme outline: Microbiology of endodontic disease and its relationship with the host immune response.
Hands-on: Rotary NiTi and advanced thermoplastic obturation techniques.

Module 3  |  12-15 September 2019 (4 days)  |  Traumatic Injury, Pain and its Management
Programme outline: Emergency endodontics and diagnosis in depth. Odontogenic and non-odontogenic pain. Diagnosis and management.
Hands-on: Rotary NiTi and thermoplastic obturation techniques.

Diploma  |  3 Modules  |  12 Days

Module 4  |  December 2019 (4 days)  |  Dental Resorption and Pattern of Tooth Fracture & Implant Prosthodontics
Programme outline: Understanding advanced endodontic problems. Handling endodontic failure alternatives related to implants.
Hands-on: Reciprocating NiTi and Carrier based thermoplastic obturation techniques & Implant prosthetic and surgery on phantom heads

Module 5  |  March 2020 (4 days)  |  Restoration of Endodontically Treated Teeth
Hands-on: Placement of core restorations and post retained restorations.

Module 6  |  June 2020 (4 days)  |  Management of Endodontic Failure
Programme outline: Endodontic retreatment, surgical endodontics.

+971 528423659 | p.mollov@cappmea.com
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Revolutionary Technology in Additive Manufacturing – by 3D Systems

By 3D Systems

NextDent™ 5000 by 3D Systems, a high-speed 3D printer – powered by Figure 4™ technology helps dental laboratories and clinics redefine their workflow to achieve improved accuracy, repeatability and productivity with lower total cost of operation. When used in conjunction with the company’s robust portfolio of certified NextDent materials, dental labs and clinics are able to address the broadest range of indications from a single printer available today. This plug-and-play solution integrates with the industry’s state-of-the-art intra-oral scanning and software solutions delivering a much more precise result than available with manual production. The benefits of the NextDent 5000 solution extend to the patient – reducing the time required to produce orthodontic and prosthodontic 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 bridge from traditional methods to a digital workflow, revolutionizing their business.

“With 3D Systems’ NextDent solution, dental laboratories and clinics are now able to produce dental devices at dramatically increased speeds up to 4X faster than other available solutions while reducing material waste and capital equipment expenditure as well as reliance upon milling centers,” said Rick Jacobs, vice president, general manager, dental, 3D Systems. “Benefits also extend to the patient by reducing the time it takes to produce prosthodontics and orthodontics, as well as the number of required office visits.”

This new solution is already demonstrating its ability to truly revolutionize the dental workflow.

“The NextDent 5000 is the fastest dental 3D printer I’ve ever seen, with accuracy and precision that result in extremely fine detail,” said Adrienne Slevin, director of education and technology, Dental Arts Laboratories.

NextDent 5000 is a beta test site. The NextDent process is equally simple and straightforward.

Dental Laboratories has been able to achieve print speeds more than 4X faster than comparable printers – completing print runs for some indications in as little as 28 minutes. 3D Systems’ 3D Sprint software, which is bundled with the NextDent 5000, provides Dental Arts Laboratories with a complete CAD optimization and print management tool, helping to more efficiently produce dental devices.

The NextDent 5000 is powered by 3D Systems’ proprietary Figure 4™ technology, which facilitates high-speed 3D printing of dental devices and fixtures.

The printer is compatible with industry-leading, intra-oral scanning and dental software solutions, delivering more precise results than conventional manual production techniques. This end-to-end digital workflow also provides higher and more predictable uptime, with a significant reduction in risk for the operator.

3D Systems is also providing 18 new NextDent materials for an unprecedented total of 30 different options. All NextDent materials are biocompatible and CE-certified to cover a broad range of dental applications for lab managers, dental technicians, dental prosthetic technicians and clinical prosthodontists and orthodontists.

“As of this week, we’re shipping the NextDent 5000 for Dental. I’m pleased with how it has performed during the testing phases, and that dental labs and clinics are seeing the power of 3D printers redefine digital dentistry,” said Vyomesh Joshi, president and chief executive officer, 3D Systems. “With the addition of these printers 3D Systems offers the industry’s widest range of regulatory-approved 3D printing materials and technologies that allow dental labs and clinics of every size to improve their customer service and competitiveness with more accurate dental devices, delivered faster than ever before.”

For further information, please contact:

3D Middle East, 3D Systems Distributor
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Why occlusion matters?

By Vivek Gupta, UK

Occlusion is the cornerstone of successful dentistry; however, it is also perhaps the most misunderstood subject in dentistry. Why do restorations done with occlusal understanding last the test of time, whilst a lack of occlusal understanding causes iatrogenic damage to patients?

90% of the patients have occlusal disease, so learning the Principles of Occlusion and about Occlusal Assessments will allow you, as a dentist, to begin to treat occlusal disease, confidently and competently.

Understanding the language of occlusion and the schools of thought that exist will allow you to fully integrate the 5 principles of occlusion into your daily dentistry.

Knowing the theory of levers will allow dentists to explain clearly and logically to patients such that consent given is informed and patients are educated correctly about occlusal disease. Allowing them to make informed and legally correct choices, whilst allowing the clinician to practice defensive but correct dentistry.

Large VH and HV slides, when to treat and when to refer is fundamentally important. Understanding how this works and how these can be used to treat patients will reduce treatment or restoration failure.

Knowing when to use splint therapy, types of spilters and duration and protocol of treatment will allow you to provide excellent care for all your patients bringing a whole new area of treatment available for your patients.
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- Dr. Munir Shwadi, UAE, Specialist Prosthodontist and Implantologist

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Module 2 | 31 October - 03 November 2019 (4 days) | Treatment Planning and Surgical Treatment
Programme outline: implant design, radiographic techniques, implant surgery, implant specific treatment planning. Basic practice management.

Module 3 | 22-26 January 2020 (4 days) | Restorative Aspects of Implantology
Programme outline: restorative techniques, prosthetic hands-on training, patient treatment, follow-up and oral hygiene, complications to avoid and treat. In depth practice management.

Diploma | 3 Modules | 12 Days
Module 4 | 16-19 April 2020 (4 days) | Immediate and Early Loading Concepts and Treatment of the Resorbed Jaw
Programme outline: tooth now concept, immediate and early loading concepts from single tooth to fully edentulous patients, severely resorbed jaws, sinus lift and ridge splitting techniques, hands-on training and live patient surgical treatment.

Module 5 | 11-14 June 2020 (4 days) | Medical Compromised Patient and Soft and Hard Tissue Management | Aesthetic and Restorative Challenging Patient
Programme outline: medications related osteonecrosis, GBR techniques, soft tissue management, implant aesthetics, ceramics and implants.

Module 6 | 03-06 September 2020 (4 days) | Rare Complications and Techniques
Programme outline: rare complications, combination implants and teeth, live patient treatment, written and oral examination and case presentations.

+971 528423659 | p.mollov@cappmea.com
www.cappmea.com/implant
The shape of an anterior restoration significantly influences the symmetry of the gingival contours. Provisional restorations that prove to be suitable both in terms of their function and aesthetics allow permanent restorations to be precisely manufactured with the help of digital methods.

Unfavourably positioned teeth and/or an asymmetric contour of the soft tissue represent a considerable challenge in the already difficult anterior zone. In order to achieve a natural-looking result, the shape and shade of the restoration have to be suitably matched to the remaining teeth and furthermore the soft tissue needs to be properly conditioned. In many cases, provisional restorations are initially used by the dental team so that the special requirements of the gingiva can be effectively addressed.

**Case study**

The 35-year-old patient consulted us to treat the carious lesions of the position of the wax crowns with the help of digital scan methods. The digital data sets were superimposed on each other. Prior to the removal of the provisional crowns, additional precision impressions were taken. In the laboratory, the data of the preparation and impressions were processed and CAD/CAM processes in the fabrication of restorations were performed. The data of the provisional crowns were placed (Fig. 3). The right lateral incisor was lengthened. Consequently, the anterior crowns would have to be not only functional and aesthetic, but also very strong and tough. We planned to use six all-ceramic crowns to optimize the length-to-width ratio (tooth lengthening) and even out the gingival contours.

**Planning**

Our plan was to reconstruct the upper anterior teeth. In choosing the most suitable material for the restorations, we had to take into account the fact that the patient enjoyed eating hard nuts. Furthermore, he reported that he had a habit of grinding his teeth at night and clenching his jaws. Consequently, the anterior crowns would have to be not only functional and aesthetic, but also very strong and tough. We planned to use six all-ceramic crowns to optimize the length-to-width ratio (tooth lengthening) and even out the gingival contours.

**Manufacturing technique and selection of the materials**

In order to minimize the risk of fracture of the ceramic restorations, we decided to use IPS e.max Press lithium disilicate ceramic, which demonstrates a high toughness of 470 MPa as well as excellent aesthetics. In addition to the monochrome press ingots, this ceramic system includes a polychromatic material (Fig. 2). IPS e.max Press Multi ingots are used to fabricate highly aesthetic monolithic restorations that do not need any characterization. They feature a lifelike progression of the shade and translucency between the dentin and incisal areas. The press technique, which involves the use of a full-contour wax-up, offers a quick and uncomplicated method of manufacturing crowns. Moreover, the press technique allows us to reproduce delicate gingival contours with utmost precision. In restorations that are built up

**Short cut in the digital fast track**

Exact reproduction of provisional with IPS e.max Press Multi

By Dr Hyun-Jun Jung and Kyung-Sik Park, Seoul/South Korea

© Heal Dental Clinic

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ZirCAD MT Multi
The most esthetic high-strength, multi-translucent\(^1\) zirconia

\(^1\) Composed of different material classes
By Dentsply Sirona

Part of creating an optimal workflow involves the ability to reliably plan for variables that differ with each patient. 3D imaging gives the clinician the ability to view anatomical structures not seen in two-dimensional images. The following case study involving a male patient in need of a restoration shows the advantages of utilizing 3D imaging and an integrated digital workflow.

Methods

In this case, an Orthos SL 3D from Dentsply Sirona was used for both panoramic and DVT scans. Digital impressions of the patient were taken with a CEREC camera and implant planning took place within the Gallieans Implant software. For guided surgery, the team used CEREC Guide 5 milled in-house at their dental laboratory on an inLab MC X5 milling machine.

Case Study

A 52-year-old male patient presented to our practice with gap in the area of teeth 45-47. He wanted this area restored. We used the Orthos SL 3D to take a panoramic scan for planning purposes.

The patient opted for a treatment plan involving the insertion of two implants and then an implant-supported bridge. Digital imaging, combining DVT with CEREC optical impressions were used to plan the implant surgery in Gallieans Implant software. The software creates an implant proposal as well as enables planning of the alignment of the prosthesis. The ability to plan and perform virtual surgery allowed the team to maximise safety and minimise risk. CEREC Guide 2 was chosen in the treatment plan and then milled in our practice to use during surgery.

An additional DVT image was made in the Orthos SL’s Low Dose Mode as a check post-implantation. Hybrid abutments on titanium base for the final restoration were chosen.

Summary

Reliable planning makes for an efficient treatment while helping to minimize risk. 3D imaging is an important part of creating a solid plan and the integrated digital workflow offered by using the Orthos SL along with relevant planning software saves time for the practitioner and is also efficient for the patient by reducing the number of times he/she has to come to the practice.

For more information contact:

Dentsply Sirona
21st Floor, The Bay Gate Tower
Business Bay, Al Salem Street
Dubai, United Arab Emirates
Tel: +971 (0)4 523 0600
Web: www.dentsplysirona.com/en
E-mail: AEA-Marketing@dentistry.sirona.com

Reliable planning for an optimal workflow

E-mail: healdentalclinic@gmail.com
Seoul, South Korea

The abutment teeth were separated and the margins and contours were adjusted (Figs 6 to 8).

This approach allowed the shape of the provisional crowns to be exactly replicated. We focused on recreating the subgingival contours, which support the oral soft tissue, so that the restorations would not have to be modified.

Spraying and pressing

In the next step, the wax crowns were reproduced with a pressed ceramic (IPS e.max Press Multi). For the investment procedure, the wax patterns were attached to a special prefabricated precision wax component (IPS Multi Wax Pattern). At this stage, it is important to make sure that the attachment joint is not too thick and that it is aligned with the laval surface. This helps to accentuate the unique shade gradation of the material. The wax restoration attached to the Wax Pattern was subsequently secured in the slot of the IPS Multi investment ring base. The position of the sprue was checked with the help of the IPS Sprue Guide (Fig. 11). The shade progression within the crown can be adjusted as required. For example, if the incisal portion should be more pronounced, the wax pattern is simply moved downward on the investment ring base (max. 2 mm). The preheating, pressing and divestment steps were carried out in the customary way and in line with the instructions of the manufacturer.

Finishing

The present restorations can be adjusted if desired in order to accentuate certain individual characteristics. In the present case, the unglazed restorations were tinted in the patient’s mouth before the stains and glaze firing. At this stage, most of the clinically important properties were clearly recognisable: tooth axes, suitable pressure on the adjacent soft tissue (e.g. papillae and gingival contour), harmony of the lip line and incisal edges as well as the symmetry of the crowns. The patient was satisfied with the optimised length-to-width ratio of the teeth. The main aim now was to reproduce this situation with utmost precision. The interocclusal record was sent to the laboratory in order to minimize the work involved in the adjustment of the occlusion. The surface texture of the IPS e.max Press Multi crowns was created with suitable grinding instruments before the glaze firing cycle. The restorations were then characterised with IPS Incolor stains (copper, white and anthracite) and glazed. The crowns were manually polished to the desired brilliant sheen (Fig. 12).

Placement

The excellent collaboration of the dentist, technician and the patient paid off. The restoration was swiftly placed in the practice without having to make any further adjustments. The clinical situation which was created on the model and with the help of provisional restorations could be successfully reproduced in the permanent restoration (Fig. 13). The patient and the dental team were highly satisfied with the result.

The entire treatment process was straightforward and efficient.

Result

One month later, the teeth and gums looked beautiful and healthy without any inflammation (Figs 14 and 15). Digital workflows minimise efforts but maximise aesthetics. The possibility of replacing the subgingival contours of the provisional crowns allowed a variety of modifications to be made during the treatment process. The IPS e.max Press Multi material itself offers an impressive array of aesthetic properties. If a restoration requires even more individualised characteristics, the incisal area can be built up with IPS e.max Ceram layering materials (cut-back technique). The presented process shows that the traditional press technique combined with CAD/CAM methods offers a wide variety of benefits and provides a basis for further individualised applications. The discovery of further creative uses involving a combination of these two techniques is only a question of time.

