DUBAI, UAE: May 2015 will mark a significant milestone in the history of the Centre for Advanced Professional Practices (CAPP) in Dubai. CAPP will be celebrating its tenth anniversary of successful continuing dental education not only in the United Arab Emirates but also across the Middle East. Through the hard work of its colleagues, sponsors, partners and supporters, CAPP has been able to establish first-class standards for continuing dental education programmes over the past decade. Participants and followers of CAPP programmes have also helped develop professional training according to the needs of the region with their open feedback.

CAPP is an ADA CERP-recog-nised provider that specialises in continuing medical and dental education programmes (conferences, hands-on courses, workshops, etc.).


By Centre For Advanced Professional Practices

Health authorities offer Ebola guidance for dentists

By Dental Tribune International

ATLANTA & CHICAGO, USA: In close collabor-a-tion with the Centers for Disease Control and Prevention (CDC) and the Organization for Safety, Asepsis and Prevention, the American Dental Association (ADA) has released information for dental professionals on Ebola virus disease, which is epidemic in West Africa. Among other recommendations, it provides advice on the treatment of patients recently returned from the region.

CDC and its partners are currently working to help prevent Ebola and other infectious diseases from being introduced into and spread in the U.S. As of

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Procter and Gamble Oral Care renews endorsement partnership with the Lebanese Dental Association in Beirut

By Crest & Oral-B

BEIRUT, Lebanon: During the 24th Beirut International Dental Meeting (BIDM 2014), held under the High Patronage of His Excellency the President of the Lebanese Parliament, Mr. Nabih Berri, a ceremony was organized to announce the renewal of the official partnership between P&G Oral Care and the Lebanese Dental Association, LDA at Biel Convention Center.

“Oral hygiene is a topic that quite often is overlooked”

Dr. Ashhad Kazi, Professional & Academic Relations Consultant – AP, representing Crest and Oral B commented on the occasion: “The vision of Procter and Gamble Oral Care is to improve oral health of more people in more parts of the world more completely. This collaboration with the Lebanese Dental Association is one of the initiatives that we are proud of and keen on sustaining.”

Professor Elie Azar Maalouf, President of Lebanese Dental Association (LDA), stressed on the importance partnership between P&G Crest and Oral B will provide to the retirement fund for dentists in Lebanon. He added: “We are specifically thrilled about the unique benefits that this collaboration between the LDA and Crest and Oral B will provide to the retirement fund for dentists in Lebanon.”

The ceremony took place in the presence of the president and members of the Saudi Dental Syndicate, whereby Dr. Kazi presented Professor Maalouf with the newest innovation from KaVo QUATTROcare PLUS, the Bluetooth enabled Power Brush: The Oral B White Pro 7000 that has just been released in the UK.

Dr. Kazi added, “Oral hygiene is a topic that quite often is overlooked and not given its due importance in our daily lives, with newer oral care technologies now at our disposal, it can be a game changer in the fight for maintaining good oral health. Crest and Oral B have a long history of high quality research as such, they offer a comprehensive line-up of toothpastes, mouthwashes, toothbrushes and flosses which provide consumers with innovative, targeted solutions designed to meet all general and specific oral care needs.”

With this collaboration for the second term, both Crest and Oral B and the Lebanese Dental Association will not only be establishing more awareness about the right routine for good oral hygiene and its maintenance, but also providing unique benefits to the retirement funds of dentists in Lebanon.
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“CEREC Desert Fest 2014” in Dubai, UAE

By Sirona

BENSHHEIM, Germany: Sirona and the Centre for Advanced Professional Practices (CAPP) organized the first ever “CEREC Desert Fest” with exciting discussions about the newest insight in digital dentistry, real-time demonstrations and an entertaining social program. The event held in Dubai from September 12-13 was aimed at both potential CAD/CAM users and experienced CEREC users.

Sirona presented the CEREC Desert Fest for the first time at The Palace Hotel Downtown Dubai, a beautiful hotel located in the city’s Old Town. More than 200 dental professionals took the chance to share their aspirations for Digital Dentistry and their experience with Sirona’s CAD/CAM system with dental colleagues from all over the world.

In addition to pioneer and future CEREC users, dentists and dental technicians from the UAE, professionals from Bahrain, Egypt, Greece, Iran, Iraq, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan and The Netherlands attended the event.

Volker Vellguth, Vice President Sales Russia, CIS, Middle East and Africa at Sirona: “With the CEREC Desert Fest we wanted to establish and strengthen the connection between our know-how and the experiences of CEREC users in these spectacular surroundings. Professional exchanges are important for the advancement of digital dentistry. We wanted to provide a stage for creative discussions for dental professionals and the more than 200 guests took advantage of this opportunity. We can proudly say that the event was a great success for us and CEREC!”

The guests clearly enjoyed this new and signature networking event. Filled with entertainment, panel shows, real-time CEREC-demonstrations, desert safaris and table clinic presentations in a beautiful Arabian flavored ambiance in the heart of Dubai.

Dr. Daniel Vasquez, San Diego “What a wonderful experience, we had a great time. When I started my presentation I asked how can I bring Dubai to San Diego or San Diego to Dubai; it is simple, I made many new friends and I hope I can stay in the heart of many of the attendees and of course in all of you.”

“The guests clearly enjoyed this new signature networking event.”

“We can proudly say that the event was a great success” - Dr. Amro Adel, Area Manager GCC, & Pakistan, Country Manager Saudi Arabia, Sirona Dental GmbH

“Professional exchanges are important for the advancement of digital dentistry.”

Contact Information

Please visit the event’s website: http://cerecfest.cappmea.com.
Oct. 17, the ADA advises dental professionals of the following:

A person infected with Ebola is not considered contagious until symptoms appear. Owing to the virulent nature of the disease, it is highly unlikely that someone with Ebola symptoms will seek dental care when he or she is severely ill. However, according to CDC and the ADA Division of Science, dental professionals are advised to take a medical history, including a travel history, from their patients with symptoms in whom a viral infection is suspected.

As recommended by the ADA Division of Science, any person within 21 days of returning from the West African countries Liberia, Sierra Leone and Guinea may be at risk of having contacted persons infected with Ebola and may not exhibit symptoms. If this is the case, dental professionals are advised to delay routine dental care of the patient until 21 days have elapsed from their trip. Palliative care for serious oral health conditions, dental infections and dental pain can be provided if necessary after consulting with the patient’s physician and conforming to standard precautions and physical barriers.

