Dentistry and dental technology delivered with passion

By Ivoclar Vivadent AG

About a thousand dentists and dental technicians from 47 countries attended the 3rd International Expert Symposium hosted by Ivoclar Vivadent in Spain’s capital Madrid. Thirteen renowned opinion leaders from academic institutions, dental practices and laboratories provided insights into the latest advancements in the field of ‘Modern restorative dentistry: Technology and esthetics’.

Robert Garley, CEO of Ivoclar Vivadent AG, underlined his desire to advance dentistry through intense dialogue. Sonia Gómara, Managing Director of the company’s subsidiary for the Iberian Peninsula, was delighted to provide the attendees with an opportunity to get to know the work of some of the world’s most renowned dental experts.

Trending high: minimally invasive procedures

Several speeches revolved around minimally invasive treatment options. Dentists talked about outcome-oriented approaches to preparation and impression-taking methods using trays and intraoral scanning devices. Dental technicians discussed the effects of limited oral space on their choice of materials and procedures. Adhesive cementation came to the fore.
Most sugar-free chewing gums in Middle East lack clear labelling on xylitol

By DTI

KUWAIT CITY, KUWAIT: The majority of sugar-free chewing gums containing xylitol that are sold in the Coop of Arab States of the Gulf (GCC) countries do not have clear labelling regarding xylitol content, a new study has found. According to the researchers, the product labels mention neither the recommended daily dose of xylitol for caries prevention nor the actual amount of xylitol the chewing gum contains. They also found that the majority of gums do not provide the necessary amount of xylitol for caries prevention.

The aim of the study, conducted by Dr Abirar al-Anzi, assistant professor at the Department of Developmental and Preventive Sciences of the Faculty of Dentistry at Kuwait University and her colleagues, was to identify sugar-free chewing gums available in the GCC region that provide the recommended daily dose of xylitol for the prevention of dental caries.

The daily dose recommended by various dental associations around the world ranges between 3 and 10 g of xylitol, available in the form of xylitol-containing gums or lozenges, three to seven times a day. Taken regularly, xylitol can contribute to the prevention of dental caries by inhibiting the growth of Streptococcus mutans, one of the main bacteria associated with tooth decay. Moreover, the sugar substitute has been found to enhance remineralisation and reduce the quantity of dental plaque, as most plaque bacteria are not able to ferment xylitol into carogenic end-products.

The researchers examined the concentration of xylitol in 21 brands of chewing gum (from Kuwait, Bahrain, Qatar, Saudi Arabia, the UAE and Oman), using a special enzymatic kit. They found a xylitol content of less than 0.3 g per piece of gum in nine products, of 0.3-0.5 g in seven and of more than 0.5 g in five products. According to the scientists, the majority of gums analysed did not provide the necessary amount of xylitol for caries prevention.

Moreover, most of the products tested lacked accurate labelling regarding their xylitol content. Of the 21 brands, only one clearly mentioned the amount of xylitol in grams on its label. Twelve products stated the percentage of xylitol (3.5-35 per cent). The rest did not specify the amount.

“Looking at the percentage, it is not easy for the consumer to calculate the actual amount of xylitol in grams. A consumer should be informed of the contents and the amount used in the product so that he can make an informed decision,” al-Anzi told the Middle Eastern newspaper Muscat Daily.

The researchers have therefore recommended clear, accurate labelling of all xylitol-containing gums sold in the GCC countries and advised dental associations in the Middle Eastern region to adopt the general recommendations for labelling of current xylitol products.

The study, titled “Xylitol chewing gums on the market. Do they prevent caries?”, was published online in the Oral Health and Preventive Dentistry journal on 12 May

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Esthetic replacement of anterior class IV restorations

By Dr. Paulo Monteiro, Portugal

Initial Situation
Female patient 30 years old. Patient was not satisfied with current anterior restorations (maxillary central incisors). Patient also expressed dissatisfaction with shade and surface texture.

Challenge
Creating smooth and natural-looking restorations for patients who demand the highest level of esthetics can be challenging. Using materials that mimic shade and opacity of dentin and enamel is critical.

Initial Situation: patient was not satisfied with current restorations.

Fig. 2: Teeth were etched after preparation using Single Bond Universal Etchant.

Fig. 4: A silicone matrix was used to create the palatal wall with Filtek™ Z350XT Universal Restorative, shade CT.

Fig. 6: Application of the dentin layer using Filtek™ Z350XT Universal Restorative, shade A1D. For volume control the Misura instrument (LM Arte by Style Italiano) was used to leave a 0.5mm space for the facial enamel.

Fig. 8: The final enamel layer of Filtek™ Z350XT Universal Restorative, shade A3E was applied and light cured.

Fig. 10: Pre-polishing of restoration with Sof-Lex™ Pre-Polishing Spiral.

Fig. 12: Final restoration is very natural-looking.

Fig. 1: Initial situation: patient was not satisfied with current restorations.

Fig. 5: The interproximal enamel layer was built with Filtek™ 350XT Universal Restorative, shade A3E and light cured with Elipar™ DeepCure-S LED Curing Light. For the incisal halo, Filtek™ Z350XT Flowable Restorative, shade W was used.

Fig. 7: Creation of mamelons and application of a small portion of Filtek™ Z350XT Universal Restorative, shade CT between the dentin layer and incisal halo to enhance translucency at the incisal edge.

Fig. 9: Sof-Lex™ Discs are used to define the outline of the restoration and create secondary anatomy.

Fig. 11: Polishing with Sof-Lex™ Diamond Polishing Spiral to create a final smooth and high-gloss polish.

Legacy of Innovation Continues for 3M Oral Care

The Anaheim Group acknowledges 3M’s contributions to the dental industry for an 11th consecutive year

By 3M ESPE

With 95 innovations launched in 2015, 3M’s designation as the Most Innovative Company in the Dental Industry was earned through a relentless commitment to science-based innovation. Honored with its 11th consecutive win, 3M’s rank on The Anaheim Group’s “Innovation Index” has once again placed the company in the top spot with 25 percent more innovations than any other dental company.

With its commitment to improving lives through science, 3M continues to improve on its own innovations. The maker of countless award-winning products under such brands as Filtek™, RelyX™ and Scotchbond™; 3M’s breakthrough innovations are often sourced from within its own walls. Interdisciplinary collaborations have inspired many of 3M’s greatest innovations in the dental industry, including pioneering the use of zirconia restorative materials and introducing nanotechnology for enhanced esthetics and strength in universal restorative material.

“Receiving the Most Innovative honor for more than a decade is a testament to what 3M excels at — applying science to help keep people healthy,” said James D. Ingebrand, vice president & general manager, Oral Care Solutions Division of 3M. “Every day, we explore new ways to impact lives, as we consistently pursue new product and process innovations with a focus on promoting lifelong oral health for all.

To learn more about 3M, visit www.3MGulf.com/espe.
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Red & White Aesthetic Harmony

By Shofu

Beautifil II Enamel and GINGIVA from Shofu are developed as a complementary line extension of Beautifil II to create life-like direct resin restorations. A special one-push syringe ensures controlled dispensing of the smooth and creamy material that is easy to sculpt into fine details and recreate the surface textures seen in natural teeth & gum.

Inclusion specially modified multi-functional organic fillers and nano-fillers impart Beautifil II Enamel and GINGIVA with exceptional handling characteristics, longer working time, high abrasion/wear resistance, stable shades, effortless and superior polish with sustained polish retention for lasting aesthetics. Shofu’s proprietary S-PRG fillers offer additional fluoride benefits and anti-plaque effect on the restoration surface.

Beautifil II Enamel is available in 4 natural shade variations of pink to easily mimic patient’s individual clinical needs. Beautifil II GINGIVA is available in 5 natural shade variations of pink to easily mimic patient’s individual clinical needs.

TRIOS scans most accurate and consistent

3Shape’s intra-oral scanner TRIOS delivered the most accurate results when compared with other leading scanning systems in a recent study. (Photograph: 3Shape)

By DTI

BALTIMORE, USA/FREIBURG, Germany: A new study evaluating the accuracy of six leading intra-oral scanners in the dental market has found 3Shape’s TRIOS to be both the most accurate and consistent performer of the scanners tested.

The study, which was conducted jointly by the University of Maryland in Baltimore and the University of Freiburg in Germany, aimed to compare the ability of intra-oral scanning systems of different brands to accurately scan a single molar abutment tooth in vitro. The analyses included the following six scanners: iTero (Align Technology), 3M True Definition (3M ESPE), PlanScan (Planmeca), CS 3500 (Carestream Dental), TRIOS and CEREC AC Omnicam (Sirona Dental Systems).

In order to compare the accuracy of each system, the investigators used an industrial grade, highly accurate reference scanner to create a digital reference dataset for an acrylic dental model. A single trained, experienced dentist then scanned the acrylic model on three separate occasions using each of the six intra-oral scanning systems.

Trueness (accuracy) was defined by superimposing the three digital datasets over the reference dataset, with 3D comparisons then performed Precision (consistency) was defined by superimposing each dataset over the other two datasets obtained and then evaluating for 3D deviations.

Of the 18 datasets analysed, the smallest deviations for the trueness measurements (+ standard deviation) between the reference dataset and the various intra-oral scanner datasets were obtained from TRIOS (4.5 ± 0.9 µm), followed by CS 3500 (9.8 ± 8.8 µm), iTero (9.8 ± 2.5 µm), 3M True Definition (9.8 ± 0.8 µm), PlanScan (10.9 ± 10.8 µm) and CEREC AC Omnicam (15.2 ± 17.1 µm).

As for precision values, here too 3Shape’s TRIOS was identified as the most accurate (4.5 ± 0.9 µm), followed by 3M True Definition (6.1 ± 1.0 µm), iTero (7.0 ± 1.4 µm), CS 3500 (7.2 ± 1.7 µm), CEREC AC Omnicam (8.6 ± 4.0 µm), and PlanScan (16.4 ± 5.0 µm).

