Dental Tribune MEA / CAPPmea – IDS Cologne success story

By Dental Tribune MEA / CAPPmea

DUBAI, UAE: The Dental Tribune MEA license owner – Centre for Advanced Professional Practices (CAPPmea) - were amongst the “movers and shakers” in the dental market during the 50th International Dental Show (IDS), which took place in Cologne, Germany, on 10-14 March 2015. The event has become the biggest and most successful “dental show” for all major players in the field, including its organizer - Koelnmesse, dental industry representatives and other dental professionals tasted the “newest spices” of the dental development cuisine at IDS Cologne.

In the year of its 10th Anniversary, and prior to the 10th CAD/CAM & Digital Dentistry International Conference, CAPPmea travelled to Cologne, for a 10-day mission, to represent globally the Middle East dental society, at the 50th International Dental Show and the 11th DTI Annual Publishers Meeting. CAPPmea provided information on its latest Continuing Dental Education events in the Middle East & Asia and distributed 2,500 up to date publications of Dental Tribune MEA at the 100m2 DTI Media Lounge stand (D66/F65) situated in hall 4.1.

11th DTI Publishers Meeting 2015

As an IDS tradition, the DTI Annual Publishers meeting was held for the 11th time. All 96 publishers from the DTI family came together at Hilton Dom Hotel for the two days meeting. The 11th Annual Publishers Meeting welcomed attenders from Australia, the U.S.A., the Middle East and many other countries. DTI’s CEO, Torsten Oemus opened the meeting with a motivational speech presenting the achievements of the last year of all the partners. Together the group evaluated, planned and strategized approaches. Amongst new projects of the partners Dental Tribune MEA / CAPPmea introduced two new innovative items: ‘Referral Clinic section’ and ‘Digital e-newspaper’ incorporating the print publication as a digital copy into the e-newsletters. The 2015 Publishers Meeting helped strengthen the global DTI platform and announced plans for the coming years to work in cooperation with the entire publishing group. Amongst the main subjects discussed were the globalization process, the digitalization of dental practices and laboratories and the relevance of on-line education and e-commerce for dentistry. Dental Tribune International and its partners will join forces in asserting the same trends for the MEA region in the coming years.

Happy 10th Birthday CAPPmea

CAPPmea - IDS Cologne
Henry Schein at IDS: Everything for digital dentistry

By Dental Tribune International

Cologne, Germany: In 2015 the Henry Schein launched an umbrella brand, ConnectDental, bringing together the range of digital products and services needed to connect dental practices and laboratories while integrating open CAD/CAM systems and materials. Tuesday’s IDS press conference confirmed once more that this is the only way to establish a future-proof practice and laboratory structure. It also provided an overview of present and future trends in dentistry.

According to Stanley M. Bergman, Chairman of the Board and CEO, Henry Schein, the current health market and the idealised vision they sought to create. Now, the time has come for practices and laboratories to demonstrate similar courage and to view digitalization as a real opportunity.

In this context, Henry Schein offers two concepts for complete digitalization of practice workflow: ConnectDental and CEREC+. Both concepts are entirely structured to deliver efficiency and profitability, and are therefore trendsetting tools in the hands of practices and laboratories. The ConnectDental workflow brings together the various digital systems components to produce an open solution, covering 3-D diagnosis, digital impressions, implant planning and model production using 3-D printers, while also incorporating design and manufacture for restorative surgery using grading and milling machines.

Andreas Meldau, President, European Dental Group, Henry Schein, and Managing Director, Henry Schein Dental Deutschland, emphasised the absolute prioritisation of continuous development for the efficient treatment of patients. “360° digital—Zahntechnik gestalten [shaping digital dental technology]”—this theme describes a first-of-a-kind event scheduled for June that is intended to offer laboratory owners and management, as well as their customers, a 360° view of the systems, components and materials that are part of the digital workflow. The event will place particular importance on providing a variety of perspectives: digital solutions according to practices, the dental laboratory perspective and the academic viewpoint. The two-day event presented by Henry Schein will feature speakers from the world of science, practices, laboratories and industry, who will share information on the opportunities and limits of digital manufacturing technologies.

Attendees of the IDS are invited to pencil in the 500th congress scheduled for June.

Henry Schein, one of the world’s leading providers of products and services for doctors, dentists and veterinarians is at the vanguard of progress in the establishment of new concepts in the health care sector.

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Stanley M. Bergman, Chairman of the Board and CEO of Henry Schein, provided information on Henry Schein’s history and future development. (Photograph: Claudia Duschek, DTI)
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Bulk fill restorations in the posterior area

By Dr. Abubakar Sheikh, Pakistan

Introduction
Traditionally cavities in posterior teeth were generally filled with amalgam. With the advent of direct composites this approach gradually changed, but there were quite a few challenges that had to be overcome. These challenges included reducing polymerization shrinkage and postoperative sensitivity, achieving tight contacts in posterior teeth and sufficient strength in load bearing areas.

With the improvement in adhesive bonding systems and composite materials most of these challenges were addressed but still it has always been recommended to place composite in increments due to a variety of reasons. These include penetration of curing light to a limited depth and placing composite in increments will help reduce the effect of polymerization shrinkage to a certain degree. From a clinician’s point of view this approach is certainly time consuming and there has always been a desire to fill the cavity in a single increment and get the job done as fast as possible.

Considering the demand of the dental practitioners, manufacturers such as 3M, have now introduced bulkfill composites which can be placed in cavities in a single increment and yet can be cured effectively and have good adaptability and reduced shrinkage. We tried bulkfill material in a clinical case in which 3 posterior cavities were filled with Filtek™ Bulk Fill Posterior composite.

Clinical Case
A female patient presented with multiple cavities in her teeth. There was a moderate sized cavity in the first molar, the first premolar had a large distal carious lesion and the second premolar had caries mesially. We decided to manage the 3 adjacent large cavities in her posterior teeth in 4th quadrant with bulkfill composite in a single appointment. Fig. 1 to Fig 15.

Fig. 1. Initial case 1: 44 large carious lesion distally, 45 large carious lesion mesially, 46 moderate size lesion occlusally.

Fig. 2. Isolation of the affected teeth with rubberdam.

Fig. 3. Caries has been removed and cavities prepared. Premolars have been separated by sectional matrices and wedge.

Fig. 4. Selective etching done on enamel margins.

Fig. 5. Single Bond Universal adhesive being applied in the molar cavity.

Fig. 6. Single Bond Universal application in all cavities.

Fig. 7. Adaptation of Filtek™ Bulk Fill Posterior composite after completely placing in molar cavity.

Fig. 8. Occlusal anatomy being carved on the molar surface.

Fig. 9. Anatomy being carved after complete filling of Filtek™ Bulk Fill Posterior composite in both premolars.

Fig. 10. Finishing of the restorations.

Fig. 11. Polishing with 3M Spiral Polishing disc and diamond polishing paste.

Fig. 12. Restorations after finishing and polishing.

Fig. 13. Completed restorations.

Conclusion
Previously with composites being placed in multiple increments, it would have been quite time consuming and tedious to do a number of such restorations in a single appointment. Certainly bulkfill composites made the job easier. Their handling and manipulation with instruments are also quite user friendly. With the composites being applied in a single increment, an ideal shade match might not be possible in all situations but in posterior restorations the effect can be masked to a certain degree. Overall I would say that bulkfill composites will definitely speed up the work and make things easy for the clinician.

About the Author
Dr. Abubakar Sheikh
Associate Professor Operative Dentistry & Head of Dept. of Endodontics & Supervisor for Fellowship Program for postgraduate students in Fatima Jinnah Dental College.
Practice owner and Specialist in Restorative Dentistry at Dr. Abubakar’s Specialist Dental Practice.
Specialist in Restorative Dentistry at Fatima Jinnah Consulting Clinics.
One step placement. One innovative material. No expensive dispensing device. No time-consuming layers. Posterior restorations made simple.

Bulk fill composites are designed to make large posterior restorations faster and easier—however, productivity can be lost when using complicated layering techniques or expensive dispensing devices. Filtek™ Bulk Fill Posterior Restorative was designed to improve productivity by allowing one-step placement up to 5 mm … as easy as “one and done.”

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Interdisciplinary approach in aesthetic dentistry

By Dr. Sebastian Fucos, Belgium

In today's dentistry, for rendering the best comprehensive dental services to our aesthetically driven patients, the paradigm has shifted to an interdisciplinary team of specialists that work together steered by a clinical co-ordinator. This person should be either a multi-disciplinary general dentist or a specialist with additional training outside his or her specialty area. This gives him or her the ability to bring the surgical, orthodontic, restorative and technical skills together as a whole, following treatment sequences customised especially for the patients' best interests and expectations.

The challenge is making the correct diagnosis and selecting the appropriate treatment regimen. In order to achieve that, the clinician has to follow certain guidelines and understand the relationships between teeth and the adjacent structures. Establishing the correct position of the incisal edge of a maxillary central incisor in relation to the lower lip, the correct ratios between the tooth's width and length, and the level of gingival margin when smiling are very powerful diagnostic tools.

In order to aid memory, one may remember it as the 42.2 rule: (a) a maximum of 4 mm of gingival margin when smiling; (b) a maximum of 2 mm from the incisal edge of a maxillary central incisor to the lower lip during smiling; (c) apically repositioned flap.

2. Altered active eruption when the osseous crest does not reabsorb to a level 2 mm apical to the CEJ. The gingival margin is still located incisal to the CEJ. This is treated with periodontal surgery with osseous resection.

