By Centre For Advanced Professional Practices

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-recognised provider that specialises in continuing medical and dental education programmes (conferences, hands-on courses, workshops...). In celebration of this anniversary, CAPP has organised a series of events including lectures, workshops and courses that will be held in Dubai during May 2015.

Health authorities offer Ebola guidance for dentists

By Dental Tribune International

Atlanta & Chicago, USA: In close collaboration 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 spreading in the U.S. As of
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 efficiently. Together with the Lebanese Dental Association is one of the initiatives that we are proud of and keen to sustain.”

Professor Elie Azar Maalouf, President of Lebanese Dental Association (LDA), stressed on the advantages of such a partnership in benefiting the Oral Care segment in Lebanon. He added: “We are specifically thrilled about the unique benefits that this collaboration between the LDA and Crest & 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 Kometberg, Germany, a Bluetooth enabled Power Brush: The Oral-B White Pro 7000 that has just been released in the U.K.

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, mouthwash, 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

B ENSHEIM, 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.”

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

The audience was well entertained at the CEREC Desert Fest in Dubai

Dr. Ninette Banday during the Chairside Indirect Veneers, Inlays, and Onlays: A – to – Z Table Clinic Presentation

Dr. Todd Ehrlich presenting Summer of CEREC Table Clinic Presentation

Open Discussion between Dr. Bernd Reiss, Germany, Dr. Todd Ehrlich, USA, Dr. Daniel Vasquez, USA and Prof. Wael Att, Germany

Contact Information

Please visit the event’s website: http://cerecfest.cappmea.com.

Exploring CEREC Omnicam with Dr. Daniel Vasquez - Table Clinic Presentation
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 contact with 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 Kallman, 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 tempora-
tization were created to provide a simple yet effective approach. 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, severe requirements must be met to maximize healing and osseo-integration of the implant body to bone:

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

The Tempcap is a healing cap and restorative platform combined (Fig. 1). It has an all-metal construction, and it contains two to three retentive pin projections (Fig. 2). Tempcap is available in different widths and heights to accommodate different implant sizes (Fig. 3) and is compatible with existing instrumentation (Fig. 4).

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 with a milling machine. In-office CAD/CAM 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 disili-cate and has ideal physical and aesthetic properties, allowing it to be the first choice for CAD/CAM restorations. IPS e.max has the ability of detailed CAM production.7

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 CAM unit (Editorial note: Planmeca E4D Technologies) (Fig. 16). Milling limitations, such as bar contact and prosthesis fracture, required CAD design modifications. Reiter-ations 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 aesthetic-ics and then subsequently fired (Fig. 18), resulting in its colour change. The crown was further stained, glazed and fired (Fig. 19).

Fig. 1. Tempcap abutment.
Fig. 2. Retentive pins.
Fig. 3. Tempcap with Straumann implant.
Fig. 4. Use of existing instruments.

Fig. 5. Temporization form and function.
Fig. 6. Temporization form and function.
Fig. 7. Digitization with E4D camera (Editorial note: Planmeca E4D Technologies).
Fig. 8. Digitized images of arch.

Fig. 9. Tempcap digitized.
Fig. 10. Digitized delineation of Tempcap.
Fig. 11. Development of emergence profile.
Fig. 12. Occlusal view of restoration.

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The IPS e.max pros-
thetic crown was fur-
ther assessed for fit, taking into account marginal fit, exclusion and proximal contacts (Fig. 22).

A secondary investigation utilized a more complex Tempcap to assess the limit of the CAD/CAM unit’s ca-
pability. A stand-alone Ankylos (DENTSPLY Implants) implant body was coupled with a Temp-
cap abutment with three reten-
pion projections (Figs. 23, 24). The abutment was digitized with the same methodology as described. An IPS e.max crown was execut-
ed and assessed (Figs. 24 & 25).

Discussion
This study has determined that the Tempcap can be success-
fully 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 labora-
tory 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 capa-
city to be milled in complex patterns, while still maintaining its structural integrity.

However, further laboratory studies, quantitatively assessing stresses and strengths and utili-
zation of a larger sample size, are required to validate the concept. Subsequent clinical investiga-
tions 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 con-
sidered.

Conclusions
In-office CAD/CAM technology can be utilized and manipulated to generate digitized forms be-
yond the scope of the morpho-
genesis. CAM manufacturing has limiting factors that must be realigned when producing modi-
fied prostheses. CAD modifica-
tions must account for the different 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 provi-
sional abutment has been docu-
mented; the utility of the abut-
ment as a simple, efficient and cost-effective component seems promising. These advances sim-
pify the procedure and reduce the cost, ultimately allowing a greater accessibility for both pa-
tients and clinicians.

Editorial disclaimer: Dr Les Kal-
man is the co-owner of Research Driven and the inventor of the Tempcap.

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lished in implants CE magazine 1/2013.

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Dr Les Kalman, DDS, graduated from the University of Western Ontario with a doctor of dental surgery degree in 1998. He then completed a CPR at the London Health Sciences Centre. He has been involved in general den-
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phy as an accredited MotoGP photographer.

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The aesthetic challenge

By Dr. Mohamed El Sayed Hassanien, Egypt

Patient’s satisfaction has always been the main goal of dentistry. The advent of 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 aesthetic 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, ceramic laminate veneers for both central incisors were proposed as a treatment option to solve her complaint.

Tooth preparation
Tooth 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 tool, which enables the operator to see both veneers together Fig.9.

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 pastel 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 used to
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 dental surgeons, no matter what their different individual needs are, will find the perfect solution for their surgical work. The KaVo MASTERsurg surgical unit convinces through outstanding comfort. It is offering a wireless foot control, allowing the user a great freedom of movement. The data documentation function supports procedure by real time displaying of the torque and other important digital data and saving it concurrently.

KaVo MASTERsurg makes it real: a customizable surgical unit that adapts to dentists’ and dental surgeons’ individual requirements. E.g., multiple programs, each with up to 10 treatment steps, maximum speed, maximum torque and even more parameters can individually be defined and saved.

The new INTRA LUX S600 LED, one of the lightest and smallest surgical motors in the world, enables to work with high power and precision.

When it comes to performance and comfort, KaVo continues to set the benchmark with the EXPERTsurg and the MASTERsurg controllers, the SURGmatic instruments (now available with hexagon clamping system with optimized head gearing) and the INTRA LUX S600 LED motor. All these components combine to a system for dental surgery that is not only easy to use but that provides save and highly precise tools for dentists and dental surgeons to face their daily challenges.

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 is

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Concepts, goals and techniques for successful orthognathic surgery

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By Dr. Theodore D. Freeland, USA

In this article, you will be introduced to the concepts, goals and techniques needed to diagnose 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 overview 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 for 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 orthodontic 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).

After an oral investigation, a thorough clinical examination of the joints will need to occur. We’ll be on the lookout for any 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 joint issues that will affect the outcome of treatment.

Joint status
Starting with the first area, you need to know the joint status. Is the joint healthy, is it degenerating, is there a disc problem? This means you’ll need to apply not only a good clinical exam, but also articulated models that can measure the difference between centric occlusion and centric relation.

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 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 joints, 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 issues that will affect the outcome of treatment.
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 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.
- Auscultation.
- Muscle splitting.
- 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. We also listen to the joint with a stethoscope, and we apply some anterior pressure to the disc through external auditory meatus to make sure the disc is functioning properly.

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LCBCT
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 Ricketts and Dr Ibaeda, we have a way to measure joint position and get an image of the condyles basically sealed with cone beam, we can measure the health of the condyles.

In a side-by-side presentation, you can see that the left side is definitely 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 axial view. The axial view confirms this, you see that the shape is better and has a more dense outline.

Thus, our basic imaging system height, as little as possible in the cone beam, we can see that the right joint has definitely lost vertical height, and we definitely have a joint spacer 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 of the joint, which is what we’d like to see. However, there have been some changes on the right joint, because we’re starting to see a “hard-breaking” effect in the left joint. These kinds of changes are ones that are important in determining if we should proceed with any kind of a surgical correction.

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

Using soft-tissue markers with 3-D facial mapping, we 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 calls 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 axis an axiortoral.

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 architectural of the mandible. These come from Bickert and from the Jarabak analysis. With this analysis, we can cover the basis that we need for orthodontics, but we can also cover what we need in a surgical treatment.

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 orbital rim, cheekbone, sub-pupal, alar bases, nasal bases and canthus of the eyes.

All of this allows us to assess if we have transverse asymmetries, where the occlusal plane is cantled instead of level. This is especially true with the mandibular plane, which we may also fixed is cantled. This is especially true in cases where there’s a degenerative process happening in one joint.

Head position, profile and frontal analysis
The natural head position is different for each individual patient. This will make the distance recorded between 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 measuring tool, and he intersection with the true vertical line to Glabella.

He further is in mind that every body’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.

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 point the center of the ear to mark the nose when the bow is level.

We have previously established, through axiorthic tracing, the hinge axis position on the patient’s articulator. This enables us to look at the orbital rim, cheekbone, sub-pupal, sub-pupal, alar bases, nasal bases and canthus of the eyes.