“The TRIOS scanning technology, in combination with the wand design, seems to be beneficial for capturing high quality datasets with excellent trueness and precision values,” the investigators said.

However, the results obtained do not provide any information about the quality of a fabricated restoration based on these digital datasets, the researchers stressed. Moreover, in an in vivo design, the outcomes might be different owing to the presence of blood, saliva, and patient movements, they concluded.

SIDEXIS 4 update gives users many new functions and technical improvements

By Dentsply Sirona

Improving performance, integrating SICAT Suite or connecting an external camera: the software update gives users many new functions. With a new SQL server, compatibility with Windows 10 and other operating systems, the technical functions have also been expanded.

At the end of last year, the SIDEXIS 4 imaging software received the internationally renowned Red Dot Award in the “Communication Design” category for its outstanding user friendliness. The new 4.1.3 software update from Dentsply Sirona Imaging now combines additional functions for users with technical modifications that further optimize the practice workflow. Especially in combination with the ORTHOPHOS SL, the SIDEXIS 4 software forms a highly functional and efficient unit. The update also offers advantages for networking with practice management systems and implantology planning or orthodontic analysis programs.

New functions make it easier to use

The software update now makes it possible to connect intraoral cameras from other manufacturers, as well as via Windows Driver Model. When imported images without an imaging date are provided, the user can enter the information manually to have the images displayed chronologically in the timeline. The update also provides additional image information: the anatomical region and external image type are displayed for every image. To facilitate work for users, it will now be possible to use copy and paste to insert images into another application, such as image processing or patient management. The program also allows images to be moved retroactively to allocate them to another patient.

No more switching between SICAT Suite applications

The integration of the SICAT Suite software package with the SICAT Function and SICAT AIR applications into the SIDEXIS 4 interface represents a considerable added value for users. SICAT Function allows the three-dimensional visualization of jaw movements for the diagnosis and treatment of craniofacial dysfunction (CMD). Users can use SICAT Air to order protrusion appliances to treat obstructive sleep apnea. Planning data created by the two software applications are displayed in the timeline and from there can be opened again directly in the SICAT Suite. The package is integrated into the phase bar of SIDEXIS 4 with its own “Plan&Treat Phase.” The applications can therefore be selected directly and treatment planning can be started. The loading times for the required 3D image data were reduced by 50 percent.

SIDEXIS 4 – state-of-the-art technology

The technical aspects of the SIDEXIS 4.1.3 software version were expanded to Windows 10 and other operating systems. Instead of the previously used SQL Server 2008 R2 database managing system, the SQL Server 2014 is now installed both during initial installation of SIDEXIS 4 and in the case of an update.

Dentsply Sirona
Sirona Straße 1
5071 Wals bei Salzburg, Austria
T +43 (0) 662 2450-588
F +43 (0) 662 2450-540
www.dentsplysirona.com
Esthetic replacement of maxillary premolar with immediate implant placement and metal ceramic crown over CAD/CAM abutment

By Dr. Larry R. Holt, USA

This article describes treatment to solve a common dental complication (loss of tooth due to vertical root fracture). Contemporary implant therapy and subsequent CAD/CAM laboratory procedures provide an elegant solution to this patient’s dental emergency. Treatment was accomplished during a period of approximately six months.

The patient is a healthy, 52-year-old female with an unremarkable medical history. Her dental history and general dental health are excellent. Unfortunately, she suffered a vertical fracture of tooth #5, which necessitated its extraction (Fig. 1). The treatment plan was for extraction and immediate implant placement with concurrent bone grafting as required. A temporary partial was planned to provide esthetic replacement and to support and shape tissue during the healing process. Final restoration was to be a cemented PFM crown supported by an Atlantis gold hue abutment.

Material selection was based on patient’s crossbite occlusion that transitions from normal to crossbite across this particular tooth’s occlusal table. Crown and abutment could potentially be subject to occlusal stress due to this transitional relationship.

A restoration that provides maximum strength was desirable for long-term stability of the restorations. The patient has a thin biotype, and the gold hue abutment provides both strength and the gold color that provides a more natural tissue color. The gold color provides “warmth” of color in the critical transmucosal region. Titanium abutments provide strength but can telegraph a greying affect on thin tissues.

Treatment began with a preoperative appointment to take necessary records (impressions of both arches, facebow transfer, shade taking, bite registration and clinical photography).

Prescriptions to lab was provided ordering a partial denture fabricated from duracryl resin and to develop a tooth born surgical guide. Lab was instructed to simulate the extraction site by removing the tooth from the study cast provided. This model was duplicated for fabrication of the two appliances.

Laboratory product was provided to surgeon. Autocast extraction was accomplished and immediate implant (Legacy Trex, implant unit direct) placed with facial bone grafting (Figs. 2-3). There was a healing screw placed and site was closed with appropriate mattress suturing technique. The unilateral partial was not delivered at time of surgery. Patient was seen in restorative office, and the partial (Duratek, Drake Precision Labs) was modified to provide tissue support and begin development of an ovate tissue site. Partial was delivered uneventfully. These appliances are extremely retentive and not subject to slippage or pressure over the implant site during function. Patient was seen at one week for postoperative check and adjustment of temporary appliance (Fig. 4).

Patient was instructed to return to surgical clinic in approximately four months for final evaluation prior to restorative procedures.

Four months after surgery, the patient was seen by surgeon to uncover the implant, remove the healing screw and place a temporary abutment. The temporary partial was adjusted to accommodate the added height of the healing abutment (Fig. 5). Patient was instructed to return to restorative office for definitive restoration of the implant in approximately three weeks.

Patient was appointed with restorative office for evaluation and to develop necessary records for laboratory fabrication of the definitive restoration. Implant site was evaluated and deemed adequately healed to proceed with restorative procedures (Fig. 6).

Healing abutment was removed and a closed tray impression coping was fitted onto the implant (Fig. 7). Radiograph was taken to confirm complete seating of the impression coping. A full arch impression was taken with heavy body PVS impression material (PanaSil Tray Soft, Heavy Body Regular Set, Kettenbach GmbH) and shade map were taken. All clinical product was sent to laboratory along with shade photography and a complete written prescription. A PFM high noble crown and Atlantis gold hue custom abutment were prescribed.

The abutment was ordered and the Atlantis abutment was torqued to 35 Ncm. A radiograph was taken to confirm final seating of the abutment.

The PFM crown was tried on and once impression was taken. A bite registration (Futar D Fast Set Kettenbach GmbH), new opposing impression (Silglinate plus PanaSil Light Body Body Fast Set, Kettenbach GmbH) and shade map were taken. All clinical product was sent to laboratory along with shade photography and a complete written prescription. A PFM high noble crown and Atlantis gold hue custom abutment were prescribed.

Once all clinical adjustments were done, a laboratory technician was consulted for final shade matching. The final shade was very close to ideal.

The technician accomplished minor modifications (minimal characterization staining and reduction in final surface gloss). Proximal contacts and occlusal table were pol...
The crown was lined with silicone tape and bite registration material was injected into the crown to fabricate a cementation jig [Fig. 12]. This step is very important to avoid excess cement extrusion during final seating of the restoration. All pre-cementation procedures were completed, including approval by patient of both esthetics and bite comfort. Abutment screw access hole was sealed with silicone tape, respecting the external contours of the abutment to allow complete seating of the restoration. This is a critical step to maintain patency for future access to retension screw.

The crown was steam cleaned and thoroughly dried. Intracoronal the abutment was thoroughly cleaned and dried in preparation for cementation procedures. Attending dental assistant maintained cheek retraction and dry field.

The walls of the crown were lined with implant cement (Dental Implant Cement, radiopaque, Premier). The crown was then seated on the previously fabricated cementation jig to extrude excess cement.

Cement adaptation to internal walls of crown was confirmed and the crown was seated over the custom abutment. Excess cement was removed by combination of hand instrumentation and dental floss after initial cement setting.

The crown was left under biting pressure with cotton roll over occlusal table for five more minutes to allow for cement to fully set. Micritic inspection of sulcus was accomplished to remove any vestige of implant cement. Postoperative radiograph was taken to evaluate complete seating of crown and to confirm removal of any excess radiopaque cement. Occlusion was confirmed and patient was dismissed.

One-week recall was accomplished to confirm removal of any vestige of implant cement. Occlusion was confirmed and patient was dismissed. The tissue color was natural and did not reveal any hint of the underlying implant or abutment. Restoration margins were concealed within the gingival sulcus. This treatment provided an elegant solution for this all-too-common dental emergency. The patient was extremely pleased with the result [Figs. 13-15].

References

For more information about this article, please contact events@cappmea.com or +971 4 3616174.

FOR INTERACTION WITH THE AUTHORS FIND THE CONTACT DETAILS AT THE END OF EACH ARTICLE.
Fixed and Removable Implant Restorations: A Solution for Every Arch

By Dr. Paresh B. Patel, USA

When a patient presents with an edentulous arch or terminal dentition, implant treatment can be provided that improves not only form and function, but also quality of life. For patients desiring better chewing capability, stability, esthetics and comfort than a traditional denture can offer, both removable and fixed implant restorations are superior alternatives. While the appropriate implant solution can vary depending on the patient’s oral health, anatomy, quality and quantity of bone, and financial resources, full-arch prosthetics have progressed to the point where virtually every patient can be restored. Although fixed, implant-supported restorations offer the highest levels of stability, function and patient satisfaction, removable overdentures are a dramatic improvement over conventional complete dentures as well. Both treatment options effectively mitigate the bone resorption that occurs following the loss of teeth, helping to preserve the oral and facial structures and, by extension, the self-confidence of the fully edentulous patient. Determining which solution is appropriate requires a careful evaluation of the individual patient’s circumstances and desires. Even when an implant overdenture is delivered, the prosthesis can eventually be converted to a fixed restoration. As evidenced by the case that follows, in which one arch is restored with an implant overdenture and the other with a BruxZir® Full-Arch Implant Prosthesis, practitioners today have a great deal of clinical flexibility. Whatever prosthetic approach is adopted, immediate, life-changing relief can be provided to patients suffering from terminal dentition or an uncomfortable, poorly functioning traditional denture. Further, the dramatic oral health improvement the patient’s oral health demonstrates the life-changing capabilities of implant therapy, which helped him overcome severe functional and esthetic challenges that were impacting practically every facet of his life prior to treatment.