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The World Congress as a turning point for laser dentistry

By Dental Tribune International

The 16th World Congress in Laser Dentistry was hosted in Aachen, Germany, giving international dental professionals the opportunity to network and learn about the latest developments in their field of expertise. Leon Vanweersch, member of the organising committee, spoke to Dental Tribune Online about the event, being promoted as the largest ever, and about his commitment to laser education as Business Development Manager at the Aachen Dental Laser Center (AALZ).

Mr Vanweersch, this year’s World Congress in Laser Dentistry was expected to be the most successful, of the highest scientific level, and the biggest and most international World Federation for Laser Dentistry conference ever. Did it meet the attendees’ expectations?

First of all, it was our intention to make this congress a turning point in the set-up and structure of executing such congresses. This congress integrated science and practical experience on different levels of presentations and demonstrations, including by highly rated international keynote speakers, on-stage live patient demonstrations, interactive digital poster presentations, oral presentations combined with relevant clinical skill training, short presentations on the latest research findings, outstanding clinical case presentations, company-supported workshops, and certificates for continuing education credits. We welcomed participants from all over the world travelling to Germany from 49 countries, such as Canada, Australia, China and Argentina. There were more than 200 presentations spread over the three days in a huge programme. In addition, our social events have certainly beaten those of all past World Federation for Laser Dentistry congresses.

What were your personal programme highlights?

Besides the fact that I am proud to have welcomed so many international attendees, I am personally very happy and excited to have welcomed back so many Aachen graduates from our mastership and MSc courses all over the world, which made this event also a kind of reunion of the AALZ–WALED [World Academy for Laser Education and Research in Dentistry] family. Besides the high scientific level of the plenary speakers we secured for the congress, I am sure that the gala event was an absolute highlight.

The congress was held under the theme “Three decades of laser innovation”. What is the status of laser technology in international dentistry at present?

I personally think that every high-standard dental clinic today should have integrated laser or laser-assisted dentistry in their therapies, in order to claim to be innovative and state-of-the-art.

How did you initially become involved with laser dentistry?

I started already in 1992, together with Prof. Dr Norbert Gutknecht, the first laser safety officer courses for dentists in Germany at RWTH Aachen University. Over the next few years, we started to offer laser workshops in Germany and later also internationally. From 1994 on, we additionally organised the national congress of the German Society of Laser Dentistry every year. Under the leadership of Prof. Gutknecht, we did many research projects for various laser companies. An absolute highlight was the worldwide initiation of the first Master of Science in Lasers in Dentistry programme at RWTH Aachen University in 2004. For many years, we have been organising one-year mastership courses in dental laser therapy in many countries worldwide, and have produced more than 1,000 laser dentists in the time at the AALZ.

Mr Vanweersch, thank you for your time.

For further information, please contact:
Leon Vanweersch
Aachen Dental Laser Center – AALZ
Pauwelsstraße 17
52074 Aachen, Germany
Web: www.aalz.de
From Aachen Dental Laser Center & RWTH International Academy - RWTH Aachen University & CAPP

Certification Course

One-year clinical specialisation course for selected wavelengths

**DUBAI, UAE**
Module 1 | 23-26 October 2019 (4 days) | Laser Safety, Laser Devices and Diode Lasers
Laser Safety Officer course | e-learning | Laser technique (Diode lasers) | High power Diode lasers (clinics)
Scientific background and clinical indications | Skill training every day of every clinical indication | Patient treatments (demonstrations)
**Hands on:** Pigmentation on soft tissue, gingivectomy and gingivoplasty, frenectomy, fibroma removal, crown lengthening, depigmentation, endodontic procedure - canal irradiation performed on sheep heads | Patient treatments (demonstrations)

Module 2 | 11-14 March 2020 (4 days) | Module Erbium Lasers
Laser Safety Officer course | e-learning | Laser technique (Diode lasers) | High power Diode lasers (clinics)
Erbium Lasers (clinics) | Laser technique (Erbium lasers) | Er:YAG and Er,Cr:YSGG | Scientific background and clinical indications | Skill training every day of every clinical indication | Patient treatments (demonstrations)
**Hands on:** Preparation in enamel and dentine, generation of a retentive surface, canal decontamination, apicectomy, soft-tissue cut with short pulses, soft-tissue cut with long pulses, open curettage, crown lengthening and bone preparation performed on sheep heads | Patient treatments (demonstrations)

Module 3 | 13-16 December 2020 (4 days) | Combined Wavelengths Therapy Concepts & Mastership Exams
Laser therapy concepts with the use of 2 different wavelengths | Written multiple-choice exam | Oral Exam (presentation of 5 patient treatments cases with diode or Erbium lasers) | Graduation Ceremony, after successful completion of an examination at RWTH Aachen University | 600 hours total workload | Over the complete course duration: case documentation & discussions

**AACHEN, GERMANY**
Module 1 | 23-26 October 2019 (4 days) | Laser Safety, Laser Devices and Diode Lasers
Laser Safety Officer course | e-learning | Laser technique (Diode lasers) | High power Diode lasers (clinics)
Scientific background and clinical indications | Skill training every day of every clinical indication | Patient treatments (demonstrations)
**Hands on:** Pigmentation on soft tissue, gingivectomy and gingivoplasty, frenectomy, fibroma removal, crown lengthening, depigmentation, endodontic procedure - canal irradiation performed on sheep heads | Patient treatments (demonstrations)

The programme targets dentists who would like to specialise in certain wavelengths. Over the course of one year, participants are taught fundamental physical and technical knowledge, and how to recognise primary, secondary, and tertiary indications on 12 attendance days split into 3 modules held over 3 educational blocks. This programme concludes with an official certificate of RWTH Aachen University, and is offered in collaboration with the RWTH Aachen International Academy, the post graduate education wing of the University.

+971 528423659 | p.mollov@cappmea.com
www.cappmea.com/laser
Great results in treating periodontitis using the SiroLaser Blue

By Dr Michael Kreich, Germany

Periodontitis, an inflammatory disease affecting the tissues supporting the teeth, is triggered by bacterial biofilms on root surfaces and/or mineralized deposits in gingival pockets. Treatment thus focuses primarily on removing peripathogenic bacteria, generally mechanically by cleaning the teeth and gingival pockets.

Dr. Michael Kreich, a dentist from Marburg, presents a case history to describe how the additional use of a laser can prove advantageous when pocket depths are greater.

In most cases, periodontitis becomes a chronic disease that damages the tissues supporting the teeth. The inflammatory reactions in the immune system are triggered by bacteria. Depending on the kind of periodontitis, various species of bacteria can be found in the inflamed areas. In chronic periodontitis, for example, Aggregatibacter actinomycescomitans, Porphyromonas gingivalis, and Prevotella intermedia can be found. In acute periodontitis, Fusobacterium nucleatum and Capnocytophaga are also present. Porphyromonas bacteria in particular are responsible for severe damage. They prevent certain defense cells (neutrophil granulocytes) from functioning. Aggregatibacter species that can penetrate the soft tissue are also significant.

Case history

The treatment of a patient with periodontitis is described below, where Bensheim) was also used in addition to the SiroLaser Blue (Dentsply Sirona, Bensheim) was also used in addition to classic periodontal treatment, scaling & root planing.

The patient's teeth were cleaned at this appointment and he was given detailed oral hygiene instructions. The patient's cooperation. With suitable treatment in the dental practice and good compliance on the part of the patient, periodontitis can be virtually healed.

Experience from my practice has shown that instrumental treatment can be effectively supported with laser therapy. In this case, it was important to wait after instrumentation before use of the 445 nm laser due to the bleeding seen following surgical instrumentation.

I am currently involved in a study under the supervision of Prof. Dr. Andreas Braun (University of Marburg) to examine the effect of the SiroLaser Blue on periodontitis treatment, the results of which will be published. Of the five patients examined and treated in my practice thus far, three have reported a rapid improvement of symptoms in the quadrants treated with laser. The laser may also have a positive effect on wound healing. The laser contributes significantly to reducing bacteria. Bacteria tests at different times suggest that the laser makes a significant contribution to reducing the amount of peripathogenic bacteria.

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Aesthetics powered by BEAUTIFIL II LS

By SHOFU

Beautifil II LS biomimetic composite offers the benefit of natural, life-like aesthetics with ease of use in your day to day cases as well as challenging restorations that require polychromatic build-up, while providing sustained anti-plaque and fluoride benefits of SHOFU’s proprietary S-PRG filler technology.

A novel low shrinkage “SBS” mono-mer formulation and unique filler complex imparts Beautifil II LS with extremely low polymerization shrinkage and a robust polymer complex for durable, lasting restorations. Tooth-like optical characteristics means shades blend in easily and restorations are virtually invisible. The non-tacky, sculptable paste is easy to layer and carve to intricate detail while exhibiting remarkable abrasion resistance.

Beautifil ILS comes in a rational selection of universal, opalescent dentin, bleach white and enamel shades that can be easily polished to a naturally lustrous finish enabling you to obtain reliable aesthetic results everyday... whether it’s a simple one shaded or a complex multi-shaded restoration.
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*NLZ E : with Endo Function
VITA is the colour expert

By Dental Tribune International

COLOGNE, Germany: On Wednesday at IDS, the Straumann Group announced further investments and partnerships, and released a stream of new products.

The many new partnerships, investments, and collaborations include the following: French implant manufacturer Anthogyr, a provider of innovative implant and CAD/CAM solutions, German partner MEDENTRA, which now offers high-quality prostheses for value implant brands; Korean company Medjet, a global provider of digital dentistry solutions, and ClearCorrect, a developer and producer of high-quality, easy-to-use clear aligners.

In the world of implants, Straumann released a fully tapered implant system, BLX. It is designed for immediate placement and is suitable for all treatment protocols. It optimises primary stability in all bone classes and simplifies restorative workflows. Together with BLX, an innovative drilling concept called Straumann VeloDrill has been launched—it’s main advantages being reduced heat generation, high drilling stability, and time-savings.

The new, highly aesthetic Straumann SNOW ceramic implant, developed by its partner Z-Systems, is now available and offers the widest range of ceramic implant options, supported by digital workflows and biomaterial solutions.

Planned for release in 2020 is a premium zygomatic implant system for patients with severe maxillary atrophy, and training and education for dentists will be offered, according to Straumann.

New scanners include the Vivotto Vivo and a co-branded version of the latest Dibapc TRIOS 4 intra-oral scanner with fluorescent technology to identify surface caries and zeta-analysis infrared scanning to detect interproximal caries. Straumann also plans to enter the preventative market.

Further details are available at www.straumann.com.

"Thanks to the successful colour adjustment of the VITA YZ materials, VITA has once again proven that it holds mastery in this area."

Strawmann Group presents change-effecting innovations

“VITA is the colour expert. As a result, we probably have the greatest experience in colour setting for a wide range of materials. Therefore, we can rely on many formulas. Our formulas and the knowledge of our development engineers have helped them to develop these colours. Thanks to the successful colour adjustment of the VITA YZ materials, VITA has once again proven that it holds mastery in this area.”

By OEMUS MEDIA

Markus Baumgartner, Product Manager of Technical Solution at VITA Zahnfabrik, discusses VITA YZ SOLUTIONS.

Ms Baumgartner, what makes VITA YZ zirconia stand out among all the other zirconia options on the market?

With VITA YZ SOLUTIONS, VITA is offering the system solution for precise, efficient and true-to-shade zirconia restorations. VITA YZ SOLUTIONS includes zirconia blanks in four degrees of translucency with matched system components for reliable shade reproduction. With VITA YZ SOLUTIONS, a broad spectrum of restorative concepts can be implemented. From the highly individual reconstruction to the solid standard restoration, this system offers many aesthetic options. VITA YZ SOLUTIONS is the system for consistent, accurate, true-to-shade restorations of excellent quality. The system includes liquids for colouring, staining and glazing materials for individualisation, veneering ceramics, and firing units for sintering and staining.

What need did VITA identify in the market that led it to develop a product with these qualities?

The zirconia market has been growing rapidly over the last ten years. With the development of the first porous VITA YZ T in 2002, VITA started the trend. In retrospect, this first variant was still very opaque and intended primarily as a framework for veneering, hence the demand for more translucent variants. In the meantime, zirconia materials have become so translucent that they can compete with glass ceramics. Owing to the increased translucency, the flexural strength is significantly lower. This was the requirement for a fourth variant: VITA YZ ST, not quite as translucent, but with higher flexural strength.

How much work went into developing this zirconia?

In the development and adjustment of the physical and mechanical properties, VITA relied on long-standing experience in the production of zirconia blanks of our competent process engineers. This allowed us to adjust the materials in physical and mechanical properties in such a way that the customer does not notice any difference during processing. In other words, the machinability is the same for all four materials. This allows the customer to process all materials identically with just one template. The colour adjustment of zirconia is very complex and requires a great deal of experience. Again, we relied on the great expertise of our development engineers. All this resulted in a product that is as convincing in its mechanical properties as it is in colour reproduction.

What kinds of things does this zirconia allow laboratories and dentists to do that they couldn’t otherwise?

With VITA YZ SOLUTIONS, all kinds of restorations can be made: from fully anatomical crowns up to 14 unit anterior and posterior bridges, fully and partially veneered single-tooth restorations and up to 14 unit bridge frameworks in the anterior and posterior regions, single-tooth restorations and up to 14 unit bridg...
Interview: “When you do innovation, you also have to take care of education.”

By Petar Mollov, DTMEA

Mectron S.P.A, based in Italy, has revolutionized the dental surgery world with the development of piezoelectric bone surgery equipment. At the IDS show in Cologne, Germany, the company presented a new generation of prophylaxis devices. Dental Tribune Middle East and Africa representative Petar Mollov interviewed Dr. Massimo Lemetti, CEO at Mectron S.P.A, about the new products launched at IDS and the company plans for the Middle East region.

First of all, Happy Birthday to Mectron and congratulations on this milestone, 40 years now!

During your anniversary speech you highlighted the importance of technology an innovation to Mectron and how this has evolved over the years. How has this statement evolved and kept over the years represented by the products that Mectron offers?

Thank you for the birthday wishes. There were no big changes to what we do. Technology and innovation are the drivers of our activities. The goal in simple words is to exploit the existing technologies in order to facilitate the life of the doctors by proposing solutions to the problems they face in their daily activities and this is for the ultimate benefit of the patients. This has been the main driver of our activities in the past and the future, so no big changes to what and how we do. The big change is related to the way technology evolved, by moving from single visionary inventors towards the structured work of engineers grouped in teams.

You have just mentioned the R&D which is in the DNA of Mectron. How do you sustain and motivate the over 200 employees to wake up every morning with the thought of innovation? What is your spending related to R&D and how does it compare to the dental industry average?