3. Compensatory eruption when the tooth surface is lost, with the reduction in facial height or vertical dimension of occlusion unaffected (short tooth syndrome). Treatment is either restorative or, in the case of hypermobility of the lip, combined with a coronally positioned mucosal flap.

4. Delayed eruption followed by early loss of primary maxillary incisors, delayed eruption of maxillary permanent incisors or eruption of mandibular incisors. Diagnostic features are short maxillary incisors, overerupted mandibular incisors or a Class III maxillomandibular relation. Bearing the 42.2 rule in mind, treatment should follow incisal reduction done selective-ly with crown lengthening only or crown lengthening combined with orthodontic intrusion of mandibular incisors and possible minimally invasive restoration of maxillary teeth.

5. Vertical maxillary excess described as a hyperplastic growth of the maxillary skeletal base where teeth are positioned farther from the skeletal base, an increased facial lower third and excessive gingival display, which is classified according to three categories:
   (a) Category 1: 2-4 mm of gingival display, treated with orthodontic intrusion, orthodontic intrusion, and periodontal treatment;
   (b) Category 2: 4-8 mm of gingival display, treated with periodontal treatment; and
   (c) Category 3: more than 8 mm of gingival display, treated with orthodontic surgery (Le Fort type I);

6. Hypermobile upper lip—the average mobility of the upper lip is from 6 to 8 mm from the rest position. More than 8 mm represents hypermobility. Considering that the average distance from the lower margin of the upper lip and the base of the nose (subnasale) is 21 mm, one could take two superimposed photographs with the patient at rest and smiling, fully calculating to the lip mobility very easily using the 42.2 rule. Generally normal tooth length is present and dental facial aesthetics is good to ideal. The treatment regimens could entail a coronally positioned mucosal flap, crown lengthening with crown lengthening or a combination of both (Figs. 8 & 9).

Since the aetiology is generally multifactorial, by combining all the clinical data gathered during the initial examination, including facial, perioral, orthodontic, endodontic and restorative data, as well as radiographs and diagnostic photographs, the clinician has the ability to compose a very detailed and comprehensive treatment plan especially for a patient with high aesthetic demands.
A crown-lengthening surgical guide (a vacuum-formed Essix appliance) was manufactured on a duplicate model of the wax-up for ideal osseous contouring during the surgical procedure (Fig. 18). The gingivectomy was performed following exactly the gingival margin of the wax-up and then used for guiding the osseous contouring, through which a biologic width of a minimum of 2 mm was maintained (Figs. 19-24). The mock-up should be prepared before the surgical appointment for an initial evaluation and then ideally six to eight weeks post-crown lengthening. If done earlier, a very well-adapted indirect acrylic prototype would be advised or the utmost care in adaptation of the bisacrylic resin (Figs. 25-27).

For the ultimate control and when time management in a private office is not an issue, the osseous contouring is performed and the flap is closed, followed by guided gingivectomy and mock-up placement at the next appointment in two to three months’ time. With this approach, the risk of recession or invasion of biologic width is reduced to the minimum.

Controlled tooth preparation was performed through the mock-up using 0.6 mm depth-gauge burs (Figs. 28 & 29). In designing restorations, the diagnosis of the initial situation and underlying tooth structure, the new design proposal and the patient’s expectations play a very important role. The material of choice in this case was feldspathic porcelain (VITA Zahnfabrik) on a refractory die (Figs. 30-33).

The mock-up should be placed in the articulator first in order of importance followed by guided gingivectomy in the posterior zone (Figs. 30-33). The occlusion was checked after cementation and a processed acrylic night guard was delivered two weeks post-operatively.

Table 1. Findings.

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Case presentation

A 32-year-old female patient came to the dental office with her chief complaints being short teeth, an uncomfortable bite, too much gingiva showing when smiling, brown-coloured areas of her teeth and insufficient contact points. The patient was in good general health with a good periodontal status and probing depths of 2 to 5 mm. The aetiology of the excessive gingival display was multifactorial, a combination of delayed eruption, altered passive eruption and hypermobility of the upper lip. From an evaluation of the teeth, both clinically and from the diagnostic photographs, we made the findings given in Table 1 in order of importance (Figs. 15 & 16). We placed incisal edge position first in order of importance because, in the majority of cases, without proper placement whatever follows could result in a tooth that tries to mimic nature but is not properly exposed in a full smile.

Based on the data gathered, the treatment plan was then presented to the patient in 3-D on models mounted in the articulator and in 2-D with a keynote presentation, allowing her to understand the present situation, treatment proposed and simulated final outcome.

Following the treatment proposal and acceptance, the case was sent to the dental laboratory, where the dental ceramist fabricated a wax-up and a stone model based on the clinician’s diagnostic findings (Figs. 17-18). A crown-lengthening surgical guide (a vacuum-formed Essix appliance) was manufactured on a duplicate model of the wax-up for ideal osseous contouring during the surgical procedure (Fig. 18). The gingivectomy was performed following exactly the gingival margin of the wax-up and then used for guiding the osseous contouring, through which a biologic width of a minimum of 2 mm was maintained (Figs. 19-24). The mock-up should be placed before the surgical appointment for an initial evaluation and then ideally six to eight weeks post-crown lengthening. If done earlier, a very well-adapted indirect acrylic prototype would be advised or the utmost care in adaptation of the bisacrylic resin (Figs. 25-27).
From everyday dentistry to advanced photoacoustic endodontic applications (PIPS): Er:YAG & Nd:YAG dual wavelength laser

By Lawrence Kotlow DDS, Enrico DiVito DDS and Giovanni Olivi MD

Introduction
Lasers provide an exciting new technology that allows the dentist the ability to give patients optimal care without many of the “fear factors” found in conventional dental techniques. Used with proper understanding of laser physics, lasers are extremely safe and effective. Using lasers for caries removal, complete endodontic treatment, bone management, cutting and shaping, and soft-tissue procedures can reduce postoperative discomfort and infection, and provide safe, simple in-office treatments; however, if we can improve our efficiency, expand what we can do, achieve better results and increase production.

Lasers represent a real quantum leap forward in the treatment of our patients, including the pediatric patient. The U.S. Food and Drug Administration (FDA) gave approval for the use of the Er:YAG laser in 1997 for both hard and soft-tissue procedures. The erbium doped (erbium particles placed within the YAG crystal) erbium:YAG (Er:YAG) laser, manufactured by Fotona and distributed in the United States by Technology4Medicine, the laser that we call the “all-purpose” laser is the Light-walker Er:YAG & Nd:YAG laser. Among the new technologies, the erbium:YAG laser has been studied in endodontics since the early 1970s and has become more widely used since then.9,10

Fig. 1. Representative sample images of root canal dentinal walls irrigated with 17 percent EDTA and PIPS for 20 seconds. (Photo/Provided by Technology4Medicine)

Lasers represent a fundamental change in the entire way dentistry has been taught. We can now rethink and often modify G.V. Black’s principle of extension for prevention with the concept of minimally invasive micro-dentistry. We need to understand that laser dentistry is one portion of an entire new way of practicing conservative, pain-free dentistry.

The laser that we call the “all-purpose” laser is the Light-walker Er:YAG & Nd:YAG laser, manufactured by Fotona and distributed in the United States by Technology4Medicine. The Er:YAG produces its effect at 2940 nm and has as its primary tissue target water and hydroxyapatite. It is very safe, relatively quiet, eliminates the smells and vibrations associated with the dental handpiece and, most importantly, is much more comfortable for the patient, significantly reducing the need for local anesthesia.

The use of the new generation erbium lasers for repair of incipient hard-tissue disease allows the dentist to provide a stress-free means of restoring teeth in a minimally invasive manner; most often with no shot and no numb lip, without the need for any local anesthetics.

The erbium laser can be used for restoring primary and permanent teeth, eliminating or reducing the amount of local anesthetics. In most cases, the patient will not require numbing for Class I, 2 (sometime), 5, 4, 3, 5, 6, 7 root canal procedures using bonded restorative materials. Using the concept of minimally invasive root canal surgery, the Er:YAG laser allows the operator to remove only diseased tissue and thus preserves much more of the healthy, unaffected tooth.

In cases where alloy is preferred, the laser’s analgesia effect may also allow the dentist to create arestorative preparation on the enamel surface that is not meant for bonding. The erbium laser is effective because of its effect on its target, water within the tooth structure. This effect occurs when the laser beam hits within the target tissue, causing it to create small microscopic explosions (photothermal followed by photoacoustic effects). When applied to soft tissue, bone or teeth and cavities, the explosions then cause the areas to be vaporized.

Lasers and pediatric dentistry are a perfect fit. There are a wide range of hard and soft dental procedures that may be performed using lasers as an alternative to conventional dental care on adults and, especially, children. Many of these procedures may be treatments dentists historically refer out to orthodontists and periodontists. As you understand and use your laser efficiently, you will discover that many of these are procedures that every dentist can easily complete.

The question that is often the major concern and barrier to integrating lasers is how this investment will pay for itself, more recently described as revenue generation. Why pay for it? We prefer to speak of this as the secondary effect. If you can easily pay premiums on your investment, and the cost factor becomes a non-issue.

The purchasing of lasers is an investment, not an expense, for any dental practice.

Lasers represent a fundamental change in the entire way dentistry has been taught. We can now rethink and often modify G.V. Black’s principle of extension for prevention with the concept of minimally invasive micro-dentistry. We need to understand that laser dentistry is one portion of an entire new way of practicing conservative, pain-free dentistry.