Case Presentation

A 47-year-old male presented with terminal dentition in both arches and severe caries (Figs. 1a–1c). The patient had already lost many of his teeth, and the dentition that remained had been rendered unstable by his periodontal condition (Fig. 2). He wanted a retentive appliance for his upper arch, from which he desired the most functional, lifelike prosthetic appearance. While he couldn’t afford such a restoration for both arches, he wanted a removable temporary restoration for his mandible, with the option of later upgrading to a fixed prosthesis. The patient accepted a treatment plan in which his maxilla would be restored with a BruxZir® Full-Arch Implant Prosthesis and his mandible with an Inclusive® Locator Implant Overdenture. Fabricating his mandibular overdenture from monolithic zirconia would ensure maximum long-term durability. This was important for the relatively young age of the patient, who would not have to worry about his upper prosthesis succumbing to fractures, chips or stains.

His lower appliance would be held in place by connecting to theimplants via Locator® attachments (Zest Anchors, Escondido, Calif.), which are an economical means of improving prosthetic retention and stability. The overdenture caps that connect to the Locator attachments would be incorporated in the prosthesis chairside, though it should be noted that many clinicians elect to have the laboratory handle this step. The surgical phase of treatment called for the extraction of the patient’s remaining teeth followed by placement on the same day as surgery, including a screw-retained, fixed provisional for his upper arch. Figures 8a, 8b: Note the dramatic change in the appearance of the patient, who left with chairside-converted dentures in place on the same day as surgery, including a screw-retained, fixed provisional for his upper arch.

Figures 7a, 7b: Same-day conversion of the maxillary denture to an immediate fixed prosthesis was achieved by adding multi-unit temporary cylinders using cold-cure acrylic and trimming the appliance into a horseshoe shape.

Figures 4a–4c: The Inclusive Tapered Implants were threaded into place, achieving excellent initial stability.

Figures 2, 3: Preoperative panoramic radiographs illustrate All-on-4 configuration of maxillary implants and axial placement of the patience implants.

Figures 5: Multi-unit abutment with carrick in place illustrates connection of the implant’s angulation to establish a uniform prosthetic platform around the arch.

Figures 6: Traditional dentures were fabricated in advance of the surgical appointment so they could be immediately converted to serve as temporary appliances during the healing phase.

Figures 9, 9a: Same-day conversion of the maxillary denture to an immediate fixed prosthesis was achieved by adding multi-unit temporary cylinders using cold-cure acrylic and trimming the appliance into a horseshoe shape.
the immediate placement of eight dental implants. CBCT scans were taken to help determine the optimal placement of the implants within the available bone and away from the patient’s vital oral anatomy. Evaluation of the CBCT scan determined that there was sufficient height, width, and quality of bone to place the implants in the appropriate locations and angulations via the guided implant surgery. Four mm Inclusive® Tapered Implants (Glidewell Direct, Irvine, Calif.) would be placed in each arch to support the fixed maxillary restoration and the removable mandibular prosthesis.

At the surgical appointment, the patient’s remaining teeth were removed, and a flap was raised to visualize the socket sites and areas of implantation. Bone leveling was performed on the patient’s maxillary arch to elevate the patient’s smile transition line above the upper lip. The maxillary osteotomies were positioned to facilitate an All-on-4 configuration, with the posterior implants tilted to maximize the anterior-posterior (A-P) spread, avoid the sinus, and accommodate the patient’s bone limitations (Fig. 3). Osteotomies were created for the placement of four mandibular implants, as opposed to the minimum of two required for an overdenture. This would enhance retention of the overdenture while allowing for the possibility of upgrading to a fixed restoration at a later time.

Following creation of the osteotomies, the implants were placed (Figs. 4a–4i). Inclusive® Multi-Unit Abutments (Glidewell Direct) were attached to the maxillary implants, correcting for the divergent angulation of the implants. This would both position the restorative platform in a manner that would situate the screw access holes of the eventual prostheses toward the lingual aspect and allow for a molar-to-molar restoration (Fig. 5).

Note that when patients present for treatment with terminal dentition, they are commonly anxious about losing their teeth and the effect this will have on their speech and chewing capabilities. For this reason, it is important to make every effort to ensure that the patient leaves with functional appliances in place. Thus, traditional dentures were fabricated from preliminary impressions in advance of the surgical appointment for modification and delivery following placement of the implants (Fig. 6).

Having achieved sufficient primary stability, the Inclusive Tapered Implants placed in the patient’s maxilla could be immediately loaded. Thus, the upper denture was trimmed and modified, chairside to connect to the multi-unit abutments through temporary cylinders (Figs. 7a, 7b). This would satisfy the patient’s desire to leave the surgical appointment with a fixed, fully functional maxillary prosthesis in place. Note that the two distal-most molars were removed to minimize the cantilevers and the forces transmitted to the implants during osseointegration. Healing abutments were placed in the mandibular implants to begin development of the transmucosal passages. The lower immediate denture was then modified and relined to seat over the implants during healing. This approach provided the patient with same-day temporary restorations, and he walked out of the office with properly functioning teeth for the first time in many years. The effect this had on the patient’s comfort, function, and appearance was immediate and profound (Figs. 8a, 8b). The final radiograph taken after seating the temporary appliances confirmed excellent positioning of the implants (Fig. 9).

Following creation of the osteotomies and insertion of the four mandibular implants, the relative positions of the implants represented by the verification jig were transferred to the lab for fabrication of a verification jig, which metal housings with overdenture caps were milled from monolithic zirconia. A custom tray provided access holes of the eventual prosthetic design were accurate absolutely certain that the definitive prosthesis was designed using CAD software (Figs. 12a, 12b). Because this digital model was based on the final impression containing the verification jig, screw access holes were created in precise alignment with the positions of the maxillary implants.

The CAD design was used to mill a provisional implant prosthesis from polyethylene (methacrylate) (PMMA) (Figs. 20a, 20b). This appliance was tried in and worn for a trial period, thus ensuring an accurate prosthetic fit. The provisional implant prosthesis was screwed into place, and its teeth positioned, function, and esthetics were verified (Figs. 21a, 21b). With both appliances in place, the provisional implant prosthesis was delivered to the patient’s chairside, cleaned, and checked for proper fit, function, and support from the soft tissue. Then the permanent implant prosthesis was screwed into place, and its teeth positioning, function, and esthetics were confirmed (Figs. 7a, 7b). The final lower setup consisted of four maxillary implants and two mandibular implants, a total of six implants (Fig. 13a). The lab verified the implant placement once it has been confirmed excellent positioning of the implants. The final restorations were milled from monolithic zirconia. The maxillary and mandibular prostheses were milled from monolithic zirconia. The maxillary and mandibular prostheses were milled from monolithic zirconia.
relationship was checked (Figs. 22a, 22b). Minor occlusal adjustments were made directly to the maxillary provisional implant prosthesis, as PMMA is easily modified. Slight alterations were also made to the lower implant overdenture. Then, blockout shims and the retentive overdenture caps were seated over the Locator attachments (Figs 23a, 23b). Quick Up self-cure material (VOCO America, Indian Land, SC) was added to the recess wells of the overdenture before seating the appliance over the metal housings. After letting the material set for approximately three minutes, the overdenture was removed, picking up the denture caps in the prosthesis. The minor voids surrounding the denture caps were then filled with Quick Up light-cured pink composite (Fig. 24). The appropriate retainers, which are available in a variety of strengths depending on the functional capabilities of the patient and the number of implants, were snapped into the metal housings (Fig. 25). The implant overdenture was seated, providing excellent retention, stability and function for the patient. With the final maxillomandibular restoration in place, the patient wore the provisional full-arch implant prosthesis for a trial period of two weeks (Fig. 26). This opportunity to wear the appliance during actual day-to-day function installed a high degree of confidence in the prosthetic design for the patient and doctor alike. Following patient approval, the provisional implant prosthesis was returned to the lab so it could serve as the blueprint for the final restoration and the minor adjustments made to the appliance could be included in the definitive prosthetic design. The final BruxZir Full-Arch Implant Prosthesis was digitally fabricated with precision (Fig. 27). As an exact reproduction of the test-driven prosthesis, the definitive prosthesis fits perfectly and offered the esthetics and function the patient had come to expect (Figs. 28a, 28b). The final restoration effectively addressed the unique circumstances of the case, providing the most durable, stable prosthesis possible for his upper, and a lower restoration that greatly improves prosthetic retention and can be upgraded to a fixed prosthesis should the patient’s situation change.

Conclusion
Practitioners now have the clinical flexibility to offer patients a wide range of treatment options, from entry-level, economical restorations like the Inclusive Locator Implant overdenture, to the fixed, highly esthetic and functional BruxZir Full-Arch Implant Prosthesis. There is a viable means of treating nearly all patients, whatever their oral health, needs and finances. Provided the life-changing benefits of implant therapy and the straight-forward restorative protocols of today, this service should be offered to all patients confronting the challenges presented by complete edentulism.

References

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Designing real smiles with digital tools

By Drs Eduardo Mahn, Gustavo Mahn, Carlos Cáceres, Luis Bustos, Chile & Christian Coachman, Brazil

Dental materials and clinical procedures have changed dramatically in the last decades. Probably the main advances that have occurred during the last two decades have been in the fields of implantology and adhesive dentistry, but the main revolution is the development of digital dentistry. Although these changes have certainly made diagnostics and certain procedures easier, the basics, such as function and the biological aspects, remain essential. At the same time, we have experienced major improvements in ceramics and composites, helping us to fulfil our patients' aesthetic demands.