In general, providers of dental health care services should continue to follow standard infection control procedures in the clinical setting as described in CDC’s 2005 Guidelines for Infection Control in Dental Health-Care Settings, the organization stated.

Signs and symptoms of Ebola include fever greater than 38.6 C or 101.5 F and severe headache, muscle pain, vomiting, diarrhea, stomach pain, or unexplained bleeding or bruising.

CDC emphasized, “The virus is spread through direct contact with blood and body fluids of an infected person, or with objects, like needles, that have been contaminated with the virus.

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Utilizing the Tempcap abutment with CAD/CAM
Combination of Tempcap, in-office CAD/CAM and e.max allows for final restoration

By Dr. Les Kalman, USA

The E4D in-office CAD/CAM unit (Editorial note: Planmeca E4D Technologies) has been employed in an investigative laboratory study to design and mill an unconventional IPS e.max restoration that would be coupled with the Tempcap as a final implant-supported crown. The combination of the Tempcap, in-office CAD/CAM procedures and IPS e.max allows the clinician to create an immediate final restorative product with ideal characteristics.

The procedure is a simple, efficient and effective solution for the restoration of implants.

Introduction

The temporization of a dental implant following surgery, particularly in the anterior region, is a necessary procedure. The temporization allows for surgical healing, preservation of the gingival architecture and, most important, replacement of a tooth in the edentulous space for patient acceptance. Several techniques for the temporization exist, but the process has proved to be time-consuming and frustrating. The Tempcap abutment and the process for temporization were created to provide a simple yet effective approach.1 With the advent of CAD/CAM technology and e.max, the potential of the Tempcap to act as a final abutment seemed likely and suitable for investigation.

Background

Following the surgical placement of a dental implant, several requirements must be met to maximize healing and osseointegration of the implant body to bone:

- Minimal forces, if any, should be exerted on the implant body, permitting proper healing and preventing a non-ossous union.2
- The gingival architecture must be managed meticulously to prevent contamination, minimizing the risk of peri-implantitis and possible failure.3
- There must be sufficient time for the process of osseointegration.4
- Temporization and immediate restorations should not violate these factors.3

The function of the Tempcap is:

- to allow for optimal gingival healing;
- prevent contamination of the surgical field;
- minimize forces and micro-vibrations on the implant;
- facilitate the simple yet successful restoration of the implant (Fig. 5).

CAD/CAM stands for computer-aided design and computer-aided manufacturing. CAD enables the individual to digitally capture an image of a prepared tooth or structure and then design an indirect restoration by using software.4

After the ideal restoration has been produced, the design is then fabricated out of a material by a milling machine. In-office E4D units (Editorial note: Planmeca E4D Technologies) are currently available to allow for immediate chairside fabrication without the use of a commercial laboratory.

IPS e.max (Ivoclar Vivadent) is a relatively new metal-free dental material used in indirect restorations. It is an aesthetic material composed of lithium disilicate and has ideal physical and aesthetic properties, allowing it to be the first choice for CAD/CAM restorations. IPS e.max has strength second only to gold and has the ability of detailed CAM production.2

Methodology

The Tempcap was selected and placed on an Ankylos (DENTSPLY Implants) implant body (master cast with soft tissue) (Fig. 6), Digitization was achieved by using an E4D camera (Editorial note: Planmeca E4D Technologies) (Fig. 7), in which several images were captured to compile an accurate image (Figs. 8 & 9). CAD design was used with E4D software (Editorial note: Planmeca E4D Technologies) to determine and delineate margins (Fig. 10).

Tooth design was initiated incorporating several parameters:

- ideal aesthetics and emergence profile (Fig. 11);
- adequate proximal contacts;
- appropriate occlusal scheme;
- material thickness requirements;
- internal surface morphology to adapt to Tempcap;
- design that can be milled via CAM technology.

Numerous design iterations were required to achieve the desired design requirements (Figs. 12-14). IPS e.max was selected for milling (Fig. 15) and was executed by an E4D CAD unit (Editorial note: Planmeca E4D Technologies) (Fig. 16). Milling limitations, such as bar contact and prosthesis fracture, required CAD design modifications. Alterations in CAD/CAM design were carried out until a successful restoration was achieved (Fig. 17).

The unfired IPS e.max crown was tried for fit and aesthetics and then subsequently fired (Fig. 18), resulting in its colour change. The crown was further stained, glazed and fired (Fig.
The IPS e.max prosthesis crown was further assessed for fit, taking into account marginal fit, occlusal and proximal contacts (Fig. 22).

A secondary investigation utilized a more complex Tempcap to assess the limit of the CAD/CAM unit’s capability. A stand-alone Ankylos (DENTSPLY Implants) implant body was coupled with a Tempcap abutment with three retention pin projections (Fig. 25). The abutment was digitized with the same methodology as described. An IPS e.max crown was executed and assessed (Figs. 24 & 25).

Discussion
This study has determined that the Tempcap can be successfully and accurately digitized and milled by in-office CAD/CAM technology (Editorial note: Planmeca E4D Technologies) to create an ideal prosthetic crown from IPS e.max within a laboratory setting. CAD software can be manipulated to generate forms beyond the scope of the unit.

Complex units, such as the three-pronged Tempcap may be successfully designed and milled. IPS e.max has the capability to be milled in complex patterns, while still maintaining its structural integrity.

However, further laboratory studies, quantitatively assessing stresses and strengths and utilizing a larger sample size, are required to validate the concept. Subsequent clinical investigations are required to assess the clinical significance and viability of the Tempcap with CAD/CAM technology. The potential to fabricate the Tempcap entirely from e.max should also be considered.

Conclusions
In-office CAD/CAM technology can be utilized and manipulated to generate digitized forms beyond the scope of the morphogenesis. CAM manufacturing has limiting factors that must be realized when producing modiﬁcations. CAD modiﬁcations must account for these discrepancies. IPS e.max has the ability to be milled in extremely detailed designs.