In general we are spending approximately 20% of our turnover in R&D on an yearly basis, which is about 2 to 3 times the industry’s average. This is a good representation of how important R&D is for us. Motivation of the people, all people involved in the new technologies and in bringing new technologies to the market is something that is mainly coming from inside Mectron. R&D and innovation are tough and tough roads which means a lot of days, months, years of effort, of commitment, of dedication, of passion and only then comes the satisfaction of launching a new product. This satisfaction is lasting only for very few moments because then you have to start with a new project from the beginning. This is the destiny of the people committed to innovation but it is what we like and what we enjoy doing. This is what motivates everyone in Mectron.

Tell us a little bit about how Mectron was formed and the philosophy of its founders.

The history of Mectron is, I would say, the usual way a business is started but still very interesting. Normally, such companies start with an idea shared between friends. That’s what has happened to Mectron, there were two young engineers, Fernando Bianchetti and Domenico Vercellotti who are two friends knowing each other since primary school days, spent in a tiny fishermen village located in the Ligurian Riviera. One day they were discussing the possibilities of what to do in their lives. They had an idea in doing something in the dental and the medical business for benefiting the people. They started a small company the same village where they used to go to school. From there until now, the company has developed and grown day by day, continuously, until reaching what Mectron is today - 200 employees, spread in Italy, US and Germany which are the countries where we have our main offices. We became quite big considering from where we started. We are very thankful to all our clients, doctors, dealers, friends and all the contribution to our voyage.

Mectron has been working on new projects that are being presented at IDS. Could you tell us what these projects are and how would they benefit the dental professionals using them but most importantly the patients? How they impact the dental professionals and the patients?

In general, our mission is to provide useful innovation to our clients, in order to make their lives easier and ultimately benefiting the patient.

This is also what is happening with the latest products Mectron has launched. Prophylaxis line, we are launching COMBI touch and the stapler which are two devices dedicated to air-polishing and scaling. The second line of products is related to the surgical line, we are launching REX Penetimplant which is the first implant system based on piezoelectric technology. The Prophylaxis line in general is aiming at preventing problems on the pre-surgical and dental work are moving towards prevention and of course our effort with this system is just to prevent patients from having problems with their oral health. With regards to how the dental benefit from our new product lines, our customers can spot the problems that need intervention like this strengthened by the patient-dentist relation. With regards to the REX Penetimplant, this is an implant dedicated to solve a specific problem, which is placement in narrow ridges.

How important is the Middle East market for Mectron and what are your expectations for it for the future?

For Mectron, the Middle East is an important market, and that’s is why we have developed specific organizational structure for the Middle East. Our region representative Hossam Ghaly has been appointed specifically to develop the Middle East area. Additionally, we are developing a lot of educational courses in order to promote our technologies and this shows our commitment to stay close to our clients. We are attending many regional events such as the Dental Facial Cosmetic Conference & Exhibition in Dubai which we will be participating in on 08 and 09 November of this year.

Mectron is involved in a lot of educational programs throughout the globe. What is your strategy when it comes to dental education in the short term?

Education is something that goes with Mectron’s vision and mission parallelly because when you do innovation, you also have to take care of education, so in a certain way education is going along with our philosophy. We have a lot of educational courses around the world, especially related to our new product lines.

Could you tell us a bit more about yourself and your journey in the medical and dental field?

I joined Mectron four years ago and it has been an amazing and exciting journey. It is an honor for me to be the Head of this organisation which is composed out of many passionate people.

Thank you very much for this informative and interesting interview.
PrograPrint: Ivoclar Vivadent presents new 3-D printing system for dental laboratories at IDS 2019

Ivoclar Vivadent is now showcasing an innovative 3-D printing system for dental technicians: PrograPrint.

By Ivoclar Vivadent

COLOGNE, Germany: PrograPrint is a new 3-D printing system for use in dental technology. It is integrated into a validated workflow and comprises materials and equipment for printing, cleaning and postcuring. The printing system is a new addition to Ivoclar Vivadent’s digital portfolio and complements the PrograMill milling equipment excellently. It is being showcased at IDS 2019 for the first time.

The new 3-D printer, PrograPrint PR5, is the heart of the system. The automatic material recognition and intuitive operation ensure a reliable process for printing objects. The specially developed homogeneous light processing technology facilitates an even light output. The results have a high level of precision.

The extremely user-friendly printer has been specially designed for dental requirements. For example, it can be used to print models and splints. A notable feature is the specifically developed cartridge system. The cartridges enable easy, contactless handling of the materials. They also protect the materials against polymerisation caused by ambient light during storage. The printed objects are cleaned with the efficient PrograPrint Clean cleaning device. Postcuring is carried out with the universal PrograPrint Cure, which completes the production of the 3-D object.

For more information contact:

Ivoclar Vivadent AG
Bendererstrasse 2
9494 Schaan/Liechtenstein
Tel.: +423 235 35 35
Fax: +423 235 33 60
E-mail: info@ivoclarvivadent.com
Web: www.ivoclarvivadent.com

Interview: Planmeca hosts daily shows at IDS

By Dental Tribune International

At this year’s IDS, Planmeca is exhibiting a vast range of digital innovations and is hosting a series of shows in a spectacular enclosed 360° area, featuring a large, curved LED screen, to illustrate how its products can improve daily work at the clinic. Internationally renowned lecturers are giving detailed clinical presentations on how to realise the full potential of dental technology. Dental Tribune International had the opportunity to interview Dr Walter Renne, from the Medical University of South Carolina in the US, on the major topics of the shows, current trends in digital dentistry and the Planmeca Romexis software.

What are you focusing on in your presentations at IDS? I am specifically speaking on Romexis Smile Design. When combined with the Creo C5 printer, smile mock-ups can be designed, printed and transferred to the patient in a single appointment. This is thanks to the new Creo C5 printer being one of the fastest in the industry. I can easily scan a complete arch and print the model in under 10 minutes.

What do you consider some of the most central trends in digital dentistry right now? First, 3-D printing is a major hot topic right now, not just for surgical guides and models, but also for prostheses that are blunting the boundary between temporary restorations and definitive restorations. A race exists for speed, accuracy, ease of use and low cost.

Second, AI — to make our work on software easier, such as the software for the Emerald scanner, which uses AI to eliminate lips and cheeks automatically. Another major time-saver is the automatic model hollow and base for 3-D printing found in the Romexis Model Analyser module.

Last, virtual and augmented reality surgical tools Planmeca is leading the way with the first virtual reality implant planning and surgical guide software. The company also has a fully integrated augmented reality surgical navigation technology that is built into the light of the dental unit to track movements.

How do you use the Romexis software in your daily dental work? Romexis is the centre of everything: 2-D and 3-D images, including radiographs, CT/3D and intraoral scans, are all completely integrated into one centralised location. It powers nearly everything that I do in my practice and is critical to my success as a clinician.

For more information on Planmeca:

VISIT PLANMECA AT 12TH DIGITAL DENTISTRY EXHIBITION DUBAI, UAE 12-13 APRIL 2019

Dr Walter Renne giving a lecture titled “3-D printed smile design mock-ups” at the Planmeca booth at IDS 2019
ICD and DTI sign media partnership agreement

By Dental Tribune International

COLOGNE, Germany: As of Wednesday evening, 14th of March, Dental Tribune International (DTI) is the official media partner of the International College of Dentists (ICD). The contract signing, which took place at the OEMUS MEDIA and DTI media lounge at IDS, was witnessed by DTI CEO Torsten Oemus, Dr Dov Sydney, Dr Mauro Labanca and representatives of Henry Schein, including Chief Global Communications Officer Gerard Meuchner.

The ICD will celebrate its centennial in 2020 and is therefore the oldest and largest honour society for dentists in the world. Sydney, International Editor and Director of Communications, as well as General Chair of the College Centennial Committee, said: “Over the past 100 years, there have been changes in social structure and the economy and yet we have continued to grow because our purpose and our goals continue to be relevant in every age and stage of world development. And now we are going to build on that with DTI and make it a long-term relationship. They help us, we help them, everybody is happy.”

The organisation was conceived by Drs Louis Ottofy and Tsurukichi Okumura with the vision of an organisation of outstanding dentists. Today, the ICD has 12,000 fellows in 122 affiliated countries, from a diversity of cultures and social backgrounds and with different professional experiences.

Annual Publishers’ Meeting: DTI looks towards the future

By DTI

COLOGNE, Germany: In the lead-up to the 38th International Dental Show (IDS), Dental Tribune International (DTI) held its 15th Annual Publishers’ Meeting over 10 and 11 March in Cologne. This year’s gathering saw 75 members of the DTI network from all over the globe in attendance to discuss the latest developments and projects the company is undertaking.

Among the highlights of the meeting was the official introduction of Dental Tribune Algérie, the newest international licence partner. Led by Dr Ouahes Aziouez, the new partner will produce Dental Tribune Algerian Edition, a quarterly publication that will focus on the latest developments in dentistry within the Maghreb region. Its first issue will be formally launched at IDS and will be available for viewing at the DTI Media Lounge in Hall 4.1 at Booth D060–F061.

The Annual Publishers’ Meeting also provided an opportunity for an exciting announcement about DTI’s upcoming expansion into the Scandinavian dental media market. Though the details are still being finalised, new Dental Tribune editions for the region will be launched soon, according to DTI President and CEO Torsten Oemus. “We look forward to welcoming our Scandinavian friends into the fold here at DTI and expanding our international presence,” he said.

Oemus also spoke about one of the newest additions to the DTI portfolio, Smyle magazine. With its flagship German-language edition currently delivered to over 60,000 dental practices in Germany, Smyle is to be expanded to include an international English-language version later this year. “By introducing an international edition of Smyle, we will be able to highlight the latest global trends in well-being, health, beauty and more,” said Oemus.

An update on the status of the highly anticipated DDS.WORLD was also provided at the meeting by Joachim Tabler and Martin Troppa, departing and incoming DDS.WORLD managers, respectively. A full-service digital marketplace for products, news, e-learning and practice management, DDS.WORLD is targeted at all participants in the dental industry. It offers a web shop and an associated search facility, practice management and inventory management systems, direct customer communication tools and much more. Attendees were informed that DDS.WORLD will initially be launched in select pilot markets—Greece, Serbia and Poland—and will provide all-in-one solutions for running a dental practice.

Alyson Buchenau, Business Development and Marketing Manager at DTI, thanked those in attendance and emphasised the importance of cooperation. “The DTI network currently reaches 785,000 dental professionals worldwide via our print and digital portfolio,” she said. “If we work together, our audience will continue to grow.”
DHA successfully saves patients jaw using 3D printing

By Sinterex

DUBAI, UAE: Experts from Dubai Health Authority, PHC Dental Center, and Rashid Hospital have combined with 3D printing healthcare startup Sinterex, to save the jaw of a patient who had an aggressive tumor.

The patient, a 17 year old girl in high school, was admitted to hospital after discovering she had a large, fast growing tumor of the right jaw. Dr Khaled Ghandour, Maxilofacial Surgeon at DHA, said that the patient was diagnosed with Ossifying Fibroma, a particularly aggressive form of tumor, which meant that the right side of the jaw had to be removed.

It was at this stage that Sinterex became involved. Sinterex is a UAE based start-up specializing in customized 3D printed healthcare products. Managing Director, Julian Callanan, explained that given the aesthetic implications and complexity of the case, it was critical to use digital planning and 3D printing to create a patient specific solution.

The workflow started with the patient’s CT scan, which was segmented and converted into a 3D printed physical model. This model allowed Dr Khalid Ghandour, and his team of surgeons, to visually inspect the patient’s situation and to develop a treatment plan. After finalizing the treatment plan, Sinterex 3D printed a Surgical Guide, which was fitted to the patient in the operating theatre to ensure that the surgeons drilling, and cutting are guided with precision. Finally, a patient specific implant was 3D printed in bio-compatible medical grade Titanium.

Dr Khaled Ghandour stressed the importance of utilizing 3D printing in medical care by saying; In maxillofacial surgery we are working in an area where both aesthetics and function are important and operating conditions challenging. 3D printing models helps us better visualize the patient’s situation, whilst 3D printing Surgical Guides and Patient Specific Implants allows us to translate plans into reality.

Dr Mohammad Al Redha, Director of the Department of Organizational Transformation at the DHA said that that this is just one further example of how the DHA has successfully used 3D printing. Other recent examples include 3D printing a prosthetic leg, removing a cancerous growth from a patient’s kidney referencing a 3D model, and saving the life of a patient suffering with cerebral aneurysm.

Dr Al Redha said that the DHA is planning to further utilize 3D printing in medical care in line with the Dubai 3D printing strategy – a unique global initiative that aims to exploit technology for the service of humanity and promote the status of the UAE and Dubai as a leading hub of 3D printing technology by 2020.
Interview: "Motivation and team work were the main reasons for the success and continuity of the LOS over the years."

By Kinga Mollov, DTMEA

The Lebanese Orthodontic Society (LOS) is one of the oldest dental societies in the Middle East. Kinga Mollov from Dental Tribune Middle East & Africa had the pleasure to interview Dr Mona Sayegh Chouibous, President of the Lebanese Orthodontic Society.

Dr Mona, could you please briefly introduce LOS and what the Society does?

Founded in 1965 in Beirut, Lebanon, the Lebanese Orthodontic Society (LOS) is one of the oldest dental scientific societies in the Middle East. Its members were instrumental in its conception. Drs. Pierre Rizkallah, Edgard Debbarne, Frederic Maalouf and Alexandre Khoury.

Today, the LOS is a member of the Arab Orthodontic Society, a corresponding member of the European Federation of Orthodontics and an affiliate organisation of the WFO. It has currently 230 affiliated members who are orthodontic specialists and practice orthodontics exclusively. Moreover, it contributes actively to the development and progress of orthodontics in Lebanon through the organisation of one main meeting per year, as well as many seminars. Since 1993, several renowned orthodontists have participated in LOS meetings and seminars, including Drs. Robert Ricketts, Roberto Justus, Athanasios Alfanais, Ravendra Nanda, in addition to many others.

Working closely with the Lebanese universities, the LOS supports the development of the community in Lebanon by furthering the continuing education of its members and by encouraging the development of scientific research in orthodontics. In October 2001, the LOS hosted the 5th Arab Orthodontic Meeting in Beirut, during which the first directory of Arab orthodontists was released. The LOS also hosted the first meeting of French-speaking orthodontists in Beirut in February 2005. More importantly, Beirut was the site of the 4th Arab Orthodontic Meeting and 12th Lebanese Orthodontic Congress in November 2013. In 2016, the Golden Jubilee of the LOS was celebrated during the 3rd Francophone Meeting CBO (Collège Inter Universitaire Fransophone en Orthodontie) in Beirut.

The LOS is active since 1965. Could you please tell us how far has the Society come since then?