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 distance away from the true vertical plane. 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 line 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 a 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 correct tooth position in the anterior, 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 a conservative approach to create adequate dishusion. 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 segment 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 performed preoperatively 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

E

s

thetic 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 ceramic materials have a translucent finished surface texture similar to that of natural enamel.2 Therapists, 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 can read-


6. About the Author

Dr. Mitch Conditt, a 1985 graduate of Baylor College of Dentistry in Dallas, TX, lectures internationally and has published numerous articles reviewing all aspects of restorative and cosmetic dentistry.
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 invisiveness 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 esthetically 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 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. Additionally 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 gingiva display if not properly treated.

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.

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.

Peg shaped lateral incisors pose another aesthetic problem that is usually restored with as follows:

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<thead>
<tr>
<th>Tooth (#)</th>
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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 were crucial information in treatment planning, especially in patients with a high lip line.

**Figure 1 - 3:** The unaesthetic smile of the patient before treatment.

**Figure 4 - 6:** Refractured view of the teeth before treatment. Note the peg shaped #12, the missing #22 and the asymmetry of the spaces between teeth #11-13 and 21-23.

**Figure 7 - 9:** Photographs of the patient during the orthodontic phase of the treatment.

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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 #11-13 and 21-23, 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 match the rest of the dentition.

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.

By Kostis Giannakopoulos, Greece
A multi-disciplinary approach to minimally invasive functional aesthetic dentistry

By Dr. Tif 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. Thick/ethics of the old 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.
3. Lower crowding - The patient was also keen to improve the aesthetics of the lower teeth as the incisors had an irregular outline. The incisal edges appeared to be of different heights. This was down to the varying anterior-posterior position.
4. Colour - The old crowns had been made at A3/A3.5 and the natural teeth had darkened a little with age.

Treatment plan
A combination of techniques and good timing can make sure we optimize the opportunity for treatment. In this case, the treatment plan was as follows:
1. Remove the two upper crowns and replace them with temporary crowns, which could be conservatively as possible. Temporary crowns, which could be adjusted, were placed (Figure 5).
2. Simultaneously fit a lower Inman Aligner to align the lower incisors into a better functional position, while using bespoke clear aligners to slightly tilt the uppers into better alignment. The rationale for using upper clear aligners and a lower Inman was that only 1 mm of movement was needed for the uppers and about 2.5 mm of movement was required for the lowers. Inman Aligners are much faster than clear aligners with these kinds of movements. And 2-3 clear aligners can be just as quick with very small movements of 1 mm and be a little more cost effective if made bespoke. It would also allow us to treat both arches more or less simultaneously.
3. Whitening the teeth (during last phase of alignment).
4. Change the composite temps to all ceramic crowns to match.
5. Retain the lower arch.

Our aim was to try to treat these multiple issues simultaneously so that treatment could be completed over a few months.

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 SpacewizeTM 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 knowing how much we were likely to need, with Inman Aligner treatment, we never completely all the IPR in one go. 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 pour contact anatomy. No more than 0.15 mm per contact on the posterior teeth was adjusted on this single visit. The contacts are smoothed and fluoride gel is applied each time.
The patient was then sent home. The Inman Aligner was worn for 16-20 hours per day with the patient removing it for eating and rest. 20 hours a day is the maximum needed wear and this intermittent 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 IPR was carried out on both the upper and lower cuspids. 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 away for another 2 weeks. The temporaries were also faciously 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 especially 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, rubber trays were made and carefully instructions given to the patient. While the patient is concentrating on using the Inman Aligner, they are always highly receptive to using bleaching trays. It adds greatly to motivation and often means they achieve a far better result. DayWhite from Oral Healthcare (Formerly Dis- ticut technician. The temporary crowns were removed and new IPS e.max HT (Ivoclar Vivadent) crowns were bonded using Vari- olink II (Ivoclar Vivadent) and Optilink FT (Ivry). 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 the provisional, then with the final crowns. If they are still keen to have more work, patients prefer a more natural result where we make “their own teeth look as good as they can”. In a case like this, with previous metal ceramic crowns, 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 options either failed or required more time and effort. Most patients just could not be bothered and would live with it. Now, simple anterior alignment can be so much quicker and more cost effective. 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 so we can capitalize on the patient’s current compliance and get an even better result. Of course, case selection is absolutely vital! Understanding what is treatable and what should be referred to a specialist orthodontist is essential. This means that patients must be fully counselled and understands 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

10. Inactivated periods of con- stant orthodontic movement forces related to desirable tooth movement in rats. Kameyama et al. Tokyo Medical and dental university, Tokyo, Japan. For in- formation contact the author at Kame.orth@nmu.ac.jp.
make it easier to distinguish and completely remove it after the orthodontics was completed. After treatment, the goals set were accomplished (Figures 7-9).

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 (Philips Zoom, Philips Oral Healthcare, Stanford, USA). The shade of the teeth 10 days after the whitening was completed was A1 for the upper centrals and A2 for the canines (Figure 15).

After proper healing of the periodontal tissues was confirmed with the periodontist, tooth #12 was prepared for an all ceramic lithium disilicate crown and teeth #21 and 25 were prepared for an all ceramic lithium disilicate Maryland type all ceramic bridge with wings (e.max, Ivoclar Vivadent, Schaan, Lichtenstein). The latter was selected because of the conservative approach and the minimal preparation required only on the palatal surfaces of the abutment teeth, as the occlusion was favorable and the patient had no parafunctional habits. This type of restoration appears to be a viable solution in selected cases, as it does not have the problems of the conventional Maryland bridge with frequent dehiscences and the marginal show-through thin and translucent central incisors. After gingival retraction with a retraction paste (Astrident Retraction Paste, 3M ESPE, Seefeld, Germany), a final impression was taken with polyether heavy and light body impression material (Permadyne, 3M ESPE, Seefeld, Germany), a rubber points (Astropol, Ivoclar Vivadent, Schaan, Lichtenstein) and finishing strips (Soflex, 3M ESPE, Seefeld, Germany). Finally, a diamond polishing paste was used (Ultramat Products Inc, South Jordan, UT, USA) on a Flexluff (Cosmedent, Chicago, IL, USA). An alginate impression was taken to fabricate a new Essix orthodontic retainer in the in-house lab within 1 hour. Oral hygiene and maintenance instructions were given to the patient and a follow up appointment was made after 4 weeks (Figures 15-21).

A multidisciplinary approach in treatment planning and performance, as well as the use of contemporary restorative materials and techniques allow for a conservative, yet very aesthetic final result.

References

The Author would like to thank the Orthodontist, Dr. Evita Kacoklis and the Periododontist, Dr. Alexis Bakopoulos for their contribution to the treatment of this case.
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I am sure that this conference will be of the greatest help to develop our knowledge and sharpen our skills in pursuing the goal that we all share, to provide our patients with the best possible solutions for their esthetic needs.

We will continue this unsurpassed cooperation to bring to our audience the most recent updates of technology in the dental field with few “surprises” as well.

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10:05 – 10:45  MEET THE SPONSORS / COFFEE BREAK
10:45 – 11:30  Dr. Anton Lebedenko, Russia
Zirconia vs. glass-ceramics – pro and contra
11:30 – 12:15  Dr. Julian Caplan, UK
In-surgery CAD/CAM Dentistry – Fact or Fiction
12:15 – 13:40  LUNCH / PRAYER TIME
13:40 – 14:15  Dr. Costa Nikolaopoulos, Greece
Simple Fast & High-Quality Implant Dentistry
14:15 – 15:00  Dr. David Glaridge, UK
An Introduction to Digital Impressioning and the Digital Workflow
15:00 – 15:45  Dr. Richard John Simonson, USA
Photography – Clinical for Dentistry, and Nature for Hobby
15:45 – 16:00  DISCUSSIONS
16:00 – 16:45  Prof. Carina Mehmara Zogheib, Lebanon
Teeth whitening from A – Z
16:45 – 17:30  Prof. Khalid Balb, KSA
The Effect of manufacturing features of rotary NITI burs on their performance: A clinical approach for analysis
17:30 – 18:15  Dr. Gary Severance, USA
Chairside Restorative Dentistry – Control Your Future
18:15 – 18:30  DISCUSSIONS
18:30 – 19:00  POSTER PRESENTATION
MEET THE SPONSORS / COFFEE BREAK

DAY TWO
SATURDAY | 15 NOVEMBER 2014 | CONFERENCE DAY | MAIN AUDITORIUM
08:00 – 09:00  BREAKFAST WITH THE SPONSORS / REGISTRATION
09:00 – 09:45  Dr. James Russell, UK
Accessible Aesthetic Dentistry
09:45 – 10:30  Dr. Michael Apa, USA
Advances in interdisciplinary Aesthetic Surgery and Implantology
10:30 – 11:15  Dr. Julian Caplan, UK
The Aesthetics of In-surgery CAD/CAM Dentistry
11:15 – 11:30  MEET THE SPONSORS / COFFEE BREAK
11:30 – 12:15  Dr. Anton Lebedenko, Russia
A DA – Behind the Scenes
12:15 – 13:00  Dr. Marcus Engelschalk, Germany
Double Scan vs. Single Scan – Two different workflows for essential improvement in fixed prosthetic reconstruction in implantology
13:00 – 14:15  LUNCH / MEET THE SPONSORS
14:15 – 15:00  Dr. Marcus Engelschalk, Germany
The functional scan in prosthodontics – new workflows for more predictibility
15:00 – 15:45  Dr. Petros Yuvanoglou, Greece
The Science & Art of Restoring Immediaely-Loaded Implants
15:45 – 16:30  Dr. Björn Tittel, Germany
Innovative Solutions & Surgery in Aesthetic Dentistry
16:30 – 17:15  Dr. Gary Severance, USA
The Landscape of Digital Dentistry
17:15 – 18:00  Dr. Emilio Rodrigues, Spain
Immediate Load with Aesthetic and Functional Restoration
18:00 – 18:15  DISCUSSIONS