A basic prerequisite for these indications is an in-depth understanding of the facial and dental aesthetic parameters. The clinician needs to understand the challenges that each clinical case presents and has to be able to develop an appropriate treatment plan that approaches the case from a multidisciplinary perspective. Tooth proportions need to be considered in relation to gingival aesthetics and in relation to the facial appearance. It is pointless to make the most beautiful direct veneer if the contours or the texture do not match that of the adjacent teeth or the gingival zeniths are clearly not symmetric and visible. As an example, if we add a tilted occlusal plane or a maxillary tooth midline shift in relation to the facial midline, the results can be frustrating. Another important aspect is the proper analysis of the patient’s smile and display (Figs 1 & 2). When photographs are taken, people tend to be dry, especially at the beginning and even more so if the person taking the photographs is not a professional photographer and the setting is a dental practice. Figure 3 shows the intra-oral view, where besides the obvious diastema and the hypomineralised areas of both central incisors, the major discoloured areas of both mandibular lateral incisors, which were certainly in need of some sort of treatment, are apparent. It is important to try to make a video while conversing with the patient about normal daily issues to avoid overlooking aspects that need to be considered in the treatment plan. The conversation will relax the patient and evoke natural smiles and laughs in response to something humorous or silly that we might say. Figure 4 shows the different healing aesthetics and the spontaneous smile, which was captured during dynamic recording. In this particular clinical case, had we based our treatment plan on the social smile photograph, we would have failed to visualise the display of the mandibular incisors, which showed unpleasant stains.

The next step was to analyse the patient from the facial perspective based on the details of her teeth. The digital smile design (DSD) concept diagnoses aesthetic problems from a facial perspective and, based on a simplified digital analysis of a few photographs, proposes treatment options and assists with communication between the various specialists in the team.

The first step is to draw a horizontal and a vertical line. The photograph is centred, moved and rotated until the bi-pupillary line is horizontal. The facial midline is subsequently ascertainment. Then the same lines are superimposed on to a similar photograph, which has also been centred, but this time taken with lip retractors in place (Figs 5a–c). The same photographs are then magnified and analysed (Figs 6 & 7). The upper lip line is recreated and then superimposed on to the photograph taken with lip retractors in place as reference of its position (Figs 8 & 9). Then the tooth proportions are measured and their ideal contours are drawn in a designed mock-up can be created.

This procedure reduces chair time dramatically and increases patient acceptance. Owing to easily accessible software such as Microsoft PowerPoint and Keynote, these effects are easily and quickly created by anyone with minimal training. Recently, new software has been released that simplifies the procedure even more; DDS software for iPads (www.digitalsmiledesign.com). The procedure is based on overlapping certain areas of the teeth in the manner previously described. The result can be seen in detail in Figure 12 and the display in Figure 13. A comparison from the facial perspective between the pre-operative situation, the traditional mock-up and the digital mock-up can be seen in Figure 14. Traditional indirect mock-ups are made from a previously created wax-up from the laboratory.

First, an impression is taken and a stone cast is then fabricated. Afterwards, the technician waxes the necessary teeth depending on the instructions given by the clinician.

Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5
Fig. 6
Fig. 7
Fig. 8
Fig. 9
Fig. 10a
Fig. 10b
Fig. 11
Fig. 12
Fig. 13
Fig. 14

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and it is difficult to differentiate between them.

The protocol is based on photographs and videos that are taken during the first appointment. The analysis is performed, and eventually the case is discussed with the team if necessary. Once the presentation is ready, the treatment plan is presented in a visually attractive way to the patient (Fig. 15). Finally, whether to use ceramic or composite restorative materials is considered depending on different factors. Our philosophy is based on the minimally invasive concept. As long as we can provide the patient with the same aesthetics, durability and predictability of ceramics, we will select composites.

In cases in which many teeth are involved, multiple diastemas are present or occlusal imbalances may jeopardise a successful outcome and major changes need to be made, our choice leans towards ceramics. Whatever approach is chosen, it is of paramount importance for the clinician to understand the ceramic and/or composite system he or she is using. In this particular clinical case, the ceramic system used was IPS e.max Press and the composite system was IPS Empress Direct (both Ivoclar Vivadent) because of its simple layering concept, its natural-looking shades and long-lasting gloss.

The correspondences between the shades of both systems make them easier to combine.

Once the treatment plan has been accepted by the patient, the treatment begins with preparation and demarcation in order to be as conservative as possible (Fig. 16). Figure 17 shows the detail of the hypomineralised areas of the mandibular lateral incisors. The areas were excavated with a redcoloured bur (Komet Dental) and etched with phosphoric acid Excite F (Ivoclar Vivadent) was used as a bonding agent, and IPS Empress Direct Dentin A1 and Enamel A1 were placed using a novel instrument called OptraSculpt Pad (Ivoclar Vivadent).

The maxillary teeth were prepared and impressions taken. Figure 20 shows the six veneers fabricated by master dental technician Victor Romero (Santiago, Chile). Then they were tried-in with a specially designed glycerine-based paste, components of the Variolink Esthetic cementation kit (Ivoclar Vivadent). Figure 21 shows how dramatic the change in value can be with this type of cement. This procedure is especially helpful when one or two veneers are seated, and the value needs to be slightly corrected in order to match them to the adjacent teeth. The veneers were then bonded and the final result can be seen in Figure 22, where the preoperative situation is shown against the similar results achieved with the digital mock-up compared with the final outcome. Figures 23 and 24 show the integration of the six maxillary ceramic veneers and the two direct composite restorations performed on the mandibular lateral incisors at the three-month follow-up. All this work was integrated from the facial perspective, as seen in Figure 25. The satisfied and spontaneous patient can be observed in Figure 26.

Dr Eduardo Mahn, DDS, DMD, PhD, is a lecturer at the Universidad de los Andes in Santiago, Chile.
Dr Gustavo Mahn, DDS, is a lecturer at the university Finis Terrae in Santiago, Chile.
Dr Carlos Cáceres, DDS, is a lecturer at Universidad del Desarrollo in Concepción, Chile.
Dr Luis Bustos, DDS, is a lecturer at Universidad del Desarrollo in Concepción, Chile.
Dr Christian Coachman, DMD, MDT, is in private practice in São Paulo in Brazil.
Contact: Dr Eduardo Mahn, emahn@miuandes
Advanced Restorative Techniques and the Full / Partial Mouth Reconstruction. Articulator Selection and Clinical Stages. Part 4

By Prof. Paul Tipton, UK

A highly respected specialist in Prosthodontics, Paul has written many articles for the dental press and is an expert lecturer in his field with Tipton Training Academies in Manchester, Leeds, London and Dublin. After gaining his Masters Degree in Conservative Dentistry in 1999, he was awarded the Diploma in General Dental Practice by the Royal College of Surgeons four years later and received Specialist status in Prosthodontics in 1999 from the GDC. An ex-professional cricketer with Lancashire County Cricket Club, he is currently the President of the British Academy of Implant Dentistry. He is one of the UK’s most successful dental teachers in the fields of Restorative, Cosmetic and Implant Dentistry over the last 20 years with more than 2000 dentists completing a year long certificate courses from one of the Tipton Training Academies (www.tiptontraining.co.uk).

Introduction

The full mouth or partial reconstruction is one of the most challenging procedure in Restorative Dentistry. In order to successfully restore and maintain teeth, the dentist must find out why the teeth arrived at this state of destruction. Tooth wear can result from abrasion, attrition, and erosion as well as iatrogenic problems with previous restorations. Research has shown that these mechanisms rarely act alone and there is nearly always a combination of the processes. Evaluation and diagnosis should account for the patient’s diet, the present state of the occlusion and dental history. Emphasis must be placed on the evaluation of occlusal prematurities preventing condylar seating in RAP. Factors that may contribute to parafunctional habits or bruxism are important to understand and manage in order to successfully restore and maintain the newly restored dentition. When there is a complete understanding of the etiology of the definitions present state a treatment plan can be established, taking into account the number of teeth to be restored, condylar position, space availability, the vertical dimension of occlusion (VDO), the choice of restorative material and the choice of articulator and ways of programming it.

Articulator Selection

There is a large choice when assessing what type of articulator is correct for the patient and restoration. In terms of classification, articulators range from hand held casts or simple hinge articulators to fixed condyle or average value articulators to semi-adjustable and to fully-adjustable.

Restorative Stages

Following on from the third article in this series which dealt mainly with the diagnostic stages of a full mouth reconstruction we now look at the clinical stages which will be illustrated by the first case study. This gentleman Fig. 1 was referred for treatment of his severe upper anterior wear. The patient was over closed and due to the wear now in a pseudo-class III edge to edge occlusion (Fig. 2). After initial diagnostic stages which included cosmetic imaging (Fig. 3), diagnostic waxing (Fig. 4) etc, the patient was ready for initial tooth preparation.

Tooth Preparation

This will be dependent upon the type of restorative material to be used eg. PFM, scanned and milled porcelain, adhesive porcelain. Whilst the shift in recent years has been to all ceramic restorations, the PFM is often the restoration of choice as it allows a more conservative preparation on both anterior and posterior teeth with only part of the gingival margin area prepared for porcelain (labial) and the rest a conservative 0.5mm light chamfer for metal (Fig. 5). There is also the added longevity in both of these areas of the mouth. The reader is referred to the work of Shillingburg for a full description of PFM crown preparation. In this instance the classic PFM crown was used to restore the upper 10 anterior teeth.

Tooth preparation should be done in stages so as to maintain control of the condylar position and vertical dimension. Providing the patient has adequate posterior stability (from amalgams, cores, prototype crown etc) then the initial tooth preparation should be the upper and lower anterior canine to canine teeth.

