The Palace Hotel Downtown Dubai, UAE

By Centre For Advanced Professional Practises (CAPP)

Dubai, UAE: CAPP has the pleasure to welcome you to a Dubai dental meeting from the upper echelon in Dental Medicine at the spectacular The Palace Hotel Downtown Dubai. The full solution for clinical and Lab restorations, designed for beginners, advanced and future CEREC users will get together the ‘creme de la creme’ in Prosthodontics, Implantology, Aesthetics and digital dentistry. An event, first of its kind taking place in the heart of Dubai featuring exceptional panelists and trainers, rounding up with an unforgettable social program.

The event featuring Dentists and Dental Technicians - beginners, advanced and future CEREC users who are just considering this revolutionary system or for the professionals who would like to keep up with latest trends in high tech dentistry. The two days will cover a Panel Show on 12th of September and Table Clinic Presentations on 11, 12 and 15th September 2014.

The panel show on 12th September, known as CEREC Desert Fest will look at the networks, which exist within the digital dental world. The five panelists will have debates after each presentation amongst each other with their vast knowledge will show how fast the digital technology and science joined up unexpectedly in dentistry, faster than we ever imagined. All panelists will have debates after each presentation amongst each other.

Dr. Aisha Sultan Al Suwaidi officially elected to lead the APDF for 2014-2015

By Emirates Dental Society

Dubai, UAE: In the presence of His Excellency, the Minister of Health, Dr. Abdulrahman Al Owais, Dr. Aisha Sultan Al Suwaidi, Head of Dental Services in Ministry of Health and Head of Dental Chapter of Emirates Medical Association, has been officially elected to lead the Asian Pacific Dental Federation for the year 2014-2015. Representatives of 52 countries attended the ceremony. Accordingly, the United Arab Emirates has hosted the Asian Pacific Dental Congress from 17-19th June 2014, with pre-congress workshop and a very rich scientific program.

Participants Feedback
We received great feedback from participants attending the conference, which can all be summarized into a message:

Over 1,580 dental professionals attended the 9th CAD/CAM & Digital Dentistry Int’l Conference

By Dental Tribune MEA

Dubai, UAE: The 9th edition of the CAD/CAM & Digital Dentistry International Conference gathered 1,580 dental professionals, leading industrial players and visitors from 37 countries at the Jumeirah Beach Hotel on 09-10 May 2014 for the biggest Digital Dentistry Show.

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Social gathering at 9th CAD/CAM & Digital Dentistry Int’l Conference on 09-10 May 2014

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New treatment center from Sirona: Quality “made in Germany” at an attractive price

By Dental Tribune MEA

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Participants Feedback
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Dental Wings integrates Neodent implants into guided surgery software

By Dental Tribune International

CURIATIBA, Brazil/ MONTREAL, Canada: Dental Wings, international provider of CAD/CAM and guided surgery solutions for dental laboratories and clinics, has announced that it has integrated products from Brazilian implant manufacturer Neodent into its coDiagnostiX software. Through the collaboration, users of the guided surgery software will gain access to Neodent’s implant and sleeve system, consisting of two implant series, three sleeves and one fixation pin.

Neodent is one of the leading dental implant companies in Latin America and targets the nonpremium segment in the implant market, thus making its products accessible to a broader population. According to Matthias Schupp, Neodent's executive vice president of sales and marketing, the company has sold over 5 million implants to about 50,000 clinicians worldwide already.

Frank Stockmann, vice president of guided surgery at Dental Wings, said that his company is pleased to be able to give its customers access to products from one of the most rapidly expanding implant companies in the world through its coDiagnostiX software. “We are confident that Neodent customers will enjoy the benefits of a sophisticated and user-friendly guided surgery solution,” he added.

Neodent was founded in 1993 and was the first Brazilian company in the implant segment to receive certification from the Brazilian ministry of health. Headquartered in Curitiba in Brazil, the company runs subsidiaries in the U.S., Mexico, Portugal and Spain. Today, Neodent employs more than 900 people, operates more than ten branches in Brazil and works with a wide network of distributors.

In addition to coDiagnostiX, which was acquired from Straumann in 2015, Dental Wings offers an open CAD/CAM platform called DWOS, both of which are aimed at improving the quality of restorations and dental treatment, and increasing the productivity of laboratories and clinicians. The company announced that coDiagnostiX will be fully integrated with the DWOS platform by fall 2014.
CEREC Desert Fest

The Palace Hotel Downtown
12-13 September 2014
Dubai, UAE
www.cerecfest.cappmea.com
By Sirona

ENSHEIM, Germany: On May 12, Sirona, the global market and technology leader in the dental industry, has introduced a new treatment center: INTEGO offers top quality and flexible configuration options at an attractive price.

All dentists around the world share a common wish: To provide their patients with the best possible treatment. That’s why they ideally want to work with high-quality devices and systems which offer optimum support for their day-to-day work. The treatment center plays a key role here; after all, this is where they spend a large part of their working day. As the global innovation and technology leader in the dental industry, Sirona has developed a new product generation for the treatment center division. This new product line can be very flexibly configured to suit the needs of various practitioners – it’s awesome! The Omnicon from Sirona is by far the greatest innovation and technological leap in this one day lecture/hands-on program which offers optimum support for their day-to-day work.

Dr. Todd Ehrlich, USA

other on stage. Open discussions with CEREC followers from the public will be made available through an internet feed and the audience onsite in Dubai.

Let’s look into what are our panelists are preparing for the delegates. Dr. Todd Ehrlich, will be giving a lecture for a long time, said “It is truly powerful this idea of a one visit dentistry – it’s awesome! The Omnicon from Sirona is by far the greatest invention in dentistry today. I love using this thing every single day.” And his suggestion: “Make sure you get a good demo of it – you are going to be fascinated how easy this camera really works. You can see his whole practical presentation about what the Omnicon can do on www.cerecfest.cappmea.com. Dr. Bernd Reiss, teacher at the German Institute for Advanced Dental Studies since 1987 he lectured at more than 400 seminars, congresses and workshops in more than 40 different countries worldwide. At CEREC Desert Fest he will bring a new Dimension into CAD CAM Dentistry with CEREC 2014. Clinical possibilities in the Dental practice, integration of different digital systems and integration of time in different ways will bring you to the question: What can we expect?

“I am honored to be a part of such a fine group of clinicians! This looks like a fabulous event!” - Dr. Todd Ehrlich, USA

Dr. Vasquez develops his passion for CAD-CAM dentistry leading him to be a trainer for Patterson Dental, and Sirona Dental Latin America. “The Evolution of Simplicity with CEREC AC...New Possibilities No Alternative” - The only limitation you have today with the CEREC systems is your own imagination... The evolution of CEREC technology has become simple, accurate, and user friendly. With the CEREC Omnicam, the digital imprisonment has recreated dentistry to become simple, accurate, and cost effective. Who would have ever imagined that through-out the years dental techniques would become extremely high tech and evolve from the simple onlay restoration to now the most sophisticated implant restorations being created?

“The Omnicon Rocks!” - Dr. Todd Ehrlich

Dr. Vasquez has hosted seminars on CEREC, Omnicam and in re- storative process, integration of CEREC / Galileos and “Speaking the same language with Sirona Connect”. Dr. Vasquez is an American Academy of Esthetic Dentistry (AAED). Will talk about the current aspect in contemporary implant dentistry. He has many publications focusing on implant therapy and basic science in the most respected journals in these fields. His research work about the discovery of biological aging and rejuvenation of implant surfaces was honored by listing under “Images of the Year” by Biomaterials journal. CEREC meets SMILE DESIGN
14–15 November 2014
Jumeirah Beach Hotel
Dubai UAE

6th Dental - Facial Cosmetic International Conference
Joint Meeting with
3rd Global Conference of American Academy of Implant Dentistry

Direct Veneers; The Shades Dilemma
Dr. Eduardo Mahn, Chile

Face & Smile Analysis No Software Solution, Clinical Photography
Dr. Eduardo Mahn, Chile

Indirect Veneers
Tutor: Dr. Munir Silwadi

Periodontal Instrumentation
Prof. Mary Rose Pincelli Boglione, Italy

Veneers vs. Crowns The Challenge In Smile Design
Dr. Eduardo Mahn, Chile

www.cappmea.com/aesthetic2014
Dental Photography Part II: Protocol for shade taking and communication with the lab

By Dr. Eduardo Mahn, DDS, DMD, PhD
Universidad de los Andes Clínica CPO Santiago, Chile

Part 1 of this article discussed the basic equipment that is necessary for dental photography. In addition, a few examples of pictures taken that were better than others for the same situation were also shown. In part II, a protocol of taking digital photographs will be presented which has been of great help to the author, specifically in achieving the right shade and value. It is based on standardized pictures that should be taken in order to show certain individual characteristics of the patient to be treated and standardized comparisons of the shade tabs and the natural tooth structures in order to give the technician more information than the usual A2 or A4 written on a piece of paper.

Introduction - Shade-taking
The evolution in digital photography and the possibility of taking pictures and evaluating them immediately as well as almost instantaneous access of the information by someone located off-site in the same city or even another country, we have a great resource available that can help us achieve the right shade of our indirect restorations. Standardized high quality photographs are also an advantage when the shade is taken for a direct restoration - for example a direct veneer or a class IV.