DENTAL HYGIENIST DAY
Jumeirah Beach Hotel, Dubai, UAE
15 NOVEMBER 2014
PART OF 5TH DENTAL FACIAL COSMETIC INTERNATIONAL CONFERENCE
14 – 15 November 2014

9:00 – 9:45  Lecture
Dr. Carine Taberani, UAE
Oral-Health Management: Between Myth and Reality

9:45 – 10:30  Lecture
Prof. Mary Rose Pincelli Boglione, Italy
Management of The Orthodontic Patient

10:30 – 11:15  Lecture
Victoria Wilson, Dental Hygiene Therapist, UK
Communication & Implant Maintenance

11:15 – 11:45  Lecture
Prof. Mary Rose Pincelli Boglione, Italy
Polishing will Brighten Your Smile!

HANDS ON COURSES
VENERS vs. CROWNS THE CHALLENGE IN SMILE DESIGN
Dr. Eduarto Mahn, Chile
12 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

ESTHETIC IN SAME DAY DENTISTRY
(ASTENTS)
Ahmar Farah, CDT, UAE
13 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

LASER IN MODERN DENTAL PRACTICES
Dr. Manal Taher Agha, UAE
13 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

DIRECT VENERS: THE SHADES DILEMMA
Dr. Eduarto Mahn, Chile
13 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

INDIRECT VENERS
Dr. Murar Sileebat, UAE
16 November 2014 (09:00 – 17:30)
SM Innovation Centre Dubai Internet City, UAE

PERIODONTAL INSTRUMENTATION
Prof. Mary Rose P. Boglione, Italy
14 – 15 November 2014 (13:00 – 16:30)
JBH, Dubai, UAE

FACE AND SMILE ANALYSIS
Dr. Eduarto Mahn, Chile
15 November 2014 (15:30 – 19:30)
JBH, Dubai, UAE

ESTHETIC IN ONE-LAYER METAL CERAMIC & COMPOSITE GINGIVA
Ahmar Farah, CDT, UAE
15 – 16 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

INDIRECT VENERS
Dr. Murar Sileebat, UAE
16 November 2014 (09:00 – 17:30)
SM Innovation Centre Dubai Internet City, UAE

VENERS vs. CROWNS THE CHALLENGE IN SMILE DESIGN
Dr. Eduarto Mahn, Chile
16 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE

LASER IN AESTHETIC DENTISTRY
Dr. Manal Taher Agha, UAE
16 November 2014 (09:00 – 17:30)
JBH, Dubai, UAE
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2. Find out the Main Product
3. Complete the Gameplan with products & stamps
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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.
CBCT and CAD/CAM allow for one-day restoration of Tooth #9

By Robert Pauley, USA

Case Overview

Our office received a frantic phone call from the mother of one of our twelve-year-old patients, who stated that her daughter fell while in P.E. class and broke a front tooth. We advised her to bring her daughter to the office as soon as possible. Immediately after her arrival a periapical radiograph was obtained (Fig. 1). Upon clinical examination and review of the digital radiograph, I saw tooth #9 was horizontally fractured at the middle third. There was no pulp exposure evident, but the tooth did have a pinkish tint on the linguall, No mobility was noted and no periapical changes or root fractures were obvious at this time. The new American Association of Endodontists guidelines recommend taking one occlusal and two periapical radiographs with different lateral angulations for all dental injuries, including crown fractures. If cone beam computed tomography is available, it should be considered to reveal the extension and direction of the fracture.1

Dr. Edward Mills in his presentation on Site Development and Implant Protocol Based on Etiology of Tooth Loss refers to a similar traumatic injury in which CT images revealed not only a root fracture within the bone but a fracture of the lingual plate.2

A limited field 3D scan 5cm x 5cm at 500 voxels was taken with the CS 8100 3D to rule out buccal or palatal plate fractures (Fig. 2). None were evident on the scan. While her parents were upset that she had been injured, the ability to view a 3D image reassured them that the damage appeared to be limited to the tooth’s coronal structure.

Treatment Plan

The patient’s treatment options were: 1) do nothing; 2) restore with a composite restoration, realizing that this would have a questionable long-term prognosis due to size of fracture; 3) restore with a CAD/CAM milled crown. The patient and her parents were advised that cases where teeth have been injured traumatistically such as in this case, one might experience a post traumatic irreversible pulpitis at a period of time beyond the initial trauma. In some cases, this condition may be treated by endodontic treatment and crown restorations but in other cases root resorption may take place precipitating the loss of the teeth. These teeth will be monitored every 6 months over several years with periapical radiographs. Every appropriate effort to maintain the tooth in place and avoid the need of an implant until the patient reaches maturity. Dental implants in adolescent patients may affect vertical growth and development of the alveolar ridge because the osseointegrated implant acts as an ankylosed tooth. At a focus conference on Advanced Dental Implant Studies, Dr. Mills summarized that jaw growth in a young adolescent patient may compromise the outcome of the oral rehabilitation using an implant supported prosthesis even if implants successfully integrated. After presentation of the treatment plan and discussion of risks, benefits, options, and alternatives, the parents and patient elected to restore tooth #9 with a CAD/CAM crown.

The parents understand this crown will likely need to be replaced once she reaches adulthood for the best cosmetic appearance, as her teeth and face will change with further growth and development.

Tooth #9 was anesthetized and prepared for a ceramic crown. I utilized the CS 5000 intraoral scanner to scan the prepared maxillary anterior quadrant and the opposing mandibular anterior quadrant as well as obtain a bite registration (Figs 3, 4). CS Restore software was then utilized to design the anterior crown (Figs. 5-7). The CS 5000 milled the crown from an Ivo-

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Porcelain laminate veneers – avoiding complications

By DCDM

Dental Veneering is the process of covering the facial surfaces of teeth by using various types of dental materials. Most commonly used are porcelain veneers which are thin shells of porcelain that are shaped like the outer layer of the teeth and are used to cover the teeth, aiming to enhance their appearance.

Many celebrities opt for this esthetic treatment to achieve what may seem like a picture-perfect smile. This may lead people to a false expectation that everyone is a good candidate for veneers. However, from a dental clinician’s perspective preparing and planning for veneers is very challenging, and if improper care is taken the patient and proper techniques in preparing the teeth are not used, multiple complications can occur. These include gingival inflammation, chipping and breaking or even complete de-bonding of the veneers.

To decide whether a patient is a good candidate for veneers many factors should first be assessed; the condition of the patient’s teeth, habits, periodontal condition and most importantly the patient’s expectations and willingness to maintain their veneers after they are placed.

We should start by analysis of the teeth. This involves assessing their shape and proportion; diastemas, and analysis of the occlusion. Regarding shape and dimension, there should be sufficient tooth structure to retain the veneer, otherwise the longevity can be severely affected. In teeth with small surface areas such as lower incisors, or teeth with multiple cavities and fillings which decrease the available surface for bonding, there is an increased chance of the early displacement of the veneer. In such cases full crowns may offer a better long term option.

In terms of diastemas, if these are too large veneers can only partly reduce the space, otherwise gingival inflammation and/or recession can occur due to the bulkiness of the veneer. This can lead to plaque accumulation around the margins of the veneers. Since patients with dark stained teeth will often consider veneers as a solution, habits should be identified and changed before veneer placement to maintain the esthetics of their veneers.

Marginal stains can be minimised by brushing or rinsing after smoking and consumption of dark colored foods. The patient’s oral hygiene must also be assessed, which leads us to the last key point of gingival health. Veneers should not be prepared on bleached or stained gingiva, which indicates poor oral hygiene. If this is done, complications which arise include placing the veneer margin too deep due to gingival enlargement, and bleeding during preparation and bonding leading to poor marginal seal and marginal staining after veneer placement. Eventually gingival recession or worsening inflammation will result. Good oral hygiene and gingival health should be achieved before veneers are started. All of these factors need to be considered during the initial assessment to avoid complications.

Additional complications can arise during the preparation of teeth. There are two common approaches to placing porcelain veneers, one is done without altering the natural teeth by bonding the porcelain veneers to unprepared teeth. This might seem like a conservative choice avoiding alteration to tooth surfaces, but it inevitably creates a bulky over-contoured appearance and increases the risk of the veneer de-bonding and gingival complications. Alternatively teeth are prepared for veneers by changing external contour, removing less than a millimetre of the facial surfaces and around 2 mms of the incisal edges, thus porcelain replaces the tooth structure removed, ensuring the porcelain is seated properly onto the tooth with enough bulk of porcelain at the edge to minimise chances of chipping and breaking. Studies have shown that the overall success and survival of the first method is much lower than the second method. The commonest complications with veneers are breaking and chipping.