When completing a full-mouth reconstruction upper and lower preparations should be done together so as to be able to establish ideal anterior guidance in both proemuctive and lateral movements. Once prepared the denture is sealed and prototypes are relined, trimmed and fitted (Fig. 6). No impressions or jaw registrations are taken at this time.

The aim of the tooth preparation stage, is, over three long visits,
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restorative to place prototypes on all the teeth and then to spend time reassessing occlusal planes, aesthetic concerns and of course occlusal scheme and comfort of the patient.

The long term success of the final restoration is directly proportional to the skill and time in preparing and planning prototypes and their adjustments. It is easy to lose vertical dimension, occlusal stability and ideal sealing of the condyle in the fossa if this stage is hurried.

If increasing vertical dimension then either the timing of the preparation and prototypes is changed to accommodate all initial procedures in one week or full occlusal contacts need to be re-established on posterior teeth during the interval between fitting of the anterior prototypes and the final segments of the posterior.

Impressions / Jaw Relationship
Once the patient has confirmed that they are happy with the aesthetic appearance, is symptom free, having an ideal occlusal scheme with multiple contacts on all teeth and the condyles in RAP with smooth shallow anterior guidance the next stage of treatment is to take impressions and jaw registrations. This can be done in several ways.

A similar scheduling of events can occur as anterior prototypes are removed, retraction cords placed, teeth re-prepared, sealed and impressions, jaw registrations and facebow recordings made with the posterior prototypes maintaining occlusal contacts, vertical dimension and a stable RAP position.

Alternately there are times when the full arch needs to be delivered to the patient at one go. This may be the case when anterior and posterior teeth are linked together in bridgework; there are limited number of appointments, patients are travelling long distances or vertical dimension is being increased on the fully adjustable articulator. This then requires the use of duralay bonnets or copings on all teeth and the use of...
a pickup impression, described later in the series.

Once anterior impressions, jaw registrations and facebow recordings are again taken the prototypes are relined, trimmed, cemented and are adjusted once more.

**Try In Stage**

The anterior restorations are now produced by the technician to the biscuit bake or “try in” stage and are tried in the mouth and the occlusion is adjusted using the mouth as the ultimate articulator.

**Cementation**

As described earlier all articulators have limitations as do the materials and techniques we use. Once upper and lower have been checked and adjusted they are sent back to the technician for glazing and then to the dentist for cementation (Fig. 7). This same sequence is then performed on one side of the mouth with upper and lower posterior and then finally the other side of the mouth.

**Conclusions**

Patients requiring full mouth or partial reconstruction are or have usually been bruxists. As such they may often brux again which is one of the limiting factors to the longevity of our restorations. Careful post restoration occlusal adjustment and refinement are essential, followed by the post restorative occlusal splint for night time wear (Fig. 8). The final smile is shown in Fig 9.30.

**Case Study 2**

This lady was referred with a failing dentition, periodontal disease and TMD dysfunction (Fig. 18). Her examination revealed several hopeless teeth and an almost edge to edge occlusion with limited anterior guidance on her anterior teeth.

In view of the limited guidance available the fully-adjustable articulator was chosen as the posterior determinants of occlusion and posterior guidance (condyles) have a greater bearing on mandibular movements and occlusal anatomy.

Following our standard diagnostic procedures, teeth prepared several teeth were removed (Fig. 12), prototypes fitted (Fig. 13), implants placed and the occlusion was adjusted so that RCP=ICP around RAP. A reorganized approach was used so as to reduce TMD dysfunction and provide the patient with the ideal 3 principles of gnathology (occlusion) as discussed in earlier articles.

The fully-adjustable was programmed by using a facebow (Fig. 14) the cadiax (Denar) (Fig. 15,16) to record intercondylar distance, immediate and progressive side shifts and the shape of the superior and posterior walls of the fossa (Fig 17,18).

The goal of the restoration was to move the maxillary teeth forwards and move the mandibular teeth posteriorly by occlusal adjustment, thereby establishing a deeper overbite and overjet and better anterior guidance (Fig. 19)

The final restoration and smile can be seen in Figs 20, 21.

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- Mr Bradley Moore – Dental Technician, ADS Laboratory, Harrogate

Professor Paul Tipton BDS, MSc, DGDP RCS (UK)  
DENTAL SURGEON  
Visiting Professor of Restorative and Cosmetic Dentistry, City of London Dental School  
www.colds.co.uk

SPECIALIST IN PROSTHODONTICS  
www.drpaultipton.co.uk

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User case study on the new composite bloc BRILLIANT Crios by COLTENE in the fabrication process of a CAD/CAM CEREC crown

By Dr. Med. Dent. Christoph G. Hüskens, Switzerland

The application fields of the new composite bloc include crowns, inlays, onlays and veneers as well as implant-supported crowns. BRILLIANT Crios is a restorative composite bloc for the fabrication of permanent restorations using a CAD/CAM milling process. This is available in Low Translucency (LT) and High Translucency (HT) shades and in sizes 12 and 14. The material properties allow extended preparation possibilities without tapered margins and polishing. In addition, the BRILLIANT Crios bloc can be combined with methacrylate-based composite materials. As part of material sampling, a 49-year-old patient in this case required a newly fabricated restoration after losing a full ceramic crown due to fracture. The patient presented with a missing restoration on tooth 37. The X-ray of the untreated stump (Fig. 1) shows the tooth with a root filling and a composite abutment post (this restoration was performed by a different dentist).

Due to the loss of the full ceramic crown, the patient was willing to have a new restoration fabricated using a CEREC crown made of the new composite-based BRILLIANT Crios (COLTENE) CAD/CAM material. The existing full crown stump required additional preparation to meet the following criteria:

- Minimal occlusal thickness 1.5 mm
- Minimal buccal thickness 0.8 mm
- Minimal cervical thickness 0.8 mm

Occlusal corrections and additional preparation of the transitions to the distal stage were required in this case. The existing deep distal stage on tooth 37 also proved problematic in this situation. We therefore decided on a squeeze bite impression using A-silicone (AFFINIS, COLTENE) as experience has shown direct optical impression taking to be less effective in this situation.

With the aid of the subsequently fabricated plaster model (Fig. 2), it was quite easy to take the optical impression for fabricating the CEREC crown. The BRILLIANT Crios bloc used for milling the full crown is shown on the photo (Fig. 3, shade A2-HT). At the time of preparing this report, there were only two milling programmes available from other manufacturers for processing composite blocs in the CEREC system. In future, there will be an own COLTENE BRILLIANT Crios milling programme by the Sirona company available for use in the CAD software.

In our case we chose the programme GC Ceramat 14. Presently, the Crios bloc can be milled with this Sirona programme. (A further possible programme is the 3M ESPE Lava Ultimate.) The bloc available to us was size 14 in future a size 12 will also be available.

Construction and milling of the crown leads to the following result (Fig. 4). Compared with ceramic materials, for example IPS Empress (Ivoclar Vivadent), the surface structure of the ground crown appears very smooth and the residual lag is smaller after milling. This facilitates its removal with a diamond and nothing remains visible after brief polishing. Polishing can be performed after milling using a conventional rotary polisher or milling paste. The crown in question also passed the check for cracks or material chipping.

A check of the precision fit on the plaster model was good (Figs. 5 + 7), so that we decided to try in and then place the restoration on the patient. To ensure bonding between the mounting material and the milled restoration, use ONE COAT 7 UNIVERSAL bond (COLTENE) only. An etching step with hydrofluoric acid is not necessary. ONE COAT 7 UNIVERSAL was applied to the sandblasted and cleaned mounting area of the restoration and rubbed in for 20 seconds (Fig. 6). Excess adhesive was removed with oil-free compressed air for 5 seconds. Bonding to the tooth substance and/or composite can be carried out using a suitable adhesive. ONE COAT 7 UNIVERSAL Bond is recommended here (procedure according instructions for use). We used this adhesive throughout in our case.

Prior etching of the enamel areas with phosphoric acid is recommend ed and was carried out by us. For bonding of the restoration, a dual-curing resin cement, i.e. DuoCem (COLTENE), or a light-curing composite can be used.

The BRILLIANT Crios crown is now ready for insertion. After bonding our full crown with DuoCem (COLTENE), the edges were cleaned, excess was removed, and then every surface of the restoration was light-cured for 30 seconds (light output 800mW/cm²) and then worked on with a rubber polisher. Milking of the occlusion proved simple and quick. The gloss of the entire composite crown already appeared after a short time. Furthermore, when readjusting the occlusal contact points, we were able to polish immediately, which is much more difficult to do with ceramic, and in particular, with fired crowns.

CAD/CAM restorations made from the new Crios blocs can be characterised, modified or also repaired at any time. Modifications can be made directly without prior treatment. In case of intraoral repairs, the restoration surface is cleaned with cleansing paste and then roughened using a diamond rotary instrument. In both cases, ONE COAT 7 UNIVERSAL is applied to the surface to be treated and cleaned with compressed air for 5 seconds. This is followed by light-curing for 30 seconds (also see instructions for use ONE COAT 7 UNIVERSAL). Colour shades or composites (i.e. BRILLIANT Emax-Clear, COLTENE) is then used afterwards according to the respective manufacturer’s instructions. The material discussed for the fabrication of a CEREC crown is a composite with the following technical features. The flexural strength and the modulus of elasticity are represented in the following graphs.**

For comparison purposes, the ceramic and composite materials of other manufacturers were used. The good flexural strength and the modulus of elasticity, which is similar to dentine, make the material more elastic than ceramic.

Conclusion
Handling is conveniently simple and the clinical result after placement and a few weeks later is very good (Figs. 8 + 9). The following points result in time saving and ‘service benefits’ versus ceramic restorations:

- No firing of the restoration required (i.e. as with IPS e.max CAD).
- Gloss of the composite is easy to achieve, also much easier than with IPS Empress CAD.
- No etching with hydrofluoric acid or silanisation necessary.
- Easy repairs, with composite are easy to make, analogous to a filling.
- Dentin like e-modulus, less brittleness than ceramic.