The Tempcap can be optically scanned and digitized in order to design and create a CAD/CAM IPS e.max restoration using E4D technology. The utilization of the Tempcap as a successful provisional abutment has been documented; the utility of the abutment as a simple, efficient and cost-effective component seems promising. These advances simplify the procedure and reduce the cost, ultimately allowing a greater accessibility for both patients and clinicians.

Editorial disclaimer: Dr Les Kalman is the co-owner of Research and the inventor of the Tempcap. This article was originally published in implants CE magazine 1/2013.

References
The aesthetic challenge

By Dr. Mohamed El Sayed Hassanien, Egypt

Patient's satisfaction has always been the main goal of achievement of dental professionals particularly with esthetics. As the popularity of esthetic dentistry increases, a growing number of patients are seeking treatment for improvement of unaesthetic anterior dentition. Accordingly several treatment options have been proposed to restore the pleasant esthetic appearance that the patients are always seeking.

Based on the conservative approach and minimal invasive dentistry protocols, ceramic laminate veneers have been introduced to satisfy the patients growing esthetic demands. Many construction techniques have been utilized in the dental market whether directly or indirectly to fabricate ceramic laminate veneers.

CAD/CAM being state of the art dental technology offers lots of merits for both the clinician and the patient. Being a chair side same day procedure, utilizing intra oral scanning avoiding conventional physical impressions, and long-term provisional restorations thus producing an esthetic all-ceramic restoration with highest degrees of accuracy and precision.

Case presentation
A twelve year girl, medically healthy, denies taking any medications visited my clinic complaining of fractured upper two central incisors Fig. 1 & 2. After clinical and radiographic examination, which revealed complete root formation, two ceramic veneers for both central incisors were proposed as a treatment option to solve her complaint.

Tooth preparation
Tooth preparations were made using the depth-guided diamond wheel no. 018 to indicate the facial reduction amount of 0.4 mm for both teeth. The labial diamond bur no. 016 was used to complete the preparation on the labial surface and precisely reproduce the cervical finish line located just below the free gingival margin Fig. 3.

Incisors preparations were made with type two-veneer preparation design ending with a butt joint on the incisal edge and not involving the palatal wrap around. Finally finishing bur no. 014 was used to finish and smooth all the preparation surfaces Fig. 4.

All teeth preparations were made with loupes of magnification 2.5 X for better precision.

CAD/CAM fabrication steps
In lab SW 4.2.3 was used to scan, design and mill these two veneers. The case was administrated as two veneers on tooth number 8 and 9; with the bio-generic indication Fig. 9. They were both virtually active. Virtually linked as a group so that the two veneers showed similar length to width relations Fig.6.

With the two veneers linked, restoration virtual translucency tool was used to check the amount of ceramic extension in relation to the underlying tooth preparation Fig.7.

SW 4.2 showed a new colored model tool, which enables the operator to see both veneers with the same color match for more valid size comparison Fig.8.

Shade matching
Visual shade matching was used for this case. Where the adjacent sound teeth showed A1 shade. Empress Cad blocks being a Lucite reinforced ceramic material was chosen for this case with a low translucency in order to mimic the adjacent shade of the teeth. Try in stage was done for the patient before glazing to check for proper seating and accuracy of the margins.

Glazing and characterization
Both veneers were seated properly with the object to fix putty material for better handling during glaze and stain process.

Empress Cad paste glaze was the material of choice for glazing the two veneers. In order to match the adjacent teeth, Empress Cad white stain was used on the middle and Incisal areas in a scattered pattern with a thin brush to give the natural white stain effect. Single cycle was used for staining and glazing together Fig.9.

Cementation procedures
- Ceramic veneer surface treatment:
  - HF 4 % Empress etching gel was
KaVo MASTErSurg LUX Wireless: Redefining the best

By KaVo

With the successful launch of the EXPERTsurg LUX surgical unit and the SURGmatic instruments KaVo recently celebrated its comeback as a main player in the dental surgery field. As one of the world market leaders the dental company now presents another highlight: The MASTErSurg LUX wireless surgical unit. Thereby KaVo confirms its market position as a leading and innovative international dental player.

The new KaVo MASTErSurg now completes the attractive KaVo surgical portfolio and redefines surgical standards. Therewith all dentists and den-

Nobel Biocare to join Danaher dental business

By Dental Tribune International

ZURICH, Switzerland/CHARLOTTE, N.C., USA – Today, Danaher, a US health care conglomerate of brands from various industries, and Swiss dental manufacturer Nobel Biocare announced that the two companies have entered into a definitive transaction agreement. In order to further expand its global dental business, Danaher has offered to buy Nobel Biocare, which is the second-largest supplier of dental implants worldwide, for CHF2 billion (US$2.1 billion).

As reported by Dental Tribune ONLINE earlier this year, Nobel Biocare confirmed that it had been approached at the end of July by third parties with a potential interest in acquiring the business. Now, the company’s board of directors has unanimously decided to recommend that Nobel Biocare’s shareholders accept the offer, which will...
Concepts, goals and techniques for successful orthognathic surgery

By Dr. Theodore D. Freeland, USA

In this article, you will be introduced to the concepts, goals and techniques needed to diagnosis surgical cases, when surgical cases should be started and how to gain the knowledge needed to create successful results.

We’ll delve into joint status, soft-tissue analysis, surgical treatment objectives, pre-treatment surgical setups and surgical setups. We’ll then follow-up by looking at the concepts of natural head position, the axis-horizontal plane and the true vertical line will be introduced. By the end of this article, you should have:

- An overview of the knowledge needed for successful treatment.
- An introduction into what, when and how to perform successful cases.
- The goal of joint health.
- A summary of the soft-tissue analysis.
- An outline of the surgical treatment objective.
- An overview of diagnostic and surgical setups.

Remember that this article is an introduction only; it’s not intended to teach you how to do surgical cases. Advanced training will be necessary to master successful orthognathic surgical cases. So with no further ado, let’s get started.

Functional occlusion

The goal is to obtain functional occlusion. Before treatment, you have to determine if you have an orthognathic surgery case. You don’t want to begin orthodontic treatment with the idea that if orthodontics fails, you will do surgery.

You’ll see in Figures 1–5 that this case involves every facet of dentistry. Changes occurred not only in the facial features, but also in the teeth themselves. It involved orthodontic and orthognathic surgery, but also lengthening the front teeth by the restorative dentist to achieve the natural smile in balance (Figs. 1–2).