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Er:YAG laser 2940 nm: Soft-tissue procedures
There is a wide array of soft-tissue procedures that can be completed using the all-purpose laser: maxillary and mandibular frenum revisions, lingual frenum revisions, treatment of pericoronitis and pain, removal of hyperplasic tissue because of drugs or poor oral care in orthodontic patients, biopsies, treatment of aphthous ulcers and herpes labialis, pulpotomies, removal of impacted teeth and, in adults, apicoectomies and bone recontouring.

Pulpotomies
Parents often express concern about the need to take radiographs because of the nature of X-rays and their possible side effects on a child’s overall health. They question the use of alloys because of the chemical makeup of the alloy. Whether these should be a real concern in today’s dental care is open to debate, depending on your individual beliefs. There are also concerns by many, although not as loudly, about the effect of various pulpotomy procedure mechanics used in pulpotomy procedures, such as fornocoecio.

Lasers provide a safe, nonchemical, effective and alternative treatment for pulpotomies. During the span of eight years, post-treatment results on more than 4,000 pulpotomies using the erbium:YAG laser has provided ample evidence that this method is both effective and safe for children who are not needed for introducing chemicals or using electrosurgery methods.

The final result of orthodontic positioning of the front teeth results in gingival hyper trophy, the laser can be a useful tool to increase crown length and give the patient a more esthetic smile. This may often be accomplished without the need for local anesthesia. Patients who have medically induced hyperplastic tissue, such as patients requiring diuretics, can also have their tissue reduced and reshaped with the erbium.

In addition to the many examples described in this article, lasers can be used for additional procedures not usually required in pediatric dentistry, such as revisions of the abnormal mandibular frenum, often avoiding the need for soft-tissue grafts, crown-lengthening procedures where bone needs recontouring, apicoectomies, removal of bony exostoses, removal of third molar impactions, removal of root remnant s, incising and draining soft-tissue infections, advanced periodontal treatments and the latest in advanced endodontic treatment via photoinduced photoacoustic stream.

Photoacoustic endodontics using PIPS
The goal of endodontic treatment is to obtain effective cleaning and decontamination of the smear layer, bacteria and their byproducts in the root canal system. Clinically, traditional endodontic techniques use mechanical instruments, as well as ultrasonic and chemical irrigation, in an attempt to shape, clean and completely decontaminate the endodontic system but still fall short of successfully removing all of the infective microorganisms and debris. This is because of the complex root canal anatomy and the inability for conventional irrigants to penetrate into the lateral canals and the apical ramifications. It seems, therefore, appropriate for the search for new materials, technologies and techniques that can improve the cleaning and the decontamination of these anatomical areas.

Among the new technologies, the laser has been studied in endodon tics since the early 1970s and has become more widely used since then.9,10

Different wavelengths have been shown to be effective in significantly reducing the bacteria in the infected canals, and important studies have confirmed these results in vitro.11 Studies reported that near-infrared lasers are highly efficient in disinfecting the root canal surfaces and the dentinal walls (up to 750 microns for the diode 810 nm and up to 1 nm for the Nd:YAG 1064 nm). On the other hand, these wavelengths did not show effective results in debrid ing and cleansing the root canal surfaces and caused characteristic morphological alterations of the dentinal wall. The smear layer was only partially removed and the dentinal tubules primarily closed as a result of melting of the inorganic dentinal structures.12,13

Other studies reported the ability of the medium infrared laser in debrid ing and cleaning root canal walls.14 The bacterial load reduction after erbium laser irradiation demonstrated high on the dentin surfaces but low in depth of penetration because of the high absorption of laser energy on the dentin surface.15 Also the laser activation of commonly
used irrigants (LAI) resulted in statistically more effective removal of debris and smear layer in root canals compared with traditional techniques (C3) and ultrasonic (PU). Additionally, the laser activation method resulted in a strong modulating action in reaction time of NaOCl, significantly increasing production and consumption of available chlorine in comparison to ultrasonic activation.14

A recent study has reported how the use of an Er:YAG laser, equipped with a newly designed needle and stripped tip, in combination with 17 percent EDTA solution, using very low pulse duration (360 μsec) and low energy (20 mJ) resulted in effective debris and smear layer removal with minimal or no thermal damage to the organic dentinal structure through a photographic technique called photon induced photoacoustic streaming or “PIPS”12,19. Also the proposed decontamination protocol in combination with 5.25 percent sodium hypochlorite solution has been investigated and shown to reduce the bacterial load and its associated biofilm formation.6,8

The purpose of this article is to present briefly the experimental background of this laser technology and introduce the clinical protocol.

Scientific background

The microphotographic recording of the LAI studies suggested that the erbium lasers used in irrigant-filled root canals generate a streaming of fluids at high speed, characterized by a strong shock wave that leads to the formation of an effective stream of fluids inside the canal while also increasing the energy levels of the shock waves.14 This phenomenon results in a safe and effective removal of debris and smear layer, and the Neodimium:YAG laser second, used in dry mode, is the most effective wavelength for the clinical use of lasers for endodontics.2,10,21

The profound and distant effect of PIPS enables the elimination of the debris and smear layer from the root canal walls and root dentinal tubules, which is evidenced in Fig. 1-3. The findings of our studies demonstrated that the erbium laser activation process is related to the risk of apical perforation, ledging and surface thermal damage, because of the ablation ability of this wavelength. Also a combination of the near and medium infrared lasers has been proposed for the treatment of the root canal surface and remove the smear layer, and the Neodimium:YAG laser second, used in dry mode, is the most effective wavelength for the clinical use of lasers for endodontics.2,10,21

The erbium lasers are also used as a medium of activation of commonly used irrigants (LAI), avoiding the risk of thermal damage, while increasing the irrigant’s ability to reach the deepest parts of the canal. One of the main advantages of this technique is that it can reach the final size required for canal patency without the use of traditional methods.8,9,11

This concept greatly simplifies the use of these lasers, as it allows for a more minimal engagement of these instruments and fibers placed into the root canals.11

Discussion

Laser irradiation is a common technique used in endodontics to improve the cleanliness, the debriding and disinfection of the root canal system. Many wave-lengths and protocols are used. Near infrared lasers are used for the three-dimensional decon-
Total-etch vs. Self-etch adhesives a case-dependent choice

By Dr. Walter G. Renne, USA

Adhesive dentistry, with direct and indirect restorations, has advanced tremendously since the first etch-and-rinse technique introduced by Buonocore for enamel-only adhesion. Enamel and dentin are both now routinely etched and bonded, procedures that have been proven in multiple studies to be safe and reliable when proper technique is followed. As the procedures advanced, we now have adhesive systems that offer either etch-and-rinse (also known as total-etch) and self-etch options. The total-etch technique is still considered the gold standard for bond strength to enamel, and self-etch adhesive systems have been compared to these to assess the relative bond strength with each. Adhesion is the most important step in all procedures associated with adhesive dentistry, and with so many options—enamel or dentin or enamel and dentin bonding; total-etch or self-etch; and multi-bottle or one-bottle systems—there is much to consider before selecting one. Both total-etch and self-etch adhesives offer reliable and repeatable results when properly selected, and the fewer steps required, the more efficient the procedure. This saves chairside time for the clinician and the patient, reducing the possibility for error. Since the appropriate technique is case dependent, the type of case must be the first consideration. If there is a large area of enamel available for bonding and only a small area of dentin, the total-etch technique is often preferred, as it has been shown to result in stronger bonding to enamel than a self-etch technique. Conversely, if a preparation has a substantial area of dentin available for bonding and a lesser area of enamel (such as a large Class II), then self-etch is more frequently used. Whatever adhesive system is chosen, it must provide for high bond strength, durable marginal integrity, and be compatible with the restorative material. The cases below show the use of universal adhesives for direct composite and indirect restorations.

Case report 1
Direct Class II Restoration

The patient in this case presented with approximal carious lesions in teeth 12 and 13, which breached the enamodental junctions on the radiographs. Old preventive resin restorations were also present occlusally. It was decided that direct composite restorations would be placed to restore the 2 bicuspidas. At the treatment appointment, after giving the patient local anaesthesia, a rubber dam was placed to isolate the teeth before preparation and provided a dry field during placement of the adhesive and composite restorations (Fig. 1). In this case, a total-etch technique was selected.

During preparation of the teeth, minimal width boxes were created that extended sufficiently for caries removal but no further and the old preventive restoration removed. Since adhesion would provide for retention of the bonding agent, there was no requirement to ensure a retentive preparation form. For this case, I chose OptiBond Solo Plus (Kerr) as the adhesive. It consists of a phosphoric acid gel etchant and a separate primer/adhesive that contains a filler to help strengthen the bond at the hybrid zone level, giving very high bond strengths with just 2 steps. After etching the enamel and dentin for 15 seconds, the etchant was rinsed off and the enamel and dentin gently dried without desiccating the dentin. Next, the bonding agent was applied and lightcured for 20 seconds (Fig. 2) before the composites were placed as bulk fills using the SonicFill System (Kerr) and light-cured.

The composites were then checked for occlusion, the margins checked for any excess, and the composites were finished and polished using Prgloss (Kerr) (Fig. 3).

Case report 2
Indirect Ceramic

Inlay in this case, a new patient presented with failed, old patchy composite restorations in tooth 20 (Fig. 4). Several areas of different composites were present that had been placed at various times. On presentation, the patient complained of sensitivity in this tooth when eating or drinking anything cold. On examination, the bond between the restorations and the tooth had failed and the composites were found to lack marginal integrity. In addition, the tooth was found to have marginal leakage, staining, and recurrent caries in the mesial box. This could have been due to the technique used, poor bond strength, or lack of compatibility between the adhesive systems and composite systems used at various times.
Fig. 8. Application of the bonding agent to enamel and dentin after primer had been used.

Fig. 9. Moderately air-drying the bonding agent.