A study analyzing the overall survival rate of porcelain veneers over a 20 year period concluded that the estimated survival rate over a 5 year period is at 95%, at 8 years is 94%; at 10 years is 86% and at 20 years is 85% (Beier et al, 2012). It should be noted that these were veneers placed after adequate tooth preparation.

The clinician must consider all these factors before choosing to place veneers if complications are to be minimised and patient satisfaction achieved.

References are available from the author.

About the Author

Dr. Nadia Tufenkjerj is a second year resident at Dubai College of Dental Medicine (DCDM), Prosthodontic MSc. Program. Located in Dubai Healthcare City (DHGC).

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Case report surgical correction of a class III malocclusion in an adult

By Dr. Fabien Depardieu

This case report describes a successful orthognathic treatment of a skeletal Class III malocclusion with mandibular prognathism in an adult individual. The patient, a 28-year-old man who had a Class III facial type and slight crowding with a complete Class III relationship, presented with a concave profile, a protractive lower lip, and an anterior crossbite. His chief complaint was an esthetic concern with the facial midline and self-confidence due to the dental midline deviation.

Introduction

The skeletal Class III malocclusion is characterized by mandibular prognathism, maxillary deficiency or both. Clinically, these patients exhibit a concave facial profile, a retrusive nasomaxillary area and a prominent lower third of the face. The lower lip is often protruded relative to the upper lip. The upper arch is usually narrower than the lower, and the overjet and overbite can range from reduced to reverse.

The effect of environmental factors and oral function on the etiological factors of a Class III malocclusion is not completely understood. However, there is a definite familial and racial tendency to mandibular prognathism. For many Class III malocclusions, surgical treatment can be the best alternative. Depending on the amount of skeletal discrepancy, surgical correction may consist of mandibular setback, mandibulomaxillary advancement, or a combination of mandibular and maxillary procedures. After surgical correction of the skeletal discrepancy, the occlusion is usually finished orthodontically to a Class I relationship. However, if surgical treatment is not performed, and the final molar relationship is Class III or Class I, there are challenges specific to the static and functional Class III occlusion that must be considered. Sometimes a Class III relationship is caused by a forward shift of the mandible to avoid incisal interferences. This is a pseudo-Class III malocclusion. In these cases, it is important to establish the inter-occlusal relationship with the teeth in the retruded contact position.

In this paper, the surgical orthodontic treatment of a young adult patient with a Class III malocclusion is illustrated.

Diagnostic and Etiology

The patient was a 28-year-old man who had a Class III facial type and slight crowding with a complete Class III relationship. His chief complaint was an esthetic concern with the facial midline and self-confidence due to the dental midline deviation. He had a concave profile with an anterior crossbite, and a protusive lower lip. His medical history showed no contraindication for orthodontic therapy and orthognathic treatment. No one in his direct family had a skeletal Class III features.

The pretreatment extra-oral photographs showed symmetric facial structures (Fig 1). The patient had a concave profile, a decreased nasolabial angle and a protusive lower lip. The intra-oral photographs (Fig 2) showed a Class III occlusion on each side with an anterior crossbite and without apparent crowding. Overjet was -2.0 mm, and overbite was -2.5 mm. His maxillary anterior teeth were prognathic, with inadequate display when smiling.

The mandibular dental midline was deviated 2.5 mm to the right, although the maxillary dental midline was coincident with the facial midline. There were no signs or symptoms of temporomandibular joint dysfunction. Mandibular movements, such as maximal opening and lateral and anterior displacement were within normal limits. No deviation and pain were discovered during the border movement of the mandible.

A cephalogram and a panoramic radiograph were taken before treatment. The cephalometric analysis and its tracing showed that the mandible protruded relative to the cranial base (SNB angle, 82°; ANB angle -9). The panoramic radiograph showed no other abnormal signs.

After the analysis of the photographs, the casts and radiographs, it was decided to approach his problems as a skeletal Class III malocclusion with an anterior crossbite and a lower deviated midline (2).

Treatment Objectives

The treatment objectives (5) were to obtain a harmonious facial profile by decreasing the protrusion of the mandible, improve the occlusion, including correction of the anterior crossbite; establishment of ideal overjet and overbite, achievement of a functional molar relationship; and place the dental midlines in the middle of the patient's face. We planned:

• To set back the mandible to correct the prognathism and the midline deviation.
• To relieve the proclined maxillary incisor position and to relieve the dental compensations.
• To relieve the dental compensations by straightening the mandibular incisors to an up-right position over basal bone.

Treatment Alternatives

The first alternative was orthodontic treatment with extraction of 4 premolars. Through the retraction of the mandibular anterior teeth, the anterior crossbite and Class III molar relationships would be corrected and the concave facial profile would be camouflaged. Nevertheless, the mandibular incisors were not suitable for much distal movement because of the thin trabecular bone in the mandibular anterior area that could damage the periodontal tissues by gingival recession, fenestration or dehiscence.

The second alternative was combined surgical and orthodontic treatment. The anterior crossbite would be corrected with a single-jaw surgery; a mandibular setback. The concave profile would be improved...
as well. It was decided to extract the upper second premolars to relieve the dental compensations by repositioning the upper incisors. The third alternative was to correct the class III malocclusion by miniscrew-assisted mandibular dentition distalization. However we decided that the skeletal problem was too excessive and required orthognathic surgery. After we discussed the three alternatives with the patient, he chose the second option.

Treatment Progress
The preoperative orthodontic preparation began on December 2011. Before the leveling and alignment procedures (4), the maxillary second premolars were extracted to decompensate the maxillary incisor inclination and to reduce the acute nasolabial angle. Pre-adjusted 0.022-in edgewise brackets were bonded to all teeth. The preoperative orthodontic treatment was achieved in 12 months, ending with 0.018 x 0.025 stainless steel surgical archwires for the maxillary and mandibular arches. The orthognathic surgery involved a set back of the mandible with a bilateral sagittal split osteotomy. This was performed to improve the mandibular profile and establish an Angle Class I canine position with ideal overjet and overbite. After the surgery, the patient was placed in intermaxillary fixation for 2 weeks. Two months after surgery, finishing was performed with maxillary and mandibular 0.018 x 0.022-in. titanium-molybdenum alloy archwires. The appliances were removed after 18 months of active treatment. Bonded lingual retainers were fitted to the lingual surfaces of the anterior teeth in both arches. Maxillary and mandibular essix retainers were delivered with instructions to wear them full time for two weeks and then night time.

Treatment Results
The post treatment photographs (Fig.3) showed that facial aesthetics were improved, and ideal occlusion was achieved with proper overjet and overbite. The maxillary dental midlines coincided with the facial and mandibular midlines. The occlusion was finished to a therapeutic Class II.

Discussion
The decision for surgical orthodontic treatment for this patient was based on the fact that his primary concern was his facial profile. Before the single-jaw surgery: a mandibular setback, preoperative orthodontic treatment, including decompensation of the malocclusion, is necessary. The dental decompensation we performed was intended to retract the proclined maxillary incisors to a normal axial inclination. Lack of optimal dental decompensation compromises the quality and quantity of an orthognathic correction. The patient’s teeth were decompensated by extracting the upper second premolars and leveling the mandibular arch. This phase was achieved in 12 months.

Conclusion
This case report describes the surgical orthodontic treatment of a young adult man with dental and skeletal class III relationship. The orthognathic treatment was the best option for achieving an acceptable occlusion and a good esthetic result. An experienced multidisciplinary team approach ensures a satisfactory outcome. Presurgical orthodontics removes all the dental compensations and suggests the extent of the skeletal discrepancy. Normal skeletal base relationship is achieved by osteotomy and setback of the prognathic mandible, postsurgical orthodontics guides the normal occlusal re habilitation by correcting any emerging dental discrepancies.

References

Contact Information
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- Orthognathic surgery

Oral surgery seminars – by Dr David Roze
- Immediate implant into a fresh socket
- Oral surgery in the dental clinic: Review and results
- Implant crown restoration
Dental implant competitors shake things up amidst economic uncertainty

By Kristina Vidug, USA

In 2015, the global dental implant market—composed of the sale of dental implant fixtures, final abutments and other devices—was valued at over US$5.7 billion. The European market, valued at nearly one-third of the global market at close to US$1.2 billion, contracted through 2014, as uncertain economic conditions continued to reduce procedure volumes and as more low-cost competitors entered the market, driving down prices.

These factors hampered the expected economic recovery and resumption of growth projected for 2015. As a result, the dental implant market will continue its decline before stabilising in 2015. Only then will the European market slowly begin to recover. Factors such as low gross domestic product growth and high unemployment continue to render dental implant procedures—which are primarily paid out of pocket by patients—cost prohibitive, while alternatives, such as bridges and dentures, that are perceived as more affordable will represent attractive options.