Soft-tissue analysis

You’ll need to know how to analyze the soft tissue. You’ll need this because you are looking at everything from a soft-tissue standpoint, or put another way, you’re recording the basic measurements that come from soft tissue, not hard tissue. If you deal with hard tissue only, then you will come up short in the soft tissue. Ignoring the soft tissue will result in a face that’s not improved, just different.

Surgical treatment objective

You need to know how to do a surgical treatment objective. You’ll need to know the technique, and you’ll need to know how to apply it because the surgical treatment objective allows you to treat the face, the occlusion, in a two-dimensional medium.

Pre-surgical setup/surgical setup technique

Once you have established what you’ll need to do from the surgical treatment objective, you will need to do what we call a pre-surgical setup. Otherwise you’ll need to apply the knowledge you’ve gained from the patient, soft-tissue analysis and the surgical treatment objective, and perform a three-dimensional workup to make sure what you have planned will work with the joint, muscles and nervous system.

Surgery

Finally, you need to know surgery. I recommend that the orthodontist be in the operating room so you know what the surgeon is doing, and how the surgery goes. It’s very important to know that the surgeon gets the joints seated in a passive manner. If the joint is stressed, then there’s a good chance that we’ll have some surgical relapse.

Joint status

Joint analysis will include three portions: history, a clinical examination and imaging.

Building a history will be similar to traditional patient assessment. We need to know if there are any family members who exhibit TMJ problems. If yes, then there’s a good chance the patient will develop significant joint issues that will affect the outcome of treatment.

After an oral investigation, a thorough clinical examination of the joints will need to occur. We’ll be on the lookout for any symptoms of injuries to the mandible. If the patient has had any injury that involves the chin, there’s a good chance that the joint may have been damaged.

Finally, we need to look into any past treatment. Has the patient had orthodontics before? Has the patient had a lot of restorative dentistry? This is important because all of the above have a tendency to affect joint status.

Clinical examination

Next is the clinical examination. Clinical examination includes the following:

- range of motion,
- symmetry of jaw motion,
- palpation,
- articulation,
- muscle splinting,
- CR position.

Range of motion should be between 45 mm and 55 mm on opening and includes assessing movement. We’re looking for a symmetrical mandible motion — meaning the chin should not deviate to the left or right on opening — and it should be relatively free of dental interference.

Now check for palpation of the muscles of mastication. If you don’t check the muscles that move the mandible, then there’s a good chance that you’ll miss some sort of functional bite issue.

When trying to manipulate the mandible, one can feel the muscles. If the muscles will not let you obtain a centric joint position, then we cannot do a diagnosis because the muscles aren’t holding the condyle out of the socket. This is usually due to some inflammation.

Finally, we’ll check what we call the centric relation position, which you should be able to feel. It should feel solid and the patient should be able to open from this position with relative ease, and there should be no noises.

Imaging

The clinical examination will tell us a lot about the joint status. The use of imaging will help us build our base of case-specific intelligence. We’ll use two types of imaging: MIJ and cone beam.
LCBT

Most of the time, we start with cone beam because it's easy to obtain a 3-D image of the joints. Thanks to the work of Rickets and Dr Ikeda, we have a way to measure joint position and get an idea if the condyle is basically in a lot better shape, having a more rounded effect to it. The size of the coronal view is one that shows a definite symmetric outline to it as compared to the vertical view. The axial view confirms this; you see that the shape is better and has a more dense outline.

Thus, our basic imaging system heightens our detectability in cases, one side is going to be the problem side, especially as it pertains to orthognathic surgery. If we go to the two-dimensional case created in the cone beam, we can see that the right joint has definitely lost vertical height, and we definitely have a joint space that is excessive (Figs. 4 & 5).

In the coronal view, we can even see that there may be some sort of cyst formation. When you compare the right side to the left side in the coronal view, you get a more traditional image, but what is we'd like to see. However, there have been some changes to the left side, because we're starting to see a “hard-breaking effect” in the left joint. This shows the joint are ones that are important in determining if we should proceed with any kind of a surgical correction.

In the sagittal view, the right side, the joint looks pretty normal. However, if we look at it in a transverse direction, you'll see less of a joint space laterally than you'd expect. Now do medially, something we see in both the left and right joints (a marked joint space, a lack). That's why it's important that you not only look at a sagittal view, but you also need to look at the coronal view to see if you have a transverse problem occurring in the joints.

Soft-tissue analysis

When we're trained in orthodontics, we're trained in hard-tissue analysis, otherwise all of our cephalometrics are based on hard structures. If you use hard structure to determine soft-tissue corrections, then you're going to run short of good functional aesthetics. That's why a soft-tissue analysis is so important.

Using soft-tissue markers with 3-D facial mapping, we are able to diagnose the soft tissue, and we can also relate it to the hard tissue.

In Figure 4, we've overlaid the soft tissue on top of the hard tissue. With the markers on, after we convert it to a two-dimensional X-ray, we can see where the sub-pupill area is, where the cheekbones are and where the alar base is. In addition, you will see a marker that we call a hinge access marker, which comes from establishing the true hinge axis of the patient. There is also a marker that's placed on the nose that we call the horizontal point.

We are going to analyze everything from a basic coordinate system of a true vertical to an axis horizontal.

The image is orientated from the axis horizontal plane and the true vertical plane, which is based on the patient's natural head position.

Figure 5 shows how these two corners are at 90 degrees from each other. In this analysis, we're going to record all the soft-tissue measurements, both horizontal and vertical, and we're going to base them on the line that runs through the subnasale (SN). This establishes the true vertical line based on natural head position.

Furthermore, we're including a few hard-tissue measurements that will tell us about the architecture of the mandible. These come from Rickets and the Jarakah analysis. With this analysis, we can cover the basis that we need for orthodontics, but we can also cover what we need in a hard-tissue surgical approach.

We also need a frontal analysis, which is taken from the patient's face. Most of the frontal workup is done in examining the patient clinically. This enables us to look at the orbit, arch, cheekbone, sub-pupil, subnasale, nasal bases and canthus of the eyes.

All of this enables us to assess if we have transverse asymmetries, where the occlusal plane is cantled instead of level. This is especially true in cases where there's a degenerative process happening in one joint.