Fig. 10. Applying bonding agent to the inlay’s intaglio surface.

Fig. 11. Final restoration seated and cemented.

After discussing the alternatives, the patient opted for an indirect ceramic inlay. At the treatment visit, after anesthetizing the area, the old composites were removed and the tooth prepared to remove recurrent caries and staining at the old margins (Fig. 5).

A digital impression was taken of the preparation (Fig. 6) and opposing arch using an E4D digital scanner, the proposed inlay form examined (Fig. 7), and the scans transferred to the laboratory where the ceramic inlay was fabricated using CAD/CAM. At the patient’s seating appointment, the fit of the inlay was assessed. In this case, I selected OptiBond XTR (Kerr) 2-bottle self-etch universal adhesive with separate etch/primer and bonding agent, which is suitable for direct composite and all types of indirect restorations. I chose this adhesive system for 2 main reasons. Due to its unique chemistry, the high bond strength obtained with this adhesive is as high as that obtained with a traditional total-etch adhesive, and it offers high shear bond strength with both enamel and dentin. The OptiBond XTR adhesive system primer etches enamel and dentin, and its hydrophilic nature lets it better penetrate the dentin to help provide increased bonding to dentin. OptiBond XTR also has a thin film thickness, allowing for proper seating of the final restoration.

A distinct consideration in choosing OptiBond XTR, particularly since the preparation was large and deep, was the lack of post-operative sensitivity found with this adhesive. Post-operative sensitivity is a relatively frequent occurrence following restoration placement, and some studies have found this more likely to occur with a total-etch adhesive than with a self-etch adhesive, although this may be due to overetching of the dentin and its desiccation leading to transient sensitivity. Self-etch adhesives inherently leave less room for sensitivity to occur. OptiBond XTR has a mild pH of around 4 (versus a pH of around 2 for phosphoric acid etchants); it does not remove the smear layer or open dentinal tubules, instead preventing tubule exposure while still allowing for hybridization. OptiBond XTR contains proprietary chemistry that helps to prevent sensitivity, and its hydrophilicity ensures that the primer and adhesive can penetrate well into the dentin and seal off the surface of the dentin, helping to prevent sensitivity. Before placement of the ceramic inlay (LAVA Ultimate), it was first air-abraded at 15 psi and ultrasonically cleaned. It was then put aside while the preparation was treated.

The primer was applied to the enamel and dentin for 20 seconds with a gentle scrubbing motion then air-dried for 5 seconds to remove the solvent. Next, the bonding agent was applied (Fig. 8), agitating the brush gently over the enamel and dentin surface for 15 seconds. The adhesive was then gently air-dried (Fig. 9) and light-cured for 10 seconds. The bonding agent was then applied to the intaglio surface of the indirect ceramic inlay (Fig. 10) and gently air-dried for 5 seconds and light-cured for 10 seconds. NX3 Nexus (kerr) resin-based cement was then applied to the intaglio surface, the inlay carefully seated, and excess cement removed before light-curing all surfaces for 20 seconds each. NX3 Nexus resin-based cement is fully compatible with OptiBond XTR, making it a superior choice compared to other resin-based cements. The interproximal areas were checked for any residual cement, and the occlusion was checked before the patient left. The result was an aesthetically pleasing restoration with excellent marginal integrity, excellent bond strength, and a satisfied patient (Fig. 11).

Summary

Our current adhesive system options are total-etch and self-etch variants. Without a patent and durable bond with high bond strength, restoration failure will occur with the breakdown of the bond even if all other aspects of the restoration are sound. Selecting a clinically proven adhesive ensures that you are choosing a material capable of performing under real-life conditions.

The adhesives used in the cases presented offer reliable, durable high-strength bonds, marginal integrity, easy clean-up, and ease of use.

Reference


About the Author

Dr. Walter G. Renne, DMD, USA

Dr. Walter runs the CAD/CAM clinic at MUSC in addition to treating patients in faculty practice where Dr. Renne maintains an active general dentistry practice utilizing both the CEREC AC and E4D systems.
Establishing good oral care habits from the very first tooth

By Jordan

It is important that we take care of our teeth right from the beginning and establish good brushing habits.

Parents and children do not share the same motivation when it is comes to choosing their toothbrush. Parents are concerned about safety and look for quality products that they think their children will like. As much as 45% of them buy "children’s personal care" products because their children are more excited about using them. Children are primarily motivated by fun (much more than health). Colours and design play an important role in making their brushing sessions positive. Older children especially are attracted to "new" features and functions that they would like to try.

In a recent consumer study² we found that parents appreciate information that will help them make good decisions when selecting a toothbrush for their child. In addition, parents welcome initiatives that will help their children be more enthusiastic about brushing their teeth.

To meet these needs, here are some good tips to remember when considering your next toothbrush for your child:

- Choose a soft toothbrush. Children have softer enamel than adults do, and it is easy for them to brush too hard. A soft toothbrush is gentle and safe for children’s teeth and gums.
- Children need a small toothbrush head as their mouths are smaller and it is easier to navigate around the mouth with a smaller head. A small head makes it easier to reach and clean properly all the difficult areas in the mouth, especially the back molars when they start to develop. It is in these areas that cavities are most likely to start developing.
- Children have less dexterity and motor skil development than adults do. It is easier for them to control their brushing movements with a handle that has more volume. Their hands are also much smaller than adults are so choose a handle that will fit comfortably in their hands.
- Children should use a toothpaste that is formulated especially for them, and only a small amount is sufficient (a good rule of thumb is to think about the size of the nail on your child’s little finger and use a similar amount of toothpaste). Children’s toothpaste have a lower dosage of fluoride than adult toothpastes. Most children prefer milder toothpastes that are not "strong". They tend to prefer other flavours like fruit flavoured toothpaste. Children should not swallow toothpaste.
- Parents are advised to brush their children’s teeth. In the Scandinavian countries, the National Dental Associations recommended parental assisted brushing until children are around 10 years of age.
- Brushing the teeth for 2 minutes gives the best results. Brushing time is the most easily controllable parameter of effective everyday brushing. Increasing time from 45 seconds to 2 minutes will increase plaque removal and contribute to significantly improved oral health benefits.³

In addition to brushing, the American Dental Association recommends that parents help their children “floss” as soon as two of their teeth touch each other. This can be as early as when they get their permanent back molars (from 6 years of age).

To keep teeth clean and healthy it is recommended that both you and your children avoid in-between meal snacking and foods and drinks that can harm your teeth’s enamel. Try rinsing your mouth with water in between brushing sessions to help wash away food and help prevent plaque build-up. Finally, regular check-ups with your local dentist/hygienist will help you keep your teeth healthy.

References
²TNS Gallup, Norway, 2010
³The Journal of Dentist hygiene, volume 83, issue 5, 2008

Beverly Hills Formula reveals the secrets of whitening toothpastes!

We continuously strive to enhance our product offering and one of our latest developments is Perfect White Black toothpaste. Ideally placed to complement the Perfect White range, Perfect White Black helps those who suffer from bad breath achieve a Hollywood smile with its high performance ‘activated charcoal’ whitening whilst experiencing a fresh breath feeling. Innovation, high stain removal but low abrasivity are key factors for Beverly Hills Formula and it is important to us to always be using the highest quality of ingredients to ensure the quality of our products is next to none. This is why I believe Beverly Hills Formula remains successful over 20 years since the brand was born.

Tooth whitening is one of the fastest growing markets in the dental sector. Why do you think this is?

In today’s image-conscious society, more and more celebrities are opting for tooth whitening, veneers, or other cosmetic procedures, in order to attain a bright, white smile, aka the “Hollywood Smile”. Quite simply, if people aren’t happy with their appearances, including their teeth, this can impact on their confidence, self-esteem and happiness. As a result, patients are increasingly turning to their dentists and dental hygienists...
Dentists, asking “How can I achieve whiter teeth?” Add to this, a recent survey that revealed, nearly one in five (18%) find stained teeth a real turn off (1), it’s no wonder why tooth whitening has become a fast growing market within dentistry.

With an array of tooth whitening products on the shelves, what makes your whitening toothpaste stand out from the crowd? Taste, brand, image and ability to combat common dental problems are all common factors for choosing toothpaste, but many look beyond the attractive packaging and into the ingredients. One of our core values is to continue to spend resources on enhancing the quality of the products and ingredients going inside the tubes instead of excessive packaging and spin marketing. The result? Low abrasion toothpastes with high stain removal, helping to protect the patient’s oral health whilst enhancing their smile.

Sensitivity is a common problem, especially after professional tooth whitening. Is there anything dentists can do to help alleviate this discomfort for patients? After in-surgery tooth whitening treatment patients can be experience sensitivity, this can be anything from a mild twinge to having severe discomfort that can last for several hours, or even days. Highly abrasive toothpastes can add to this pain, as they continue to wear away the enamel. For this reason, patients should use a low abrasion, desensitising, whitening toothpaste that contains the ingredient Potassium Nitrate. Those who require extra sensitivity relief with an extra whitening boost will appreciate Beverly Hills Formula Perfect White Sensitive toothpaste. Combining the advanced Hydrated Silica for high performance whitening with Potassium Nitrate for rapid sensitivity, patients can start to enjoy acidic foods and drinks once again whilst leaving teeth looking and feeling brighter. Regular use will also help to prevent tartar build-up and reduce tooth sensitivity, effectively protecting and whitening teeth whilst allowing patients to maintain good oral care.

There has been some speculation that whitening toothpastes aren’t effective. Is this true?