Dental implants were invented in Sweden; as a result, it is not surprising that a great number of premium manufacturers are based in Continental Europe. In the past, premium manufacturers, such as Straumann and DENTSPLY Implants, were able to rely on their long-standing reputations in the market and the high quality of their products to command higher prices than did some of their competitors.

More recently, however, some of the premium competitors have employed strategies to appeal to increasingly cost-conscious consumers. For instance, Straumann has reduced the price of its titanium implants by 15 per cent in Austria, Germany and Switzerland. While the price change only came into effect in the first quarter of this year, the strategy appears to have been effective because the company reported a 6 per cent rise in first-quarter revenue compared with a 6 per cent decrease in the same period last year.2

The price reduction has come at a perfect time: while economic conditions begin to slowly improve, consumers are still extremely price sensitive. These price cuts therefore allow dental professionals to offer premium implant products to their patients at a reduced rate.

Straumann’s price reduction is not its only foray into the value market. In the first quarter of this year, the company purchased US$50 million worth of bonds from low-cost South Korean dental implant manufacturer MegaGen. The investment, which will be converted to shares in 2016, will help bolster Straumann’s revenue while allowing it to participate in both the premium and value segments, thus appealing to a wide range of practitioners and patients alike.

Straumann is not the only company shaking things up in the world of dental implants. Zimmer Dental recently announced its acquisition of rival Biomet. While both companies are better known for their orthopaedic products, they are fairly significant competitors in the dental industry as well. Lay-offs are not uncommon when companies merge, especially when the companies in question offer the same types of products. This can have a negative impact on sales in the short term, as the newly combined companies’ sales force decreases, leading clients to switch to other competitors.

However, this will not be the case with the Zimmer-Biomet merger, at least not in the short term, as the sales teams from both companies are expected to be retained through the merger. The cost of retaining both sales teams has been estimated at US$400 million. While the effect of this acquisition on the market remains to be seen, the fact that the sales force will not be decreasing bodes well for the newly merged companies, likely resulting in an increased market share in the dental implant segment.

There is discussion of merger and acquisition activity among other companies in the segment too, with Nobel Biocare reportedly in talks to sell to private equity firms and strategic buyers. While these talks are still in the very early stages, what is certain is that there has been a great deal of activity in the competitive landscape in the past several years.

This, combined with the aforementioned economic factors, is turning the dental implant market into a dynamic, action-filled space. With the dental implant market set to rebound in Europe and with revenues expanding in other countries—particularly in the rapidly developing BRIC and Middle Eastern markets—the global industry is poised for even further change, and the competitive landscape could look entirely different a few years from now.

About the Author
Kristina Vidug is Market Research Analyst at Decision Resources Group, a US-based market information provider.
Same Day Dental Implants® & Teeth - A Surgical & Prosthesis Protocol

By Costa Nikolopoulos Oral & Maxillofacial Surgeon (S.A.) & Petros Yurganou Specialist Prosthodontist (U.S.A.)

The original Branemark protocol advocated the use of a two stage surgical approach where the turned (smooth) implants were buried for several months under the mucosa. With the advent of surface enhanced and tapered implants the protocol later evolved into a one stage approach.

Several clinicians then proceeded to immediately load these one stage implants with good success provided good primary stability (more than 45Ncm) was achieved at time of implant placement and provided micromovements could be limited to 100μm. Ample reports have been published on immediate loading of dental implants showing an initial unloaded period of 5 - 6 months is not necessary. From a patient’s point of view the reduction of treatment time between implant placement & installation of a functional prosthesis leads to increased patient satisfaction & treatment acceptability - especially for profession and/or socially active patients.

High treatment acceptance and patient satisfaction are the most important advantages of immediate loading and immediate function.

Surgical Protocol

The surgical protocol of immediate loading of dental implants with same day teeth is based on the following:

Avoid Bone Grafts

This is in line with Prof. P.I. Branemark’s philosophy of “Lesser Surgery to Treat More Patients” (Fig 1).

With increased costs and patient morbidity due to bone grafting, an increased patient resistance to implant treatment has been noted. An alternative method of treating implant patients who have suboptimal bone volume without bone grafting is made possible by using:

1. Angled implants in a tilted manner placed into available bone anterior and posterior to the maxillary sinus (Fig 2).  
2. Wider and appropriately shaped implants placed into immediate extraction socket molar sites thereby avoiding socket or sinus grafting (Fig 5).

High Primary Stability

An important factor for immediate loading success is high primary implant stability (greater than 45Ncm) which can be achieved by using a surface enhanced tapered implant design to enhance lateral compression of bone.

By underprepping, high insertion torque and primary stability can be achieved even in cases of decreased bone density such as is often the case in maxillary alveolar bone and as well as in osteoprotic patients. Primary stability can easily be measured during implant placement with a torque wrench (Fig 4). If 45Ncm insertion torque is not achieved, the implant should be removed and without further bone preparation a 1mm wider implant is placed.

This usually results in adequate primary stability of 45Ncm for immediate loading. If 45Ncm insertion torque is still not achieved then again the implant can be removed and replaced with an even wider diameter implant if the available bone width permits. This usually results in adequately high insertion torque and primary stability or replacement with a 4mm wider implant.

Scientific research shows less bone loss, better bone levels and peri-implant soft tissues when the transmucosal abutments are placed at time of surgery and never removed (Fig 9). Healing caps are then placed on the multi-unit abutments (Fig 10). After abutment placement, at the same surgical appointment, the impression is taken at abutment level and provisional acrylic screw retained fixed teeth are placed in the same day as the implant surgery.

In single implant cases the healing abutment is placed directly at implant level. An implant impression is taken and six hours later a full ceramic/zirconia screw retained crown is then connected and torqued to 45Ncm directly on to the implant without an intermediate/transmucosal abutment (Fig 11). No multi-unit abutment is inserted or placed in the single implant case as the multiunit abutment has no anti-rotation feature.

Flapless/Minimal Flap Surgery

In extraction cases no mucoperiosteal flaps is reflected. The integrity of the extraction socket walls is inspected and assessed with a 15mm or 20mm periosteal probe placed into the extraction socket or alveolus. If the extraction socket walls is performed with the probe (Fig 12) and this is complemented by good vision with magnifying loops and light illumination. In healed sites where possible the “punch” technique is used (Fig 15).

Alternatively minimal flaps are raised where indicated.

This flapless/punch technique/minimal flap approach results in minimal or no soft tissue change thereby allowing the restorative dentist/prosthodontist to proceed with the provisional acrylic screw retained teeth in the same day and permanent ceramic screw retained teeth in 1 week in the case of multiple implants. In the case of the single implant the permanent full zirconia screw retained tooth can be delivered in 6 hours on the same day.

Number of Implants

In edentulous cases 4 to 6 implants (lips 14 & 15) are placed per arch depending on:

1. Bone volume and quality
2. Implant length & diameter
3. Implant distribution (A-P spread)
4. Patient's age
5. Patient’s finances (cost to benefit ratio)

Prosthodontic Protocol

The Prosthodontic protocol of SameDay Dental Implants & Teeth is focused and designed around the patient’s needs. It’s fast, efficient and doesn’t compromise quality. The patients are never left without teeth for more than six hours. As a result treatment acceptance is high.

All implants with good primary stability (>45Ncm) are immediately loaded with screw-retained teeth. For single implant cases, the final all ceramic screw retained tooth is fabricated and delivered to the patient within six hours. For multiple implants cases, temporary screws retained acrylic teeth are fabricated with an immediate/immediate screw retained all ceramic or metal ceramic teeth are delivered one week later.

Timing of Immediate Loading

Dental implants either should be loaded the earliest possible (never exceed ten days after surgery) or alternatively two months after placement. This is because the so-called initial stability (mechanical stability) that an implant has, starts to drop gradually and the implant becomes more likely to fail if forces are applied. Fortunately, simultaneously a “secondary stability” (Osseointegration) starts to build up. The sum of the two “stabilities” which is demonstrated on the stability graph (Fig 16), gives us the “total stability”. As a golden rule implants ideally should never be disturbed during the “stability dip” period.

Proper Preparation

In order to achieve this protocol, preoperative screening and detailed surgical and prosthodontic assessment is necessary. The following are the main steps for preoperative assessment:

1. Patient’s medical history and treatment acceptance.
2. Initial impressions to check the condition of the existing teeth.
3. High resolution cone beam radiography for implant position.
4. Study models to evaluate the patient’s occlusion.
5. Volume and quality of the bone.
6. Planning and maxillofacial surgery procedure.
7. Planned prosthodontic reconstruction.

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Fig 1. Dr. Costa and Dr. Petros in line with Prof. Branemark’s philosophy of “Lesser Surgery to Treat More Patients”.

Fig 2. Angled implants placed into available bone anterior and posterior to the maxillary sinus.

Fig 3. Immediate molar replacement implants.

Fig 4. 45Ncm Primary Stability measured during implant placement.

Fig 5. Healing caps placed on the single implant with a Zirconia screw retained crown.

Fig 6. Silicone key of a diagnostic wax up was used.

Fig 7. The silicone key can direct the implant surgeon.

Fig 8. Bite registration is started prior to extraction of all the teeth. This is followed with addition of bite registration material onto the remaining healing caps.