In the coronal view, we can see that there may be some sort of cyst formation. When you compare the right side to the left side in the coronal view, you get a more traditional image, but what is we'd like to see. However, there have been some changes to the left side, because we're starting to see a “hard-breaking effect” in the left joint. This shows the joint are ones that are important in determining if we should proceed with any kind of a surgical correction.

Head position, profile and frontal analysis

The natural head position is different for each individual patient. This will make the distance recorded from Glabella to the true vertical line different.

To measure how far Glabella is from SN (true vertical line), we first need to establish the patient's natural head position (Fig. 6). To do so, we have the patient stand in front of a mirror. First, the patient is asked to close his eyes and bob his head up and down three times.

After this is complete, the patient is asked to open his eyes and look himself directly in the eyes in the mirror. After we have established the natural head position, we then use the measurement from the true vertical line to Glabella. This establishes the true vertical line of the face.

Keep in mind that everybody's head position is a bit different. The further that Glabella is from the true vertical line will affect how we look at the lower third of the face.

Now we need to establish the axis-horizontal plane (Fig. 7). First, we establish the horizontal position using the ear bow. We'll use the pointer on the ear bow to make sure the ear is level with the true vertical line.

We have previously established, through axiopillar tracing, the hinge axis position on the patient's head. This enables us to look at the orbit, arch, cheekbone, sub-pupil, subnasale, nasal bases and canthus of the eyes.

This establishes the true horizontal plane. The axis-horizontal plane is then transferred to the articulator. This allows us to orient the CBCT data with the articulator mounting.

Now we have the true axis-horizontal plane and the true vertical plane combined, and now we're going to base them on the true vertical plane different.

In the example we are using, the patient has a mandible that has an arch that's level with the true vertical line different. This is the kind of case where you should be looking for degenerative joint disease. All of the above enables us to establish the parameters and coordinates we need to analyze the face and occlusion and then apply the correct treatment so the patient will have a functioning stable occlusion with the necessary facial improvements.

Soft-tissue analysis

The treatment objectives are based on the soft tissue. You perform the surgical treatment objective in this order.

1) Establish the position of the upper lip to the true vertical line in a vertical and horizontal manner.

2) Determine what you need to do with the anterior teeth to create the correct upper lip position.

3) Once you established the anterior part of the maxilla, then proceed to the posterior part of the maxilla and determine if you need to do an intrusion or extrusion of the posterior segments to level the occlusal plane.

4) In most cases where there's a retrusive chin and a skeletal open bite, the patient has an occlusal plane, measured from the true vertical line that is some where between 102 and 108 degrees. By leveling the occlusal plane, based on the anterior tooth position, you can set the mandible to the maxilla. This will usually balance the lower third of the face. If you still find the chin is too far forward or too far back, you may need to do genioplasty.

In the example case (Fig. 8), we have performed a surgical treatment objective, established the true vertical plane and we have our axis-horizontal plane. In this patient, we need to move the anterior teeth up because in the frontal analysis the patient showed too much tooth structure and too much gingival tissue. To fix this, we balance the maxillary anterior teeth based on the upper lip position.

Once we've established the correction in the anterior part, we're able to set up our occlusal plane at 95 degrees, showing us what we need to do with the posterior segment. In the example case, we need to extrude the posterior segment.

Figure 9 shows how we've completed the extrusion of the maxillary segment, and we've balanced the occlusal plane. The next objective is to place the mandible with the correct overbite. This is not 2 mm but 4 mm. This is because you want to have an adequate overbite to create adequate dishclusion. In establishing the mandible, you can see in our example how the lower part of the face is placed normally enough with the true vertical line (Fig. 10).

In establishing the surgical treatment objective, we see that we want to place the anterior section in the superior direction and the posterior in the inferior direction. These are all the measurements we need to establish a surgical setup. Hopefully, this is a sufficient preoperative so the patient has a good idea of what needs to be done.

Pre-surgical and surgical setups

The pre-surgical and surgical setups are techniques that do require the clinician's time. It's
The importance of cementation: A veneers case using a new universal cement

By Kerr

Esthetic options in dentistry are the prevailing choice of most patients today. Veneers and bleaching in particular have become buzzwords in popular culture, and TV sitcoms, film and magazine advertising have turned these cosmetic techniques into household names. As a result, dental teams must accommodate the demands of their patients, becoming highly versed in placing metal-free restorations.

Practitioners can find a multitude of educational articles and courses teaching the science and technology of porcelain, zirconia and composite. But while emphasis is frequently placed on the final prosthesis or direct restoration, often overlooked are the increasingly important auxiliary materials that contribute equally to the clinical success of these new materials and restorations: impression and provisional materials, bonding agents and cements. Education is imperative because cementation and bonding are two areas of esthetic dentistry that have evolved through generations of products and techniques.1 These processes are essential in making esthetic restorations both functional and comfortable. That's why veneering can be an optimal, conservative alternative to crowning teeth, since preservation of tooth structure is important to dentists and patients alike. The highly esthetic results are due to the fact that ceramics have a translucent finished surface texture similar to that of natural enamel.2 Therefore, assistants and lab technicians spend vast amounts of time and effort perfecting veneers to avoid fracture through painstaking preparation, material and shade selection, fit and fabrication. Yet even after such arduous processes, clinical failure and patient dissatisfaction readily occur with errors in cementation.

Cementing veneers is a delicate process with a historical litany of potential problems — color instability, insertion difficulty, handling and cleanup issues, unsatisfactory radiopacity, low translucency after curing, mismatch between try-in gels and final cements, and debonding, to name a few. Cement selection in certain applications necessitates knowledge of the chemistry and physical properties of the particular cement type and insertion requires an exacting technique for successful clinical results.3 This article outlines a veneers case using NX3 Nexus® Third Generation—a new, universal cement from Kerr. The subject is a long-standing patient-of-record with a current radiological and medical chart. This focus is on the steps and techniques implemented at final cementation of the protheses.

Clinical Case

A female patient in her mid-fifties presented a chief complaint of being unhappy with her smile. An examination of her hard tissues revealed immediate concerns of multiple fractures, hypocalcification, shortened anterior teeth due to wear and an asymmetrical smile line (Figures 1 and 2). After proposing a first phase treatment plan to restore all of these expectations when choosing a cement—NX3 satisfies all of these expectations.4 This product was preferred because of its unique "biotopic" properties, which enable them to stay where they are placed prior to light-curing. This feature makes adjustments and proper placement easier while decreasing the need to add excess cement to be cleaned (Figure 10). The veneers were then tested for 40 seconds if space is needed once they are cured.