Motivation and team work were the main reasons for the success and continuity of the LOS over the years. A few motivated and experienced orthodontists instigated the Society at the start with the ambition of better structuring the profession and keeping the orthodontists informed on latest advancements and techniques in the orthodontic field. Then it was loaded for many years by an orthodontist of talent, Professor Pierre Rizkallah who braved all difficulties to maintain the subsistence of this institution. He was organising Scientific Meetings and seminars regularly inviting international and local speakers.

The goal of the succeeding LOS presidents was to keep on with the progress initiated and build more regional and international connections with other dental and orthodontic societies. The LOS participation in lots of international events all over the world as well as organising many conventions in Lebanon helped in establishing good relationships with other orthodontists and dental professionals at the scientific and human levels.

Dr Mona, you have joined the Lebanese Orthodontic Society as President in 2018. Could you please share with us your experience so far?

The experience has been rewarding and fruitful. My participation as a LOS member at the beginning, then part of the executive board and chair of the scientific committee later helped me greatly in progress as LOS President with a background at the scientific, logistic and relational aspects. Since the start, the objectives were well-defined and approved by the newly elected board and committees involved in the good administration of the Society.

Motivating orthodontists to subscribe to the LOS was one of the main goals to allow interaction and to keep them within the educational path. Interdisciplinary seminars with eminent speakers are organised on a regular basis confronting different topics in relation with orthodontics.

Working hand in hand with other orthodontic societies such as the Tunisian, the ATREO “Association Tunisienne de recherche et d’études en orthodontie”, in two joint Meetings was successful and thriving. The first one took place in June 21-23, 2019 in Beirut and the second in December 14-16, 2019 in Tunis where colleagues shared their knowledge and consolidated friendships.

In February 21-24, 2019, the 15th Saudi Arab Society Meeting was held jointly with the 14th Arab Orthodontic Society Conference in Jeddah and was at a high international level. All Arab Orthodontic Societies’ Presidents including Lebanon were present to exchange experience and coordinate together.

It is important to emphasise that all previous and upcoming LOS achievements are owed to the team-work and efforts made by the preceding Presidents and Committees, and as the American Author Helen Keller quoted “Alone we can do little; together we can do so much.”

What was the main goal you would like to achieve by the end of your presidency when you joined LOS?

In fact, while progressing in the work at the LOS, not only one but many fundamental goals seemed to be of major importance. If I must choose one, it would be to place the LOS in a leading and front position internationally by enhancing and supporting scientific research and publications. LOS can contribute actively to connect Lebanese orthodontists with other orthodontic organisations and institutions to attain this aim.

The LOS is annually organising many events, could you give us more information about the upcoming one?

Thank you for the interview and time Dr Mona. Looking forward to welcoming you in Dubai, 12-15 April 2019 for the 14th CAD/CAM & Digital Dentistry Conference.
Align Technology supports
saudi community by addressing
dental issues of teens and younger patients

By Align Technology, Inc.

JEDDAH, KSA: Align Technology, a global medical device company engaged in the design, manufacture and marketing of the Invisalign system, the most advanced clear aligner system in the world, and iTero intraoral scanners and services for orthodontic and restorative dentistry, will put a spotlight on teen and younger patient’s oral care during 13th Annual Conference of the Saudi Orthodontic Society (SOS).

The leading dental event in the Middle East, taking place in Jeddah between February 21 – 24, will see dental professionals and industry leaders from across the region presenting key innovations and findings from the fields of orthodontics and dental health. Align Technology is one of the sponsors of this edition of the conference.

Align’s focus on teen and younger patient’s dental occlusion complements the focus of the Ministry of Health to patient’s dental occlusion complements Align’s focus on teen and younger patient’s dental occlusion. This edition of the conference.

The Kingdom of Saudi Arabia is an important market for the company and for younger patients with early mixed dentition, typically 6 to 10 years of age. It is estimated that the number of dental clinics will increase to more than 5,000 in the next two to three years amid increasing numbers of cases with malocclusion, reported among 6 to 12-year-olds. Further, independent research1 in the Kingdom cites the prevalence of types of malocclusion among schoolchildren.

As children bite down, the wings engage and hold the lower jaw (mandible) in a forward (advanced) position. The Invisalign Comprehensive Treatment with Mandibular Advancement feature, now approved by the Saudi Food & Drug Administration, and the future release of Invisalign First treatment at the 13th Annual Conference of the Saudi Orthodontic Society will help prevent severe problems and alignment issues as the children grow.

Similarly, Invisalign First clear aligners are designed with features developed specifically for younger patients with early mixed dentition – a mixture of primary/baby and permanent teeth. They address a broad range of malocclusions, including shorter clinical crowns, management of erupting dentition, and predictable dental arch expansion. The early treatment will help prevent severe problems and alignment issues as the children grow.

Mawlid Chaoui, Align Technology, General Manager, Middle East and Africa, said: “We are delighted to extend our support to the SOS community and to highlight Invisalign orthodontic solutions that assist dental professionals in addressing as many as 80% annual orthodontic case starts, especially when treating dental malocclusions of teens and younger patients.

Through our participation at the Conference, as well as our ongoing commitment to offering dental professionals advanced orthodontic solutions that help drive digitalization of orthodontics, we are proudly supporting Vision 2030: transformation, set forth by the Kingdom of Saudi Arabia, in which enhancing the wellbeing of the community is top priority.”

This will lead to the jaw shifting incrementally forward to its proper place over time and the lower jaw growing into the appropriate size to match the upper jaw, thus overcoming the overbite problem. The aligners uniformly move and level the teeth.

Invisalign aligners can be removed for eating and drinking, thus having no food restrictions, and since they are not fixed, they allow teens to brush and floss their teeth freely. They are also virtually invisible and may help them feel more confident.

The Invisalign Comprehensive Treatment with Mandibular Advancement feature can help address Class II type of malocclusion, more commonly known as an overbite, which is one of the leading reasons teenagers undergo orthodontic treatment. With the Invisalign solution, the required corrective procedure – encouraging the lower jaw to move forward while straightening the teeth at the same time – can be done without the use of any traditional appliances.

The Invisalign Comprehensive Treatment with Mandibular Advancement feature is manufactured using patented SmartTrack material and features precision wings that are situated between the premolars and first molars. As children bite down, the wings engage and hold the lower jaw (mandible) in a forward (advanced) position.

For additional information about the Invisalign system or to find an Invisalign provider in your area, please visit www.invisalign.com. For additional information about the iTero digital scanning system, please visit www.itero.com.
# Certificate & Diploma in Restorative Aesthetic Dentistry

**From British Academy of Restorative Dentistry**

**DUBAI 2019-2021**

## Certificate  |  4 Modules  |  15 Days

**Module 1** | 19-21 September 2019  | Prof. Paul Tipton & Dr. Adam Toft & Dr. Ashish Rayarel  
**Treatment Planning in Advanced Restorative Dentistry**  | **The Principles of Occlusion in Advanced Restorative Dentistry**  | **Tooth Preparation in Advanced Restorative Dentistry**

**Module 2** | 20-23 November 2019  | Prof. Paul Tipton & Dr. Matthew Holyoak & Dr. Adam Toft & Dr. Ashish Rayarel  
**Minimally Invasive Veneer Preparations**  | **Master the Art of Composites Part 1 - Adhesion Composites & Anterior Composite Restorations**  | **Master the Art of Composites Part 2 - Composite Veneers**  | **Master the Art Composites Part 3 - Posterior Composites**

**Module 3** | 19-22 February 2020  | Prof. Paul Tipton & Prof. James Prichard & Dr. Adam Toft & Dr. Ashish Rayarel  
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**Module 4** | 08-11 April 2020  | Prof. Paul Tipton & Dr. Malcolm Riley & Dr. Adam Toft & Dr. Ashish Rayarel  
**Bridge Design**  | **Aesthetic Perio Connective Tissue Grafting**  | **Aesthetic Perio Crown Lengthening**  | **Modern Post and Core Techniques**

## Diploma  | 4 Modules  | 15 Days

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**Module 6** | November 2020  | Prof. Paul Tipton & Mr. Gary Jenkinson & Dr. Adam Toft  
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**Module 7** | February 2021  | Prof. Paul Tipton & Prof. Edward Lynch & Dr. Adam Nulty & Dr. Adam Toft & Dr. Ashish Rayarel  
**Minimally Invasive Dentistry**  | **Digital Dentistry Workflow & Photography Principles, Hardware and Storage Part 1 & 2**

**Module 8** | May 2021  | Prof. Göran Urde & Dr. Timothy Eldridge & Dr. Adam Toft & Dr. Ashish Rayarel  
**Implant Prosthodontics Part 1 & 2**  | **Botox & Dermal Fillers – A Dental Facial Aesthetics Part 1 & 2**

+971 528423659 | p.mollov@cappmema.com  
www.cappmema.com/capptipton
Researchers discover new material that could make dental fillings more durable

By Dental Tribune International

PORTLAND, Ore., U.S.: A recent study has found that a compound used to make car bumpers more robust and protect wood decks could make dental fillings last twice as long. The results of the investigation will help design fully formulated adhesives to be tested in clinically relevant conditions, and as a result, dental patients could reduce the number of visits to the dental office.

A team of researchers at the Oregon Health and Science University (OHSU) School of Dentistry in Portland has created a filling material that is twice as resistant to breakage than conventional fillings. The new filling uses the additive thiourethane, which can also be found in protective coatings for cars and wood decks.

The team has also developed an adhesive that proved to be three times stronger after six months in use than the adhesives that are currently used to keep fillings in place. Combined, the new adhesive and the composite are designed to make more enduring dental restorations.

“Today’s dental restorations typically only last seven to ten years before they fail,” said Dr. Carmem Pfeifer, an associate professor in the Department of Restorative Dentistry at the school and corresponding author of the studies. “They crack under the pressure of chewing, or have gaps form between the filling and the tooth, which allow bacteria to seep in and a new cavity to form,” Pfeifer said. “Every time this happens, the tooth under the restorations becomes weaker and weaker, and what starts as a small cavity may end up with root canal damage, a lost tooth or even life-threatening infections,” she continued.

The dental adhesive uses a type of polymer, known as (meth)acrylamide, that is much more resistant to damage in water, bacteria and enzymes in the mouth than the standard adhesives currently used in the dental industry. The composite material uses thiourethane, a chemical compound that can better withstand chewing.

The study describing the adhesive is titled “Use of (meth)acrylamides as alternative monomers in dental adhesive systems” and was published online in Dental Materials on Feb. 27, 2019, ahead of inclusion in an issue.

The study on the material is titled “Toughening of dental composites with thiourethane-modified filler interfaces” and was published online in Scientific Reports on Feb. 19, 2019.

Dr. Carmem Pfeifer from the Oregon Health and Science University School of Dentistry has developed a doubly resistant filling material that may help reduce dental visits and prevent extensive treatment.

Researchers discover new material that could make dental fillings more durable
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Parodontax helps stop the clock on gingivitis and gets your patients back to healthy gums.

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Parodontax helps stop the clock on gingivitis and gets your patients back to healthy gums.
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to help prevent moments like these
Minimally invasive root canal shaping—A new protocol

By Dr Bogdan Moldoveanu, Romania

Minimally invasive—the most well-known oxymoron in dentistry—is probably nowadays considered the new standard of care in almost every field of dental medicine, but more so in endodontics. Despite improved oral and dental health, the demand for endodontic treatment and restorations remains high among individuals with relatively complete dentition and dental awareness. The need for adequate endodontic treatment is most likely one of the driving forces behind all the improvements that have reached practitioners in recent years. The use of nickel-titanium (NiTi) rotary files in root canal preparation is one of those improvements and has provided a reduction in the frequency of procedural errors and the time required for chemomechanical preparation in relation to manual files.

Shaping is considered a crucial phase in root canal therapy because it not only is aimed at removing remaining pulp tissue, microorganisms and debris, but should also create the preconditions for effective irrigation and obturation. These tasks should be accomplished without altering the diameter and position of the apical foramen or excessively weakening the root in any part. New instruments have been introduced every year, each claiming to be better than the previous one and having the ability to provide a better outcome. Regardless of any commercial interests, with regard to root canal shaping, from the aspect of the success of endodontic treatment, it is very important to maintain the original form of the canal as far as possible while the root canal is being gradually enlarged from the apical to the coronal region.

The need for successful endodontics has probably set the stage for a new generation of rotary files, made with heat-treated NiTi. The various thermomechanical procedures and the improvement in composition of the alloy that is used in manufacturing NiTi files are aimed at improving the flexibility of NiTi files. Improved flexibility of NiTi files would minimise the intracanal irregularities, such as canal transportation, and would ensure an increase in the success of root canal therapy.

One of the most well-known instruments when it comes to heat-treated rotary files are the HyFlex CM files (COLTENE). The controlled memory (CM) wire made with a thermally treated NiTi alloy, owing to the austenite/martensite transformation, has a stable martensitic microstructure at body temperature. Therefore, the structure of HyFlex CM enables significant fatigue resistance, ease of bending and the ability to return to its original shape when heated above the transformation temperature.

Recently, COLTENE has introduced a new type of file, the 20/05 EDM (the preparation file), which comes as a much-needed addition to the already existing EDM shaping system. HyFlex EDM instruments (COLTENE) are manufactured using the technique of electrical discharge machining and are the first endodontic files to be made with this method so electrical discharge machining can be used in manufacturing all types of conductive materials (e.g. metals, alloys, graphite and ceramics) of any hardness at high precision levels. This manufacturing process uses spark erosion to harden the surface of the NiTi file, resulting in superior fracture resistance and improved...
One of the most well-known paradigms in endodontics concerns the instrumentation of curved root canals, for which it is believed that the use of a #25 file in the apical portion fulfills all of the clearing and shaping objectives of root canal therapy. The idea behind this theory is mostly centred around what can happen if one uses over-instruments the root canal. Failures such as deviations, perforations and zipping may have a higher rate of occurrence when one enlarges the apical diameter beyond a #25 file. However, when one is treating a tooth exhibiting signs and symptoms of periapical periodontitis, further enlargement by hand files might be required, since it appears that the minimum instrumentation size needed for penetration of irrigants to the apical third of the root canal is a #30 file.

Case report
The patient who is the focus of our discussion came to our office reporting intense pain in response to hot and cold stimuli in the left maxilla (Fig. 1). He described the pain as being spontaneous at times and that in some cases, the pain was very intense pain in response to hot stimuli. Upon examination, an access cavity was created using high-speed diamond burs and ultrasonic tips (Figs. 4–8). Pre-flaring in the coronal third, middle third and almost triangular in the apical third, trapezoidal in the middle third and almost triangular in the coronal third (Fig. 2). The other HyFlex EDM files (20/05 and 20/05) have a single taper of 0.05 throughout the working part.