Fig 9. Good peri-implant tissues with “One Abutment One Time” approach.

Fig 10. Healing caps placed on abutments.

Fig 11. The single implant with a Zirconia screw retained crown.

Fig 12. Pulpation of the extraction socket walls with a peri-odontal probe.

Fig 13. In healed sites where possible the “punch” technique is used.

Fig 14. Occlusal view.

Fig 15. All On-6.
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Fig. 17. Before/After Digitally Designed Smile

Fig. 18. Preoperative and Implant Impressions, Bite Registrations and Silicone Keys, Right After Surgery.

Fig. 19. Prefabricated Zirconia Crowns in Different shapes and sizes.

CAD/CAM Advancements

Recently in order to eliminate this problem, at SameDay Dental Implants® Clinic; CAD/CAM full contour zirconia screw retained implants prostheses are used in selected patients (Fig. 26). Only the front teeth are layered (hickey) with porcelain to optimize esthetics and passive abutments (titanium) are utilized to eliminate zirconia to titanium wear problems. Even though zirconia is a technique sensitive material, the first results (one year) are very promising. However, only time will tell, if zirconia will be the material of choice. The advancements in digital impressions and CAD/CAM technology will further reduce the manufacturing time but most importantly will increase the accuracy and quality of the dental prostheses.

Conclusion

By using tapered angled implants as well as wide immediate molar replacement implants in a prosthetically driven fashion it is possible in most cases to avoid bone grafts, achieve high primary stability and treat patients with implants and passively fitting, screw retained teeth all in the same day (Fig 27).

This reduction in treatment time, immediate function and cost saving leads to high patient satisfaction and increased treatment acceptance by patients.

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Implant Tribune

Fig. 26. Fixed Full Contour ZIRCONIA prosthesis on implants.

Fig. 27. SameDay Dental Implants® & Teeth with Angled and Wide implants.

Once all necessary modifications are made and the patient is satisfied, we need to convey all newly established parameters to the final prosthetic technician. This is achieved by:

i) taking photos and videos to record the esthetic result, in the mouth and
ii) using the so-called “Clinical Remounting Procedure”, in the laboratory.

Alginate impressions and bite registrations are taken from the temporary teeth, which are removed from the mouth and remounted again on the articulator. From the newly remounted temporary teeth the dental technician fabricates:

i) a series of silicon keys which will guide him to fabricate the permanent teeth and ii) an “Anterior Custom Made Guiding Table” (Fig 22) which will allow him to reproduce the occlusal scheme of the temporary teeth to the permanent teeth.

Two months later the temporary teeth are placed again in the mouth of the patient and the silicon keys are screwed onto the anterior and on 20 Ncm. He is instructed not to bite hard onto the acrylic teeth and are delivered in the lab. Instructions are provided to him.

2) Permanent Teeth Fabrication

With the help of i) the interchangeable implant and temporary models, ii) the silicon keys, iii) the anterior custom made guiding table, iv) the photos and v) the videos starts to fabricate immediately the permanent screw retained porcelain teeth.

The permanent teeth need to be ready in one week’s time and should have perfect fit onto the implants. This is one of the most important prerequisites for optimal implant longevity.

The material of choice, used by our dental lab, for the past 20 years, is porcelain fused to metal. The fabrication of the metal ceramic prosthesis involves a series of technique sensitive procedures, inevitably in each step, small “5 dimensional inaccuracies” are introduced into the prosthesis. The sum of these inaccuracies is never zero. As a result, at the end of the fabrication procedure, the final prosthesis will never have a perfect fit onto the implants.

The use of the “Passive Abutment” (Fig. 25), which is a tita-
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Beirut International Dental Meeting 2014

By Dental Tribune MEA

Under the high patronage of His Excellency the President of the Parliament of Lebanon Mr. Nahih Berry, Lebanese Dental Association known by its yearly BIDM (Beirut International Dental Meeting) has organized the 24th BIDM 2014 in collaboration with the Saudi Dental Society at BIEL in Beirut on 11-15 September 2014.

Pre-congress courses and workshops took place on September 10 at “USJ” – University St. Joseph - Faculty of Dentistry which was managed by Professor Ghassan Yared and Professor Carina Mehanna, under the supervision of Prof. Nada Naaman, Dean of Faculty of Dentistry.

On the first day of the event the attendees witnessed the ribbon-cutting ceremony followed by a tour of the exhibition exploring the latest dental technologies, equipment and services displayed by numerous key industry leaders and dental manufacturers.

The BIDM 2014 not only opened the doors to open-discussions and learning for the region but allowed the participants to build their skills and use the opportunity for networking by up-to-date knowledge and sharing experiences in the application of technology throughout the event.

President of Lebanese Dental Association, Prof. Elie Maalouf discussed during the opening ceremony: “With the theme “Planning for the Future” we encourage all Lebanese living in Lebanon and abroad, as well as all Arab and foreign dentists to attend this highly regarded meeting, in an effort to plan for a better future, not just scientifically, but culturally and politically.”

Prof. Maalouf further announced, “We should all denounce terrorism and extremist behavior. Attending this meeting and especially in this dire time will tell the world that we are strong together and will show them that no matter how hard they try to separate us we will always find a platform to meet. Lebanon is a small country but it has always reflected to the world a sense of modern civilization and openness to all cultures and religions. Lebanon does not tolerate extremist behavior and will not allow negative media to taint its reputation. Holding ambitious annual dental meetings with world renowned international and local speakers will show the world that we are competing with first world countries regarding scientific achievements”.

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used to etch the fitting surface of each veneer for 60 seconds as recommended by the manufacturers to obtain a clean ceramic surface for durable bonding.

Empress ceramic primer Monobond-S was used as a silane-coupling agent for one minute and then air dried for five seconds according to the manufacturers instructions. One layer of Excite bonding agent was applied on the fitting surface of each veneer for 60 seconds then air thinned for 5 seconds Fig 10.

• Tooth structure surface treatment:

Transparent strips were used on the proximal surface of adjacent teeth to avoid etching effect. phosphoric acid 35 % was used to etch the enamel margins of the tooth preparations for 30 seconds and 15 seconds for the dentin areas. Copious air water spray was used to remove the acid for 20 seconds. One layer of Excite bonding agent was applied on the tooth structure and air thinned for five seconds. LED light curing unit was used for curing.

Vario-link Veneer light activated resin cement was used for cementation of the two laminate veneers. Optra Sticks were used for holding the labial surface of the veneer for better handling processes during cementation. Initial polymerization was made and excess cement was removed with a sharp tip of a probe. Dental floss was used to ensure that there is no trapped cement in between the embrasures. Final polymerization was completed.

Intra oral proximal strips were used for better smooth proximal margins Fig. 11.

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About the Author
The general secretary of LDA, Dr. Walid Khattar further declared during the ceremony: “Efforts exerted leading to this conference were colossal, we did very important team work as council members, committee members, professional and competent employees, to accomplish this conference. I hope that you will benefit from interesting scientific topics adding therefore to dental medicine a new scientific cornerstone.”

The conference further proved to be a vital platform for the participants to share ideas, explore the potential of new advances in technology and foster closer ties. The BIDM 2014 gathered under one roof of 6,000 square meters more than 4,500 dental professionals in the dental field.

The scientific conference brought together more than 2,500 dentists registered to the event program from Lebanon and the region and more than 1000 have been registered as visitors to the exhibition area. This year, despite the difficult situation in the region, the event gathered 56 highly esteemed guest speakers from 16 countries around the world (USA, India, France, Germany, United Kingdom, Italy, Bulgaria, Libya, Greece, Spain, Lithuania, and from the Arab countries Kuwait, Sultanate of Oman, Egypt, Kingdom of Bahrain and KSA) in addition to an interesting panel of Lebanese talented lecturers will attempt to clarify during 3 exciting days some of the most important issues and dilemmas arousing today. They highlighted on areas of ongoing developments and frontiers of research challenges in treatment planning, clinical performance and sustainable measures that are essential for a long-term treatment success. The event also received sponsorship by major market players and dealers in the region and the world leading companies, more than 157 companies were part of a unique huge space offered this year. The event came to a conclusion with 13 lucky draws sponsored by Lebanese Dental Association during the closing ceremony.

Overall, The BIDM 2014 was a resounding success with nothing but positive feedback from the visitors.

The courses this year covered a variety of topics including: Endodontology, restorative dentistry, pedodontontology, laser in dentistry, Surgery and implant loading. Each course received specific continuing education hours in collaboration with CAPP (Center for Advanced Professional Practices) which is an ADA CERP recognized provider.
Saliva and Oral Health

By Michael Edgar, Colin Dawes & Denis O'Mullane and contributed to by Mahvash Navazesh

Excerpt from Saliva and Oral Health: An Essential Overview for the Healthcare Professional

E

The presence of saliva is vital to the maintenance of healthy hard (teeth) and soft (mucosa) oral tissues. Severe reduction or absence of salivary output not only results in a rapid deterioration of oral health, but also has a detrimental impact on the quality of life for the sufferer.