In this case a picture can really help the clinician identify the opalescent areas and the halo effect of the adjacent tooth, before re-doing the restoration (Figure 1).

Dental shade taking at the dental lab or in the dental practice can be frustrating as most dentists do not really know how to use the shade guide when they finish their undergraduate studies. In particular, if work has to be redone, because the clinician does not know what was done incorrectly wrong or how to obtain the right shade. Dental shade guides are used by dentists, dental assistants and dental laboratory technicians to communicate proper tooth color, translucency, and brightness.

However, many variables come into play no matter what system you decide to use. Before even starting to think about shade taking, you need to answer an extremely simple and obvious question: are you using exactly the same shade system as the lab? There are many shade taking systems available, with variations in the shades between different manufacturers, even though conceptually the concept may be the same. They are also manufactured from different materials with different optical properties. For example, some labs are familiar with the Chromascope system, most of the dentists with the A.D shade guide, while the younger generation of dentists learned with the 3D master shade guide.

The role of a shade guide is to help standardize the perception and so facilitate the communication in order to match the shade of the natural teeth with the required restoration.

Shade guides are not a perfect representation of what is actually seen but are close enough to identify a range of tooth colors. Eyes are still the best tool for identifying and communicating the correct shade of the natural tooth. Tooth color can be referred to as being an A1 to B2, or between a B2 and B3 when describing the respective tooth closest to the one being restored. It is always best to get the patient to the dental lab and have a custom shade taken, if possible, particularly for the more difficult cases. However, in most of the cases this is not possible, due to unwillingness of the patient to spend time going to the lab, or the location of the lab not being in close proximity.

The use of shade guides should be used in conjunction with digital photography. If no direct light is projected to the mouth and the shade tabs, the main light source will be the flash of the camera, which has always the same temperature (between 55000K and 60000K) and can be used by the dentist in the clinic and the technician in the lab. When pictures are taken under different light conditions, the variations between the same shades can be considerable.

A good photo for both the dentist and the lab technician can be obtained so that they both are looking at the tooth color under the same conditions. When the technician compares the color of the restoration with the shade guide, he can take a picture that will create an image to be used as a comparison under the same light conditions as the natural teeth in the image sent from the technician.

Due to the flash of the camera, the technician can then whether the restorations looks similar to the original shade tab sent by the dentist.

Shade Color Basics
Color has two basic characteristics: Hue and Chroma. Natural tooth color also displays these same characteristics. Hue can be defined as the actual color such, as yellow or gray. Chroma is the intensity of that color and is sometimes called saturation. Hue and Chroma are typically represented by a shade guide in terms of which color comes closest to the actual tooth being measured. For example, shade guides will have a range of A1 to A4 or B1 to B4, plus C and D shades. (Figure 17) Value is the brightness of a tooth. It is therefore given a separate classification than color when communicating shade.

Teeth also exhibit a halation effect and can be measured by how much light can pass through different sections of a tooth. Shade taking problems arise because most natural teeth are not an exact match to a shade guide, nor do shade guides adequately express tooth translucency and value. In many cases, when it is decided that a tooth has a certain shade, the Hue and the Chroma are communicated to the lab, but never the value and this is where the problems arise. Very few crowns are accepted if the value is incorrect, while moderate inaccuracies in hue and chroma may go unnoticed. For this reason the shade taking protocol needs to be based on information being communicated to the lab in the most accurate way possible.

Before the shade is taken conventionally or a picture is taken for the same purpose, several factors need to be controlled:

1. If patient is wearing bright colored clothing, drape him or her with a neutral colored cover.
2. Have patient remove lipstick and other make-up, as well as eyewear.
3. Teeth must have been cleaned.
4. The shade taking should then be done at the beginning of the appointment, so that teeth are moist (the patient must lick their teeth constantly to keep them moist) and your eyes fresh.
5. The operatory light should be turned off or pointed in another direction. It is not necessary for the patient.
6. The room light conditions should have a temperature of 5500-6500° K. (when pictures are taken, these parameters are no longer relevant, because the light of the flash will prevail). 7. Obtain value levels by squinting. 8. Women are far less likely to be color blind than men, so it is a good idea to have your assistant in shade taking decisions (assuming that the assistant is a woman and not color blind).

In Part 1 of this article, the necessary equipment and accessories for adequate introral pictures was discussed. Please refer to it for the necessary information if you are planning to purchase adequate equipment.

Once the patient is ready, place the shade tabs in front of the anterior teeth, before starting the treatment itself. The same applies for pictures with lips. It is important to repeat the same protocol introrally, as well as extrorally, because of the large influence of the reds in shade taking. (Figures 7-8) In addition to the points presented before, the following should be considered initially when photographs are taken: (Figures 9 - 15)

1. Avoid the large reflection areas of the mental parts of the shade guide as they reduce the detail of the pictures
2. Take pictures using two different shade tabs
3. The surface of the shade tab must be at exactly the same level of the buccal surface of the teeth, as even minor discrepancies can make a tooth look darker or brighter due to the power of the flash)
4. The incisal edge of the tabs should be at roughly 1mm distance from the natural teeth, or as close as possible, without touching each other.
5. Take pictures with and without contrasters. This is especially relevant in young teeth with opalescent areas and clear halo effects.

6. In cases where an all-ceramic restoration is planned, the shade of the stump should also be given to the lab, using a special shade guide, such as the natural die material shade guide of the IPS e.max system (Ivoclar Vivadent, Liechtenstein). 7. Consider taking some pictures in black and white. A black and white photograph will help show the value of the shade tab in relation to the patient’s tooth. (Figure 14)

Clinical case
A 27-year-old female patient came to our office unsatisfied with the appearance of her 2 anterior pfm crowns (Figure 15). The value of both crowns clearly did not match the other teeth and her smile line unfortunately also showed the discolored cervical part of tooth II (Figure 16).

An overview picture of the stump shade was taken with a reference (Figure 17a). This reference should ideally be the natural die material A-D shade guide (Figure 15d). Both shade guides, the natural die material guide and the A-D shade guide have some similarities, for example, as a rule of thumb an ND2 looks quite similar to an A2 (Figure 17b). Obviously, the natural die material shade guide has shades that are dark, since its purpose is to correlate to artificially discolored stump and not to recreate natural shades as the A-D shade guide (Figures 17c and 17d). Internal bleaching of the stump was then performed with 55% hydrogen peroxide (Figure 18) in two sessions of 20 minutes each. Figure 19 shows the final result after the composite build-up with Excite DSC and Multilayer flow (Ivoclar Vivadent, Liechtenstein).

Acknowledgements
The author would like to thank CDT Juergen Seger and Volker Brosch for their valuable technical work presented in this article.

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mCME 7
The diode laser as an electrosurgery replacement

By Glenn A. van As, BSc, DMD

I
t 2008, Dr. Gordon Christensen wrote an article in JADA comparing the soft tissue cutting abilities of diode lasers to those of electrosurgery (radiosurgery) units. In comparing these two technologies against each other, he found that both dental lasers and the less expensive electrosurgery units have advantages and disadvantages, and he summarized with several key points:

1. Although there was considerable overlap in their uses and both technologies were effective, Christensen found that diode lasers were able to be used around metal (aluminum and gold) as well as with dental amalgam.

2. He stated that lasers did not harm dental hard tissues (bone) or soft tissues (pulp), and that the clinician could use the laser with less anesthetic, and finally he mentioned that lasers were antimicrobial (antibacterial).

3. The acceptance and use of lasers, especially the diode laser, was increasing in dentistry, and that lasers attract patients because of their recognized and accepted role within the field of medicine (LASIK eye surgery).

4. Electrosurgery units were “less expensive than the least expensive diode lasers” and he mentioned that lasers were purchased for less than $2,500.

5. The laser’s availability and range of $10,000 to $15,000, they have a small footprint, are relatively inexpensive, require no safety glasses for eye protection if they are within the nominal hazardous zone (NOHZ) during laser operation. This zone is most often between 3 and 7 feet, but some lasers can have extended NOHZ ranges of 40 feet.

6. Orthodontic patients will often exhibit gingival hyperplasia when brackets that can make it difficult to work on them. This overgrowth of tissue can be due to poor oral hygiene, space-closing mechanics, excess cement or a combination of factors. The diode laser can be used for gingivectomy procedures to safely remove and recontour the excess tissue and healing can be remarkable in a very short period of time (Figs. 2–4).

7. Ability to work around dental implants safely

- Diode lasers in the range of 810-1,064 nm are well absorbed in hemoglobin, melanin (pigment) and to some degree water (Fig. 1). These mid infrared tissue wavelengths in the absorption spectrum offer the dental clinician the ability to ablate soft tissues precisely while controlling the depth of treatment with the diode laser can lead to an almost sterile operative field (98 percent reduction of pathogenic bacteria). Finally, there is a growing body of evidence that suggests that lasers used at lower energy settings can have a biostimulatory effect on tissue, which can help turnover of connective tissue, improve healing and shorten healing times while even improving early osseointegration.

8. As an aside, there have been clinicians who routinely use monopolar electrosurgery units to expose implants. It is imperative to realize that although more expensive bipolar (two electrodes) electrosurgery units can be used safely around implants, that more commonly purchased single electrode (monopolar) units may damage the implant surface and potentially affect osseointegration with resulting implant failure with contact times as short as three seconds.