Prior to final curing, the restorations were spot-cured for 10 seconds to allow the light-cure method was used because the veneers were not inordinately thick. NX3 allows veneers to be cemented all at once (as opposed to cementing centrals first, laterals second, and so on) because of its unique "biotopic" properties, which enable them to stay where they are placed prior to light-curing. This feature makes adjustments and proper placement easier while decreasing the need to add excess cement to be cleaned (Figure 10). The veneers were then cured for 10 seconds using the E.D. Demetron I curing light (kerry) (Figures 7 and 8).

After etching and bonding, the veneers were cemented using NX3 light-cure cement in the clear shade (Figure 9). The cement was dispensed directly onto the internal surface of the veneer and was expected to ooze from all margins when the veneers were placed onto the prepared teeth. With the choice of either the single-syringe light-cure veneer cement or the dual-syringe dual-cure resin, the light-cure method was used because the veneers were not inordinately thick. NX3 allows veneers to be cemented all at once (as opposed to cementing centrals first, laterals second, and so on) because of its unique "biotopic" properties, which enable them to stay where they are placed prior to light-curing. This feature makes adjustments and proper placement easier while decreasing the need to add excess cement to be cleaned (Figure 10). The veneers were then cured for 10 seconds using the L.E. Demetron I curing light (kerry) (Figures 7 and 8).

The teeth were then etched for 15 seconds with Kerr Gel Etchant, which is composed of 57.5% phosphoric acid (Figure 5), and then rinsed and slightly dried.5 While a total-etch technique was used, NX3 works with both total-etch and self-etch protocols, adding to the distinctiveness of the product.) Per manufacturer directions, Optibond Solo® Plus (kerry) was brushed onto to the tooth surfaces for 15 seconds (Figure 6), air-thinned for 3 seconds, and cured for 10 seconds using the L.E. Demetron I curing light (kerry) (Figures 7 and 8).

Figure 1: Pre-op

Figure 2: Interior upper pre-op

Figure 3: Temps of csect 8232DC4

Figure 4: Esypsum precame 8232DC3

Figure 5: Kerr etch

Figure 6: Optibond solo plus

Figure 7: Curing solo plus

Figure 8: Cured bonding agent

Figure 9: Veneers w/ NX3 8232186

Figure 10: Cleaned cement 8232DC7

Figure 11: Cleaned cement 8232DC7

Figure 12: Final new teeth and 8232DC7

Figure 13: Post-op

Conclusion

Cementation is an important aspect of functional aesthetics. An understanding of chemistry, technology and physical properties are all essential to proper usage and clinical success. Cement selection is the single most important factor in choosing the bonding system for this case. NX3 Nexus® Third Generation cement is free of amines—organic compounds containing nitrogen as their key atoms—which were largely blamed for the color shifts so prevalent with earlier cement formulations. In an earlier use of the product the cement proved to be “flunitropic;” the consistency of non-drip paint, the restorations were seated and adjusted before curing with no dripping or ooze. Curing limitations of use and cleanup, color match and optimum retention are some of the attributes necessary when choosing a cement—NX3 met all of these expectations.

References

Dr. Mitch Coudill, a 1985 gradu ate of Baylor College of Dentistry in Dallas, TX, lectures internationally and has published numerous articles reviewing all aspects of restorative and cosmetic dentistry.
Conservative approach to multidisciplinary aesthetic dental treatment

By Kostis Giannakopoulos, Greece

The aesthetic performance of dental restorations has always been a factor of utmost importance in the success or failure of the treatment. Lately, as aesthetic awareness of the population increases and the evolution of dental materials have made new techniques possible, optimal aesthetics can be achieved following less invasive restorative procedures. In many cases, multidisciplinary treatment is necessary so that the best possible outcome is achieved with a minimum degree of compromise between invasiveness and aesthetics. Every complex case should be treated planned by a team of specialists, so that every detail and limitation from each point of view is taken into account. The restorative dentist usually designs the smile and oversees each phase of the treatment by all other specialists.

Congenitally missing lateral incisors are a common dental problem that can be ethically dealt in three different ways: 1. canine substitution, 2. tooth supported restoration, and 3. implant supported restoration. Tooth auto transplantation (usually premolar) and removable partial dentures are other, less commonly applied treatment options. In the case of only one lateral incisor missing, an additional problem of symmetry results in the spaces between the right and left side usually exists and needs to be addressed.

Peg shaped lateral incisors pose another aesthetic problem that is usually restored with as follows: 1. all ceramic crowns, 2. porcelain veneers, and 3. direct or indirect composite veneers. Additional to the inadequate width and length of the peg shaped lateral, many times there is also a gingival aesthetic problem that can lead to a square looking restoration and too much gingival tissue display if not properly treated planned with either orthodontic intrusion or gingivoplasty/gingivectomy before the restoration is fabricated.

In this article, a case is reported of a young patient with one congenitally missing and one peg shaped lateral incisor. The patient was treated with a combination of orthodontic, periodontal surgery and aesthetic – restorative dentistry interventions.

Case report
A 22-year old Caucasian female presented to the clinic asking for aesthetic improvement of her smile. The patient was single and a student of law school. The medical history was unremarkable with no pathologies and no known allergic reactions reported to any kind of medicaments. No medications were taken on a systematic basis by the patient. The dental history was also unremarkable with only preventive and minor operative dentistry interventions and prophylaxis in the past. The patient mentioned a history of congenitally missing teeth in her family.

The chief complaint of the patient was spaces between the teeth and specifically the missing upper left lateral incisor tooth, the irregularly shaped upper right lateral incisor, and the diastema between teeth #11 and 21. Also, she was concerned about asymmetries in her smile and misalignment of her teeth. Finally, the patient stated she would like to have a brighter smile (Figures 1-3).

The dental examination revealed no pathological findings or signs of dental disease. The DMFT was low and the comprehensive periodontal examination was within normal limits. Soft tissue examination resulted in no pathological findings; radiographic bitewing examination revealed no pathological findings as well.