An understanding of saliva and its role in oral health helps to provide dentists, nurses and other oral health care professionals of the problems arising when the quality or quantity of saliva output is decreased; this awareness and understanding is important in the primary prevention and treatment of the condition.

There is an extensive body of research into salivary fluid. It has been used to indicate an individual's susceptibility to developing caries, it has also been used to assess the biological, physiological and pathological changes which are mirrored in saliva. For example, the beneficial effects of saliva as a diagnostic fluid is that it is easily available for sampling and analysis. It can be used to monitor the presence and levels of harmful oral microorganisms and ions.

The following article provides an overview of oral complications associated with salivary gland hypofunction, epidemiology, diagnosis, clinical implications and management of xerostomia.

Xerostomia and Salivary Gland Hypofunction

Saliva plays a significant role in the maintenance of oral-pharyngeal health. Subsequent to a dry mouth (xerostomia) and objective evidence of diminished salivary output (salivary gland hypofunction) are common conditions, particularly in medically compromised older adults. They can result in impaired food and beverage intake, a soreness of oral disorders, and diminished host defence and communication. Persistent salivary gland hypofunction can produce permanent oral and pharyngeal disorders and impair a person's quality of life.

Global estimates of xerostomia and salivary gland hypofunction are difficult to ascertain due to varying study design, differences in the definition and usage of the term xerostomia and salivary gland hypofunction interchangingly, utilization of different diagnostic criteria and saliva collection methods, and small sample sizes. However, overall, the prevalence of xerostomia and salivary gland hypofunction increases with age and affects approximately 20% of the population aged 65 years and older.

There are multiple causes of xerostomia and salivary gland hypofunction, the most common being autoimmune. Amongst adults, at least 60% of older adults are taking at least one medication that causes salivary gland hypofunction.8,9 However, to estimate the true prevalence of xerostomia in adult populations is difficult,10 among the reasons are that salivary gland hypofunction is under-studied in these populations, there are no reference values, and the prevalence of xerostomia in adult populations is dependent on the definition of xerostomia being used. The prevalence of xerostomia is nearly 100% among patients who have been diagnosed with an autoimmune exocrinopathy affecting between 1-4% of older adults.

Estimates of the prevalence of xerostomia in adult ambulatory and nursing home populations range from 16-72%.10,11 Combining the prevalence of xerostomia and salivary gland hypofunction, variances of the percentage of adults with these conditions who complain of symptoms of xerostomia have been mentioned. Generally, an estimated general estimate of approximately 50% xerostomia and salivary gland hypofunction taking adults 65 years and older.

Approximately 80% of all persons over age 65 have at least one chronic condition and 50% have at least two. Hypertension, diabetes, and coronary artery disease are the most frequently occurring conditions among older adults. These conditions, and the medications often prescribed for their management, could impact the structure and function of salivary glands leading to complaints of xerostomia in the elderly.8 Therefore, diminished salivary gland hypofunction.

Diagnosis of xerostomia and salivary gland hypofunction

Subjective responses and questionnaires

The establishment of a diagnosis of xerostomia by health professionals with patients’ complaints and can be advanced with the use of questionnaires. It should be noted that a patient’s presenting complaint may not be dry mouth in spite of the presence of salivary gland hypofunction. Therefore, lack of complaint should not be perceived as evidence of adequate saliva secretion. Many of the common oral symptoms and signs associated with xerostomia include: altered taste, difficult eating, chewing, swallowing, and mouth breathing, and, especially without drinking accompanying liquids. Patients complain of impaired denture retentive, halitosis, retentive, stomatodynia, and intolerance to acidic and spicy foods.8

Xerostomia is also common, since salivary output normally reaches its lowest circadian level during the early morning (approximately 1 am), and its highest circadian level during the early evening (approximately 9 pm). However, the circadian variation of salivary flow rate is less than 0.1 ml/min and the mean flow rate is less than 0.1 ml/min. The paraffin or gum base collection is the most commonly used method for saliva collection. Stimulated whole salivary flow rate is recorded gravimetrically and expressed as ml/min. Stimulated whole salivary flow rates of less than 0.5 ml/min are also considered to be suggestive of salivary hypofunction. The most common diagnostic technique for collecting this form of saliva is with the use of a standard piece of paraffin or gum base to be placed under the chin at each 60 second interval for 15 minutes. Without swallowing, the saliva is collected into the pre-weighted container and the collection is completed. The volume is recorded gravimetrically, and expressed as ml/min.

Saliva Collection

Some investigators have attempted to define the lower limits of “normal” salivary flow rates. However, there is substantial variability in flow rates that makes it difficult to define diagnostic cut-off values.8,12

Clinical implications of xerostomia and salivary gland hypofunction

Dental caries and dental erosion

One of the most common oral conditions that develops as a result of salivary gland hypofunction is dental caries, with increased risk of caries when salivary gland hypofunction increases by about 50%, patients will begin to experience xerostomia. The best way is simply to monitor a patient's salivary health (both objectively and subjectively) over time to determine whether there are demonstrable changes.8

Caries associated microorganisms and enamel demineralisation. The most common cause for unstimulated whole saliva is high fluid production, which occurs secondary to salivary infections and obstructions (e.g. bacterial overgrowth and Sjögren’s syndrome). A swollen parotid gland can displace the tongue and extend inferiorly over the angle of the mandible, whereas an enlarged submandibular gland is palpated medial to the posterior-inferior border of the mandible.

Diabetes mellitus, hypertension, and heart diseases, diabetes, arthritis, gout, and chronic obstructive pulmonary disease (COPD) may be associated with salivary gland hypofunction. There-
(difficulty swallowing), and difficulty chewing food secondary to salivary gland hypofunction can lead to changes in food and fluid selection that compromise nutritional status. The speech and eating difficulties that develop can impair social interactions and may cause some patients to avoid social engagements. Dysphagia increases susceptibility to aspiration pneumonia and contributes to the lung's inability to discriminate between Gram-negative anaerobes from the gingival salus.[]

Management of xerostomia and salivary gland hypofunction:
The initial step in the management of xerostomia is the establishment of a diagnosis. This frequently involves a multidisciplinary team of health care providers who communicate effectively, since many patients have concomitant medical conditions and frequently experience complications of polypharmacy. The second step is scheduling frequent oral health evaluations due to the high prevalence of oral complications.[11]

Maintenance of proper oral hygiene and hydration (water is the drink of choice) are helpful. Several habits, such as smoking, mouth breathing, and consumption of caffeine containing beverages, have been shown to increase the risk of xerostomia. Limiting or stopping these practices should lessen the severity of dry mouth symptoms. A low-sugar diet, daily topical fluoride use (e.g. fluoride toothpaste and mouth rinses), antimicrobial mouth rinses, and use of sugar-free gum or candy to stimulate salivary flow, help to prevent dental caries.

Pain management should be instructed on the frequent use of fluids during eating, particularly for dry and rough foods, and avoiding problems secondary to salivary gland hypofunction can impair the intake of fibre-rich foods, restricting some older adults to a primarily soft and carbohydrate diet. Accordingly, patients must be counselled on a well-balanced, nutritionally adequate diet and the importance of limiting sugar intake, particularly between meals.

If there are remaining viable salivary glands, stimulation techniques using sugar-free chewing gum, candies (sweets), and mints can stimulate salivary output. Chewing sugar-free gum is an extremely effective and continuous salivary stimulant, since it increases salivary output and increases salivary pH and buffer capacity. Buffered xylitol-containing chewing gums or mints are often recommended, because xylitol has an anti-cariogenic effect.

Conclusion
Saliva not only plays a pivotal role in the maintenance of a healthy homeostatic condition in the oral cavity, but contributes to one's overall health and well-being. Components from saliva interact in different ways with the dentition to protect the teeth. Patients who lack sufficient saliva suffer from many oral diseases, of which caries is only one. To alleviate discomfort they are advised to use saliva stimulants and substitutes which have the function of lubricating the oral surfaces. Chewing sugar free gum is increasingly being viewed as a delivery system for active agents that could potentially provide direct oral care benefits, as it promotes a strong flow of stimulated saliva.


*Underwriting costs for this Saliva and Oral Health edition were provided by Dr. Michael Dodds and The Wrigley Company.

References
Robert Pauley, Jr., DMD

Dr. Pauley has been practicing dentistry in the Atlanta area since graduating from the University of Kentucky College of Dentistry in 1988. Currently enrolled in the Advanced Dental Implant Studies, Dr. Pauley is an Associate Fellow of the American Academy of Implant Dentistry and a Fellow of the International Congress of Oral Implantologists.

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Clar Vivadent e.max shade A1 size 12 ceramic block. We tried in the crown and took a digital PA radiograph to verify the margination, and made a slight occlusal adjustment on the lingual surface. The patient and parents were pleased with the appearance of the unglazed product. We polished, glazed, and added a slight white line on the buccal of #9 to mimic natural tooth #8. The crown was fired in the Ivoclar Programat Oven on e.max glazing setting. After a final try-in, the crown was cemented in place using variolink translucent base and catalyst. We cleaned off the excess cement, verified the final occlusal scheme, and captured a final periapical image verifying cement removal (Fig. 8).