The purpose of this case report is to present a new protocol that uses only three files in order to reach an optimum result, sacrificing a minimal amount of dental structure. One of the most important things that a clinician can focus on is being open-minded to question the paradigms of our profession. In time, some paradigms can become a false “standard of care” to those who blindly follow statements that are not supported by valid information. Adherence to some ideas promoted in the virtual or actual professional environment may ruin the balance of accurate knowledge, leading both clinicians and researchers to understand things solely from their perspective, for it seems evident to them that there is no other way to be. This is what we have come to know as the settlement of the paradigm.10

One of the most well-known paradigms in endodontics concerns the cutting efficiency. HyFlex EDM NiTi files are manufactured using CM alloy technology just like the HyFlex CMS NiTi files. HyFlex EDM 25 has a taper that changes throughout the file shaft and a 0.05 mm apical diameter. Throughout the file shaft, HyFlex EDM 25 has three different cross sections: quadratic in the apical third, trapezoidal in the middle third and almost triangular in the coronal third. The other HyFlex EDM files (20/05 and 20/05) have a single taper of 0.05 throughout the working part.

This recommended shaping protocol also has the benefit of extruding less debris outside the root canal, thus improving the patient’s quality of life after the completion of the therapy. Denal and pulp tissue debris, microorganisms and irrigating solutions may extrude into peri-apical tissue during the preparation of root canals, thus causing complications such as postoperative pain, inflammation/infection and flare-up, and possibly delaying the healing process.

The instruments in such an order are also very well suited for maintaining the anatomy of the root canals. The HyFlex EDM 25 file determines slightly less transportation at every level and in most cases stays a little more centred compared with other instruments available.14

Using the HyFlex EDM instruments as opposed to the Hyflex CM ones is no random choice. Hyflex CM files are manufactured via a grinding procedure. Grinding procedures during the production of NiTi files cause the formation of irregular areas, such as pits, fissures and metal folds.25 Being subjected to huge flexural and torsional forces, the instruments need to be resistant and the surface of the file must not change throughout the therapy. According to a study by Uska et al., the surface of used Hyflex EDM files was found to be statistically significantly rougher than that of used Hyflex CM files.26 The surface properties of HyFlex EDM files, when compared with those of Hyflex CM files, were better retained after use for severely curved root canal preparation.

The sequence proposed in the present article is easy to use, easy to learn and highly versatile. One may adapt it to different cases, be it a severely curved root canal, a tooth with a mandibular molar or a highly calcified canal in a mandibular central incisor. Following several easy steps, but respecting the order in which the files must be used, success is just around the corner.

After chemomechanical treatment, the root canals were filled using a single-cure filling technique (BIOERO Guttapercha Points and BIOLIT/Guttaflow bioseal, both COLTENE), and the access cavity was sealed using composite materials (Figs. 12–16).

Conclusion
Living in a world full of endodontic opportunities, it is important that the clinician use all the means available to provide the best quality of care for patients. Hopefully by applying this particular sequence in root canal therapy, the clinician can achieve the task more easily and in a much safer manner.

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

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Dr Bogdan Moldoveanu
He gained his DMD from the Iuliu Hataganu University of Medicine and Pharmacy in Cluj-Napoca in Romania and then a Master in Clinical and Surgical Microendodontics from the University of Turin. He is a visiting professor at the University of Turin and at the Iuliu Hataganu University. He practices in Cluj-Napoca, focusing mainly on surgical and non-surgical micro-endodontics. Dr Moldoveanu is the CEO of the educational platform Endodontics Co Pasiune [endodontics with passion] and an opinion leader for COLTENE. He is a certified member of the Italian Academy of Endodontics and of the European Society of Endodontics, and an international specialist member of the American Association of Endodontics. He can be contacted at bogdan@endodontiecluj.ro.
The influence of Glide Path preparation on the canal shaping times of WaveOne® Gold in curved mandibular molar canals

By Martin Vorster, Peet J. van der Vyver, Farzana Paleker

Introduction
The aim of this study was to compare the glide path preparation times of stainless steel hand files, PathFile® (Dentsply Sirona), and the WaveOne® Gold Glider (Dentsply Sirona). The preparation times for final root canal shaping with the Primary WaveOne® Gold instrument in extracted human molar teeth with and without prior glide path preparation were also recorded and compared.

Methods
Mesiobuccal canals of 60 extracted human mandibular molars (curvature angles between 25° and 35° and radii <10 mm) were selected and randomly divided into 4 groups with 15 canals each. Canals were negotiated to patency with a #8 K-file. Canal preparations were performed by a single operator using precurved #10-15-20 stainless steel manual K-files (the K-file group), a #10 stainless steel manual K-file followed by PathFile® #1-3 (the PathFile® group), a #10 stainless steel manual K-file followed by WaveOne® Gold Glider #1-3 (the WaveOne® Gold Glider group), or no further glide path preparation. Final canal preparation of all 60 canals was performed with the Primary WaveOne® Gold instrument. Glide path and final preparation times were recorded.

Results
Glide path enlargement was statistically significantly fastest in the WaveOne® Gold Glider group (19.7 ± 5.6 seconds) followed by the PathFile® group (41.0 ± 6.8 seconds) and then the K-file group (81.2 ± 26.3 seconds) using analysis of variance (ANOVA) and Kruskal-Wallis tests (P < .0001). No statistically significant difference in the mean final preparation times was found among the WaveOne® Gold Glider (23.1 ± 6.0 seconds), PathFile® (24.4 ± 4.9 seconds), and K-file groups (27.2 ± 9.5 seconds). All 3 groups were statistically significantly faster than the no glide path preparation group (35.4 ± 10.2 seconds) using ANOVA (P = .0004) and Kruskal-Wallis tests (P < .0001).

Conclusions
Preparation time with the Primary WaveOne® Gold file was statistically significantly reduced when the file was used in combination with any of the glide path preparation techniques. The WaveOne® Gold Glider performed statistically significantly faster in glide path preparation time than the other glide path preparation techniques.

Editorial note:
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Dentsply Sirona
21st Floor, The Bay Gate Tower, Business Bay, Al Sa’ada Street
Dubai, United Arab Emirates
Tel. +971 (0)4 523 0600
Web: www.dentsplysirona.com/en
E-mail: MEA-Marketing@dentsplysirona.com

For more information about Dentsply Sirona Endodontics please contact your local representative

Dentsply Sirona
21st Floor, The Bay Gate Tower, Business Bay, Al Sa’ada Street
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DENTAL PROFESSIONALS ONLY

Cherry on top in complete denture prosthetics: individuality and naturalness

Removable prosthetics as high-quality restorative treatment in the edentulous patient

By Erwin Eitler, Switzerland

Restorative treatment of the edentulous jaw requires, above all, sound knowledge of the function and statics of dental prosthetics. Customised pink-and-white aesthetics that match the expectation of the patient represent the ‘cherry on top’ here, adding extra quality to the treatment.

We all know it, but let’s say it again: The number of edentulous patients will increase sharply over the coming years due to ongoing changes in demography. The older people grow, the larger the number of edentulous patients will become. Complete prosthetics will therefore remain of high relevance for both clinicians and technicians and should not be neglected neither in the education and training nor in the day-to-day work of dental professionals. Sound knowledge coupled with clinical and technical expertise are essential to achieve satisfactory results. Upfront, complete dentures for edentulous patients appear to hold little promise from an economic point of view. However, the writer of this report maintains that this is a question of perspective. Complete denture prosthetics is a supreme discipline that allows a customised approach for each individual patient. An appropriate treatment strategy can be selected from a range of processing techniques to meet the individual needs of the patient being treated. Accordingly, outcomes range from e.g. highly aesthetic, custom-made tooth replacements to ‘basic’ complete dentures manufactured using a digital method. Whichever method is used, function and statics will always be at a high level. Any compromises in statics and function would not be acceptable.

Preoperative situation

The 73-year-old female patient presented with severe periodontal damage in the upper and lower jaw (Figs 1 and 2). The oral cavity was free of inflammation and looked well maintained. However, the periodontium had been irreversibly damaged by periodontal disease. The clinical diagnosis showed that the teeth in the upper jaw could no longer be preserved. Some of the lower teeth also had to be removed. However, the lower premolars and canines were still in a good enough condition to be used as anchors for a dental prosthesis. A conversation was held with the patient to discuss her expectations and treatment options. She wanted to have dentures that could give her stability. Most important of all, she wanted to be able to chew normally again. She also described her difficulties in speaking and expressed her discomfort about her appearance. She wished to have a ‘beautiful’ smile again and be able to speak without impediment. In addition, the dentures should be easy to clean and handle and they should be hard-wearing. Implant-based treatment measures were not an option, as she wanted to avoid any additional surgical intervention. It was therefore decided to restore the upper jaw with a complete denture and the lower jaw with a partial model cast denture.

Treatment planning

Casting a tooth replacement for a family member is always a special task for a dental technician, especially if, as in this case, said family member was the technician’s own grandpa. This increases the challenge of a task that is already demanding (complete dentures). The goal was to create dentures that harmonize with the face of the patient in a naturally beautiful and discreet way. Functionally and aesthetically, highly aesthetic dentures should be achieved.

Primary requirements of the patient on the dentures:

- Restored chewing function
- Improved phonetics
- Discreet integration of the dentures
- Individualized aesthetics
- Easy to clean

Anterior teeth and setup in the oral cavity

First, the teeth in the upper and lower jaw that could no longer be preserved were extracted and the extraction wounds were allowed to heal. After that, impressions of the oral situation were taken. The diagnostic casts were used to establish the arrangement of the upper anterior teeth. For this task, high-quality prefabricated denture teeth (SR Vivadent® S PE) were used. These moulds provide impressive individualized aesthetics for the anterior region. The expressive texture and internal stratification of the teeth lend an age-appropriate natural liveliness to the dentures. In addition, the teeth are made of a material that meets the requirements for durability, consisting of highly cross-linked DCL (Double Cross Linked) polymer. According to the manufacturer, the DCL polymer is a modified polymethyl methacrylate variant that offers higher compressive strength and better durability than conventional PMMAs — while the material’s flexibility is similar as that of conventional resins.

After the casts had been analysed, the teeth were set up according to the known parameters. Despite clearly defined aesthetic guidelines, it is crucial to check the setup on the patient and to adjust it as needed. The anterior setup was adjusted in the mouth of the patient to meet her individual aesthetic and phonetic requirements. The patient was instructed to perform various phonetic exercises and produce certain sounds so that her speech pattern could be observed. These observations were then used to adjust the arrangement of the teeth (Fig. 3). In this way, an ideal setup was achieved for the upper anterior tooth row.

Tooth setup

Master models were created on the basis of a maconatic impression of the upper jaw. The models were then mounted on the articulator in a centric relation in line with the bite registration. The four anterior teeth in the lower jaw were set up to match the setup established in the oral cavity (Figs 4 and 5). An intermediate step, a posterior try-in was performed with the help of wax rims to check the bite height defined in the oral cavity. Posterior setup was then performed accordingly. The teeth were set up in a one-tooth-to-two-teeth relation taking all the principles of complete denture prosthesis into account. The SR Ortho® S PE posterior moulds are also made from DCL polymer. The beautifully shaped tooth necks of the anterior and posterior moulds, modelled on nature, merit particular mentioning here. They facilitate the aesthetic conversion into composite because the shape imitates the appearance of solid teeth growing from the “gums”. A try-in of the setup in the oral cavity helped to verify the arrangement of the anterior teeth establishing wax stage by stage.

Completing the dentures

A model cast framework was produced for the lower jaw. The den-
Fig. 6. The denture base was injection moulded and thermostabilised to create space for creating soft tissue customisations.

Fig. 7 and 8. The completed upper denture distinguishes itself through its characteristics with gingival composites and phonetically aligned teeth.

Fig. 9. Model cast denture in the lower jaw with an open periodontal flap.

Fig. 10. Completed dentures on the upper and lower jaw models. The customized pink and white aesthetic effects make the dentures look very natural – the teeth look as though they have grown from the gums like natural teeth.

Fig. 11. Upper and lower dentures in situ. The customized pink and white aesthetic effects make the dentures look very natural – the teeth look as though they have grown from the gums like natural teeth.

Fig. 12. Upper and lower dentures in situ. The patient with her dentures. New quality of life and stability.

Fig. 13. View of the lips with inserted dentures in function.

Fig. 14. The denture base was reduced – another step that in this case was motivated by the high aesthetic ambitions of the dental technician (who, just to remind you, is the grandson of the patient). Step by step, the complete upper denture was given a natural look with the help of the light-curing lab composites. Final polymerisation was followed by mechanical polishing (Figs 7 and 8). The model cast denture for the lower jaw was also completed (Figs 9 and 10).

Fig. 15 and 16. The patient with her dentures. New quality of life and stability.
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Driving innovation forward

By Dentsply Sirona

As the Director of Research and Development at Dentsply Sirona Lab, Markus plays a central role in terms of our innovation pipeline. He is the person who drives new product developments, for example, innovative materials such as Celtra® Press.

Thanks to his expertise, great communication skills and intuitive thinking, Markus understands our customers’ needs and turns them into new and smart product ideas. His work philosophy reflects Dentsply Sirona’s unique positioning by always laying out the whole picture of the workflow. He is working closely together with other Dentsply Sirona business units to generate valuable links to related workflows. This means that you can benefit from thought out end-to-end solutions, and subsequently benefit from tangible improvements in your daily work.

In this interview, Markus explains the various facets of his work as well as the secret behind real innovation.

Tell us a little about your role as Director of R&D at Dentsply Sirona Lab? What are your main responsibilities?

Markus: For a clinician, about the NextDent 5100 and what it offers, I think that people often ask: does the printer deliver this.

Interview: “We definitely passed a tipping point for 3-D printers”

By Brendan Day, DTI

Powered by 3D Systems’ proprietary Figure 4 technology, the NextDent 5000 is a high-speed 3-D printer designed to save time for both patient and practitioner. Dental Tribune International spoke with Rick Jacobs, dental vice president and general manager at 3D Systems; Sebastian Cornelissen, CEO of Condent and Coreксent; and DR Michael Scherer, an American prosthodontist and owner of Dentsply Sirona Middle East.

What are the benefits of the NextDent 5000 for dental labs?

Cornelissen: In the dental lab, you have similar time pressure issues to a dental practice. You need to be able to produce things fast, in multiple colours and often in large quantities. To be frank, these are all easily achievable with this printer.

Often, a dentist will send some scans to us so that we can quickly create a smile design for the dentist to print a mock-up of in his or her office. Though we are based in the Netherlands and have clinicians working with us from Germany, the NextDent 5000 allows for this entire procedure to be conducted in less than 2 hours.

What has the feedback been since the launch of this printer? What do you see as the benefits of this new printer for clinicians?