The aesthetic evaluation of her smile resulted in the following issues that would need to be addressed in the treatment plan: 1. peg shaped lateral incisor #12, 2. congenitally missing lateral incisor #22 with diastema between #11 and 21, 3. dental midline transmitted to the right by 4mm, 4. asymmetry between the left and right side, especially in the space between #11-13 and 21-23, 5. gummy smile, especially on the area of #12 and the missing tooth #22, and 6. the gingival zenith was asymmetrical between #11 and 21 (Figures 4-6, Table 1). The occlusion was Class I.

The base shade of the teeth was A5 on the upper central incisors and A3.5 on the upper canines with the Vita Classical shade guide (Vita Zahnfabrik, Bad Sackingen, Germany). Photographs and alginate impressions were taken in the exam appointment to fabricate study models. Then the team of aesthetic/restorative dentist, orthodontist and periodontist treatment planned the case. The recommended treatment plan was accepted by the patient in favor of the alternative treatment plans.

Orthodontic phase
The orthodontic treatment goals were as follows: 1. intrude #11 to align the incisal edges of the centrals, 2. equalize the spaces between #11-15 and #21-25, 3. transfer the dental midline to the left, and 4. correct misalignments and minor rotations in different areas. Some composite resin was bonded on the facial surface of tooth #12 to facilitate bracket placement. The composite was white in shade to

<table>
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<th>Tooth (#)</th>
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<td>13</td>
<td>6</td>
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<td>12</td>
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<td>21</td>
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<td>22</td>
<td>6</td>
<td>8.5</td>
<td>21 - 22: 2.2mm</td>
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<td>23</td>
<td>6</td>
<td>8.5</td>
<td>22 - 23: 2.2mm</td>
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Table 1: Teeth and spaces between them were measured. The proportions of the teeth (length to width ratio) and the arrangement of the spaces are crucial information in treatment planning, especially in patients with a high lip line.
A multi-disciplinary approach to minimally invasive functional aesthetic dentistry

By Dr. Tiff Qureshi, UK

Simple tooth alignment is rapidly becoming accepted as the norm in cases that previously would have been treated with porcelain veneers. However, patients often present with a mix of problems such as previous metal ceramic work, the treatment of which should be integrated as part of the treatment plan. Timing becomes a vital part of the treatment when mixing restorative care, alignment, tooth whitening and occlusal planning. The following case illustrates an effective approach to treatment.

Case report
A patient presented complaining that “his two front teeth [old upper anterior crowns] felt as if they were too large and were always hitting the lower teeth.” In addition, his bite never felt “right” (Figure 1). He also wanted to try to improve the appearance of his teeth. He was aware of what could be done with porcelain veneers, but wanted to try to make the best of his own teeth.

Examination
On inspection it was clear there were several issues:
1. Occlusion - The irregular alignment of the lowers and the thickness of the upper old crowns were adding to the problem of unbalanced anterior contacts. The back of the crowns, especially the upper left central, were hitting the front of his lower teeth, in particular the lower left central.
2. Thickness/aesthetics of crowns - The occlusion meant that the upper crowns had been placed quite labially and because they were metal ceramic, made them feel particularly thick. They also appeared rather opaque.

Treatment plan
Our aim was to try to treat these multiple issues simultaneously and good timing can make sure we optimize the opportunity for this.

1. Remove the two upper crowns and replace them with temporary crowns, which could be adjusted, were placed (Figure 2). The preps were merely cleaned and treated as conservatively as possible. Temporary crowns, which could be adjusted, were placed (Figure 5).
2. Upper and lower impressions were taken for upper clear aligners and for a lower Inman Aligner. A prescription of the tooth movement using Spacewize™ software was given to the technician so they were aware of exactly where we wanted the teeth to be moved. Spacewize also calculates a figure for the amount of crowding present giving us an idea of the total amount of space that would need correcting and whether the case is suitable for Inman Aligners or not.

Two weeks later, the patient returned. The Inman Aligner and clear aligner were fitted on the lower and upper teeth respectively. Minimal interproximal reduction (IPR) was started. Despite calculating the amount of crowding present, the IPR is never carried out in one go. Only IPR strips or discs are used. This gives the opportunity to ensure the stripping is far more anatomically respectful than using burs or heavy discs. This massively reduces the risks of excess space formation, gouging or poor contact anatomy. No more than 0.15 mm per contact on the posterior teeth were adjusted on this single visit. The contacts are smoothed and fluoride gel is applied each time.

Alternative options
Alternative options were discussed. Fixed braces were discounted because of the cost, the difficulty in simultaneous whitening and added difficulty in having the crowns as temporary through treatment. The patient’s posterior occlusion was also good. Full anterior veneers were discussed, but after the patient understood how simply and quickly the alignment could be done, seemed a completely ridiculous and unethical solution.

Treatment
On the initial appointment the two old crowns were removed (Figure 2). The preps were merely cleaned and treated as conservatively as possible. Temporary crowns, which could be adjusted, were placed (Figure 5). Upper and lower impressions were taken for upper clear aligners and for a lower Inman Aligner. A prescription of the tooth movement using Spacewize™ software was given to the technician so they were aware of exactly where we wanted the teeth to be moved. Spacewize also calculates a figure for the amount of crowding present giving us an idea of the total amount of space that would need correcting and whether the case is suitable for Inman Aligners or not.

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Of root resorption. On return Mum needed wear and this in- tervention completed extraction where colour was often means they achieve a far better result. DayWhile from Oral Healthcare (Formerly Dis- trict technician. The temporary crowns were removed and new IPS e.max HT (Ivoclar Vivadent) crowns were bonded using Vari- olink II (Ivoclar Vivadent) and Opfilond PT (G) and the occlu- sion against the aligned lower teeth was checked. The patient was extremely happy with the end result and felt his teeth looked natural (Figures 6-12).

Discussion

The case is another example of why a progressive form of smile design can be so essential in any case where a patient is looking to improve their smile. At every point, the patient sees their smile improving, first with full teeth, then at least the teeth are straight and light, so less invasive and more trans- parent veneers can be used. More often than not, patients prefer a more natural result where we make “their own teeth look as good as they can”. In a case like this, previous metal ceram- ics, one can see how integrating alignment, and whitening can enhance aesthetics and simplify restoration dramatically. This makes a stable and aesthetically pleasing outcome far easier to achieve (Figures 15-17).