Many dental professionals and patients assume that all whitening toothpastes do not live up to their claims but this is not true. Contrary to this, it is important that toothpastes, which safely and effectively whiten teeth and are proven to work, are brought to your patients’ attention. In 2012 a UK Dental School performed an in-vitro laboratory study. Its aim was to measure stain removal in order to discover how effective various toothpastes were at removing dietary stains from Perspex, compared to water.

The laboratory tests revealed that stain removal was performed after just one minute. Of the products tested, Beverly Hills Formula Perfect White toothpaste scored exceptionally well, removing nearly 91% of stains over a five minute period (2). Meanwhile other leading brands of whitening toothpaste were at removing dietary stains from Perspex, compared to water.

Toothpaste abrasiveness is a concern to patients assumption that all whitening products remove tooth stains over a five minute period. The result? Low abrasion toothpastes with high stain removal, helping to protect the patient’s oral health whilst enhancing their smile.

Sensitivity is a common problem, especially after professional tooth whitening. Is there anything dentists can do to help alleviate this discomfort for patients? After in-surgery tooth whitening treatment patients can be experience sensitivity, this can be anything from a mild twinge to having severe discomfort that can last for several hours, or even days. Highly abrasive toothpastes can add to this pain, as they continue to wear away the enamel. For this reason, patients should use a low abrasion, desensitising, whitening toothpaste that contains the ingredient Potassium Nitrate. Those who require extra sensitivity relief with an extra whitening boost will appreciate Beverly Hills Formula Perfect White Sensitive toothpaste. Combining the advanced Hydrated Silica for high performance whitening with Potassium Nitrate for rapid sensitivity, patients can start to enjoy acidic foods and drinks once again whilst leaving teeth looking and feeling brighter. Regular use will also help to prevent tartar build-up and reduce tooth sensitivity, effectively protecting and whitening teeth whilst allowing patients to maintain good oral care.

There has been some speculation that whitening toothpastes aren’t effective. Is this true?
Impeccable esthetic results with ceramic restorations

By Dr. Nelson Geovane Mansing, Brazil, Passo Fundo, Brazil, and Alexandre Santos, Brazil

The aim of any restorative treatment in anterior teeth is to re-establish proper function and a natural-looking smile. In addition to ensuring the function and longevity of the restoration, the esthetic expectations of the patient have to be fulfilled.

Materials that are based on biomimetic principles allow the natural teeth to be faithfully reproduced in many different clinical situations. Furthermore, biomechanical aspects and light-optical characteristics have to be taken into consideration in the restoration process.

Clinical case study
The 55-year-old patient requested an esthetic makeover for his front teeth. The slight gap (diastema) in the upper anterior dentition, which was visible when he smiled, displeased him in particular. The clinical examination also revealed dark stains on tooth 21, which had been caused by endodontic treatment and composite restorations (Figs 1 and 2). Models were created and photos taken in order to thoroughly analyze the existing situation and plan the anticipated result. The photographic documentation included portrait pictures of the patient as well as introral close-ups.

Subsequently, the tooth shade was chosen on the basis of the diagnostic wax-up (Fig. 3) was determined. The Digital Smile Design protocol was used and a wax-up was fashioned on the basis of the information acquired during the planning stage. A composite resin (System® C&B) was used to fabricate an introral mock-up of the planned restorations.

Selection of the restorative material
A suitable restorative system was chosen on the basis of general esthetic and functional considerations. In the following case, we decided to take advantage of the outstanding esthetic potential of feldspathic ceramic and the excellent biomechanical performance of the adhesive cementation protocol on natural tooth structure.

State-of-the-art adhesive luting techniques involving ceramic conditioning with hydrofluoric acid and silane produce reliable bonds between ceramic restorations and natural dentition. Moreover, adhesive cementation requires less invasive preparation of the tooth structure and it imparts the restoration with excellent biomechanical properties.

Preparation and impression taking
As a result of sophisticated developments in dental ceramics and adhesive dentistry, it is now possible to fabricate delicate, ultra-thin restorations showing outstanding translucent properties. In the present case, teeth 12, 11, 21 and 22 were prepared to receive veneers. Since tooth 11 showed some discolouration, more tooth structure was removed from it during preparation (removal of approximately 1 mm of tooth structure; Fig. 4).

The other three teeth required only minimal preparation. The canines 15 and 23 remained untouched, since they were to be restored with veneers that do not require any preparation. A silicone matrix made according to the diagnostic wax-up was used as an orientation aid during preparation. Tooth preparation was confined to the dental enamel in order to ensure an effective and long-lasting adhesive bond.

The impression was taken with an addition silicone (Virtual®) using the double-cord technique. Subsequently, the prepared teeth were photographed together with the shade guide samples in order to ensure the best possible shade match in collaboration with the dental laboratory. The matrix which had been fabricated according to the diagnostic wax-up was used to produce the introral mock-up. The composite material (System® C&B) was used for this purpose and for fashioning the provisional restoration.

Fig. 1. Preoperative smile: The patient was dissatisfied with the a 12 lignment of his front teeth.
Fig. 2. Close-up: Slight gaps are visible between the front teeth, and tooth 21 is discoloured.
Fig. 3. Determination of the tooth shade
Fig. 4. After minimally invasive preparation of teeth 12 to 22
Fig. 5. Custom-layered veneers in the laboratory on refractory dies
Fig. 6: The veneers were made of fluorapatite leuco glass-ceramic (IPS d.SIGN). As a result, light optical qualities that are similar to those of natural teeth were achieved.
Fig. 7. The delicate ceramic veneers were prepared for seating.
Fig. 8: The fit of the individual veneers was checked in the mouth of the patient.
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In the dental laboratory
The ceramic restorations were created on a refractory model using a fluorapatite leucite glass-ceramic (IPS d.SIGN®). Prior to this step, we selected the appropriate ceramic layering materials with the help of the shade determination photos. Then the veneers were conventionally layered on refractory dies. After the firing process, the restorations were carefully finished. Subsequently, the delicate ceramic veneers were prepared for placement (Figs 5 to 7).

Placement
The provisional restorations were removed and the prepared teeth were cleaned. Then the veneers were tried in the mouth (Fig. 8).
- Try-in sequence:
  - Dry try-in of each individual restoration for the inspection of fit
  - Dry try-in of all the restorations together in order to check the proximal contacts
  - Try-in of the restorations with glycerine paste (Variolink® N Try-In) for determining the shade of the luting composite
- It is of utmost importance to try in the restorations with a try-in paste in order to select the most suitable shade of the luting composite. In principle, a translucent material is selected for cementing ultra-thin veneers (for example Variolink N Clear Veneer), since the natural tooth structure and the restoration are expected to produce the tooth shade. Nevertheless, if the shade needs to be specially adjusted, try-in pastes in other shades can be tested and used.

Once the luting composite had been selected, the try-in paste was rinsed off with water and the restorations were conditioned with nine-percent hydrofluoric acid (HF) for 90 seconds. Then they were thoroughly rinsed with air-water spray. The prepared tooth surfaces were cleaned with 35-percent phosphoric acid for 20 seconds. A silane solution (Monobond® Plus) was applied and left to react for one minute, followed by the adhesive (ExciTE® F). A light-curing composite (Variolink N Clear Veneer) was used to cement the restorations in place.

The restorations were seated according to the corresponding protocol. After the excess cement had been cleaned up, the composite was polymerized for 60 seconds at high light intensity (1,200 mW/cm², Bluephase®).

Since the canines did not require preparation before they received the ultra-thin veneers, the transitions between the restorations and the teeth had to be lightly finished with a diamond polishing system (Optifinal®). The surfaces were finished by moving from the restoration to the tooth structure in order to prevent any damage being done to the natural dental enamel (Figs 9 and 10).

Conclusion
The adhesive cementation of ceramic restorations offers a proven treatment strategy, which provides excellent biomechanical and esthetic results. In the described case, the natural-looking and esthetic result speaks volumes. A satisfied patient with a beaming smile was released from the dental practice (Figs 11 to 13).

Fig. 10. Final polishing
Fig. 11. After seating of the six veneers on teeth 13 to 23
Fig. 12. Inspection of the functional parameters
Fig. 9: The transitions between the ultra-thin veneers and the canines were lightly finished.
Fig. 11: Final picture: The upper tooth row looks esthetic and very natural.
Fig. 12: The upper tooth row looks esthetic and very natural.

By Dental Tribune ME/ACP/Procan

Dr. Monteiro is coming to Middle East to lecture on direct restorations of anterior and posterior teeth, with special focus on new bulk fill resins and he shared with us his opinion on modern dentistry evolution and latest technologies used in dental materials.

Following the IDS Cologne we see a big change in the dental industry, towards which direction do you see dentistry heading?

Dr. Monteiro: Modern Dentistry walks towards the maximum conservation of dental tissues (enamel and dentin). Accordingly, materials which are able to emulate the natural teeth tissues in aesthetics and function have been developed.

We have witnessed in recent years a technological evolution in dentistry. With more and more applications, technology in dentistry open us new doors, new ways to go. With no doubt the technology is not only the present but is the future of dentistry.

Being an international speaker, what is the most important message you would like to portray to the audience?

Dr. Monteiro: Dentistry is constantly developing and there is a need to update regularly.

In this sense, we should not be stuck in the past, trying to follow new trends if properly supported by scientific evidence. Don’t be afraid of new technologies, new products, new dental restorative techniques. All this came to help us to simplify our daily clinical world.

With more and more applications, technology in dentistry open us new doors, new ways to go. What is your impression of Dentistry in the Middle East?

Dr. Monteiro: I have not had direct contact with dentistry in Middle East, as this will be my first time I will travel to these countries. However, I have followed the work of some colleagues in this region, which have a very high level of excellence. So I have a very positive opinion.