9. Lasers, in contrast, can be used safely with tremendous coagulation and retraction in dentistry, but they do not provide for decontamination of the operative field.

10. Reduced need for anesthetic

Monopolar electrosurgery units do not have the ability to be used routinely without local anesthetic. In contrast, diode lasers can often be used either with low wattages or in pulsed modes to remove minor to moderate amounts of soft tissue with only topical anesthetics. Although at this time the laser may not be as significant to the clinician, there are many instances where soft tissue acts as a barrier to ideal restorative treatment, and if local anesthesia can be eliminated it becomes a big selling point to patients.

Many patients are looking for alternatives to local anesthetic, and when the occasion allows for the procedure to be completed without the patient being numb, the ability to offer the choice of no patient discomfort, improve healing and shorten healing times while even improving early osseointegration.

Table: Comparison of diode laser versus monopolar electrosurgery units

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Monopolar Electrosurgery</th>
<th>Diode Laser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft tissue removal</td>
<td>Requires local anesthesia</td>
<td>Can be used safely with minimal to no anesthesia</td>
</tr>
<tr>
<td>Gum recontouring</td>
<td>Requires local anesthesia</td>
<td>Can be used safely with minimal to no anesthesia</td>
</tr>
<tr>
<td>Tissue coagulation</td>
<td>Requires local anesthesia</td>
<td>Can be used safely with minimal to no anesthesia</td>
</tr>
<tr>
<td>Tooth removal</td>
<td>Requires local anesthesia</td>
<td>Can be used safely with minimal to no anesthesia</td>
</tr>
<tr>
<td>Implant surgery</td>
<td>Requires local anesthesia</td>
<td>Can be used safely with minimal to no anesthesia</td>
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CAPP designates this activity for 2 CE credits.
crown tunneling for tissue management around endodontically treated teeth, exposure of para-
thetically erupted canines for orth-
odontic brackets and gingivecto-
ies of these teeth.

When biological width is re-
spected, and adequate attached and keratinized tissue exists, then judicious recontouring of the ginv-
a on the same day as the prepa-
reations can yield stunning results (Figs. 17-19).

The diode laser has become a popular technology as an alternati-
for tissue management compared to the traditional methodolo-
dy of placing a single or double recontouring cut in the sulcus. The diode laser can be used in almost all instances to produce gingival retraction as an alternative to cord with excellent results both in terms of gingival retraction and margin delineation for the labora-

Unlike electrocutaneous regions where recession can be an issue, as can postoperative pain, diode lasers offer the clinician the ability to precisely remove overhanging, infiltrated tissue while creating a gingival trough that is not likely to cause damage to bone, cemen-
tum or pulp tissue like electrocuto-

cal units can. In addition, there is research that suggests that the lateral thermal damage done with lasers is significantly lower than that with electrocuturgy. 

Ability to photocauterize vascular lesions and treat oral lesions

One of the advantages of a di-
ode laser is the ability to treat oral lesions, including: recurrence aph-
is ulcers (RAU), venous lake lesions of the lips and herpetic lesions. Research has shown that lasers can be safely used to treat these lesions, and in addition it is possible that if caught early during the prodromal stage that herpetic lesions can be aborted or significantly reduced in terms of length of time they are pres-
ent. In addition, it has been the author's experience that, once treated with a diode laser, the lesions are often less likely to reappear in the same area. In fact some evidence suggests that herpetic lesions treated in the early stages with the diode laser can cut the healing time in half and create a remission period that is twice as long before it recurs. 

Vascular lesions called venous lakes or hemangiomas can occur on soft tissue-areas including the upper and lower lips, buccal mu-
osa and palate. These lesions can be difficult to treat with traditional methods where significant bleed-
ing in endodontic situations may be reduced. The diode wave-
lengths are rapidly absorbed by hemoglobin and therefore can be used to coagulate and eradicate these esthetically undesirable purplish lesions often with only topi-

cal anesthesia. Literature has shown that the diode can be used in almost 100 percent of cases to eliminate these lesions, most of-
ten in only a single session lasting only a couple of minutes (Figs. 20-22).

Anti-bacterial capabilities of lasers

Many authors in the literature have demonstrated the tremen-
dous ability of all lasers with re-
spect to the reduction of bacterial and even fungal infections. The excellent antibacterial ca-


lesions treated in the early stages provide better healing through decreasing the risk of infection through laser light alone (Figs. 25-27). In addition, growing re-
discussion has demonstrated that the risk of high bacterial loads in peri-
donidial pockets and in particular in endodontic situations may be reduced by lasers. 

This latest research has implications for improving traditional methods locally where used, and in helping to reduce the potential greater systemic health risks generally. The role of lasers continues to be researched today, but present research has shown that diode lasers can be used safely within root canals with minimal fear of developing lat-

tigenic complications when con-

siderations are used. 

Conclusion

The diode laser has become the "nucleone handpiece" in many dental offices. The advan-
tages of being able to work around metals including dental implants, a reduced need for anesthetic, a reduced risk of recession post-
operatively, the ability to reduce bacteria, and to use the diode to photo cautery vascular lesions (with only topical anesthetic) have all provided dentists with a new alternative for soft-tissue surgery.

Lesions are a vast added ben-
efits in that they do not require a pad to be placed under the patient for grounding, and they can be used safely with pacemakers. Di-

odle lasers have found their place in dentistry. Once considered an application looking for a purpose, these small, cost-effective and re-
liable lasers have discovered their niche as the new go to solution for many soft tissue problems in our daily dental practices.

References


984.


Full list of references is available from the publisher.

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For more information you can contact Dr. Glenn A. van As on: glennavanas@aol.com.
Weightlifter grits his teeth – a case for VITA ENAMIC

By Hermann Loos

Stress and high demands literally make us grit our teeth. On a colleague's homepage it says on the subject of teeth grinding and bruxism: “We can develop a weightlifter's strength just by using our teeth". The masticatory organ is exposed to forces of up to 800 newtons during teeth clenching. The normal pressure of mastication is generally around 20 - 30 newtons. Those affected are often people in certain professions, for example, those who work for long periods of time on the computer, as well as those whose work involves intensive physical exertion, like runners, cyclists, bodybuilders and, as previously mentioned, weightlifters.

During subconscious clenching of the upper and lower teeth, the limit of physiological function is far exceeded. Not only natural tooth substance, however, but also restorative materials reach their limit during mechanical overload. In the clinical case example described here, this led to the fracture of an old all-ceramic crown restoration.

Patient case

The patient was a weightlifter by profession. He sought treatment for a fracture on the vestibular wall of his all-ceramic crown on tooth 25 (Fig. 1). He wanted a new, metal-free restoration. For the sake of time efficiency, treatment was planned with the CEREC chairside system.

The material of choice

A suitable material in this case was the new VITA ENAMIC, whose material composition and mechanical and physical properties offer a combination of ceramic and composite. The hybrid ceramic is a completely new generation of ceramic materials. The unique, dual network structure consists of a dominant ceramic network reinforced by a polymer network. This follows the principle of compound materials, i.e. both networks penetrate each other mutually. Thus immense stability as well as extraordinary elasticity are guaranteed for the first time. In addition to classic, single tooth restorations (inlays, onlays, veneers and crowns), VITA ENAMIC’s range of indications includes minimally invasive restorations and restorations exposed to high masticatory forces. VITA ENAMIC is available in the geometry (size) EM-14 (12 x 14 x 18 mm) and in the translucency levels HT (High Translucent) and T (Translucent) and in five VITA SYSTEM 3D-MASTER shades 0M1, 1M1, 1M2, 2M2 and 3M2. VITA ENAMIC can be processed with Sirona’s CEREC or inLab MC XL systems, software version 4.0 or higher.

The treatment procedure

After removing the fractured crown, further preparation suitable for ceramic was carried out on tooth 25 (Fig. 2). The digital impression (Fig. 3) was performed using the CEREC AC acquisition unit and the Bluecam. The CEREC 3D-software’s automatic biogenetic tooth modelling function was used for designing the crown restoration (Fig. 4). Occlusion registration was performed. The opposing jaw was not scanned. The biogenetic reconstruction of the occlusal surfaces is based on a mathematical procedure that allows the automatic reconstruction of the patient’s individual tooth morphology based on the morphology of the patient’s re-

VITA ENAMIC® redefines load capacity.*

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Fig. 1: Initial situation - fracture of the all-ceramic crown on tooth 23.

Fig. 3: The digital model.

Fig. 4: Design.

Fig. 5 a: Different views of the crown after completion of the design ...

Fig. 5 b: ...in the milling preview.

Fig. 2: Preparation.
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< Page 10

Before

Procedure

After

By Dr. Fabio Cosimi D.D.S.
Dr. Susanna Giovannini D.I.
I-Ostia Lido, Rome

Cleanic: Clinical use of a recognised prophy paste with Perlite
Pulp protection in today clinical practice: what about the role of materials?