Jacobs: What is important for us is that we were able to show that our company, we decided to make sure that our printer would work without issue, day in and day out, for at least three years. Flexibility, speed, accuracy and, ultimately, affordability of the machine and the materials—those, along with training and ongoing support from our outstanding resellers, are the foundations of the NextDent 5000.

We got a lot of feedback from users of this printer, like Michael and Sebastian, and thankfully, our R & D team in San Diego really listened to what they asked for, what the market asked for and this is what our company should always do: listen carefully to our customers and deliver what they demand.

Are software updates included? Jacobs: Absolutely. As long as the user is connected to the Internet, he/she will be able to have the latest updates automatically downloaded to the printer.

It’s predicted that, within three to five years, more than 50 per cent of dental labs globally will have an in-house 3-D printer. What, in your opinion, is driving this growth? Jacobs: Well in 2018, we definitely passed a tipping point for 3-D printers here at 3D Systems. Thanks to easier registration, certification, improved ease of use, and a range of other factors, it has become much more achievable to integrate a 3-D printer into one’s daily workflow.

Scherer: Clinicians are now expecting dental labs to be digital and to have printing capabilities. It’s no longer a case of whether a lab will take your files, but rather if they print themselves or still outsource it. That’s how fast 3-D printing has grown in dentistry.

For more information about Dentsply Sirona lab portfolio please contact your local representative.

Dentsply Sirona

22020, The Gate Tower
Business Bay, Al Seada Street
Dubai, United Arab Emirates
Tel.: +971 (0)4 523 0600
Web: www.dentsplysirona.com/en
E-mail: MEA-Marketing@dentsplysirona.com

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Interview: World Oral Health Day with FDI President Dr Kathryn Kell

By Dental Tribune MEA/CAPPmea

Dr Kathryn Kell, FDI president, talks to Dental Tribune MEA/CAPPmea about the importance of oral health.

Tell me about the work FDI does and the World Oral Health Day program you run.

FDI World Dental Federation (FDI) is an international not-for-profit membership-based organization that serves as the principal representative body for more than 1 million dentists worldwide; we are active in close to 200 National Dental Associations (NDAs) and specialist groups in 130 countries. Founded in 1900, FDI is a pioneer in the field of modern dentistry. FDI has a bold vision: to lead the world to optimal oral health. Speaking as the unified voice of dentistry, we collaborate closely with our members, oral health experts, allied health professionals, and industry partners alike to achieve this vision together.

We are very proud of our World Oral Health Day campaign, which is a platform for the public, the oral health community, and policymakers to help reduce the global burden of oral disease. Everyone has the power to take action to reduce the impact of oral diseases on individuals, families and communities. WOHD provides the ideal platform to grow awareness and encourage people to take charge of their oral health. By working together and coordinating efforts at local, national, and global levels, we can amplify the voice of the oral health community every year on 20 March.

Why is oral health an important topic beyond the teeth and mouth of an individual?

Oral health is much more than a beautiful smile – it is an essential part of our well-being. The mouth is a kind of ‘mirror’ to the body and reflects the status of our overall health. A look into our mouths can reveal nutritional deficiencies, signs of serious diseases, and the effects of unhealthy habits like tobacco or alcohol use. World Oral Health Day encourages all of us to protect our mouths and bodies by adopting good hygiene habits: eating a healthy diet that is low in sugar and high in fruits and vegetables, quitting tobacco use and avoiding harmful alcohol consumption.

What results did World Oral Health Day achieve over the past few years?

We are impressed by the increasing global reach of World Oral Health Day. In 2018, 161,159 participants in 544 events around the world celebrated World Oral Health Day. In 2019, 562,299 participants engaged in events and activities. Here’s a snapshot of the diversity of World Oral Health Day activities around the world: children’s education programmes, lectures, workshops, rallies, free dental check-ups, brush-a-thons, media outreach, social media promotion and more. The response in the media, including on social media, was staggering: in 2018, our campaign reached close to 860 million people.

What is your anticipation for World Oral Health Day in 2019?

This year, World Oral Health Day is all about action on oral health at every level. The campaign will promote good oral hygiene habits and the importance of adopting a healthy diet and lifestyle. It will also highlight the link between oral diseases and other noncommunicable diseases such as diabetes, cardiovascular disease, respiratory disease and some cancers. The 2019 campaign theme, “Say Ahh. Act on Mouth Health,” is filled with oral health messages and tips for good oral care that children and adults can take home and integrate into their daily self-care routines and share with their families and friends.

Why are partnerships with companies like Philips important to FDI and how do such organizations support World Oral Health Day?

As you know, the dental profession and the dental industry are essential partners in delivering oral health to populations around the world. Bridging the gap between the two is even more important today, as new materials and technologies are developed to accommodate the latest treatment philosophies. As leaders in the corporate world, companies like Philips have access to an international community of diverse stakeholders; by working together, we can promote oral health on a truly global scale. Since 2016, Philips’ Sonicare has played an integral role in ensuring the success of World Oral Health Day through global and local activations.

In the UAE, Philips collaborated with several stakeholders such as Dubai Health Authority, universities and schools to raise awareness on oral hygiene. By continuing to unite our efforts, we can help make oral diseases a priority health issue and lead the world to optimal oral health.
**Interview: “You are not healthy without good oral health”**

By Dental Tribune MEA/CAPPmea

Could you please give us a short introduction of yourself and the organisation?

I am Kathryn Kelly and I am the President of FDI World Dental Federation. We are based in Geneva, Switzerland and in the organisation, we represent over a million dentists worldwide. We have around 200 members and we have about 110 members that are membership organisations. For example, I am a member of the American Dental Association—they are a member of FDI. The United Arab Emirates is a member of FDI. Those are the membership organisations, but then, in addition, we have other international organisations as affiliate and supporting members that are also very involved with us.

For instance, the International Association of Dental Research, the American Dental Education Association and several honorary members organisations, such as the International College of Dentists, the Academy of Dentistry International and the Pierre Fauchard Academy.

We have other membership organisations, such as the International College of Dentists, the Academy of Dentistry International and the Pierre Fauchard Academy.

As a member of FDI, those are the membership organisations. For example, I am a member of FDI. Those are the membership organisations. Those are the membership organisations. Those are the membership organisations. Those are the membership organisations. Those are the membership organisations.

I have been involved with FDI myself for many years. At one stage, I was the Chair of the Congress and Education Committee, which was why I was previously in Dubai at the last couple of meetings. So, I am rather familiar with this meeting and it is really great to be back here again and see the changes.

Can you tell us a little bit about how you are partnering with the industry? You mentioned it now.

FDI is also a partner. Previously—I remember last year—we also partnered with other industry players. How important is that for you and what is the scale that you use to evaluate who should be the partner and how to grow the partnership?

We say partnership. We really are partners because without our partners, we would not be able to do anything, really. As a dental society, in my office, if I do not have equipment and if I do not have the right materials, I am not going to be able to practice. It is the same thing with FDI if we do not have a commitment to each other. And that is what we look for. Really strong programmes where we can work together. At FDI, we had “Smile and the World” and we had a really great, successful project in China last year. So, now we are looking forward to doing more.

And you are also doing that in India and Brazil, right?

Yes, that was also in the past project.

What about here in the Middle East?

In the Middle East, we actually need to start developing some programmes. We have a Middle East Education Committee and we have a person who is based in Lebanon, Wunir Dumed, who puts on educational programmes around the Middle East and North Africa.

Could you share a little bit about the vision you have, 2020? What is that about?

Vision 2020 is our advocacy programme. Again, we have advocacy for our members, but we also advocate for oral health around the world and we do this by working with the World Health Organization and other United Nations agencies. I recently did a presentation in CIOSP in Sao Paulo, Brazil a few days ago on the Minamata Convention. Basically, people are looking at what other materials we are going to be using in the future. We know the future are composites, glass ionomers and some things we are looking for you to still develop. We are very excited about some of the new things that we know you are going to be coming out with in the next few years, too.

We went to the 3M headquarters in the Minneapolis St Paul area and we talked to their research team about some of the things that they can do to help develop materials that can be used in countries where even their water supply is limited—you cannot really use the water—they do not have air, they do not have the tools required to do effective glass ionomers in composites. I think if we all work together and look at how we can develop new materials that will really work in some of these countries, that would help us in the long run.

And for the region now, one of the main goals, especially for the UAE and the Dubai Health Authority, is to get rid of caries. Caries prevention is a big goal. How do you see FDI working with those kinds of entities? Have you already begun doing some activities with them through world oral health care?

World oral health is one of the things we do at Prevention, but I cannot stress enough how prevention is the key, because if we do not have caries and if we do not have periodontal disease to deal with, then we are in. Then we do not have oral cancer and the things that go along with oral cancer, such as tobacco and alcohol consumption. Then you know you are going to prevent all these other problems from happening. I think, if anything, FDI stresses prevention.

And this year, in March, can we expect anything special here for World Oral Health Day?

March 20th to celebrate World Oral Health Day. I will be there, and we are looking forward to having a big celebration in Cairo.

The Egyptian Dental Association and the Egyptian Dental Senate are working hard to put something exciting together for us.

Along with Vision 2020, we have a new definition of “oral health”, but we have spoken about that before. Now, we are in our next stage; we are going to look at measurement tools, we are going to go surveys and the surveys are going to be global surveys, so that we can actually see what type of dental diseases are out there and which countries have more issues with caries, for example. Whereas other countries may have more issues with periodontal disease. This way we can actually get a focus on where we want to go with our vision. And then, eventually, we will develop projects that will be the next step.

How can companies or individuals who are not directly involved in the World Oral Health Day, participate? How is that something that we can begin?

We really hope that everyone—all companies in our industry—would like to join us and be a part of this in some way. For example, Companies can help celebrate with some of their dental organisations. So, there is a way to get involved.

Is there anything else you would like to share with our listeners—Have you already begun doing some activities with them through world oral health care?

Our vision is to lead the world to optimal oral health and that is what we want to do. It would be a big thing if the people in the Middle East can work with their governments to put together good programmes that would benefit the public.

We really want to bring oral health into all of healthcare, all of health care policies and anything you can do to bring oral health care into the healthcare arena, in policies, in your governments. This can be very helpful. “You are not healthy without good oral health”—that is another message we want to convey.
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By E.M.S.

One of the true standout dental products launched at the biennial International Dental Show in Germany in 2017 is the EMS AIRFLOW Prophy- laxis Master air polishing system and with it, the crystallisation of a much-needed solution to keeping implants and peri pockets clean. In the last 21 months, the EMS AIRFLOW brand has taken the world by storm.

Suddenly, specialists, dentists and dental hygienists and therapists have a single go-to solution for implant maintenance and pocket regeneration. As well as prophylaxis, EMS AIRFLOW is even replacing more invasive, technique-sensitive procedures like root planing. Apart from the slick, retro look and cutting-edge Swiss engineering of the EMS AIRFLOW/Prophylix Master air polishing system, the real key to its success is a symbiotic relationship with EMS AIRFLOW PLUS powder. Based on Erythritol, the patented micro-sized particles of EMS AIRFLOW PLUS powder have been clinically proven as highly effective time and again at removing biofilm without damage to implant or tissue.

An unexpected benefit for EMS of the micro-sized particles of AIRFLOW PLUS means that only an EMS air polishing unit can dispense the powder. Trying to use AIRFLOW PLUS with a non-EMS air polishing is not only short life of the material, resulting for instance, in over-dispensing of powder and clogging. Peri-odontists and hygienists using the air polishing system will like it to anyone that had a Mac. They will immediately understand the difference.

AIRFLOW PLUS powder was developed in-house by EMS. We were eager to know more, so we spoke with Marcel Donnet, the EMS Powder Technology Research Group Leader in Nyon, Switzerland and posed the five most common questions dental professionals ask about EMS PLUS powder.

Marcel, firstly what is a powder engineer and what led you to this role at EMS?

We come in contact with powders on a regular basis, never the wiser.
Upon closer inspection, we will realise that powders are very complex and its behaviour is neither like a solid nor a liquid (despite, in fact, being a solid). As a result, making a powder is actually complex.

A specific university tract does not exist for powder engineers, one must pursue a combined educational plan consisting of chemical and material engineering. I received my Bachelor’s degree in chemical engineering; then pursued a Master’s degree and finally attained my PhD from a material science department which had a laboratory working exclusively with powders.

Whilst conducting my doctoral studies, I had the opportunity to complete a lot of high-end research on powders. This placed me in the perfect position to one day work at EMS: here we have to master the powder from the production to the mouth of the patient!

How did you come up with the idea of using Erythritol as an ingredient for the AIRFLOW PLUS powder and what else distinguishes AIRFLOW PLUS powder from other powders on the market?

Innovations require constant change and development. Developing a new product takes time today, we’re developing the new products of tomorrow.

When one new product finally comes on the market, we’re already working on the next generation. Based on this philosophy, when we came on the market, we were already searching for a new powder with hopefully even better characteristics. This research led us to the group of materials known as “polyl”, which are non-sugar sweeteners. From this group, Erythritol was chosen because the powders are chemically stable and do not cause a reaction with the body. In addition, it is impervious to humidity and tastes good. The powder has been optimised by means of various tests we revealed that this material has low abrasivity, allowing subgingival usage, and also high efficiency, making it ideal for supragingival usage.

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So in the end, this material in the form that we are manufacturing it has unique balanced properties with its behavior is neither like a solid nor a liquid.

What are some of the recent advancements in prophylactic powders?

When I joined EMS in 2005, air polishing did not rank highly in terms of non-cosmetic usage. Today, AIRFLOW is the new trend, the product of the future, and most in our industry attempt to imitate it. The shift came about, because we undertook advanced research. This research allowed the development of new applications, better understanding of past issues and highlighted the advantage powders offer.

For example, the first advancement made the EMS AIRFLOW/PERIO Powder, which was less abrasive than previous powders and therefore allowed a fully new application: cleaning biofilm in shallow pockets. This turned the powder from being cosmetic to becoming a treatment solution for the periodontist. This was a huge paradigm shift!

Due to this success, we developed the EMS AIRFLOW PLUS nozzle, which allows you to easily clean biofilm inside deep pockets. Treating deep pockets became another success story thanks to its efficiency, especially in terms of treatment time and patient comfort. The shift from solely cosmetic application to an important and effective tool for patient care was complete. This paradigm shift was formally recognised when EMS received the PLURABUS innovation prize in 2007. The prize is significant because it is based on users questioning what is possible at dental trade shows over a full year. It is the voice of thousands of users.