Long-term studies are necessary to compare the clinical results with ceramic materials. In terms of application, this material proved excellent. The patient was very satisfied with the result and praised the pleasant wear comfort of the composite restoration versus his previous ceramic crown immediately after treatment. Next we would like to attempt restoration of an implant with a single crown.

** Source: www.scientific.coltene.com / 27.08.2015

*Comparisons of filler morphology, mechanical strength and milling characteristics of different CAD/CAM blocs for Sirona inlay/MI XL milling system Camelia Kappmann, Ralf Böhner, Coltène/Whaledent AG, Switzerland. David Zweifel, Private Dental Laboratory, Switzerland.

Fig. 1: Initial situation, single X-ray of tooth 37 with existing root filling and abutment post.
Fig. 2: Plaster model with prepared tooth stump 37.
Fig. 3: Milling bloc BRILLIANT Crios, colour shade A2 HT.
Fig. 4: Milled crown with residual lag (separation point from bloc).
Fig. 5: Crios crown on plaster model.
Fig. 6: ONE COAT 7 UNIVERSAL is applied to the bonding surface of the crown and rubbed in with a dental brush for 20 s.
Fig. 7: The finished BRILLIANT Crios crown on the plaster model in occlusion.
Fig. 8: Clinical situation after placement and polishing.
Fig. 9: Follow-up after 4 weeks.

Dr. Med. Dent. Christoph Hüskens
Herrenwiese 3
9306 Friesdorf / TG
Tel.: +41 71 450 06 70
Fax: +41 71 450 06 72
E-Mail: info@hueskens.ch
www.hueskens.ch

**Graphs:**

- Flexural Strength [Mpa]
- Flexural Modulus [GPa]

- IPS Empress
- VITA Emax
- Lava Ultimate
- ONE COAT 7 (Experimental)
- ONE COAT 7 (Laboratory)
- DuoCem (Experimental)
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By Dr. Andrew Wakefield, UK

Tooth surface loss (TSL) can present in various clinical forms and has a wide range of aetiological factors. Dental erosion, attrition and abrasion are commonly observed by general practitioners, the first two often being seen in younger patients. The superimposition of TSL and malocclusion and/or tooth size and position discrepancies can compound the problem because of the coincident loss of form, function and aesthetics. It can also cause difficulties in planning treatment options, with treatments having to be drawn from multiple disciplines and integrated harmoniously to achieve long-term success. There are also other important issues to consider, treatment of tooth wear involves altering the vertical dimension of occlusion (VDO) and orthodontic treatment alters the planes of the teeth, both often complex, lengthy and high cost procedures in their own right and need to be considered in combination. If the patient is young the cost of ideal treatment can be prohibitive and they will expect longevity from the treatment provided and materials used. These are conflicts which probably will require some form of compromised treatment being embarked upon. It also needs to be borne in mind that the protection of valuable remaining natural tooth tissue is sacrosanct and this puts pressure on the ethical practitioner to be as conservative as possible. It is impossible to be in these cases to ensure that the patient is fully aware of any compromises chosen, the reason behind the decisions made and to involve them in the decision making process itself. Fortunately with the advent of modern hybrid nano-composite materials and innovative orthodontic aligners new techniques, treatment can be designed to be progressive in nature, with patient compliance and success can be achieved at the straight-forward end of the treatment spectrum yet can evolve to encompass more complex restorative work involving invasive reduction or as a default if required. All of these factors had to be considered in the case presented here.

Case Study

The case study illustrates a simple multidisciplinary approach through the use of occlusal therapy combining centric relation direct composite build-up of worn occlusal surfaces of upper and lower molars and premolars to re-establish an acceptable and comfortable VDO. The resulting increase in anterior space was utilized by retracting the spaced, severely worn upper incisors with removable aligners (IAS Inman Aligner and IAS Clear Aligners). This enabled aesthetic restoration without the need for invasive reduction by placing direct labial nano-hybrid composite veneers using a modified (stratified, functional and restorative) clear ma-trix technique described by Alzubair. The labial veneers were made when he was 32 years old, complain- ing of unsightly gaps between his front teeth. There was a relevant family history as he had an identical twin brother who also had a spaced anterior appearance. The patient was presented with a reduced lower face height. Introral examination showed evidence of moderate occlusal wear through to dentine occlusal wear through to dentine occlusion. Intraoral examination showed evidence of moderate occlusal wear through to dentine occlusion. There was no serious frenum interference. The palatal surfaces of the upper incisors and the edges of the lower incisors were reasonably intact and there was a class 1 incisor relationship and no deep bite. The palatal surfaces of all the teeth were unworn and the dentition unrestored. The upper canines were also worn and tilted slightly labially. It was possi- ble to identify the anterolabial side of the mandible, functional contacts on the posterior teeth and an ab- sence of anterior guidance. There were no dietary abnormalities yet neither was he aware of any bruxist activity, although he admitted a severe nail biting habit. A diagnosis of permanent anterior attrition in the presence of unfavourable canine geometry coupled with non-tooth contact parafunction was made. The patient vanished for two years, then returned, eager to commence treat- ment. Study cast comparison was able to demonstrate that there had not been any appreciable change in the clinical situation during that time, possibly attributable to a de- crease in the rate of wear over the surface area of the teeth in contact increase.

Aims of treatment
1. To create a mutually protected occlusion where the anterior teeth include the posterior teeth in all excursive movements of the mandible.
2. To avoid any preparation to the teeth whilst providing treatment according to sound biomechanical principles.
3. To prevent further pathologic wear of all teeth and to cover all exposed dentine.
4. To secure teeth for life the position of the upper incisors after or- thodontic movement.
5. To improve the aesthetics and re- store the patient's confidence in the appearance of his smile.
6. To perform the treatment in a sen- sible time frame and at cost effec- tively as possible.

Treatment plan

Four Phases
1. To establish a stable posterior occlusion at an increased VDO using centric relation and simple direct composites bonded onto the occlusal surfaces as an occlusal deprogram- mar to discourage the anterior slide and allow the mandible to go back.

This will also create space for the orthodontic phase.
2. To retract the upper anterior teeth with removable aligners by a suf- ficient amount to enable their sub- sequent restoration to aesthetically acceptable mesio-distal dimensions and to create interproximal contact, but not so much as to create a problem with soft tissue space.
3. During the patient would be accommo- dating to the new VDO established in phase 1. This will create the need for invasive reduction of the incisors during the next phase.
4. To recreate the incisal anatomical form using direct nano-hybrid composite labial veneers. Precision in form will be assured by using a full clear silicone stent made over a diag- nostic wax-up, with the use of a pre-evalua-tive temporary to assess patient comfort and satisfaction.
5. To retain the teeth in their new positions for life using a palatal wire bonded retainer locked into the com- posite veneers for added flexural strength.

Treatment Progression

The worn dentine and enamel on the occlusal surfaces of the upper and lower molars and premolars was covered and restored to original morphology with acetal etch bond- ing and direct placement of nano- hybrid composite (Venus Pearl - Heraeus Kulzer). Even contacts were established in centric relation (not done definitively as the final adjunc- tion of the occlusal scheme was performed later after the establish- ment of the anterior guidance). The increase in the VDO anteriorly was approximately 2mm. A standard IAS Inman Aligner was fitted to the upper arch with the aim of retracting the incisors. This occurred over a four month period with IAS Clear Aligners used for refinement of position at the end. During this time the patient accom- modated very well to the new VDO. The 3D printed model of the pre- dicted outcome of the orthodontic phase proved doubly useful, first for treatment, but also because a wax-up of the composite veneers could be proven on it in order to see if the treatment prediction would allow the subsequent placement of appropri- ate sized composite veneers which would have interproximal contact. Once the incisors had been retreated to the pre-planned position, an ac- cessorial wax-up was made on a study cast and a full coverage clear silicone matrix, strengthened by mm EBA.

Discussion

The treatment proved to be a suc- cessful, cost effective choice for the patient, primarily due to accurate planning, realistic expectations, good compliance and avoidance of exces- sive laboratory fees. At six month re- call, there is no evidence of marginal breakdown of the composite and the wire is still bonded and preventing relapse. The patient satisfaction is now established and can be copied later if a move to ceramics is ever considered. In this type of additive
case where there is no labial enamel erosion or thinning, ceramics are very much a second choice material since veneering or crowning necessitates enamel preparation to get good margins for the technician to work to in order to avoid over-contouring the restorations. In addition, crowning would have made reliable acid etch bonding of a retention wire impossible on the palatal side and macro-retention grooves in the palatal ceramic surface would necessitate more aggressive palatal-sieial preparation to make sufficient space so as not to weaken the ceramic. Ceramic veneers would fare no better as their palatal margins would be right on the line of the bonded retainer and the bonding footprint for the wire to enamel would be much reduced, both increasing chances of failure.

The flexural strength of an incisor comes primarily from the labial and the palatal enamel which was left intact in this case. High strength composite bonded over both the unprepared labial and palatal enamel surfaces gave an optimal biomechanical result as the flexural strength of the incisors will have been substantially increased. This should reduce the chances of marginal breakdown of the composite in the long term. To further reduce flexural stresses on the upper incisors, the small ledge created by the bonded wire acts as a vertical stop for the lower incisors to occlude against, favourably transmitting forces down the vertical axis of each tooth.

The psychological impact of the treatment has been substantial. There was a total transformation of his appearance and smile, with a noticeable effect upon the patient’s self-confidence. The patient’s identical twin has followed his brother’s treatment closely and it is looking like I might need to repeat the process all over again! If not, we have a good control subject for the future in order to observe what might have happened had my patient not had this treatment.

References

The full list of references available from the publisher.