By Dimitrios Tziadas, DDS, PhD

Vital Pulp Protection and Therapy (VPPT) is the term used to describe all those procedures, materials, and treatment techniques that aim to protect the pulp tissue in a healthy and functional state, whenever the dental pulp has been compromised by caries, trauma or restorative procedures. Pulp vitality or the pulp tissue is not essential for mature tooth survival. Mature permanent teeth with stable and functional vitality may survive for a long time after a successful endodontic treatment. However, the maintenance of pulp vitality in both mature and developing teeth provides benefits, n immature permanent teeth the vital pulp has the most important requirement for continuation of root development and strengthening of the root dentin complex. It is generally recognized that the living pulp is the most important factor for maintaining the biological pulp-functional unit, is maintained (Berghenholz 2005). The objective of VPPT is to minimize reversible and irreversible pulp injuries, to allow pulp tissue healing and to protect it from exogenous stimuli. It is well recognized that the damaged dentin-pulp complex requires protection from thermal conduction, chemical injury from the overly restorative materials and further bacterial invasion from dental caries or oral bacterial leakage. It must be clarified here that protection from thermal conduction depends mainly on the conductivity of the main restoration and is beyond the scope of the present article. In order to assess the therapeutic validity of the current and past restorative materials in vital pulp protection, the biology of the dentin-pulp complex is briefly reviewed.

Biology of dentin-pulp complex

The pulp and the dentin have been widely considered as a cooperative biological entity, they form an embryological and functional entity. The dental pulp is a connective tissue entirely enclosed by dentin in the pulp chamber of the tooth. Dentin is a collagenous mineralized tissue characterized by the presence of parallel dentinal tubules, forming a semipermeable substrate which is regulated by the defensive function of the pulp and is effective in protecting the pulp from leaking bacterial threats and chemical irritants. Pulp structure is not uniform, consisting of the pulp periphery and the pulp proper. The peripheral pulp region has two interconnecting structures: the odonto bulb layer, which is a layer of highly differentiated odontoblasts and a zone composed of biosynthetic product of odontoblasts (preodontin). Odontoblasts are responsible for formation of preodontin, which further form the mineralized structure of dentin. Odontoblasts form primary dentin during tooth development, secondary dentin during the whole life period and tertiary reactionary dentin during the pulp-dentin complex reparative responses odontoblasts are post-mitotic cells, they are not able to proliferate. In case of severe injury, physical trauma, odontoblasts can be replaced by newly differentiated odontoblast-like cells, which can repair defect of the den- tin-pulp complex by producing tertiary reparative dentin. The preodontin reflects the activity of odontoblast layer and its role is crucial in maintaining the functional unit in the pulp environment. The existence of intact pulp periphery seems to be the most important requirement for protection of the pulp tissue. A network of inflammatory reactions of pulpal cells, microcirculation and nerves, directly affect the outcome of the fundamental defensive mechanisms in the dental pulp. Whenever the basic structure of pulp periiphery is affected due to exogenous stimuli, regardless of the existence of pulpal exposure, a typical wound healing process of the pulp tissue takes place. Complete reconstitution of the pulp peripheral region, by re-pairing the biosynthetic activity of survived odontoblasts and replacement of lost odonto bulb with odontoblast-like cells might be considered as the optimal end result of the healing process in the pulp-dentin complex. Under pathological conditions in the pulp-dentin complex a wide spectrum of atypical forms of matrices could be formed at the pulp periphery. These atypical matrices are characterized from porosity due to their osteogenic appearance and they are not effective in protecting the pulp from leaking bacterial threats and non-destructive external irritants. Clinical and experimental data clearly show that the presence and quality of the tissue reconstituting pulp periphery in the pulp-dentin complex is important prognostic factor for the long-term success of the outcome of VPPT. The clinical exploitation of dentino-genic potential of pulp tissue to reestablish the structural and functional specificity of pulp periphery represents the basis of modern VPPT (Tziadas 2010).

Clinical variables in VPPT

Numerous variables in VPPT and clinical studies carried out over than 6 last decades clearly showed that the successful out- come for vital pulp therapy is primarily depended on the type of injury, while other variables related to the status of the dentin-pulp complex and the treatment modality have also been investigated. In general and beyond the role of treatment modality (techniques and materials), as the most important mechanism in effective long-term protection of the damaged pulp which will be analysed below, other clinical factors have attracted attention.

The reader of the present article is encouraged to study a number of papers reviewing experimental and clinical ob- servations as well as the level of evidence in relative clinical research, which have been pre- sented in the symposium held on 2007 in Chicago, Illinois, on “Emerging science in pulp ther- apy: new insights into dilemmas and controversies” jointly sponsored by American Association of Endodontists and American Academy of Pediatric Dentistry (see Pulp Symposium, Journal of Endodontics, July 2008, Volume 34, Number 7S). It has been well recognized that the following critical factors are playing a role.

a. Treatment indications

As has been well demonstrated the VPPT is indicated for teeth with healthy pulp or reversible pulps. More particularly:

Pulp protection, when a material is placed on the pulpal surface of a dentinal cavity to act as a barrier between the permanent restoration and the sound dentinal base of the cavity, is indicated for:

- Cartion or non-caries tooth cavities with remaining dentin thickness less than 1 mm, no history of lingering or spontaneous pain, nega- tive percussion and palpation tests and positive pulp vitality test, and ii. young permanent teeth after luxation trauma or crown fracture exposing the in- ner third of the dentin, regard- less of the presence of clinical symptoms.

Indirect pulp capping is a technique in symptom-free teeth with deep cavious lesion where a thin zone of carious dentin is removed to avoid pulp exposure. The ultimate goal of this technique is to complete caries removal just before the pulp exposure, where the potential risk of pulp healing can effectively protect the pulp and stimulate tertiary dentin formation. Presence of symptoms of irreversible pulpitis, positive percussion and palpation tests, or radiographic appearance of apical lesion can exist absolute contra-indications for indirect pulp capping.

b. Control of infection

It is well-known that the pulp of sound healing depends largely on the extent to which infection can be avoided (Berghenholz 2005). Thus, control of pre-op- erative and post-operative infec- tion, is a critical clinical concern with various VPPT techniques.

- Pathology of dentin-pulp complex. Among various clini- cal variables that have been accounted as factors playing a role in the outcome of the VPPT, most important are issues related to different patho-physiology and healing potential of the dentin-pulp complex, as in primary, immature and mature permanent teeth:

• Dental treatment of primary teeth must satisfy different goals than treatment for mature permanent teeth, due to the limited life span of primary teeth and their possible relationship to the permanent tooth successor. The anatomical structure, pathophysiology, and diagnosis of en- dodontic diseases are different between primary and perma- nent teeth. However, recent ad- vances in primary tooth biology demonstrated that primary teeth have also a potential for wound healing and tertiary dentin for- mation. In light of these observa- tions, VPPT in primary dentition has been already re-evaluated and similar techniques as in per- manent teeth are widely used (American Academy of Pediatric Dentistry, 2006).

• Similarly, dental treatment...
e. Remaining dentin

Effective protection from the chemical and bacterial irritants depends on the following two parameters (Smith 2002):

i. The remaining dentin thickness has been widely recognized as the main factor which determines the long-term success of the treatment, in absence of bacteria. In general remaining dentin thickness more than 1 mm is considering to be a safe limit for adequate pulp protection.

ii. Situation and dimensions of the exposed dentin surface in the cavity seem to influence the overall dentin permeability through the number of exposed and open dentinal tubules.

f. Operative trauma

The operative trauma has been also implicated with pulpal injury and subsequent pulp healing. Frictional heat due to uncontrolled mechanical cavity preparation, over-drying of the exposed dentin, direct damage to odontoblastic processes in deep cavities, and the chemical treatment of the dentinal surface due to acid-etching, may be associated with transient pulp damage and/or increased dentinal sensitivity, which can delay pulp healing, while also development irreversible pulpal pain cannot be excluded.

The role of materials - In general similar materials are widely used in today clinical practice for both sites, pulp protection in deep sound dentinal cavities, and in active carious dentinal lesions, despite the facts that the objectives of the two techniques are clearly different. For many years the hard setting zircon oxide eugenol cements are used under amalgam restorations, and the hydroxide-containing cements have been considered as materials of choice for pulp protection in deep dentinal cavities, especially in cases of indirect pulp treatment. Some glass ionomers. As well as resin-modified glass ionomers, and the calcium hydroxide-based cements have been demonstrated as materials used as pulp protective material to avoid deleterious pulp inflammation and necrosis (Bell et al. 2003, Smith 2002, Tri et al. 2010). Furthermore several micro-organisms could be isolated from deep carious lesions and hence; the use of a material with antimicrobial activity under restoration has been highly recommended. Since bacteria can differentially affect the ability of odontoblasts to repair the dentine barrier function, and in active carious dentinal lesions.

the rule of capping material in reduction of bacterial growth is important. Histological investigations have demonstrated prevention for bacterial growth in almost 100% of the restorations with glass ionomer-based materials, in caries free teeth of young adults for post-operative period up to one year. In a few recent studies the MTA and hydroxyapatite-based materials showed significantly better antibacterial activity than Ca(OH)₂.

Biocompatibility

Absence of cytotoxic effects and biocompatibility of the restorative materials are reasonably of critical importance to reduce the possibility of pulp tissue irritation or degeneration. Various cell culture systems, implantation testing models in animals or usage tests in animal or human teeth have been repeatedly evaluated the biocompatibility of materials used as pulp protective bases. Calcium hydroxide-based materials have been much studied and represent the gold standard in the research of dental material biocompatibility.

Conventional glass ionomers are highly biocompatible materials, and the rest modified glass ionomers, the resin composites and the adhesive systems have been shown to be considerably more cytotoxic, due to the release of non-polymerized monomers (RIGMA, UDMA, TEGDMA, HEMA). These monomers can cause direct pulp inflammation in toxic concentrations, or dramatic reduction of the dentin permeability in toxic concentrations. However histological studies in deep cavities of human teeth are expected to confirm these issues.