Can you tell us about your upcoming lecture in Saudi Arabia?

Dr. Monteiro: I am excited about the opportunity to visit and lecture in Saudi Arabia.

In these lectures we will discuss the new materials and techniques for direct restorations of anterior and posterior teeth, with special focus on new bulk fill resins. We will also discuss simple techniques to make direct restorations with a high aesthetic level.

You will love how simple it is to make an aesthetic restoration.

What is your opinion regarding bulk fill posterior restorative materials? What are the major advantages and disadvantages?

Dr. Monteiro: I really like the bulk fill resins. Especially the newer ones.

As a main advantage - the possibility of using large thickness of material, lower shrinkage and easy application. The disadvantage... Honestly only to be slightly translucent material to allow the light pass through.

In which case would you prefer to use bulk fill composite in the posterior area?

Dr. Monteiro: To be honest, in direct restorations I currently use almost always the bulk fill resins in posterior teeth.

What is the risk of post-operative sensitivity with bulk fill posterior composites vs traditional composites using traditional layering technique?

Dr. Monteiro: With bulk fill the risk is much lower, due to lower polymerization shrinkage.

What are the key success factors when working with bulk fill posterior composites?

Dr. Monteiro: Choosing the right composite resin and apply it correctly. There are bulk fill resins that are very fluid. Usually all these more fluid resins need to be coated with a conventional composite resin, due to suffering more occlusal wear. This is not the case with the latest versions, for example with Filtek Bulk Fill Posterior, as those are materials that can be used with a lower occlusal wear.

I would choose a resin composite that is not so fluid and which allows me in the same time a good and proper compaction in the cavity and an easy modeling.

Choosing the new materials and technologies used in dental materials.

"...perfection for a lifetime"
The passive abutment

By Dr. Petros Yuvanoglu, Greece and Dr. Ero Pandelias, Greece

One of the main problems faced by both prostho-
dontists and dental techni-
cians, with regards to implant supported dental prostheses is the problem of producing a re-
peatable passive fit which would eliminate the need for complex and intense laboratory proce-
dures, usually undertaken to improve the fit of castings e.g. sectioning and soldering.

The Passive Abutment (Fig. 1) is unique to Southern Im-
plants and has been in clinical use since 1998. It allows one to achieve a predictable passive fit of cast structures in a practical way.

The unsatisfactory fit of prosthodontic work on implants is due not only to the distortion caused by the physical process of invest-
ing, casting and sandblasting, but also from the distorting forc-
es which develop when the cast-
ing is exposed to repeated high temperature cycles while baki-
g porcelain. All these parame-
curs cause the collection and en-
trapment of energy resulting in tensions, which are then trans-
ferred to the prosthetic screws. Consequently we have fractures of screws, destruction of the pro-
thesis (porcelain fracturing) and perimplantitis. Finally there is breakdown of relationship be-
tween the patient and the dental practitioner and tension among members of the implantology team as well (technician/den-
tist/prosthodontist/surgeon).

After years of research by South-
ern Implants, the first prosthetic abutment with a passive fit was presented to the dental implant market in 1994.

The philosophy of the passive abutment is innovative in the field of dental implantology and has reduced the stress experi-
exed by the technician and the dentist, especially when it comes to the fit of the prosthesis.

By reviewing data from x-rays of patients who have dental im-
plants with fixed prostheses, one can see marked differences be-
tween those with passive abut-
ments and those without.

Passive fit is achieved by luting a premachined titanium interface component onto the finished prosthesis, using the laboratory master model as the blueprint for fit. The luting takes place in the dental lab by the dental techni-
cian. No additional clinical steps are required.

The discrepancy between the passive ring and implant reaches as low as 2 microns, independ-
et of the length of the span of the bridge. The titanium interfa-
cial component is kept separate from the manufacturing of the casting and is therefore not sub-
jected to degradation by heat-
cycles or de-vesting and finish-
ing procedures as a cast-to-gold cylinder would. The integrity of the machined part is therefore main-
tained in the original con-
dition.

The passive abutment kit in-
cludes a titanium ring, which will not be subject to external physical forces and is cemented to the porcelain superstructure after the aforementioned is cast and polished.

Description

The Passive Abutment consists of four components (Fig. 2):
1. Plastic cylinder - this com-
ponent is incorporated into the wax-up of the structure and thus becomes part of the casting.
2. Titanium interfacial compo-
nent (6 mm) - this pre-machined component forms the final inter-
face between the casting and the implant.
3. Luting screw - this small screw is used to clamp the inter-
facial component onto the laboratory analogue during the process of luting the casting onto the interfacial component.
4. Prosthetic screw - this screw retains the completed prosthesis to the implant at final placement and provides a compressive force across the cement line.

Overview of use

The plastic cylinder is incorpo-
rated into the wax-up and be-
comes part of the cast structure. The casting may then undergo further laboratory processing e.g. ceramic firing, finishing and polishing before being as-
sembled with the interfacial component. The titanium inter-
facial component is kept sepa-
rate from the manufacturing of the casting and is therefore not subject to degradation by heat-
cycles or de-vesting and finish-
ing procedures as a ‘cast to gold’ cylinder would.

The integrity of the machined part is therefore main-
tained in its original condition.

The finished cast structure is as-
sembled with the interfacial ring by luting before placement in the patient’s mouth by the dental technician. Both titanium ring as well as the prosthesis, need to be sandblasted and cleaned by air pressure and not with a ultrasonic bath.

For assembly, the titanium in-
terfacial component is clamped to the analogue on the master model by means of the luting screw. The luting screw ensures that the interfacial component is held in full contact with the im-
plant analogue.

The finished prosthesis is then luted to the clamped interfacial ring using a dual-cured resin ce-
ment.

In this way the resin cement serves as a space filler between the casting and the interfacial ring, thus compensating for any minor casting and finishing dis-
crepancies, so eliminating mis-
fit of the casting to the implant.

At placement in the mouth, the prosthetic screw retains the completed prosthesis (both cast-
ing and interfacial ring together) to the implant and maintains a compressive force over the ce-
ment line. This is achieved be-
cause the prosthetic screw en-
gages onto the casting and not onto the interfacial ring. The cement is therefore not respon-
sible for retention of the prosthesis, but is merely a space filler.

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**Fig. 1. The Passive Abutment**

**Fig. 2. The Passive Abutment Assembly**

**Fig. 3. Comparing Fitting Surfaces**

**Fig. 4. Different Radiographic Appearance Of The Same Mis Fit Depending On X-ray Beam Angulation/OrIENTATION**

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JONATHAN L. FERENCZ, D.D.S.
Diplomate American Board of Prosthodontics

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The luting screw is discarded.

The Application
The Passive Abutment is intended for the fabrication of implant-supported SCREW RETAINED CASTINGS (e.g. crowns, bridges, exo-, mezzo-structures, cast bars, custom posts) on one or more implants where excellent prosthetic fit is desired. The use of a burrout plastic cylinder allows freedom of choice in choosing the casting alloy. The complexity of laboratory procedures is greatly reduced when compared to complex casting procedures with gold cylinders.

The Passive Abutment System is available for direct connection to all Southern Implants product ranges. Passive Abutments are also available for Compact Conical Abutments.

For direct connection to Externally Hexed, IT, Tri-Sea, Deep Cone and Internally Hexed connection implants, both non-engaging and engaging versions are available:

1. Non-hexed (non-engaging) versions are indicated for multi implant case (bridges).
2. Hexed or engaging versions are available for Compact Conical Abutments.

Clinical implications of misfitting implant structures

Discrepancies in fit are extremely difficult to detect clinically, if not impossible where the interference between implant and superstructure is subgingival. Vertical misfits will only be detected on x-ray, if the misfit occurs interproximally and the x-ray beam is oriented perpendicular to the interface.

If the discrepancy is in the buccolingual plane, it will not be detected on x-ray.

Even gross discrepancies may be missed where x-ray techniques are suboptimal (Fig. 4). Most importantly, poorly fitting prostheses can result in:

- bacterial accumulation at the prosthetic/implant interface, which will result in bone loss around the implants (Fig. 5)
- mechanical strain being applied to the implant, which may result in bone loss.

The percentage of retainer screws and thus more frequent screw loosening will allow extrusion of the retainer screws, resulting in screw fracturing.

The Laboratory Procedure

1. Model preparation:
   - The appropriate analogues must be selected and the model prepared using a silicon or rubber soft tissue mask. The highly recommended use of a removable soft tissue mask will allow easy access to the analogues for further lab procedures and will greatly ease later assembly procedures.

2. Wax-up:
   - The Titanium Ring and Waxing Sleeve are assembled on each implant analogue, using the brass equivalent of the prosthesis for a prosthesis (the prosthesis screw to hold in place). (Fig. 6). Do not over-tighten, so as to avoid distortion of the plastic. The wax-up can be cut back or added to as needed.

3. Investing and Casting:
   - The retainer screw must be removed to allow the wax-up with plastic cylinders to be lifted from the model, leaving behind the loose titanium interfacial component (Fig. 7). Standard procedures are used for investment and casting. An appropriate casting alloy must be chosen, depending on whether a ceramic veneered bridge or cast bar is being manufactured. Alloys that are commonly used are:
     - Degunorm, Argipal, BegoPal 500, BegoCor-G, Porsoum 4, De-guilen-G etc.
   - Complete harden. The plastic cylinder requires an oven temperature of about 80°C for at least 45 minutes.