From there, our innovative journey progressed and led to the new EMS AIRFLOW PLUS powder, which combines the advantages of a supragingival and subgingival powder in one. EMS AIRFLOW PLUS powder is unique and patented. However, it was only part of the success story. This powder is a bespoke delivery system, the AIRFLOW Prophylix Master. The EMS AIRFLOW Prophylix Master was launched in Australia last year and is the "enabler" of GUIDED BIOFILM THERAPY (GBT), the only evidence-based solution for dental biofilm management developed by EMS. GBT refers to the clinical protocol for selectively removing the biofilm that forms on hard structures of the mouth, such as teeth, restorations and removable appliances including dentures, using a colour dyes technique to assist, so as to maintain and promote good oral, gum and teeth health over time.

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What is the difference between the EMS AIRFLOW PLUS powder and the EMS AIRFLOW Prophylaxis Master?
By Cortex

Over two decades ago, digitalisation started to transform dentistry, but the process has not been accomplished yet. We are currently in a hybrid phase, in which digital and conventional procedures are often combined. In 2018, Cortex’s fully digital system assumed its place in the digital dentistry world. The system provides the clinician with a complete digital workflow, from virtual implant planning to the final restoration.

Virtual implant planning, static guided surgery, dynamic freehand navigation systems and other CAD/CAM technologies have been undergoing a drastic evolution in the last few years.

The decision on whether to use a digital or a conventional procedure is highly dependent on the clinician's individual preferences, and no recommendations can be made based on the present consensus.

For example, a septum case was solved using a combination of the virtual implant planning software Implant Studio (3Shape) and Cortex’s guided surgery kit that helps achieve correct placement of Cortex’s Magix dental implant, the design of which acts as a bone expander and allows for minimum bone drilling.

After clinical and radiographic examination, a virtual diagnostic impression and a CBCT scan were taken. The digital files were imported into computer-guided planning software and perfectly merged. The case was planned remote from the treatment place in the digital laboratory at the Cortex headquarters. After one week, the surgical template was received.

Placement of a Magix implant for the mandibular first molar was virtually planned for the septum site. The ideal position of the implant was virtually planned based on the anatomical architecture and prosthetic considerations. The angulation and vertical position of the implant were determined to minimise axial loading of the implant and create a proper emergence profile. A 3-D printed surgical template from a rapid prototyping machine was designed and fabricated for the surgery. The drilling osteotomy and implant placement process were smooth and precise, and the results were as planned.

As clinical cases in dentistry can vary greatly and have individual nuances, digital implantology allows for pre-diagnosis and pre-prepared optimal surgical workflow planning, avoiding unexpected challenges during the surgical execution.

It offers a number of benefits to the clinician as well as the patient. For some clinicians, it reduces the procedural time and offers more secure implant placement in complex cases. More importantly, it provides a link between the virtual prosthetically driven treatment plan and the actual surgery by transferring the simulated intervention accurately to the surgical site with the use of an individual surgical template, made specifically for each case. This approach provides the planner with prosthetically driven planning in order to assure an optimal final restorative result.
Incorporating CAD/CAM solutions for full-mouth dental implant reconstructions

By Dr Ara Nazarian, USA

Patients facing the loss of their natural dentition have more treatment options than ever before. The traditional complete denture, once the standard of care for the fully edentulous patient, is slowly but surely giving way to fixed full-arch implant restorations as their superior stability, function and aesthetics become more well known. Further, prosthetic materials have advanced in leaps and bounds, and monolithic zirconia can now be milled for fixed full-arch indications. By moving beyond acrylic and its vulnerability to wear, chipping, stains and fracture, this adds long-term durability to the qualities that make the fixed full-arch implant prosthesis the ultimate restorative option for fully edentulous cases.

Owing to the versatility of dental CAD/CAM technology and the material properties of monolithic zirconia, high-strength restorations can be fabricated for the fully edentulous patient in various configurations. For example, because of its flexural strength of up to 1,465MPa, BruxZir Solid Zirconia (Glidewell Laboratories) can be milled into thin layers and maintain the high level of durability for which the material has become known. This allows for the fabrication of restorations ranging from the monolithic zirconia full-arch implant prosthesis, which resembles a screw-retained hybrid denture in form, to cementable prostheses that attach to custom abutments in the manner of traditional crown and bridge work.

While the screw-retained monolithic zirconia full-arch implant restoration has grown increasingly popular in recent years, the cementable alternative is well suited for many patients. When sufficient hard and soft tissue are present, prostheses can be designed that emerge directly from the gingiva, creating the aesthetics and feel of natural dentition. Additionally, the use of custom abutments to support a cementable full-arch bridge allows for low-profile restorations with minimal faciolingual width. This is appealing to many patients and can indicate a fixed solution in cases of limited vertical clearance.

Cementable monolithic zirconia implant prostheses can be fabricated in various designs as described by Dr Carl Mich’s prosthodontic classifications. While they are most commonly indicated in fixed prosthesis (FP) 1 and 2 cases, in which the prosthetic teeth rise from the gingivae like natural teeth, they can also be used in FP3 cases, where the monolithic prosthesis includes pink gingival areas in order to reconstruct the soft tissue. Whichever prosthesis type is indicated, the precision of dental CAD/CAM technology and versatility of full-contour zirconia allow the entire restoration to be milled from a single block of the material, adding to the overall strength.

All of these prosthesis types afford bone preservation, improved dental function, psychological benefits and enhanced quality of life associated with fixed implant prostheses, which come the closest to natural dentition of all restorative options.

The use of custom abutments for this type of restoration—and all cementable prostheses for that matter—is essential, as it allows for the creation of margins that are gingival or just slightly subgingival, enhancing crown retention, cervical soft tissue margin and the final emergence profile. The precision and flexibility in prosthetic positioning allowed for by custom abutments also make it easier to achieve a passive fit for the restoration and correct for divergent angulation of implants.

The following case report features a full-mouth reconstruction via cementable full-arch BruxZir bridges over Inclusive Titanium Custom Abutments (Glidewell Laboratories). The treatment protocol for this type of restoration will be illustrated, as well as the general parameters for determining whether this solution is indicated for the individual patient. Standard denture technique, digital treatment planning and CAD/CAM technology were used to achieve an excellent result in an aesthetically challenging case.

Case presentation
A female patient in her mid-fifties presented for treatment with an edentulous maxilla and grossly decayed, hyper-erupted mandibular dentition (Figs. 3a & c). The patient was a heavy smoker, had not seen a dentist in several years, and was not taking proper care of her remaining teeth owing to pain and discomfort. The patient’s maxillary denture had become increasingly loose-fitting since losing her teeth nearly a decade prior. Her desire for a restoration that felt and functioned more like natural teeth led her to my practice, where she could undergo the surgical and prosthetic phases of treatment under one roof.
radiographic evaluation indicated sufficient bone volume for full-arch implant therapy.

Treatment options were presented to the patient for her edentulous upper arch and non-restorable mandibular denture, including various combinations of fixed and removable implant prostheses. This involved a discussion of complete edentulism and its problems, consequences and solutions, the effect of tooth loss on oral health, and the differences in stability and function afforded by each treatment option.

Dental financing programmes were explained, which is an important part of treatment presentation, as it can help make implant therapy feasible for patients who cannot cover the entire cost upfront.

The patient strongly desired fixed restorations, as she had grown quite frustrated with her removable maxillary denture over the years. In addition, the patient had a pronounced overbite and incisal guidance, which had undergone substantial bone resorption and gingival recession. The tissue contours would also need to be recreated in the mandible, where bone levelling was required to remove undercuts, create a bone-supported surgical guide and establish adequate bone width in which to place the implants.

The anatomy of the patient’s ridges called for a cementable solution, as the labial/incisal bone volume required that several of the implants be tilted in a manner that would have required access holes too far to the facial aspect if screw-retained prostheses were to be prescribed. This would have been especially problematic for this patient, as cigarette smoking tends to darken the complexion used to seal the screw access holes. The patient also desired prostheses that occupied as little facial space as possible, further indicating a cementable solution. Thus, custom abutments would be utilised to correct the angulation of the implants and support full arch Brånemark systems. The monolithic construction of the FP’s prostheses, in which both the gingival areas and teeth are milled from the same block of solid zirconia, would ensure the longest-lasting restoration possible.

The patient returned for the records appointment, where maxillary and mandibular impressions were taken so that immediate temporary dentures could be fabricated for delivery at the surgical appointment. CBCT scanning was performed using the 3D-Dental technology to provide the information needed for virtual treatment planning. Based on the images obtained from the CBCT scans, the patient’s arches were virtually reconstructed in a digital environment (Figs 3–6). From the digital treatment plan created by 3D-Dagnost, bone-level surgical guides were produced for the maxilla and mandible (Figs 7–8).

The Hahn Tapered implant (The Hahn Tapered Implant System) was selected for the procedure because the pronounced thread design would help achieve optimal positioning and primary stability. The tapered shape and wide range of sizes also simplified the task of situating the implants in the key positions around the arch. Its conical internal hex connection results in a very stable seal between the implant and prosthesis, which is beneficial for crestal bone preservation and soft-tissue health.

At the surgical appointment, intraoral sedation was administered to the patient. The bone-level surgical guide was seated over the patient’s maxilla once the tissue had been reflected, and the fixation pins were tightened (Fig. 9). The implant osteotomies were created following the simplified surgical protocol of the Hahn Tapered Implant System. The implants were placed from second molar to second molar in the maxillary arch (Figs 10,11). Healing abutments were connected to the implants to help prepare the soft tissue for the restorative phase (Fig. 12).

Next, the patient’s untreated mandibular teeth (Fig. 13) were extracted using the Physics Forceps (Gold Endent), a flap was reflected, and an alveoplasty was performed. A bone-supported guide was seated in order to control the location and angulation of the implant osteotomies (Fig. 14). As the Hahn Tapered Implants were threaded into place, their deep, sharp threads engaged the walls of the socket sites and helped maintain proper position toward the lingual aspect. Because of anticipated tissue swelling as a result of the bone levelling procedure, four high healing abutments were connected to the implants in the lower arch (Fig. 15). The immediate dentures were soft-relined with Macropore (Kettenbach) to seat over the Hahn Tapered Implant Healing Abutments, the hourglass shape and undercuts of which provided a degree of retention that enhanced dental function for the patient during healing (Figs 16,17).

Four months later (Figs 17,18), the healing abutments in the maxillary arch were surgically exposed and the tissue appropriately approximated and allowed to heal. Approximately two to three weeks later, Hahn Tapered Implant Impression Copings were seated and closed-tray impressions taken with a polyvinylsiloxane material (Panasil, Kettenbach), as was a bite registration (Futar, Kettenbach). The final prostheses were well fitting and satisfactory to the patient, duplicates were provided to the laboratory to aid the restoration design process.

Based on the impressions, the laboratory poured and scanned stone models, creating a digital representation of the patient’s arches on which the designs for custom abutments and the cementable restoration were created. Inclusive Titanium Custom Abutments were fabricated with corresponding PMMA Smile Composers. The patient returned for clinical evaluation of the prosthetic design. The custom abutments were delivered using laboratory-provided acrylic delivery jigs, which helped ensure proper orientation and seating (Fig. 19). Owing to the precision of the digital design process, the fit of the custom abutments was optimal, establishing margins that were at a slight distance from the gingival surface. This simplified the removal of excess cement from the margins and illustrates the advantages of CAD/CAM-produced abutments.

The PMMA Smile Composers were seated over the custom abutments, and slight alterations were made to fit the gingival margins, length of teeth, and bite (Fig. 20). A bite registration was taken with the try-in bridges in place.

The PMMA Smile Composers were returned to the laboratory along with photographs, the bite registration and instructions for minor modifications, including lowering the gingival margins of the mandibular prosthesis and raising the gingival margins of the maxillary prosthesis. The laboratory scanned the adjusted PMMA try-in bridges, made the requested alterations to the prosthetic designs, and milled the final prostheses from Bränemark Solid Zirconia.

The final restoration was delivered at the next appointment and established accurate fit, function and interocclusal relationships (Figs 21,22). No adjustments were needed for the monolithic zirconia prostheses because of the PMMA try-in process, which captured the precise modifications needed for proper form and aesthetics.

Final radiography confirmed complete seating of the Brånemark restoration on the inclusive Custom Implant Abutments. The patient was extremely happy with the reconstruction of her maxillary and mandibular arches, which restored aesthetics, dental function, comfort and confidence.

Conclusion

The accuracy of dental CAD/CAM technology and the versatility of prosthesis materials allow practitioners considerable flexibility in restoring the edentulous arch. For clinicians who prefer a cementable solution or cases in which bone stops on aesthetic restorations are grafted, the monolithic zirconia restoration over custom abutments excels in restoring the teeth, as well as the hard and soft tissue of the fully edentulous patient.

Editorial note

A list of references can be obtained from the publisher.

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Dr Ara Nazarian maintains a private practice in Troy in Michigan in the US with an emphasis on comprehensive and restorative care. He is a diplomate of the International Congress of Oral Implantologists and the Founder and Chief Clinical Officer of the Aesthetic Dental Academy. He has conducted lectures and hands-on workshops on aesthetic restorations grafting and dental implants throughout the UK, Europe, New Zealand and Australia.
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Once I implemented the Insignia system, I could immediately tell that something different was happening to what I was used to. The patient's occlusions seemed to come together almost effortlessly, and this was happening simultaneously with alignment. This saved time in the chair and time in braces, which was a win-win for both myself and my patients. I changed to Insignia as my standard of care and have been using it for all my full-fixed cases for the past seven years.

Could you explain how the Insignia System works? Insignia uses the Approver software to move the teeth to an ideal situation. The torque values are calculated from the initial position to the final desired outcome using algorithms developed by the inventor, Dr Craig Andreiko. This is revolutionary—and I do not profess to understand how these calculations are made—only that they are effective, in a clinical setting, in finding a solution for our patients.

Customised brackets are manufactured in clear jigs that are applied indirectly to the teeth for accuracy and co-ordinated archwires are produced to further promote a solid occlusal foundation for the patient. By studying the Approver in over 2,600 cases, I firmly believe that there is a great deal of false knowledge in orthodontics that is based on high friction, high force appliances and that conclusions about what a patient's biology will tolerate have been erroneous and misleading. Insignia is showing us what is possible and also that simple intra-arch alignment has a much greater effect on the entire dentition and occlusion than has been taught in the past.

What are the main advantages of implementing the Insignia system? Understanding how the Approver software works and what constitutes a 'good' set-up versus an 'excellent' set-up is what delineates the system's advantages. With the Insignia technique, knowing what to ask for is as important as knowing how to evaluate what is set up on the virtual teeth. Assessing what is delivered to the patient clinically and managing the actual outcome is still the orthodontist’s job. Insignia does not replace the doctor—it is simply a tool, like any braces system, but it is more accurate and effective, because it is based on a visualised solution rather than an imagined one. It saves time, not only in the length of appointments, but in the overall number of appointments—making it more profitable.