Biospecificity

It is associated with the capability of material to stimulate repair of dentin permeability (barrier function). Systematic investigations on the ability of the use pulp protective materials, including the gold standard group of calcium hydroxide-based materials, to mediate inflammations in the underlying pulp and to

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• universal for all cavity classes
• comfortable handling, easy modellation
• also available as flowable version

Dental desensitising varnish
• treatment of hypersensitive dentine
• fast desensitisation
• fluoride release
• easy and fast application

PREMIUM PRODUCTS

Recently calcium silicate-based materials have demonstrated strong antimicrobial activity unreactive materials in the base of the cavity have also been proposed. In the last position of the materials, the glass ionomers present several important properties, such as an elasticity similar to dentin, bonding to dentin and to enamel. However glass ionomers are not resistant to water and have a slow setting rate. Improved physical properties have been obtained with the resin modified glass ionomers. Newly released calcium silicate-based dentin substitutes have also showed interesting physiochemical properties.

Antibacterial activity

It is widely accepted that the ability of the pulp protective material to reduce bacterial leakage and to prevent post-operative growth of leaking bacteria and their invasion into dentinal tubules is the most critical requirement to avoid deleterious pulp inflammation and necrosis (Bell et al. 2003, Smith 2002, Tri et al. 2010). Furthermore several micro-organisms could be isolated from deep carious lesions and hence, the use of a material with antimicrobial activity under restoration has been highly recommended. Since bacteria can differentially affect the ability of odontoblasts to repair the dentine barrier function, and in active carious dentinal lesions.
Editorial report on the Dental Hygiene Day at the 9th CAD/CAM & Digital Dentistry International Conference
09-10 May 2014 Dubai

By Victoria Wilson,
Dental Hygiene Therapist, UK

Dubai, UAE: A truly remarkable day for Hygienists in the MENA, over 100 Hygiene delegates attended the first Dental Hygiene Day on Saturday May 10th, 2014 which was a continuation of the 9th CAD/CAM & Digital Dentistry Int’l Conference, May 09-10, 2014 at the Jumeirah Beach Hotel, Dubai, UAE. Hygienists practicing in the UAE and from other countries in the MENA attended the first of its kind in the Middle East.

The timetable included a variety of relevant topics tailored specifically to the Hygiene profession.

The exceptional speakers made it worthwhile for any hygienist to attend.

Prof. Crawford Bain delivered an interesting informative lecture on the maintenance of the dental implant patients, an extremely relevant topic for all Hygienist in light of the growing number of implants being placed and the crucial role of the Hygienist in the necessary maintenance.

Dr. Matthieu Gabriele gave a lecture on Oral Hygiene protocols and complications with various fields of dental treatment, a must know-how for every Hygienist.

Dr. Rasha Ahmed presented the important topic on dentine hypersensitivity management. Hygienists face patients common complaints of hypersensitivity on a daily basis, and the well presented topic by Dr. Rasha was much appreciated by the audience.

Victoria Wilson’s Lecture, the Editor of Hygiene Tribune, focused on communication within Dentistry, a topic essential for the delivery of oral health education and achieving long term compliance and maintenance of oral health.

The afternoon consisted of a hands on course on periodontal instrumentation, with the renowned Prof. Mary Rose Pincelli Boglione from Italy and the International Federation of Dental Hygienists IFDH. Due to the popularity and demand the course was extended to 2 days. We were honored to have such an expert in the profession join us on a revision of the essential skills of scaling and instrumentation. Hygienists are trained extensively on scaling and instrumentation in their education, however it is easy to fall into bad habits. This was an invaluable refresher course for Hygienists and we hope that Mary will join us in the future for more courses.

In the 7 years I have been living and working in the UAE I have never known for there to be such an extensive program for the profession on one day and for so many Hygienists to be in one room at one time.

The year 2014 is an exceptionally exciting time for the profession of Dental Hygiene in the MENA. Four months ago the Dental Tribune Middle East opened the Dental Hygiene Tribune section dedicated entirely to the Dental Hygiene profession. More and more dental and medical professionals are requesting to have a Hygienist on board. Following on from the Dental Hygiene Day we look forward to more Hygienists days by CAD/CAM with more hands on courses, and lectures tailored to the needs of hygienists professionals.

What we all have to keep in our mind is that a healthy periodontium is the backbone to all good restorative dentistry and medical treatment – not in the whole process an essential part in overall health and wellbeing.
New Philips Zoom WhiteSpeed Light-Activated Whitening System.

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**Philips Zoom In-Office Whitening kit makes treatments easier**

Packed in procedural order, you get everything you need for each treatment, including Philips Zoom at-home whitening gel for follow up and maintenance complete in a single package. The Philips Zoom Kit also includes simplified visual instructions.

**Unique products for your sensitive patients**

Each treatment comes with a Patient Post Care and Maintenance kit that includes the Relief ACP Oral Care Gel. This unique formula combines potassium nitrate for sensitivity relief along with Amorphous Calcium Phosphate (ACP) that helps create healthier smiles through advanced enamel protection. To ensure a more comfortable experience all around, instruct patients to use it for 10-30 minutes after treatment.

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The advanced Philips blue LED technology provides approximately 50,000 hours of use—reducing operating costs, downtime and is 40% more energy efficient. The light also emits 100% greater light intensity* with no compromise to safety. Redesigned to be easier to position and more ergonomic, your patients and your treatment will be better than ever.

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Philips Zoom is funding a worldwide public relations campaign to drive patients to dental professionals, and new programs to help you quickly and easily integrate Zoom into your practice.

“With this new light the patient’s sensitivity is minimal, making the procedure much more pleasurable.”
– Juban Dental Care - Baton Rouge, LA

Reveal your patients’ most healthy, radiant smile with Philips Zoom WhiteSpeed

Give your patients the immediate white smile they want and the healthy white teeth they need, with the new Philips Zoom WhiteSpeed. The number one patient-requested professional teeth whitening brand* is clinically proven to deliver superior whitening results in just one office visit. WhiteSpeed is shown to whiten teeth up to 8 shades in 45 minutes; that’s 40% better than a comparable non-light activated system.†

The new Whitening LED Accelerator’s variable intensity settings allow you to customize the output to ensure each patient receives a more comfortable treatment. 91% of patients experienced little to no sensitivity with Zoom WhiteSpeed.‡

Now better than ever — Philips Zoom WhiteSpeed.

* In the U.S.
† Compared to Philips Dash
‡ Results based on 500-person study Data on file.
Philips introduces its best brush yet, Sonicare DiamondClean, helping users achieve brushing brilliance every time

By Philips

Dubai, U.A.E. - Philips is proud to present the new Sonicare DiamondClean - a brush that offers some unique brushing to its most sophisticated level and which delivers Sonicare's best clean yet removing up to 100% more plaque in hard to reach places than a manual toothbrush.

Sonicare DiamondClean harnesses Philips Sonicare’s patented sonic technology to deliver a powerful dynamic brushing experience. The brush is able to deliver a unique whole mouth clean feeling thanks to its five brush modes that allow you to tailor your brushing according to your needs as well as your dental professional’s advice. The brush modes range from:
• Clean – the standard mode for a whole mouth clean
• White – removes surface stains to whiten teeth
• Polish – brightens and polishes teeth to bring out their natural luster
• Gum Care – gently stimulates and massages gums
• Sensitive – an extra-gentle mode for sensitive teeth

Highly charged
DiamondClean’s charge base also features a unique charging technology that allows you to remove up to 44% more bristles than Philips Sonicare’s standard sized ProResults brush heads, providing you with both superior plaque removal and whiter teeth. The heads come in two sizes – Standard and Compact – for focussed cleaning in areas of special need, for orthodontic patients and those with smaller mouths.

Brilliant cut
Sonicare DiamondClean brush heads also sport a new diamond-cut tuft formation to provide you with an even more efficient brushing experience. The uniquely designed diamond bristle heads have 44% more bristles than Philips Sonicare’s standard sized ProResults brush heads, providing you with both superior plaque removal and whiter teeth.

How much do you care for your hands?

By Beverley Watson RDH, Kings College, London

LONDON, UK: It is understood that out of many professions, Dental Hygienists are in the high risk category of suffering from Repetitive Strain Injury RSI or Carpal Tunnel Syndrome CTS. This article aims to evaluate ways to reduce this risk.

Two widely used brands of Hand instruments are to be compared, LM DuraGradeMax and American Eagle XP Technology.

Method: Online research publications.

Conclusion: After reviewing the information from both LM American Eagle and American Eagle XP Technology.

From this TO this

Figure 1. The repeated activity can compress the median Nerve travelling through the Carpal Tunnel.

Figure 2. Examples of stretch exercises to perform between patients.

Figure 3. Examples of treatment options for RSI OR CTS when the strain has become chronic, and simple exercises are inefficient.

XP Technology American Eagle
Specially filtered titanium nitride/stainless steel alloy not a coating but infused.
Rockwell hardness test most steel instruments 58-60, XP 89, Diamond 100
Strokes 1500 XP = 1,500 other

DuraGradeMax LM steel
Hardened steel alloy by thermo-mechanical heat treatment, controlled gas atmosphere and cryogenic processing.