4. Refining the screw seat:
   - The ‘screw’ is fully inserted in the casting where the head of the screw will seat (en-gage). The cast surface of the screw seat will likely be rough due to the casting procedure and must therefore be refined using special hand-held reamers (Fig. 8).

5. Fitting the casting to the model:
   - The titanium interfacial components are soldered or laser-welded to the analogues using the small luting screws. Do not over tighten, as this may result in loosening of the retainer screw (Fig. 9). The casting can then be placed over the secured interfacial components (Fig. 9). The casting can be easily fitted and removed from the model without the need to remove and replace the luting screws. If the prosthesis needs to be screwed, retain the model, then one or more of the small luting screws can be exchanged for a prosthesis (the prosthesis screw) before cementing the prosthesis to the analogue, while the short luting screw has a smaller head and can only retain the titanium interfacial component to the analogue.

6. Luting the prosthesis to the titanium interfacial component:
   - After completing the fabrication of the prosthesis, sandblast the fitting surface of the casting and the top surface of the titanium ring. The titanium ring is best clamped to an analogue by the short luting screw for ease of handling while sandblasting. This also protects the fitting surface of the titanium ring, avoids sandblasting the polished collar of the titanium ring.

7. After sandblasting, it is very important to disassemble and ultrasonically clean the following:
   - the titanium interfacial components
   - the short luting screws
   - the fitting surfaces of the prosthesis
   - Clean the analogues (Implant Replicas) of the model by brushing with soap and water or steam cleaning to remove any debris, which may interfere with perfect seating of the interfacial components.

8. Luting the prosthesis to the titanium rings will now take place on the master model.
   - Attach the titanium rings to the model with the short luting screws
   - Apply self cure resin cement or dual cure resin cement to the sandblasted surface of all of the titanium rings. Refrigeration of self-cure resin cements will usually lengthen working time and ease of use on multi-unit structures.

Important: Limit the amount of resin cement being applied to the angle between the sandblasted horizontal plane and vertical plane of the titanium ring (Fig. 10). This will avoid excess cement extruding upwards through the screw hole in the casting and so inadvertently locking the luting screw into the cement. Definitely avoid placing any cement in the area immediately around the head of the luting screw.

9. Fit the prosthesis over the titanium rings and settle the prosthesis firmly into place with finger pressure to each remaining abutment. Arch castings can be left seated under their own weight in the titanium ring (Fig. 11).

10. Smaller bridges or single units need to be held lightly in place by using a self-cure resin cement in place of a luting screw to allow cement to seat. Do not use a luting screw in a three-unit structure (IMPORTANT) Do not over tighten the luting screws. The luting screws are used to retain the prosthesis during cement hardening as this may lead in distortion of the multi-unit structure.

7. Finishing & Polishing:
   - Once resin cement hashardened, remove all luting screws and then remove any prosthetic retaining screws so that the prosthesis can be lifted from the model (Fig. 11).

Attach polishing protectors or implant lab analogs, of correct diameter, to each of the fitting surfaces of the cemented titanium rings. Remove excess excess resin cement using a sharp blade, probe or hand scaler. Polish the remaining cement using low speed, felt or brass equivalent of the prosthetic screw (the prosthesis screw to allow cement to harden. (e.g. use the middle or large grit). The titanium interfacial component is firmly in all areas.

8. Complete finishing.
   - IMPORTANT: Do not over tighten the luting screws. The luting screws are used to retain the prosthesis during cement hardening as this may lead in distortion of the multi-unit structure.

   - Once polishing is completed, remove the protector caps or implant lab analogs (Fig.12) and replace the casting on the cleaned model analogues to inspect and verify the quality of fit. Thus, if the model is best cleaned from analogues using a brush with a alcohol. The fit would have to be expected to be excellen in all areas.

A titanium ring can easily be removed by forcing a sharp blade into the cement line, or by punching a hole in the ring using the shaft of a lab handpiece drill applied through the screw access hole (place the bridge rings down on a folded towel for pad- ding and give the drill shall a sharp tap).

Important: As this technique re- lies absolutely on the accuracy of the master model to achieve passive fit of the prosthesis, it is vital that accurate impression techniques be used and that the quality and condition of the model and analogues be maintained at all times.

Try-in procedures

Should it be necessary to try-in a passive abutment case (i.e. the rings are sitting in the framework) the following method may be followed:

1. Remove the three remaining abut- ments from the implants.
2. Place some petroleum jelly (“Vaseline”) or chlorhexidine gel around the head of each abutment.
implant using a syringe with a blunt delivery tip.

c. Place the loose Passive rings individually into position on the implants and press the down into place using a flat-ended “plastic” instrument. When the rings are seated, the gel helps hold them in place. The soft tissue surrounding the rings also holds them in place quite well.

d. Place the metal structure over the rings in the mouth, taking care to align the casting properly so as to not disturb the rings.

e. Screw retain the structure by placing a few prosthetic screws in strategic places.

f. When removing the frame, take care of any rings that may drop. Some rings may be on the removed frame while others may be left on the implants.

Count the rings to make sure you have all of them.

It is an advantage of the Passive system that the fitting surfaces can be removed from the casting to avoid damage by heat cycles during the repair process and then be refitted.

Delivery of the Final Prosthesis

Once the final prosthesis is placed into the patient’s mouth, peri-apical X-rays should be taken in order to verify the positive fit onto the implants. The X-ray beam should be oriented perpendicular to the implant/prosthesis interface in order to increase the chances of detecting a potential discrepancy (miss fit).

Eliminating a Miss Fit

In case that a miss fit is detected, make sure that no soft or hard tissues are interfering with the positive sitting of the prosthesis.

As mentioned above Passive Abutments can eliminate all discrepancies introduced into the prosthesis during the laboratory steps of the manufacturing.

If a miss fit is detected, this is attributed to one of the following reasons:

a. distorted implant impression
b. increased implant component tolerance
c. distorted plaster implant model

In order to eliminate a miss fit, a new implant impression should be taken and a new plaster implant model should be poured again. The laboratory technician is going to use the new implant model as a blueprint in order to recement the passive abutments (Fig. 15).

As a result of those actions the new radiographic examination should reveal no discrepancies to the fitting of the prosthesis onto the implants.

Conclusion

The Passive Abutment from Southern Implants allows one to achieve a predictable passive fit of cast structures in a practical way. It’s easy to use, cost effective and has repeatable results, which eliminate the need for complex and intense laboratory procedures like sectioning and soldering.

Contact Information

Dr. Petros Yuvanoglu D.M.D., summa cum laude, Cert. Prosth. (TUFTS U.S.A.), Prosthodontist.

Dr. Petros Yuvanoglu is co-director of the Branemark Osseointegration Center Dubai. He qualified as a dentist in 1995, receiving his dental degree summa cum laude from Semmelweis University in Budapest, graduating with exceptional high grade, top of his class as valedictorian. He has lectured extensively on the “Same Day Implants & Teeth” reconstruction protocol. Together with Dr. Costa Nicolopoulos (Oral & Maxillofacial Surgeon), they are the founders of “Same Day Dental Implants” Clinic in Dubai Health Care City, U.A.E.
Super-high translucent zirconia Ceramill Zolid FX for highly aesthetic anterior and posterior restorations

By Amann Girrbach

Ceramill Zolid FX – this is the strong alternative to lithium disilicate, as the super-high translucent zirconia blanks from Amann Girrbach can now be used to fabricate highly aesthetic monolithic or anatomically reduced restorations in the anterior region and up to 5-unit bridges in the molar region without having to forego the excellent material properties of zirconia. In addition, Ceramill Zolid FX does not age, which ensures long-term strength and stability of the restoration. Ceramill Zolid FX is processed and fitted in the patient’s mouth without additional expense and also using standard luting material, as is the usual practice with zirconia restorations.

In accordance with the integrated product philosophy of Amann Girrbach, Zolid FX is not a single product but a whole system solution consisting of material and method.

A coordinated staining concept will therefore soon be available for Zolid FX Classic, which enables precise, reliable staining according to the VITA classical shade guide.

Amann Girrbach will also soon supply the super-high translucent zirconia blanks Ceramill Zolid FX Preshades for restorations, which are fabricated as efficiently as possible without a staining process.

Interview with
Abdo Salem - Amann Girrbach
Sales Manager MEA

By Dental Tribune MEA/CAPPmea

Amann Girrbach started its activities in the Middle East region in 2010 and has been growing ever since. Dental Tribune MEA / CAPPmea has the pleasure to interview Mr. Abdo Salem, Sales Manager MEA to find out more about the company in the area.

Dental Tribune MEA: Mr. Abdo Salem, congratulations on the continuous achievements at the innovative Amann Girrbach. How do you explain the constant success to innovate and serve your customers in the MEA region over the years?

Abdo Salem: Amann Girrbach started its sales activities in MEA in 2010 and has strengthened its presence here by having a dedicated team based in Beirut offering Helpdesk support in Arabic, French and English speaking languages as well as a technical support and assistance team. Furthermore we established an AG training center based at the Antonin University where a professional instructor with dental technician educational...
The new dental care system proven to reverse the enamel erosion process

By Dental Tribune MEA/CAPPmea

Dubai, UAE: Monday 16th of February 2015, over 100 dental professionals gathered at the Armani Hotel Downtown Dubai, UAE for the launch of the new dental care system which proves to help reverse the early and invisible stages of the enamel erosion process. Dental Tribune MEA/CAPPmea interviews Unilever expert Dr. Fred Schafer on his views.

Dental Tribune MEA/CAPPmea: Dr. Fred Schafer, what is NR-5 or rather Regenerate? Dr. Fred Schafer: Regenerate Enamel Science™ is a dental care system. It is the first system able to help reverse the early, invisible stages of the erosion process, and regenerate enamel with exactly the same mineral of which tooth enamel is made. The Regenerate system contains the exclusive NR-5™ technology with 5 international granted and pending patents.