What are the overall results of using the Insignia system in a practice, not just clinically, but also in terms of patient loyalty? Our practice has doubled since implementing the Insignia system and I firmly believe it is because we have a reputation for clinical excellence using technology. By solving so many of the shortcomings of traditional braces systems, Insignia has allowed me to work on finishing and detailing cases to a level that was never an option before without excessive treatment time or increasing the number of appointments. Patients love the beautiful results that are gained in a shorter time.

What would you say to your colleagues who are hesitating about using the system? The cost factor stops a lot of doctors from using Damon or Insignia. They argue that Insignia costs more and that it is not justified. I could never put a price on happiness, but the simple fact is that efficient treatment saves money. Insignia has a fixed overhead cost for me and controls the practice’s cashflow—we only have costs when there is production required. The patient’s treatment that is not being solved is no longer being subsidised by others, which is a common theme with traditional orthodontics. So, in short, every Insignia case is profitable—this is how a business should run.

My impression of most doctors I speak to is that they harbour a fear of change. Changing any system in an orthodontic office is messy at the start. I think a lot of people look for reasons not to change rather than embrace the change. Practitioners need to understand that once the kinks are worked out and they start practicing on the computer and not on patients, the end result is a gorgeous, streamlined practice that is a joy to work in.

By Kinga Mollov, DTMEA

During the Ormco Forum Dubai, Dental Tribune MEA had a pleasure to speak to Dr Sonia Palleck and ask questions about the Insignia System. Please if you could introduce yourself to our readers? My name is Dr Sonia Palleck. I have been in solo private practice for 30 years, but teaching is one of my passions. I am a part-time clinical instructor at the University of Western Ontario where I obtained both my dental and orthodontic degrees. I have a 14-year-old daughter whom I love spending time with.

When did you first hear about the Insignia system? I first heard about the Insignia system at an American Association of Orthodontists meeting I was looking into passive self-ligation using the Damon System, as I was using the Minit SmartClip at the time, and wanted something that applied lighter forces. I worked with an indirecet set-up and with its computer-simulated treatment, Insignia made sense to me. So I purchased 40 cases and have never looked back.

What prompted you to provide it as a solution in your practice? Once I implemented the Insignia system, I could immediately tell that something different was happening to what I was used to. The patient's occlusions seemed to come together almost effortlessly, and this was happening simultaneously with alignment. This saved time in the chair and time in braces, which was a win-win for both myself and my patients. I changed to Insignia as my standard of care and have been using it for all my full-fixed cases for the past seven years.

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Improving the facial balance in an adult using slow arch development techniques

By Dr Derek Mahony, Australia, & Dr Theodore R. Belfor, USA

Introduction

Anti-ageing is a branch of medicine focused on how to prevent, slow or reverse the effects of ageing, thus helping people to live longer and healthier lives. Recently, however, more evidence-based medicine has led to anti-ageing becoming a multi-billion-dollar industry in the past few decades, the market for anti-ageing products and services has grown into a global industry valued at an estimated US$613 billion in 2019, up from US$262 billion just five years before, according to PRC Research, a publisher of technology market research reports based in Wellesley in the US.

The recent medical literature and evidence-based medicine show that, as we age, there seems to be a loss of fat volume in some areas of the face, as well as a change in the morphology of the facial skeleton. Facial soft-tissue augmentation by injection has become increasingly popular as a minimally invasive option for patients seeking cosmetic facial enhancement. Replacing lost soft-tissue volume allowed for a more comprehensive approach to total facial rejuvenation. It has been demonstrated that orthodontic treatment with an intra-oral orthopaedic dental appliance (Homeoblock, Orthosmile) increases soft-tissue volume and enhances facial symmetry, producing soft-tissue changes consistent with improved facial esthetics.

This appliance can be added to the treatment protocol of facial injection to create a relatively non-invasive interdisciplinary approach to midface enhancement.

With this article, we show how orthopaedic/orthodontic appliance therapy, in conjunction with the placement of dermal fillers for the reduction of lines/wrinkles and depressions in the face, can produce desirable facial soft-tissue enhancement. Furthermore, we show that the volumetric changes achieved by this combined treatment approach can produce a desirable result, namely a more youthful appearance.

Case study

A healthy woman in her mid-sixties presented for treatment with a strong desire to improve her facial appearance (Fig. 1). Her oral hygiene was good and there was no active periodontal disease. She had headache symptoms and clinical examination revealed a disc displacement with reduction in the right side, with a maximum jaw opening of 38 mm. Her centre line was displaced 2 mm to the right and lined up when she opened < 10 mm, indicating that she had a mandibular displacement to the same side. A Homeoblock appliance, with a 5 mm bite block on the right side (to decompress her temporomandibular joint), was fabricated and delivered (Fig. 2). When she closed on the bite block, her excursion freed up and the muscles realigned the mandible so that her centre line lined up correctly. Her headache symptoms were relieved in three weeks and her maximum opening was improved to 42 mm. The patient continued Homeoblock treatment for nine months.

Intra-oral and extra-oral photographs were taken to monitor treatment, and 3-D stereophotogrammetry was performed. Extra-oral 3-D digital photographs were taken with a facial capture system (3DMD). A facial capture system (3DMD/Kodak) and stereophotogrammetry were used to generate a clinically accurate digital model of the patient's facial surface. It uses a technique of stereo-triangulation to identify external surface features reviewed from at least two cameras. This approach incorporates the projection of a unique, random light pattern that is used as the foundation for triangulating the geometry in 3D. The capture takes < 2 ms per frame. The data is processed and a highly precise < 0.5 mm root mean square of the distance measured is calculated, creating a digital model of the patient that is ready for immediate clinical use. Stereophotogrammetry for quantifying facial morphology was introduced in a study published in the Journal of Dentistry in 1996. It was concluded that “stereophotogrammetry is a suitable 3-D registration method for quantifying and detecting development changes in facial morphology”.

Evaluating the patient’s face over the nine months of Homeoblock treatment for her temporomandibular dysfunction showed a change in the morphology of the face (Fig. 3). Morphometric analysis was performed by superimposing before and after 3-D images and using finite element modelling. Thousands of triangular reference points were used to establish the change. The blue area indicated no change and the red to orange areas showed an increased dimension of up to 2.2 mm. We saw an increased volume above and under the eyes, the zygomatic region, the upper lip, and the marionette and pre-jowl areas. From the facial photogrammetry, we could see a reduction in the lines, wrinkles and depressions (Figs. 4 & 5).

After nine months, the patient’s facial changes prompted her to go forward with injections of dermal fillers. She was given 1 ml of Restylane (Pharmaceuticals) for lip enhancement and two 1.5 cc corrections with Radiesse (Merz Aesthetics) in the pre-jowl and marionette areas and along the inferior border of the mandible, and the inferior and lateral borders of the zygoma (Fig. 6).

Results

Post-treatment, the patient’s face appeared more youthful with better defined cheekbones and a firmer jaw line. The skin appeared smoother with fewer lines, wrinkles and depressions (Figs. 7a & b).

Discussion

Facial changes related to palatal expansion are clearly outlined in this article. The maxillary complex shows a change in size and (or) mass allied with an increase in structural complexity, in association with biological processes. Palatal expansion, presumably, switches on osteoblastic genes associated with active bone deposition and concomitant remodeling of the spatial matrix ensures in relation to the changes around the eyes, we must recall that the maxilla forms the floor of the orbit and skeletal changes may become apparent after expansion, specifically, changes in orbital morphology may be reflected on the skin of the face: as the lower eyelids become tighter, the lateral canthus becomes more horizontal, facial width increases, particularly at the zygomatic-maxillary sutures; and the craniofacial complex, putatively, not only functions to create a relatively non-invasive interdisciplinary approach to midface enhancement.

Fig. 1: Pretreatment facial and anterior photographs.

Fig. 2: The Homeoblock appliance.

Fig. 3: The pretreatment face, the post-treatment face at six months and nine months, and finally, a morphometric evaluation of the change.

Fig. 4: Morphometric evaluation of the final results: finite element analysis showed increased facial volume with a directional change of almost 4 mm, indicated by the red to orange colour.

Fig. 5: Superimposing the red post-treatment face over the blue pretreatment face. The red areas showed increased volumetric changes that occurred during our treatment. There was an increase in volume in the frontal, supravital, inferior orbital, zygomatic, nasal base, upper lip, nasolabial depression, and marionette and pre-jowl areas.

Fig. 6: Morphological facial changes in the lips, zygoma and jaw area after the placement of 1 ml Restylane and 1.5 cc of Radiesse. Note the deeper red to orange colour in the areas where the injections were placed.

Fig. 7a & b: Before and after facial photographs.

Fig. 8: The Homeoblock appliance.

Fig. 9: The Homeoblock appliance.
Indirect bonding: Digital technique vs conventional method

By Drs Arturo Fortini, Alvise Caburlotto, Elisabetta Carli, Giulia Fortini & Francesca Scilla Smith, Italy

One of the peculiar features of straight-wire techniques is the in-built tip, torque and in-out adjustments in the brackets, which reduces the need for making first-, second- and third-order bends on the arch. It follows that the precision in the positioning of the brackets is of fundamental importance for making the correct adjustments and for the consequent predictability of the result, thus making bonding one of the most important steps of the whole treatment.

With direct bonding, there is a high margin of error in bracket positioning, due both to the dental professional’s experience and to difficulty with visualisation. The positioning errors that can be made are on the horizontal, vertical and mesiodistal axes, and can create the need to reposition the brackets during orthodontic treatment, resulting in a waste of time. Over the years, indirect positioning techniques have been developed to make positioning more precise and to make the procedure as fast as possible. The aim of this study was to compare a new, digitally-assisted method of indirect bonding (Transfer Bite Leone) with the conventional clear two-tray technique, using the split-mouth method to evaluate the amount of remaining composite around the base of the bracket in both procedures.

In order to avoid differences due to placement, we used the same dedicated programme for both methods. STL files, obtained from intra-oral arch scanning or stone model scanning, were loaded and processed with the Leone Maestro 3D Ortho Studio software (AGE Solutions). This digital tool permits the segmentation and width and height measurement of the teeth, and the subsequent determination of the long axis and the average height of the clinical crowns, in order to virtually arrange the brackets in the correct position. The dentist can later change the positioning, the torque, the tip and the rotation to obtain an absolutely individualised and strategic positioning of the brackets for the case (Fig. 6).

Once the ideal position of the brackets had been obtained, we used the Maestro 3D software to obtain a file that allowed the 3D printing of the model in which, in the left hemi-arch, the brackets were integrated to be able to use it to produce the conventional thermoformed clear trays that would contain the brackets to be placed in the mouth. In the right hemi-arch, using the software, we designed a Transfer Bite that permitted precise positioning of the brackets. The Transfer Bite is made of biocompatible material and is produced using a high-precision 3D printer according to specific parameters.

Our split-mouth clinical investigation protocol was accepted by the American Association of Orthodontists committee for the table clinics that we presented at the 2017 annual congress in San Diego in the US (Fig. 2). This procedure clearly demonstrated the limitations of the conventional two-tray technique: inconsistent accuracy, an excess of composite around the base of the bracket that cannot be removed during the bonding step, and difficulty in removing the thermo-printed support (Figs 3 & 4).

The Transfer Bite system with positioning devices was found to be better because it allows the clinician to have a complete view of the base of the brackets, optimising the removal of excess composite (Fig. 5). In addition, the Transfer Bite, compared with the thermoformed trays, has greater stability on the dental arch, with an even better precision result, and aids the dentist in repositioning the brackets in a detachment case.

Our experience of using the Transfer Bite system on 12 patients allowed us to confirm that this new indirect bonding method is simpler, easier and more accurate than the conventional method. Furthermore, it proved to be a less operator-dependent technique, allowing even less-experienced clinicians to achieve optimal results.

Editorial note:

This article was originally published in ortho international magazine of orthodontics, issue 2/2018.

Dr Arturo Fortini is a specialist in orthodontics and in private practice in Florence in Italy. He can be contacted at arturofortini@gmail.com.

Dr Elisabetta Carli is a specialist in orthodontics and in private practice in Fivizzano in Italy.

Dr Alvise Caburlotto is a specialist in orthodontics and in private practice in Padua in Italy.

Dr Giulia Fortini is a specialist in orthodontics and in private practice in Venice in Italy.

Dr Francesca Scilla Smith is a specialist in orthodontics at Nova Southeastern University, College of Dental Medicine, in Fort Lauderdale in the US.
Andy Wallace describes a case that successfully combines fixed orthodontics and bleaching with the strength of composite edge-bonding restorations.
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mask the joins when edge bonding and lengthening teeth. They blend well to the natural enamel and adapt perfectly to the colour of the surrounding dentition.

**Durable result**

Polishing was completed using the Kulzer Venus Supra Polishing kit. Its extensive silicone range is filled with microfine diamond powder. The pink pre-polishers are effective for removing scratches and creating secondary anatomy, while the grey ones give a great, long-lasting finish. A final harte was achieved using aluminium oxide paste on a felt wheel. New vacuum-formed retainers and bleaching trays were fabricated for the new shape of the teeth. They would help to retain the treatment outcome and maintain teeth whitening. I recommended three to four days of top-up bleaching, using Philips Zoom Daywhite, three times per year.

At the three-month follow-up appointment, I found that the upper retainer wire had debonded. The patient was instructed to wear the removable retainer full-time while the laboratory made a new wire.

The patient attended the surgery the following week and the new retainer wire was bonded in place. New vacuum-formed retainers were fabricated after approximately two years. The patient continues to be seen every six months for her examination and review.

We were both delighted with the ABB treatment outcome. The composite provided a long-lasting, natural restoration. At the three-year recall appointment, I found that the upper retainer wire had debonded. The patient was instructed to wear the removable retainer full-time while the laboratory made a new wire.

No chips or appreciable wear. No furcation was seen (Figure 8). At the next appointment, the edge-bonding had debonded. The patient was instructed to wear the removable retainer full-time while the laboratory made a new wire.

The patient attended the surgery the following week and the new retainer wire was bonded in place. New vacuum-formed retainers were fabricated after approximately two years. The patient continues to be seen every six months for her examination and review.

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**References**


Editorial note: The article was originally published in Dentistry Issue February 2019.

Dr Andy Wallace
BDS (QUB) MFGDP (RCS Eng)
President of the ESAO
Dentist at Bachelors Walk Dental, & Vice President of the EASD
Andrew is a general dentist with special interest in Prosthodontics and Orthodontics and accepts referrals for full mouth rehabilitation, treatment of tooth wear, cosmetic dentistry and endodontics.

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**Final Programme**

**Round Table Trainings**

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