Figure 7 shows its durability out lasts any other instrument including XP Technology.

Figure 4

Introduction: RSI Repetitive Strain Injury or CTS Carpal Tunnel Syndrome “Repetitive activity or trauma to the wrist” is the term used to describe the pain felt in muscles, nerves and tendons caused by repetitive movement and oversee

This clearly describes a Dental Hygienists average working day, the repetition of the same movements. RSI can affect different parts of the body the neck, shoulder, elbow, wrists and hands. For the purpose of this article the focus will be on the wrist and hands.

Four common causes of RSI:
1. Repetitive activities
2. Doing a high-intensity activity for a long time without rest
3. Poor posture or activities that require work in an awkward position
4. Holding the instrument USS or hand scalers with the wrist is bent. It is best to keep the wrist in line with the arm not at an angle compressing the median nerve (Figure 1).

Signs and symptoms can vary but the most common are pain, aching or tenderness, stiffness, throbbing, tingling or numbness, weakness and cramp.
Help your patients eat, speak and smile with confidence with the Corega® denture care regime.

Corega® cleanser is proven to penetrate the biofilm* and kill microorganisms within hard-to-reach surface pores.\(^1\)

Dentures contain surface pores in which microorganisms can colonise.\(^1\)

*In vitro single species biofilm after 5 minutes soak


Date of preparation: June 2014.
Ref: CHSAU/CHPLD/0008/14c
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In ‘bleeding on probing’ trials over 4 weeks, parodontax® demonstrated significant effects in reducing bleeding gums by 22% (p<0.01)

Bleeding on probing increased after 4 weeks of brushing with the fluoride control toothpaste

<table>
<thead>
<tr>
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<th>Fluoride-containing control toothpaste</th>
<th>parodontax®</th>
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<tbody>
<tr>
<td>Baseline Mean</td>
<td>24.75 (6.34)</td>
<td>25.40 (6.80)</td>
</tr>
<tr>
<td>4 weeks Mean</td>
<td>26.00 (9.14)</td>
<td>19.80 (7.38)</td>
</tr>
<tr>
<td>Change vs baseline</td>
<td>30.00</td>
<td>22% reduction in bleeding (p&lt;0.01 vs baseline)</td>
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Adapted from Saxer et al 1994. All interdental spaces from 6+ to +6 were tested at baseline and 4 weeks for bleeding on probing on the right side (buccal) and left side (lingual). Findings were recorded as 0=no bleeding; 1=slight/isolated bleeding; 2=marked bleeding. Mean scores were determined. N=22. Baseline values [Mean SD]: Control (fluoride-containing toothpaste) group 24.75 (6.34); parodontax® group 25.40 (6.80). After 4 weeks: Control (fluoride-containing toothpaste) group 26.00 (9.14); parodontax® group 19.80 (7.38). *parodontax® vs control p<0.05.
Prevention: Take regular hand breaks to stretch and exercises the muscles, tendons and ligaments. See Figure 2 for some possible exercises.

Breaks don’t only include time away from scaling, but also time away from the computer and writing notes. Typing can also compress the nerves in the Carpal Tunnel.

Treatment: If it is not possible to take long term time out from the activity causing the repetitive strain on the small muscle groups, then it is necessary to take regular short breaks and stretch (Figure 2, 5).

A hand splint, the hand is held in a relaxed position to take pressure of the Median nerve running through the Carpal Tunnel and as a final resort surgery.

A brief history of Hygiene

The earliest recorded text associated with teeth cleaning dated 5000 BCE where tooth picks were used in Mesopotamia (early Iraq) according to the M dentistry Time line of Dental Hygiene, but it was not until 1915 in USA, Connecticut that Alfred C. Fones trained 97 Dental Hygienists and the Dental Act set regulations stating their duties.

Then in UK 1945 saw the 1st Dental Hygienists trained in the Women’s auxiliary Army WAAF. Instruments: The 1st Dental hand instruments were very thin and heavy with smooth metal handles requiring a very tight grip. Later a cross hatch was scored into the metal handles for easier grip but were still very thin, wider lighter steel gripped handles were introduced and in the last 10 years a wider ergonomic soft silicone was used around a metal inner part then came into production, a very light completely resin handle with a grip for less wear on the muscles and tendons.

Ultra Sonic Scalers have dramatically improved the Dental Hygienists ability to remove hard deposits from the tooth surface by either working in a Magnetoconductive or Piezo electric capacity. This reduces the need for excessive forces applied by the hand over an extended period of time increasing the risk of strain and inflammation of the wrist muscles and tendons resulting in RSI or CTS (Figure 4). Sharpening: Numerous articles state the different methods of sharpening instruments. Arkstone different shapes round, flat, long, short, different sizes, angles, grades course, medium, fine.

Machines: The Hu-Freidy instrument sharpener, the LM Rondo-plus electrical disc sharpener

The Neivert Whittler to name a few.

The consistency of the angulation is unpredictable and operator error possible. It is possible to affect the cutting edge, causing more strain on the fingers hand and wrist. It is human nature to not sharpen immediately when required. Figure 5 shows the different types of next generation hardened steel.

Results: LM handles present to be ergonomically superior with a wider silicone grip to help keep the Carpal Tunnel open, however they do still contain an inner part of steel. This runs the entire length of the handle increasing the overall weight compared to the completely resin handle of the American Eagle.

The XP Technology instruments require no sharpening at all, and will allow more repetitive strokes with minimal pressure on the tendons and wrist. The LM Eagle XP technology tips becomes dulled more slowly than the American Eagle. The XP technology tips becomes dulled is feasible to use their Quick tip® to replace the tip at less cost than the full instrument.

The statistics in Figure 7 do not clearly state how the results were determined for LM instruments, it is not clear what numbers 8, 7, 5 and 5 represent, minutes, hours, Days, Strokes? It is possible however to see in the photographic evidence 15000 strokes to 1,500 from American Eagle instruments.

Regarding the hardness of the Steel alloy of the LM instruments there is no evidence to support this but the American Eagle XP instruments have the Rockwell hardness test to prove their claim.

Conclusion: In conclusion the Ultra Sonic Scaler should be used as much as possible to avoid excessive strain on the transverse carpal ligament and median nerve. It is clear that some calculus deposits remain interdentally after Ultra Sonic Scaling alone. Ultra Sonic Scaling alone is not sufficient and hand instrumentation is necessary in conjunction with Ultra Sonic Scaling.

The correct choice of hand instrument is essential for a Dental Hygienist to help avoid RSI. It seems the American Eagle lightweight resin handle with the XP Technology blade will be of most benefit long term. Due to its superior strokes carried out 15000 to 1,500 before starting to dull.

For this reason it seems the American Eagle XP technology would be in the instrument of choice compared to the LM DuragradeMax. The American Eagle XP will ensure less pressure is exerted on the median nerve, the transverse ligaments and the carpal tendons reducing the risk of RSI or CTS.

References:
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5. May 2012, RDH Feature, No 2014
7. May 2012, RDH Feature, No 2014
8. May 2012, RDH Feature, No 2014
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UP TO 5x GREATER REDUCTION
IN PLAQUE BIOFILM ALONG THE GUMLINE

5x

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#1 Oral-B, most Dentist Recommended Toothbrush Brand worldwide

* vs. a regular manual toothbrush

continuing the care that starts in your chair
KaVo CAD/CAM workflow with the new products ARCTICA AutoScan, KaVo multiCAD Virtual Articulator and VITA ENAMIC

By KaVo

With the production of two monolithic posterior crowns, the KaVo CAD/CAM application technology demonstrates a practical case in which the new CAD/CAM products ARCTICA AutoScan, KaVo multiCAD Virtual Articulator and VITA ENAMIC for KaVo ARCTICA play a major role.

Described below are the following individual steps, which consist of:
1. Order preparation
2. Scanning
3. CAD construction
4. Preparation for manufacture
5. Manufacturing
6. Completion

Order preparation: 30 seconds

First, the practitioner, the patient and the respective technician are defined in the order entry form. The second step consists of the definition of the indication including all parameters. In the present case, this concerns the creation of two full crowns to be made of VITA ENAMIC Regio 46 and 47. The parameters for the respective practitioner can be referenced in the KaVo multiCAD software. This function guarantees consistent quality regardless of the originator of the order (Figure 1, 2).

Scanning: 180 seconds

This case is scanned with the new fully-automatic ARCTICA AutoScan. The scan process is very simple as the software guides the user step by step through the scan process. The individual scans are performed completely automatically. First, the upper jaw is scanned, followed by the lower jaw. If necessary, single stumps may then be scanned separately. This is followed by a vestibular scan allowing the correct positioning of the jaws by the software (Figure 3).

The next step consists of matching the individual jaw scans and the vestibular scan by marking three identical points on the respective jaw and vestibular scan. Afterwards, the software calculates the exact position of the upper and lower jaw scans (Figure 4, 5, 6).

Construction of the restoration in the KaVo multiCAD software: 180 seconds

In the KaVo multiCAD software, the contact relief of the corresponding jaw is displayed in the scan software. For analytical purposes, it may be displayed in color. The respective color and intensity indicate the distance to the antagonist.