Regenerate Enamel Science™ is a completely novel way to apply effective anti-erosion enamel care because it combines an Advanced Toothpaste for daily brushing with a Boosting Serum for direct application of the NR-5™ technology onto tooth enamel on three consecutive days once a month.

The NR-5™ technology is a unique combination of calcium silicate, sodium phosphate and fluoride. Whilst standard fluoride toothpastes help to protect from enamel erosion, clinically-proven Regenerate Enamel Science™ is the first system able to help reverse the early invisible stages of the erosion process and regenerate enamel with exactly the same mineral (hydroxyapatite) from which tooth enamel is made.

How has Unilever’s new NR-5™ dental care system proven to reverse the enamel erosion process? To answer this question we need to understand first how the NR-5™ technology works. When brushing calcium silicate and sodium phosphate combine with saliva to form hydroxyapatite. Finally the calcium silicate particles deposit (stick) onto the surface of enamel. The calcium silicate particles then trigger the formation of crystals of hydroxyapatite on the tooth surface.

Therefore the first step in proving the NR-5™ technology was to investigate the formation of hydroxyapatite crystals. Detailed measurement and analysis of the deposited layer – using sophisticated microscopy and x-ray technology – did indeed prove that the deposited layer is hydroxyapatite.

The second step was to study in the laboratory whether the invisible erosive damage of tooth enamel could be restored. A series of studies using small pieces of enamel were carried out according to internationally accepted protocols and procedures. The enamel samples were analysed and measured to determine the beneficial effect of the NR-5™ toothpaste and the direct application boosting serum.

The results of these studies showed:
- the combined treatment of NR-5™ toothpaste and NR-5™ boosting serum provided 82% recovery of enamel hardness after three days.
- the NR-5™ boosting serum gave a 45% benefit compared to the NR-5™ toothpaste alone.
- the combined treatment of NR-5™ toothpaste and NR-5™ boosting serum provided significantly greater recovery of enamel surface micro-hardness in comparison to a normal toothpaste.

Finally, the NR-5™ toothpaste and NR-5™ boosting serum were tested in human volunteers. The results confirmed that the combined use of the NR-5™ toothpaste and NR-5™ boosting serum provided a greater regenerative benefit to acid-damaged tooth enamel than a normal toothpaste.

What was the motivation and inspiration to produce such a formulation over ten years of research and development? The motivation was to give the consumer an improved dental care system specifically designed to help against the challenges our modern, healthy diet pose to tooth enamel. The inspiration came from research into the repair of bone in which a calcium silicate – phosphate mixture was used. Our studies have shown that the best effect can be achieved by using the NR-5™ toothpaste and NR-5™ boosting serum together. Serum is for 190 AED and Toothpaste for 80 AED.

How will Unilever convince dental professionals that the new NR-5™ Regenerate System is better than its predecessors and that it should replace the everyday regular toothpaste used? Unilever has carried out extensive basic and applied scientific research on this new technology and provided clear proof of the effectiveness of the NR-5™ toothpaste and NR-5™ boosting serum. The main results have been published in a peer-reviewed scientific journal and are available to academic researchers and dental practitioners worldwide. We are convinced that the daily use of the NR-5™ toothpaste combined with the direct application of NR-5™ boosting serum – a completely novel and unique way of using an oral care product – will significantly help consumers in protecting their tooth enamel from damaging effect of the erosive acid challenges our modern diets and lifestyle styles bring.

Is it so that the advanced toothpaste also has to work in conjunction with a Boosting Serum to get the full effect? If so what are the prices for both the toothpaste and serum for the MEA region? Our studies have shown that the best effect can be achieved by using the NR-5™ toothpaste and NR-5™ boosting serum together.
Clinical case study: esthetic anterior restoration with VITA SUPRINITY

By Daniel Carmona Cando, MDT, Spain

Initial situation
The case documentation shows a 39 year old patient who presented at Dr. Diego Alexander Cardenas’ practice in Barcelona, Spain, with two aging metal-ceramic crowns and loss of soft tissue in regions 11 and 21 (Fig. 1).

Following comprehensive consultation, she opted for a new crown restoration fabricated using VITA SUPRINITY. Crucial in this respect was the unique characteristic of this new material that combines the esthetic potential of a glass ceramic with the improved strength provided by reinforcement with zirconia.

Complexity and material selection
Just how complex this case actually was only became apparent following removal of the inadequate restorations for preparation: the tooth stumps were strongly discolored and fitted with gold metal abutments. The question needed to be addressed as to whether the planned restoration could mask this sufficiently in order to achieve a satisfactory result from a visual perspective.

In the LABORATORIO DENTAL FONTCAR laboratory, we met this challenge by combining the esthetic possibilities afforded by VITA SUPRINITY using the cutback technique with the low-melting fine-structure feldspar ceramic VITA VM 11.

Milling and reworking
The inLab MC XL system (Sirona Dental GmbH, Wals, Austria) was used for virtual design and milling of the crowns. Following the CAM process, reworking of the new high-performance glass ceramic should only be carried out at low pressure using fine-grained diamond-tipped milling tools as well as special polishing instruments. For cost-effective surface processing that is gentle on the material, the technical and clinical versions of the VITA SUPRINITY Polishing Set are recommended. For crystallization firing, any vacuum furnace that supports slow cooling can be used. The crowns can be placed directly on to honeycomb firing trays with platinum pins, without using firing paste.

Final result
Despite the unfavorable initial situation, VITA SUPRINITY enabled a comparatively good final esthetic result to be achieved in highly efficient fashion, restoring the patient’s natural smile. The expectations and hopes of the patient and the entire treatment team were met in full.

We would like to thank master dental technician Thomas Gausmann for his enormous local support!

About the Author
Daniel Carmona Cando
A master dental technician from Barcelona, Spain, uses the following complex patient case to report on how laboratory users can achieve excellent results with VITA SUPRINITY restorations. This article provides a step-by-step explanation of how VITA SUPRINITY and the VITA VM 11 veneering ceramic can be used to achieve esthetic results in a challenging clinical scenario.
Another fresh development that has become part of the DTI portfolio is the innovative e-commerce plug in for the dental-tribune.com website. Its layout now has become part of the DTI portfolio.

Another fresh development that has been included as an addition to the DTI portfolio is the innovative e-commerce plug in for the dental-tribune.com website. Its layout now has become part of the DTI portfolio.

Dental Tribune MEA / CAPPmea, covers the third largest region in the DTI Portfolio and has grown with tremendous speed over the three years. The company provides the largest dental media distribution in MEA through bi-monthly printed publications, daily on line news and e-mailed newsletters. The Dental Tribune MEA / CAPPmea media reaches regularly over 45,000 dental professionals in the MEA region and, together with DTI, provides information services to over 800,000 dental readers worldwide.

Impressions from the IDS Week – CAPP in Cologne

As usual, Dental Tribune was the best performing Media at IDS. DTI further published five today publications – the IDS official trade show newspaper, an ultimate business guide for visitors and exhibitors.

Oemus Media Group, which is the German counterpart of Dental Tribune, broadcasted live news events with active 24/7 coverage of the International Dental Show during the whole period of 10-14 March. As part of the duty, a dedicated on-site editorial team was equipped with live studio tools and a production team operating from within the soundproof walls of the Dental Tribune Media Lounge editorial room. Dental Tribune MEA / CAPPmea, as part of the team worked closely with the organizers and dental societies to cover IDS press conferences, lectures, presentations and contests. In addition, exclusive interviews, industry reports and image galleries have been published in newspapers and on-line at www.dental-tribune.com. Subscribers to the Dental Tribune MEA / CAPPmea newsletters and social platforms have received exhibition highlights and news every day. Furthermore, an e-paper version of the respective daily issue was sent out through e-newsletters. All press conferences have been covered by Dental Tribune representatives and published live in over 24 languages.

Once again, the Dental Tribune Media Lounge surprised the industry with the cozy friendly atmosphere and excellent ambience for networking. From morning until evening, the lounge welcomed B2B industry “movers and shakers” and dental professionals to meet, network, plan new marketing tools and advance their business interests. Dental Tribune International further invited its partners to a number of cocktail receptions to the DTI Media Lounge. During the receptions, attendees received business updates on international markets and had the opportunity to connect with their peers and leaders from the dental industry. The feature events included a Russian Night, a CHANNEL 5 Night, a Chinese Night, and a Brazilian Night. These evenings underlined key points in the respective dental markets focusing on latest movements. The DTI Media Lounge was once again the host of the elite dental industry professionals and high-end international dentists.

CAPPmea at IDS 2015

For the third time CAPPmea experienced a very successful presence at IDS Cologne sparking up large interest within the industry through its Dental Tribune MEA Media and CAPPmea’s educational programs. CAPPmea is the only UAE based company to exhibit for the last 6 years at IDS Cologne. With its diamond partner Dental Tribune International further invited its partners to a number of cocktail receptions to the DTI Media Lounge. During the receptions, attendees received business updates on international markets and had the opportunity to connect with their peers and leaders from the dental industry. The feature events included a Russian Night, a CHANNEL 5 Night, a Chinese Night, and a Brazilian Night. These evenings underlined key points in the respective dental markets focusing on latest movements. The DTI Media Lounge was once again the host of the elite dental industry professionals and high-end international dentists.

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Contact Information
Dr. Dobrina Mollova
Managing Director
Dental Tribune MEA/CAPPmea
Managing Director
dr.mollova@cappmea.com
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