Andrew Wakefield took “The New Concept of Alignment Bleaching and Bonding course” with IAS Academy in London 2014 and since then has completed over 40 Inman Aligner cases.

Andrew Wakefield BDS LDS RCS is a general dental practitioner working at Apolline House Dental Practice in Northeast London.

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The impact of CAD/CAM on dental practices

Interview with Dr Jonathan L. Ferencz who shares his experiences with CAD/CAM technology in dental practice

By 3Shape

In what way has CAD/CAM made a major difference to your dental practice and patients?

The first time I really experienced the difference CAD/CAM has made for my patients was with one patient, a very successful partner at a well-known architectural firm. He came in on a Friday afternoon around 2 p.m. and said, “John, I’m very sorry to bother you but the crown on my front tooth just cracked. I’ve got a really important dinner tonight with clients and I’m going away on a 4 day ski trip with my family. If I don’t make the trip, I’m in trouble. If you made me a temporary, I would be most appreciative.”

His crown was in two pieces. I told him that I believed that we could do more than just make him a temporary. I would recommend scheduling a crown, I would recommend scheduling a crown. The patient would agree because it is such a convincing demonstration. We are helping patients to codegnose.

So the scan serves to educate and, in a way, empower the patient?

The best patient is an educated patient, but the communication or educational process has to be quick and intuitive. It cannot entail capturing an image, loading it onto the computer, locating the image, etc. So now, rather than taking out the camera and iPad, I reach for the TRIOS. The idea of having a scanner in every room and having a hygienist pick up the scanner is becoming a reality in our practice.

Do you envision scanning being a routine part of a patient visit?

There is so much information that I can now see from looking at the enlarged scan. It is like looking through my loupe that gives four and a half times the magnification. With a scan, I can expand the image on my screen to be as large as I like. Basically, I can imagine us using a scanner for not just some patients, but EVERY patient. I definitely see a day when we scan each patient as part of our routine.

Do you think that one day decisions on treatment could be made by just reviewing digital scans?

Do you mean do I imagine a day when I could be sitting in my beach house in the Bahamas leafing through scans on my laptop? It would be nice, but it will not happen because so much of our success is based on relationships and personal contact.

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The right system for the demands and needs of dentists and patients

By Dental Tribune Siona

CEREC satisfies an impressive scope of clinical demands. And now patients can enjoy a full contour zirconia restoration within one session – a material that is known for tremendous strength and biocompatibility, and which offers various clinical workflow advantages for practitioners.

Bensheim/Salzburg: For more than 30 years, CEREC has been offering patients a functional and aesthetic dentistry. Even now, the process continues. During that time CEREC has continuously added new materials to the system including, PFMAs, composites, feldspar and lithium disilicate ceramics. Adding full contour zirconia crowns and small bridges to the portfolio completes CEREC’s range of prosthetic indications. Roddy MacLeod, Group Vice President CAD/CAM at Dental Tribune Siona, explains what Dentsply Sirona has to offer.

Mr. MacLeod, why are you now also offering full contour zirconia for the production of chairside crowns and bridges?

Roddy MacLeod: We have noticed two megatrends in dentistry: the continued adoption of digital dentistry (including CEREC) and dentists’ rapid adoption of full contour zirconia, particularly for posterior indications where strength is the priority. As the market for digital technology, we have naturally combined these two trends. The result is the new CEREC Zirconia workflow. We believe that adding full contour zirconia to the existing materials available within CEREC gives the clinician the maximum flexibility to handle nearly any clinical situation. And to be able to do it all in a single visit certainly adds patient and practice benefits.

What is special about this workflow?

Zirconia has been used in dentistry for close to 20 years so the material is familiar to clinicians. The innovation now is delivering full contour zirconia in a single visit. To do this, we have developed the CEREC Sirona furnace. Due to its extremely fast sintering speed, it enables dentists to fabricate crowns and small bridges made of zirconia inside a single visit. In addition to fast sintering, glazing is also possible with this furnace – a first in the market. The short workflow is both convenient and economical.

Our CEREC Zirconia blocks are available in 10 shades on the basis of the Vita Classic Shade Guide®. All our CEREC milling units are now wet and dry milling capable. Dry milling is the preferred method for zirconia since it eliminates a drying step before sintering, saving us time. The whole process is guided by our new software CEREC 4.41 which makes it very easy even for beginners since the sintering and glazing information is automatically transferred to the furnace by the software. The staff does not need to program the furnace – this is all taken care of in the software. We are convinced that this workflow is the logical next addition to our current material setup.

What does that mean for patients?

Like before with CEREC, patients get longstanding, high-quality, affordable care in a single session. But now with full contour zirconia we have expanded our indications into cases where strength of the material is paramount.

In our experience, patients really appreciate single visit treatment. In a recent US survey, for example, showed that patients recommend the CEREC dentist 34 percent more often than patients whose dentist does not work with CEREC. As advantages they mention the time savings, the reduced number of injections and the elimination of the temporary material and temporaries in Germany. According to another patient survey, the majority of patients would be willing to pay more for treatment in one session, and two thirds of respondents would be willing to travel further (even for change dentists) in exchange for that benefit.

By now expanding CEREC’s indication with full contour zirconia, even more patients can experience the benefits of single visit dentistry.

What do you think the advantages for dentists are?

For dentists, full contour zirconia is the first material acting as a good substitute for the industry standard PFM and even full cast restorations. The reasons the material is incredibly strong and, from a mechanical point of view, sufficiently capable of bearing clinical stress. Full contour zirconia also means we don’t have problems with chipping, which can be an issue with conventional multilayered prosthetics. Moreover, the material is biocompatible and less expensive to manufacture. The biggest advantage for dentists is reliability. The material is nearly indestructible and they don’t need to change their tooth preparation technique or cementing protocol. Zirconia is adding to our already excellent portfolio of materials, however with a very crucial role. It has abundant strength and is well suited for those cases where durability and longevity are the primary concerns.

Due to its strength, zirconia is often said to be problematic with regard to wear of the antagonist. What role does this play?

Yes, it is kind of counter-intuitive. On the one hand you have this incredibly strong material and we automatically think it must be abrasive against the antagonist. In fact, we have learned through numerous studies that the abrasion is not caused by the hardness, but primarily by the surface roughness. This means the smoother the surface, the less the abrasion. It has been suggested that a polished full contour zirconia crown is less abrasive than a crown made of other materials. Consequently, even bruxism is not a contraindication for the use of zirconia.

How does full contour zirconia behave in terms of accuracy of fit?

Very positively. Since the zirconia blocks are presintered, the material is circa 25 percent larger than in the final, full sintered state. Because the finisher 10 milling instrument is relatively smaller than normal grinding burs, the margins, lumen and occlusal are all milled with the greatest detail. And, since there is no facing on a metal framework there are no overcontoured margins. Overall we see superb fit coming from full contour zirconia restorations and we’re excited to bring these benefits chairside.

References

By Dental Tribune MEA/CAPP Events

DUBAI, UAE: By Dental Tribune MEA/CAPP Events in Aesthetic Dentistry in Dubai Beach Hotel.

Dubai Dental Week between 01-07 November 2016 at Jumeirah All below mentioned hands-on courses are part of the annual bringing their knowledge to the next level.

8. Modern Preparation and Cementation for Inlays, Onlays Dr. George Sanoop, UAE 03 November 2016, 09:00 - 18:00
9. Tips and Tricks of non – Surgical Powered Instrumentation Prof. Angelo Putignano, Italy 04 November 2016, 09:00 - 18:00
10. The Style Italiano Approach to Veneers Dr. James Russell, UK & Prof. James Prichard, UK 05 November 2016, 09:00 - 18:00
11. Indirect Veneers Dr. Eduardo Mahn, Chile 06 November 2016, 09:00 - 18:30
12. Veneers Vs Crowns: the Challenge in Smile Design Dr. George Sanoop, UAE 07 November 2016, 09:00 - 18:00
13. Indirect Inlays, Onlays & Partial Crowns Dr. Eduardo Mahn, Chile 07 November 2016, 09:00 - 18:30
14. Practical Clinical Orthodontics Fellowship Module 1 Dr. Eduardo Mahn, Chile 07-12 November 2016, 08:00 - 16:00

Accredited hands-on courses in Aesthetic Dentistry in Dubai

DUBAI, UAE: Centre for Advanced Professional Practices (CAPP Events) announces new courses in Aesthetic Dentistry in November 2016. The courses are aimed at dental professionals who want to further their education and to receive additional CE Credit Hours alongside bringing their knowledge to the next level.

All below mentioned hands-on courses are part of the annual Dubai Dental Week between 01-07 November 2016 at Jumeirah Beach Hotel.

The following hands-on courses will be available in Dubai between 05 November 2016 at Jumeirah Beach Hotel:

1. Digital Smile Design Part 1 & 2 01-02 November 2016, 09:00 - 18:30 Dr. Eduardo Mahn, Chile
2. Smile Design & Aesthetic Restorative Options Part 1 & 2 03-05 November 2016, 09:00 - 18:30 Prof. Brian Millar & Mr. Bill Sharpeing, UK
4. The Style Italiano Approach to Veneers 03 November 2016, 09:00 - 18:00 Prof. Angelo Putignano, Italy
5. Non-Prep Veneers and Modified Non-Prep Veneers 03 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
6. Direct Veneers: How to Create the Right Shape and Texture and Achieve the Desire Shade 04 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
7. Tips and Tricks of non - Surgical Powered Instrumentation and Polishing to Brighten Smile 04 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
8. Modern Preparation and Cementation for Inlays, Onlays and Occlusal Veneers 05 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
9. Advanced Composite Course (Closing, Dacromers and Correction of Pig Laterals) 06 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
10. The New Concept of Alignment, Bleaching and Bonding (Ismann Aligner Certification) 06 November 2016, 09:00 - 18:00 Dr. Tim Qureshi, U.A.E
11. Indirect Veneers 06 November 2016, 09:00 - 18:30 Dr. Munir Silwadi, UAE
12. Veneers Vs Crowns: the Challenge in Smile Design 07 November 2016, 09:00 - 18:00 Dr. Eduardo Mahn, Chile
13. Indirect Inlays, Onlays & Partial Crowns 07 November 2016, 09:00 - 18:30 Dr. Munir Silwadi, UAE
14. Practical Clinical Orthodontics Fellowship Module 1 07-12 November 2016, 08:00 - 16:00 Dr. Dubravko Perina, USA

Upon completion of the hands-on courses delegates will receive accreditations from ADA C.R.F., Health Authority - Abu Dhabi (HAAD) and Dubai Health Authority (DHA).