Afterwards, the articulator KaVo PROTAR evo 5B is started in the KaVo multiCAD software. The respective patient-specific settings of the physical PROTAR articulator such as, for example, the condyle track inclination and the Bennett angle, are entered into an entry mask. The correct positioning of the models in the virtual articulator (KaVo PROTAR 5B) is done automatically. Based on the scan of the articulated models in the ARCTICA AutoScan and the positioning of the models by the KaVo Splitcast system, the correct positioning is automatically transferred to the CAD software. This positioning also applies to models that were inserted into the articulator by means of a facebow.

The illustration shows a lateral excursion to the left (Figure 10).

In the subsequent construction process, the movements of the jaws may be visualized at any time (Figure 11).

The manufacture of the two VITA ENAMIC crowns on 46 and 47 is performed quickly and easily by means of library teeth that are automatically positioned onto the preparations and may be loaded into the situation via a simple mouse click. Furthermore, the library teeth may subsequently be matched to the individual occlusal relief of the chewing surface. The user is able to adjust the suggestions of the software via a wizard (step-by-step assistant) at any time during the construction process. Various tools...
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Now is the time to consider investing in your own CBCT System

By Ernesto Jaconelli

This Century has seen the introduction of 3D imaging as a readily available dental diagnostic tool. This trend has been inspired by the development of both Cone Beam Computed Technology (CBCT) and PC storage capability making 3D imaging more convenient, easier to use, and affordable.

To be able to view the area of interest in all three dimensions significantly improves the accuracy of diagnosis and this in turn makes for faster better patient treatment. Each year new systems are becoming available such as the new CS 8100 3D System from Carestream Dental. These new systems are now significantly smaller, more versatile and user friendly than their predecessors. The CS 8100 3D has a “resting” width of 35cm (110cm when in use) and weighs only 92Kgm so will fit easily into most compact dental clinics.

A very important feature of all modern CBCT systems is that they provide the Dentist with a choice of volumes that will be right for the area of interest. These volumes are known as the Field of View (FOV). The CS 8100 3D for example gives choices from taking a 2D Panoramic to capturing a selection of 3D FOVs of 4 x 4 / 5 x 5 / 8 x 5 / 8 x 8 and 8 x 9 mm. As with all x-rays it is essential to minimise the dose to the patient - the larger the FOV the more dose to the patient. Each area of dental surgery will require a different FOV depending on the treatment being considered so it is essential to have a choice of FOVs to select from.

For a single implant a FOV of 5 x 5 mm will be sufficient and the dose to the patient in this case will be similar to that from a 2D panoramic scan. However for the preparation of multiple implants or surgical guides then a single arch FOV of 8 x 8 / 8 x 9mm FOV would be selected. Dentist who specialising in Implants were the first to fully appreciate the benefits of 3D imaging such that it is now unusual to find one who does not have their own CBCT system.

For Endodontists, the key diagnostic tool is always their surgical loupes. But they are also adopting 3D image to reveal more clearly any additional canals that are present and possibly missed from a 2D image as well as their exact position and apical areas. A sectorial FOV of 5 x 5mm will provide a very high definition image for an Endodontist to be able to examine the area in precise detail.

Until now Orthodontists have mainly been satisfied with a 2D panoramic view. However having a CBCT system that switches easily from a 2D panoramic to 3D image allows the Orthodontist to select a 3D view when required. Retention and angulation for example are more precisely diagnosed from an 8 x 5 / 8 x 9 mm FOV.

3D imaging will soon be the norm for dental diagnostics requiring all dentists to be familiar with the technology and capable of analysing 3D images. There has never been a more appropriate time to consider having your own CBCT System. Manufacturers are supplying more training and equipment that can be accessed. The CS 8100 3D compact size will fit into most Dental Clinics.

For more information on either CBCT technology, the new CS 8100 3D or courses at Ajman University please contact: montassar.bentili@carestream.com or visit www.carestreamdental.com
Simple, planned aesthetic orthodontics for the General Practitioner

By Dr. Tif Qureshi

Dr. Tif Qureshi shows how digital technology has moved progressive smile design on and the enormous benefits this will have for both patient and consent. Digital Smile Design is making a come back in a very smart and innovative form through the use of live video, cameras, and keynote presentations.

I commend the users of this technique as it is clearly a far better form of smile design planning than just using plain static before and after pictures with someone else's smile stitched into place.

However in cases where there are alignment issues, I would still argue that any patient who does not at least go down the pathway of alignment and bleaching, cannot really see their teeth change in a dynamic way.

I have found that patient's feelings about their smiles change out of context and they want one thing but after they see their smile change a little they start to appreciate it in a different way. How can someone really be convinced unless they are given the opportunity to bleach their teeth, perhaps with slight alignment and bonding.

This case is the perfect example and will show how progressive smile design also using digital technology can produce beautiful predictable results that often require far less invasive treatment.

We use digital technology in a different way of course and this is all to do with planning and consent. Previously with human Aligners, we had to use resoling models. These are effectively fairly crude stone models which take a cut and once repositioned in wax the aligner is then built on that model. As soon as the aligner is fitted into an uncorrected mouth the forces are there to push the teeth to the final position. The real downside of all the wax creates quite large inaccuracies. Also it is very difficult to see how much adjustments have been made to the teeth to get them to fit within the curve. This is even more so of a problem for flared teeth which have been out of the arch for many more years. These teeth tend to be highly triangular and often need more targeted adjustment to get them to fit within the arch form. You can visualize the walls of these teeth, it is almost impossible to accurately know how much production is required to each.

Of course with digital 3-D printing this has all changed. The difference if you like is night and day. We can also use printout models to show the patients the proposed outcome. This is excellent for the consenting process. Untreated patients will now see any compromises areas and the final outcome. If they are not happy they could reject the treatment before it starts.

A case
A 22 year old gentleman did not like the appearance of his teeth especially because the two centrals was so prominent. He had considered having porcelain veneers done just to improve his smile in one treatment. He did not like the appearance of his enamel and also the discrepancy in the shape of his front teeth. We showed him the occlusal view of his teeth and he could see that the upper anterior is one mildly malaligned. Indirect veneers would have been fairly aggressive towards the preparation of the upper central incisors. By showing examples of other cases where simple alignment had dramatically improved the aesthetic value the patient agreed to try to align his teeth first before having veneers done.

Consent part one
A full orthodontic examination was carried out. All orthodontic options were discussed and the patient understood the benefits of fully comprehensive orthodontics, and was also given a range of short-term techniques that he could have chosen. He declined comprehensive orthodontics on the basis that he only wanted to deal with his anterior teeth.

He chose to have an Inman Aligner because of the shorter wear time and the minimal cost impact on his overall treatment desires. Our first goal was to evaluate the aesthetics and function to decide on landmark or reference teeth. As part of the digital planning process these teeth are not moved and ensure the setup accommodates these teeth to ensure the proposed curve is not flared out or over constructed.

In this case the patient also had a retained upper left deciduous tooth (no canine had developed). Fortunately this tooth was in the right position so it became the reference tooth and hence no orthodontic force would need to be applied to it. Both upper centrals needed to be retracted and both laterals slightly advanced. It was important to visualize a chin up view to ensure this is visible for the patient from an occlusal and guidance point of view. All the movements were possible.

(1) Occlusal showing landmark and desired movements.
(2) Showing spacewise trace

In the chair the occlusal photo is taken and uploaded into the spacewise digital calculator. The curve is set according to the landmark teeth and required movements. This showed a crowding result of 3mm which was within the easy limits for Inman treatment.

Impressions were taken and again sent to the lab with the spacewise trace.
Composite anchors were also placed in a timed and sequenced manner to ensure the forces could be directed at the right time. This allows for rapidly increased treatment times.

After only nine weeks the patient’s anterior teeth had nearly aligned. Bleaching trays impressed impressions were taken at this stage. Super sealed trains are used with 6% day white from Phillips. The patient bleaches 35 to 45 minutes a day while the aligner is out of the mouth.

After a week the patient returned his teeth had improved in alignment already but with the improvement in color as well made him view his teeth in a different way. At this point he decided not to have porcelain veneers and instead to ask for composite bonding and buildings. He had seen examples of this already. We used some mockup flammable material to show the patient what was possible and he was thrilled with the results. So an appointment was booked for 2 weeks to have this done.

Discussion

It was noted that the patient had reviewed and understood the 3-D model and what it was proposing. The Inman Aligner was then built and fitted.

Composite bonding was carried out on the 7,9 and 10. A composite veneer was placed on the 11. All these were carried out with only roughening and no prep or bevel. Venus Diamond composite from Heraeus Kulzer was used. I find that the Opaque shade allows superb blocking out of light meaning that if layered as dentine, it means a long bevel is not required to block out the join. Enamel shade can then be placed thicker towards the incisal edge.

A wire retainer was fitted and the guidance adjusted to ensure there were still balanced excursive contacts on the left side so the load was not focused on the deciduous tooth.

Roughening, total etch Optibond solo and Venus flow were used to bond the wire in place. A clear essix retainer was also given to the patient to wear at night initially then to use occasionally and to have as a back up if the wire de-bonded.

At this point he decided not to have porcelain veneers and instead to ask for composite bonding and buildups. He had seen examples of this already. An Inman Aligner was put in for a mottled appearance the most important thing here is that the patient understands that the Inman Aligner is out of the mouth.

The patient was delighted with the treatment.