Post-operative instructions were given. The patient and parents were advised to call immediately if there was sensitivity, swelling, questions or concerns. I spoke with the parents and checked on the patient one day and one week postoperatively. She was proud of her new tooth and said it felt “awesome” (Fig. 9).

Testimonial
Carestream Dental products helped me gather valuable clinical information, diagnose, monitor treatment status, and provide better care for this patient. The digital radiographs initially captured by the CS 8100 3D to evaluate the tooth were clear and beneficial to determine fracture and position of nerve tissue. This clarity allowed us to see the bone pattern and periodontal ligament space surrounding the damaged tooth. In addition, the 3D scan, taken at a 5 cm x 5 cm field of view and 500 voxels, allowed us to rule out buccal or palatal plate fractures before finalizing the treatment plan. The various voxel settings let us select the best exposure time to image the structures we desire to view. This would not have been possible in the past with a panorex or digital 2D radiograph system.

The fact that we were able to provide the patient and her parents with a three-dimensional CBCT of tooth #9 gave them the opportunity to see and understand what was going on under the surface; ultimately resulting in positive acceptance of the treatment plan. I find that the CS 8100 3D unit gives me an incredible level of detail with actual size images that I can view from any angle or cross-section to get the best possible diagnostic image. CS Solutions (CS 5500 intraoral scanner, CS Restore software and CS 5000 milling unit) allows my office the opportunity to fabricate same-day permanent restorations. My patients appreciate the fact that our office is staying up to date with new available technology and giving them a safer environment with less radiation.
New 3Shape advisory board develops plan to improve patient care

By Dental Tribune International

COPENHAGEN, Denmark: 3Shape, a global provider of digital 3-D solutions for dental laboratories and dental clinics, has formed a dental advisory board made up of 12 prominent dental professionals from around the world. The new board will provide the company with insight and direction in digital technology and product development, as well as help the company move towards its goal of improving dental patient care.

“The 3Shape Dental Advisory Board provides 3Shape with a unique opportunity to work with the dental industry’s top digital experts to develop our technology and solutions and better answer real needs for dentists. Our goal is to improve patient care. Working alongside these industry leaders brings us one step closer to this,” said Flemming Thorup, President and CEO of 3Shape.

The group met for the first time earlier this month in Copenhagen. Leading digital dentistry advocate and practitioner Dr Jonathan Ferencz from the US chaired the two-day meeting. The advisory board developed a four-point plan to achieve the following objectives: (1) to share best practices in the use of digital technologies; (2) to define actual needs for better dentistry based on cases and experience; (3) to gather and disseminate and development of and innovation in dental technologies; and (4) to promote education and awareness of digital dentistry.

All board members are respected leaders in the use of digital dental solutions and intra-oral scanning. Members work with a variety of the digital dental systems available on the market and not necessarily 3Shape’s own 3-D scanners and CAD/CAM software.

“The way dentists care for patients has changed dramatically over the past few years, with digital technology driving much of this change. Digital workflows enable dental professionals to work more efficiently and accurately, with digital case handling now in many cases surpassing analogue treatment in quality. The creation of the board will serve to improve patient care even further and strengthen 3Shape’s reputation as an industry leader. At the two-day meeting we got a sense of 3Shape’s passion not only from their willingness to listen to the expertise and insight of the professionals gathered, but also from their commitment to taking action and applying our recommendations to create better solutions and improve patient care,” said Ferencz.

The 3Shape Dental Advisory Board comprises 11 dentists and one dental laboratory owner. Board members are from Australia, Brazil, Denmark, France, South Korea, Spain, Switzerland and the US. Plans for the board include biannual meetings to ensure the success of the four-point plan, as well as to assess both the industry and 3Shape product development.

Ferencz likened support for 3Shape in the industry to that of IT giant Apple: “I think there is a passion that users have for 3Shape that is analogous to the passion that Apple users have for their products. 3Shape is driven by innovation much the same as Apple. And like Apple, they make products that are more useful, beneficial and incidentally, look cool too.”

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**Interview: “The Emirates Clinic is unique”**

*By Dental Tribune MEA*

**Dubai, UAE:** The Emirates Dental Group provides in-house medical and dental services for eligible staff members and their families via its own Emirates Clinic, located at the famous Sheikh Zayed Road in Dubai, UAE.

Dental Tribune MEA had the pleasure of interviewing the Vice President of the Dental Clinic Services, Dr. Brendan James Carr to find out more about the Emirates Dental Clinic Services and its uniqueness. The dental team comprises of dentists, dental hygienists and dental nurses who provide the highest standards of dental care for company staff and their dependents on a routine and emergency basis. Supported by dental hygienists and surgery assistants, dentists not only monitor dental health across the Group, but also participate in preventative dental programs and/or education for employees.

**Dental Tribune MEA:** Dr. Brendan Carr, thank you for your time. Could you share with us your background and the road to becoming VP at the Dental Clinic Services in Dubai?

**Dr. Brendan Carr:** I graduated from Glasgow University in 1988 and worked in the NHS for 5 years before accepting a position in a large private practice in the Gold Coast Australia. After working and living in Australia for 4 years I took up a position in a private practice in West London for a further 5 years. I moved to Dubai in 2009 having been very fortunate to be selected for a position in the Emirates Airline dental clinic which has been a great move and a clinic that thoroughly enjoy working in. I took on the role as VP of the clinic in March 2015 and am very fortunate to have an excellent team working with me to provide high quality dental care to our eligible patient base.

**What makes the Emirates Dental Clinic Services so unique in comparison with the hundreds of clinics in UAE?**

The Emirates Clinic is unique in the way that we solely look after eligible staff and their dependents of the Emirates Group and no one else. This includes our team of over 5500 pilots. We need to ensure that this important group are dentally fit and most importantly, fit to fly. The dental treatment for all our patients is covered under the company’s generous insurance scheme. In addition our dentists are all salaried and as a result patients have the confidence that whatever treatment we recommend is done so with their best interests at heart and with no commercial motivation. The clinic has been open now for 19 years and in that time has grown from 2 dentists and one hygienist to the current position of 10 dentists and 7 hygienists in order to support the expansion of the airline over the years with the aim of providing ethical, quality dental care in a safe environment as its core philosophy. Our clinic has also been internationally accredited by the Australian Council on Health Care Standards (ACHS), which assesses the quality and safety of health care provided by clinics and hospitals. This is an award which we are all very proud of within the team and the Emirates Group as a whole.

**How do you assess the level of dental medical services and awareness in UAE?**

There is no doubt that the awareness of the importance of dental health is improving in the UAE and that the regulatory bodies such as the DHA are striving to ensure that all dental professionals within the UAE are following required standards. In the 5 years I have lived in Dubai, I am more aware of dental health promotions taking place and products being advertised. I believe much work is still required to make people aware of the links that smoking, diabetics and heart disease have with dental health.

**What is your impression of the Dental Industry Market and its fast development especially in Digital Dentistry?**

In the past 10 years there has been a dramatic increase in the amount of new products and technologies coming into the market and it can often be a challenge keeping up with all of these developments. I am of the opinion that as with all industries, we should embrace new technologies that will improve the service that we provide for our patients and the working environment we work in. The digitalization of equipment whether it be with radiographs or CAD/CAM scanners is becoming more and more an integral part of the dental surgery. It is clear that when feedback has been provided to the manufacturers of problems being faced with new technology, this feedback is being listened to so as to improve the functionality of this technology. I am of the belief that the digital technology available nowadays justifies the investment required by dental clinics.

**How do you and your staff keep up to date with the latest developments in Dentistry?**

All of our staff are required to meet both the DHA continuing professional development standards and the CPD requirements of their home countries regulatory bodies. In order to achieve this we attend various conferences and seminars both locally and overseas. We also have subscriptions to dental journals from around the world which we share within the group. We also take advantage of online CPD articles and reports.

**What would you say is your dental philosophy?**

The message you would like to give to your patients?

My dental philosophy is to aim to provide high quality, ethical dental care in a caring way that encourages patients to be regular attenders to ensure that all their dental needs are met.

**Is there anything else you would like to add?**

I would like to take the opportunity to thank you for your interest in our clinic and team and for the work you do in promoting dental education both locally and globally.

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**Inibsa Dental: the specialists in dental anaesthesia**

*By Inibsa Dental*

**Inibsa Dental** is a pharmaceutical company with over 65 years experience in the R&D and production of dental anaesthetics.

With a production capacity of over 150 million cartridges a year, Inibsa Dental is positioned in its own right amongst the world’s leading manufacturers.

Inibsa Dental has the right anaesthetist to suit every patient. In their daily practice, dentists face a wide range of pathologies and patients. It is important to choose the appropriate anaesthetics for each treatment and patient considering factors such as the need for postoperative pain control, the required hemostasis, the risk of postoperative self-inflicted injuries and any contraindications to the selected local anaesthetic. Inibsa Dental provides a complete range of drugs to deliver safe, convenient and effective anaesthesia for every type of dental procedure and patient.

Inibsa Dental’s local anaesthetics are aesthetically manufactured, silicone-coated and have latex-free rubber components to ensure a smooth and painless injection.

**Contact Information**

For more information visit: http://www.inibsa.com