Conclusion

In each of our practices, there must literally be hundreds of patients who have issues similar to this gentleman’s complaint. Previously, conventional solutions often placed a barrier to treatment, adding time and cost into what was already an expen- sive treatment. Most patients just could not be bothered and would live with it. Now, simply anterior alignment can be so much quicker and more cost ef- fective. I’m amazed at the sheer volume of patients who will have treatment like this done if they are suitable. Being able to combine whitening because the aligners are removable is just another bonus for so we can capitalize on the patient’s current com- pliance and get an even better result. Of course, case selection is absolutely vital! Understand- ing what is treatable and what should be referred to a special- ist orthodontist is essential. This means that patients must be fully consented and understand the risks and disadvantages of not treating any posterior issues if just concentrating on anterior alignment.

Disclosure

Dr Qureshi runs courses with Dr James Russell and Dr Tim Brad- stock-Smith and lectures on the

References


Figure 11. Upper occlusal before.
Figure 12. Upper occlusal after.

Figure 13. Lower occlusal before.
Figure 14. Lower occlusal after.

Inman Aligner worldwide.

Acknowledgements

The author thanks Inman Align- er Certified Laboratory, Pearl Healthcare, Hampton; Victoria; Donal Inman CDT and the In- man Orthodontic Laboratory; Nimrodental Inman Aligner Lab, London; Tony Knight at Knight Dental Design; and Middle East Dental Laboratory, Dubai.

Figure 15. Side smile before.
Figure 16. Side smile after.

Figure 17. Side smile after closed.

The patient was then sent home. The Inman Aligner was worn for 16-20 hours per day with the pa- tient removing it for eating and rest. 20 hours a day is the maxi- mum needed wear and this in- troductory wear reduces the risk of root resorption. On return 2 weeks later, it was clear that the contacts had closed tight and the teeth had moved a little.

More IPK was carried out on both the upper and lower teeth. The occlusal contacts of the upper temporary crowns were adjusted to allow clearance for the lower teeth to move and the lower left lateral to advance particularly and the patient was then set a lower retainer for 2 weeks. The temporaries were also facially contoured to ensure they were flush with the natural teeth. On the subsequent return visit, it was clear that the teeth were aligning rapidly and espe- cially well (Figures 4 and 5). We then decided to start some simultaneous tooth whitening. Impressions were taken, even though the result was still 25% from completion. Sealed, rub- ber trays were made and careful instructions given to the patient. While the patient is concentrat- ing on using the Inman Aligner, they are always highly recep- tive to using bleaching trays. It adds greatly to motivation and often means they achieve a far better result. DayWhile from Oral Healthcare (Formely Dis- cuss Dental) is used so that the patient only needs to wear the Inman Aligner for 16-20 hours per day with the pa- tient removing it for eating and 16-20 hours per day with the pa- tient removing it for eating and rest.

The patient was then sent home. A retainer wire12-15 was bonded to the lower inci- sor teeth using a prefomed wire on a jig made by the orthodont-
accomplished (Figures 7-9).

Surgical phase
As stated previously, the dental team decided to align the incisal edges of #11 and 23 and not intrude further #11 to align the gingival zeniths. This decision was based on the fact that the teeth showed no signs of wear, in which case the worn tooth would be intruded more to be back in its original pre-wear position and then would be treated restoratively. The goals of the periodontal surgery were:

1. align the gingival zeniths of teeth #11 and 21, 2. gingivectomy with osseous reduction on #12 to reduce as much as possible the gingival display without compromising the long term prognosis of the tooth due to loss of periodontal support, 3. gingivectomy in mostly all the upper teeth to bring the gingival display to a more pleasing appearance. After surgery, a healing period of 8 weeks was recommended by the periodontist before the restorative procedures start (Figures 10, 11). The option of a single implant placement for the missing lateral incisor #22 was rejected before surgery, as an additional bone grafting procedure would be required and this was not accepted by the patient (Figure 12).

Aesthetic/Restorative phase
Six weeks after the periodontal surgery, in office whitening was performed so the patient's desire for brighter teeth is met (Phillips Zoom, Phillips Oral Healthcare, Stamford, USA). The shade of the teeth 10 days after the whitening was completes #11 for the upper centrals and A2 for the canines (Figure 13).

After proper healing of the periodontal tissues was confirmed with the periodontist, tooth #22 was prepared for an all ceramic lithium disilicate crown and wings #21 and 25 were prepared for an all ceramic lithium disilicate Maryland type all ceramic bridge with wings are fabricated.

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workshops and self-instruction programmes. For the past ten years, CAPP has facilitated over 550 continuing education programmes with over 52,000 international participants. With the opening of CAPP Asia in 2012, CAPP’s reach has expanded to the Asia Pacific region and beyond.

In 2012, CAPP joined the global family of 96 publishers by becoming the proud owner of the Dental Tribune Middle East & Africa edition, and has since been delivering six print editions annually to over 20,000 dental professionals in the Middle East and Africa region and has delivered 24 newsletters to more than 41,000 active subscribers. Through its international website, the latest industry news reaches the largest dental community worldwide—an audience of over 650,000 dentists.

CAPP started out in Dubai ten years ago as a centre for professional training. It quickly grew and developed two very important international conferences: the CAD/CAM and Digital Dentistry International Conference and the Dental-Facial Cosmetic International Conference.

Next year, the tenth CAD/CAM and Digital Dentistry International Conference will be celebrated together with the CAPP anniversary. The last decade has been a journey with challenges in keeping pace with the incredibly fast growth of the industry combined with new technologies, particularly in digital dentistry.

Ten years ago, it would have been difficult to imagine the kind of opportunities presently available to change dentistry and improve overall patient care, including diagnostics, planning and treatment, in terms of precision, treatment and healing time, and aesthetics. What has been accomplished in the past ten years has been significant and CAPP would like to thank all of its business partners, sponsors and supporters for together making CAPP the success it is today. CAPP would especially like to acknowledge all who have worked at and continue to be with the CAPP office and share the challenges and passion. Thanks also go to all of the dentists, dental technicians, dental hygienists and dental assistants who have followed us in the decade of rapid development of the dental industry and dental technology.

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