On viewing the sequenced shots it is clear to see the changes. The patient was delighted that he had emerged from the treatment with his own teeth looking more attractive than having ceramic porcelain veneers. As good as ceramic restorations are, they will always require further treatment/maintenance and replacement. On a 22 year old if alignment, bleaching and bonding can satisfy the patient that it has to be better than placing ceramic veneers. The problem with digital smile design is that the patient is not really given the opportunity to see the teeth change slowly and in situ.

It is fine if whitening, bonding and alignment are part of those protocols but arguably patients should not be shown images of multiple veneers until they can visualize their own teeth looking better.

You can see how very subtle changes can dramatically improve the appearance. Even though the colour is not truly homogenous and the teeth have a mottled appearance the most important thing here is that the patient was completely delighted with the treatment.

Ultimately a patient being happy with their own smile has to far outweigh the parameters that are set up traditional smile design.

Final images at the 6 month review are also shown.
may be used for this purpose, for example free forning, virtual wax knife, scaling, turning and shifting of teeth.

Interferences remaining after the construction will be displayed by the software and automatically removed in consideration of both static as well as dynamic factors (by means of the virtual KaVo PROTAR Evo 5B) including the previously identified motion tracks. This allows for a drastic reduction or even the complete omission of subsequent follow-up work in the mouth of the patient for the practitioner. Not only does this facilitate time and cost savings, the danger of chipping may be reduced as well (Figure 12, 15).

The following colour illustration shows the occlusal pattern after dynamic adjustment (Figure 14).

In the image, one can clearly recognize the deviations (color markings) between the static and dynamic structure and the adjustment of interferences in the chewing relief.

The dynamic adjustment may be displayed over the static one as wire netting. Any interferences to be expected are clearly recognizable (Figure 15).

After the dynamic adjustment, the finalized VITA ENAMIC crowns may be displayed in the KaVo multICAD module TruS-mile in a photo-realistic manner (Figure 16, 17).

Preparation for manufacture in the KaVo CSS: 60 seconds

The next steps for the completion of the dentures are performed in the KaVo CSS software, which is a job, material, tool and machinery management software by KaVo.

First, the manufacturing method is defined. This means that the user has the opportunity to send the produced,
open STL data of the restoration to his ARCTICA engine, his Everest engine or to other KaVo milling partners via the free KaVo Everest portal. The work to be manufactured and the predefined material to be used may be reviewed in a 3D view. If necessary, additional modifications such as, for example, a change of the material may be made.

After the selection of the KaVo ARCTICA engine as the production machine and a VITA ENAMIC for KaVo ARCTICA block, which was previously booked into the KaVo CSS via RFID technology, the nesting, i.e. the positioning of the restoration in the virtual material block, may be performed (Figure 18).

Now, the blanks are inserted in the block bracket of the ARCTICA engine and affixed with a torque wrench with a defined tightening torque (Figure 19, 20, 21).

Afterwards, the tool stack with the tools required for the VITA ENAMIC — in this case, 4 different grinding tools with diameters between 0.6 – 3.6 mm - is inserted.

These tools were also previously booked in the KaVo CSS software via RFID chip and assigned to the glass ceramic tool stack. The advantage is that the tool service times are precisely logged and that the ARCTICA engine uses a traffic light pattern (green, yellow, red) to show the user when a tool should be exchanged. This also helps to minimize application errors.

In case of an automatic tool change in the KaVo ARCTICA engine, the tools are once again inspected with a laser for breakage or faulty positioning once they have been removed from the stack.

The processing is started at the touch of a button on the touch-screen of the ARCTICA engine or, alternatively, directly at the PC (Figure 22).

Completion of the VITA ENAMIC crowns: 180 seconds each

After the successful production of the two restorations on the KaVo ARCTICA engine, the VITA ENAMIC crowns may be separated from the material block. The ARCTICA engine may be connected to a KaVo lab handpiece (ERGOgrip and POWERgrip) and used to further process the works. Prior to the start of the grinding procedure, there is also an opportunity to reduce the diameter of the connectors to a minimum at the end of the production process, so that the time expended for the separation of the restoration becomes negligible.

After the grinding procedure, the VITA ENAMIC crowns are polished in a time-saving manner with the tools from the VITA ENAMIC polishing set. An additional subsequent individualization of the work is possible with the colours of the VITA ENAMIC stains kits. In this case, an additional individualization was omitted upon the request of the patient (Figure 23, 24, 25).

Thanks to the use of the virtual articulator during the construction in the KaVo multiCAD software and the precise 5-axis technology of the ARCTICA engine, the work could be inserted directly into the mouth of the patient and corrections of the occlusal relief could be waived. As can be seen, precisely integrated process chains pay off.
stabilize directly tertiary dentin formation and intratubular mineralization, are entirely lacking from the literature. A few recent investigations at the preclinical level have shown that application of newly commercialized calcium-silicate based materials in deep dentinal cavities resulted in rapid stimulation of the biosynthetic activity of odontoblasts and dramatic reduction of dentin permeability. Again, all these data have to be confirmed clinically.

In conclusion, despite the fact that numerous scientific articles studied experimentally or clinically the pulp protective materials in experimental or clinical investigations (Björndal et al. 2010) and a number of critical and systematic reviews discussed their results, it must be emphasized that they have not been evaluated for the complete range of their effect. Given that application of a calcium hydroxide-based material in combination with a glass ionomer, seem to be the best choice according to the guidelines of American Academy of Pediatric Dentistry and the position statements delivered by the American Association of Endodontists, further randomized multi-centered controlled clinical research is needed to assess firstly the overall role of capping material in the VPFT, and then the ability of today used and/or newly developed materials to provide long-term pulp protection.

References

Table: A schematic overview of the pulp protective materials’ performance in clinical and experimental investigations.

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describes using of Smile Design inside CEREC software and software DSO Connect by Dr. Josef Kunkela. Dr. Kunkela is an innovative Czech dentist with extensive experience in prosthodontics, restorative dentistry, preventive care and dental marketing. He currently presents his research in Czech Republic, USA, Germany, France, Ireland, Malta, Poland, Hungary and Slovakia. He also organizes practical courses in prosthodontics and CAD/CAM dentistry in the Czech Republic. His studies are published in the dentistry journals Quintessence, International CAD/CAM Magazine, Dental Tribune and DentalCare Magazine.

Five table clinics will operate from 11th to 13th September in groups. Outstanding CEREC trainers will run a premier extensive training for future and advanced CEREC users. Participants will have the opportunity to interact immediately and ask their personal questions of interest. The practical demonstrations will, at the same time, provide inspiration and other means of trouble shooting.

Dr. Todd Ehrlich, USA - Summer of CEREC “If you are a current CEREC user wanting to hone your skills, or someone curious about the technology, this narrative instruction will guide you for the best outcome.”

Dr. Daniel Vasquez, USA - Explore CEREC Omnicam “It’s incredible how easy and fast new user learn to operate the new Camera CEREC Omnicam. Come learn and engage in this One day lecture/hands-on and discover how you can integrate CEREC Omnicam to your practice.”

CEREC InLab Basic & Advanced Training is featuring Dental Technicians, Mr. M. Al-Zu’bi, Canada Mohammad Al-Zu’bi-RDT, owner of Optimus Dental Lab Inc; a Crown & Bridge lab which focuses on Digital Dentistry and CAD/CAM Technology. How the InLab works for non-users. Digital work flown in Dental Laboratories. Material used with the system. Utilizing the system to the fullest potential! Mohammad is a Sirona Beta Tester, Sirona international speaker/trainer, CEREC & InLab basic/advanced Trainer, Founder of the InLab Study Group. He has been a dental technician for 18 years working in most lab departments.

CEREC overlay is one of the most common indications for patient restoration – he it on a vital or root-canal treated teeth. The sheer quantity and frequency of these procedures may result in a large number of errors unless one is intimately familiar with all the strengths and weaknesses of the used work-protocol and applied materials. Dr Josef Kunkela will focus on detailed workflow in his table clinic presentation on 12 September “CEREC Guide work flow & CEREC Alignments; Smile Design workflow, Digital Face Bow and Virtual Articulator”

Almost 50 years ago, the first Chairside Indirect Ceramic Restorations were introduced; a posterior tooth Bonded Ceramic Inlay was digitally imaged, designed, and manufactured using CEREC Chairside CAD/CAM equipment. Nowadays, the system is capable to digitally produce almost every type of single tooth restorations as well as bridges both on natural teeth and implants.

Dr Munir Silwadi with his table clinic presentation “Chairside Indirect Veneers, Inlays, and Onlays A - Z” will make a demonstration on models created out of actual cases. Participants will be able to use the full capabilities of the system to practice all steps required to produce and bond Veneers and Partial Crowns, especially to restore Endodontically treated teeth.

Social Program

Work hard, play hard is the motto of the CEREC Desert Fest. With a content rich Scientific Program it is only fair to have a suitable social program. On the first day there will be an opportunity for a sponsored DESERT SAFARI for the interested – a must for everyone who is visiting UAE. A memory to share with your family and friends back home. Be sure to bring a camera when going to a desert safari in Dubai as the views are breathtaking. There will be plenty of opportunities for socializing with your colleagues at our special Social Program. On the second day there will be a special encore finish with CEREC Night – a special event overlooking the Majestic Dubai Fountains which are dancing to the sound of the angelic voices of Andrea Bocelli and Sarah Brightman. We look forward to spend a wonderful two days with you at the dynam- ic Emirate of Dubai in UAE.

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