Contact
The above mentioned courses have limited spaces available and all interested participants are requested to contact CAPP Events to reserve their places or visit www.cappmea.com/aesthetic2016
British Academy of Restorative Dentistry (BARD) Conference 2016 Review

By Dr Nisha Siosio (BARD), UK

The British Academy of Restorative Dentistry (BARD) is an organisation whose core purpose is the education of dental clinicians, aiding in the improvement of Oral Health by offering them a flexible learning pathway.

These pathways can lead to MRD via PG certificate, Diploma, MSc and MCIndent. Members are encouraged and given the opportunity to improve their skills in all aspects of dentistry from the very basic principles to advanced treatments and concepts. Our members are not limited just to dentists, dental technicians are also part of the BARD family.

The BARD Conference 2016 was held at the Forest of Arden Marriott Hotel & Country Club on 3rd and 4th June. Friday (the first day of the event) was kicked off by an address from The President, Professor Paul Tipton. The Saturday evening started with a drinks reception where everyone was amazed and baffled by an illusionist, there was a few “how did he guess that, just by looking at me?” comments. This reception was followed by a Charity dinner support- ing The Vine Trust: Against Hope Programme which looks towards promoting health and dental care in Peru, supported by volunteers from the medical world. A considerable sum was raised via auction of various items memorabilia and an unconventional game of ‘Heads and Tails’. Followed by various unorthodox moves on the dance floor. The BARD family is growing year by year and the members are friendly and approachable creating a good network of clinicians, making social events like this more enjoyable.

After the success of the first day the second day concentrated more on new ideas and materials, starting with a look into the digital world with a talk on Cerec by Julian Caplan. Carlos-Mauria Guisand travelled from South Africa to talk about high performance polymers in the MALO CLinica approach. Whereas Aled Siwery gave the delegates a rare chance to meet ‘The Elf’ from the Elf on the Shelf. The patient was delighted about his new teeth and the Elf even performed a little magic to entertain the audience.

The conference ended with a talk on Cerec by Julian Caplan. The BARD conference is intended to be more than just an educational experience. It is also designed to be unforgettable and enjoyable, especially when it comes to social events. The Saturday evening started with a drinks reception where everyone was amazed and baffled by an illusionist. There was a few “how did he guess that, just by looking at me?” comments. This reception was followed by a Charity dinner supporting The Vine Trust: Against Hope Programme which looks towards promoting health and dental care in Peru, supported by volunteers from the medical world. A considerable sum was raised via auction of various items memorabilia and an unconventional game of ‘Heads and Tails’. Followed by various unorthodox moves on the dance floor. The BARD family is growing year by year and the members are friendly and approachable creating a good network of clinicians, making social events like this more enjoyable.

Sponsors of the event made a fantastic contribution, the response and support exceeded expectations. There were an array of exhibitors offering the latest in materials, products and innovative technology designed in making the clinical practice more economical, effective and efficient. The exhibits tied in with the lecture topics making their presence more valuable. The focal point was the ‘Booths’ stand where there were demonstrations of a new non-metal Polymer PEEK used for fixed/removable dental prostheses. There was allocated time during the extended breaks and lunch for delegates to visit the exhibitors. Looking over the two Sponsor’s area during this time, there was a buzz of activity, with discussions of Implants (Osstem, Nobel Biocare, Arton System/ Biomer), dental products/equipment (DMG, NSK, Henry Schein, Ivoclar Vivadent, Optident, GC, Dentistry in America, Dental Air) as well as Lasers (Espratic and LumenHaze). Over at the Tipton Training Booth, attendees could sign up to a range of theory and hands-on courses. Demonstrations of digital scanning and restoration production could be seen with Cerec. Alport & Vincent, core-3D and Swift dental talked about and showed the good quality work they produce, which gave the delegates a rare chance to discuss different approaches and treatments with lab technicians on a face to face basis. Braemar Finance provided their valuable knowledge in all things money/investment. There were dental experts from The Luke Barnett Centre for Cosmetic Dentistry, an opportunity to talk with Porsche and sit in a Tesla. All in All there were products and services to suit everyones dental and some non-dental needs.

The weekend catered for a broad spectrum and the feedback was positive. Delegates were inspired to go back to their own surgeries and incorporate what they had learnt, with a big buzz of interest in the next conference. Preparations and talks have already started and after the hugely positive remarks from this year’s conference, the goal being to keep up the high standard and wide range of topics, exhibitors and speakers as well as another superb social event.

The next BARD Conference is looking to be held at The Belfry Hotel and Resort in the Spring/Summer of 2017. Go to www.bard.uk.com for further information/details.
in relation to the placement of all-ceramic restorations.

**Analogue or digital, that is the question**

Analogue and digital techniques were at the centre of many presentations and these techniques were weighed up against each other. The general consensus was that the future of dentistry would be significantly characterized by efficient and yet high-quality digital esthetics, while manual techniques would be associated with achieving the highest degree of naturalness. Dedication to the patient, paired with intuition and creative skills, forms the foundation of successful treatment, regardless of whether digital or analogue methods are used.

**Renowned speakers**

Presentations were delivered by Prof. Dr Sidney Kina (Brazil), Prof. Dr Hor- rian Beuer, Prof. Dr Daniel Edelhoff, Dr Andreas Kushad and Oliver Brix (Germany), Dr Mauro Fradoni and Michele Temperani (Italy), Dr Marko Jakovac (Croatia), Dr João Fonseca (Portugal), Dr Rafael Pitolero Sande and August Bragaeara (Spain) and Dr Ronoldo Hirata and Lee Culp (USA).

**Experts Circle and award ceremony**

Seventeen concepts and trends were also discussed the day before the conference. At an “Experts Circle”, select speakers delivered short presentations and took part in a panel discussion, giving 300 attentive participants insights into the future of digital dentistry. This was followed by the announcement of the winners of the “IPS e.max Smile Award.”

Next Symposium to be held in Rome "Ivoclar Vivadent's" weekend event in Madrid provided the attendees with plenty to talk about and they were invited to continue their conversations at the company’s gala dinner held under the theme of “Ivoclar Vivadent & Friends”. Bringing the conference to a close, Sonja Gömara said that the dialogue on dental esthetics would be continued at the 4th International Expert Symposium in Rome in 2018.

**Opening speech by Robert Ganley, CEO Ivoclar Vivadent AG**

The dialogue on dental esthetics would be continued at the 4th International Expert Symposium in Rome in 2018.

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

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**Thirty-three from 18 countries:**

**International summit for Dentsply Sirona treatment center experts**

**By Dentsply Sirona**

Dentsply Sirona treatment centers must meet the needs of different users all around the world. In order to achieve an in-depth understanding of these needs and use them as the basis for further development, the company invited 33 selected users from 18 countries to an exclusive event in Bensheim. It provided the experts for the first time, with a special platform to exchange experiences and opinions, both with Dentsply Sirona and each other.

**Bensheim/Salzburg:** At Dentsply Sirona, the definition of quality comprises the designing of products according to users’ wishes and needs, which may differ from country to country. This is why international dentists are becoming increasingly involved in product development processes. "Listening" was therefore the motto of the first global Key User Summit, a three-day symposium for selected users of Dentsply Sirona treatment centers. From May 30 to June 1, the 33 dentists met at the German production site in Bensheim for an attractive program that included exchanging experiences, further development and training.

**Ergonomic treatments**

An important aspect of the symposium was the working in ergonomic treatment positions. Thomas Senghaas, a dentist from Hamburg, clearly demonstrated how the new generation of treatment centers can support dentists while they work. “Up to now, I was not aware of these ergonomic training courses, so this was a very valuable input for me,” said Dr. Michael Panthebey from Calgary, Canada. The range of topics also included brief seminars on integration, the digital workflow and infection control as well as an entertaining coaching presentation on communicating with colleagues and patients given by prominent keynote speaker Georg Woschnecht from Vienna.

“...It’s important for us to understand the details of the clinical challenges dentists face,” summarized Mari- angeles Dr Nata, product manager for Treatment Centres and organizer of the first summit. “This is why talking to dentists from different countries is so important because this is the only way we can develop products that make dental treatments better, faster and safer.”

**Important exchange of experiences among users**

The participants were equally enthusiastic. Dr Sun Rui Hong, from China said, “The dental world was so much bigger. It is vital to exchange experiences with colleagues as this results in a far better understanding of how we can make the best use of our Dentsply Sirona equipment.” All of the participants praised the sense of community. Rui Hong called it “a new family.”

Dentsply Sirona provided the high-quality and extensive transfer of knowledge. The participants gained practical insights into the treatment center creation process during a tour of the Dentsply Sirona production halls. The guests from around the world also enjoyed a tour of the historical city of Heidelberg, including a visit to the castle.

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**Panel discussion at the Experts Circle held the day before the Symposium**

**About 1000 people attended the Symposium**

**Opening speech by Robert Ganley, CEO Ivoclar Vivadent AG**

**Panel discussion at the Experts Circle held the day before the Symposium**

**See the latest from Crystal Sponsor at DFCIC in Dubai**

**04-05 November 2016**


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**Ivoclar Vivadent AG**

Benderviertel 2
9494 Schaan, Liechtenstein

www.ivoclarvivadent.com