Invisible braces market to grow rapidly over next five years

By DTI

According to a recently published report, the global invisible braces market is expected to grow at a 12.16 per cent compound annual growth rate from 2016 to 2021. The report analyzes the development of the ceramic, lingual and clear aligners segment in ten major countries and further shows that the process will be mainly driven by technological innovations and increasing demand for invisible braces among the adult population with aesthetic concerns about fixed orthodontic appliances. Over the past decade, improved technological advancements, particularly digital technologies, and increasing awareness of aesthetic alternatives to conventional braces have led to growing demand for orthodontic treatment with aligners.

In addition, rising disposable income has resulted in increasing per capita health care expenditure, which has further led to a growing focus on health care, thereby increasing the demand for invisible braces specifically among the adult population with aesthetic concerns about fixed orthodontic appliances. Over the past decade, improved technological advancements, particularly digital technologies, and increasing awareness of aesthetic alternatives to conventional braces have led to growing demand for orthodontic treatment with aligners.

While the market has witnessed a strong foothold in North America and Europe, rapid growth in the demand for invisible braces is expected to be fueled by the emerging markets in Asia Pacific and Latin America through India and Brazil, whereas rising dental tourism in Mexico and Thailand will continue to contribute towards the invisible braces market.

Among the leading companies operating in the market are Align Technology, Ormco, DENTSPLY International, 3M and ClearCorrect.

The 152-page report titled Global invisible braces market: Trends, opportunities and forecasts (2016–2021) was published on 1 February. It can be purchased at www.rnrmarketresearch.com.

DT launches new international ortho magazine

By DTI

LEIPZIG, Germany: The orthodontic segment has grown significantly within the past 20 years owing to new technologies and products, as well as an increase in adult patients requesting orthodontic treatment. In response to this trend and to update dentists on the most significant developments in the field, Dental Tribune International (DTI) has added ortho—international magazine of orthodontics to its portfolio. The 2016 issue includes articles on clear aligners, vibration therapy and rapid maxillary expansion, as well as the latest product information and event previews.

The new high-gloss English language magazine adopts an interdisciplinary approach involving orthodontics, oral surgery, periodontics and restorative dentistry, and aims to serve as an educational tool, providing comprehensive knowledge and information on the newest technologies that can profitably be integrated into treatment concepts. The publication, which will be distributed at all major international orthodontic congresses and exhibitions, presents the latest research and case studies, as well as trends in procedures and techniques.

In order to connect with orthodontic specialists, the DTI team is scheduled to attend a number of orthodontic events around the globe in 2016, including the 92nd Congress of the European Orthodontic Society, which will take place between 11 and 16 June in Stockholm in Sweden; and the fourth Scientific Congress for Aligner Orthodontics, to be held on 18 and 19 November in Cologne in Germany. DTI will be providing comprehensive live coverage of these and other events on its website. In addition, e-newsletters about the respective events will be sent to orthodontists worldwide.

From 2017, a new issue of the ortho magazine will be published twice a year with a print run of 4,000 copies. An e-paper edition of the magazine is available free of charge via the DTI online print archive.

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By 3Shape

The versatility and solution coverage offered by 3Shape systems has enabled Glidewell to grow and develop well ahead of its competition by continuously expanding the range of its products and services. Now all types of restorations and large orders are handled digitally each day, with over 50 of 3Shape’s installations covering every Glidewell department need.

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It has become clear to Glidewell that their 3Shape solutions are a major factor in enhancing their business, and they credit this to the system’s accuracy, consistency, predictability and reproducibility of output. Many incoming orders explicitly express the condition that they are to be executed using Glidewell’s 3Shape systems.

The accuracy of the 3Shape system enabled Glidewell to introduce 2 highly successful products that are enjoying explosive market growth.

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BruxZir® Zirconia soon became the fastest growing product in the history of the laboratory, and today Glidewell is making 8,000 BruxZir® restorations per week using 3Shape’s technologies.

The flexibility of 3Shape as a system and a company fit perfectly with Glidewell’s goal to help pioneer the growth of digital dentistry. Glidewell’s technicians continuously communicate with 3Shape, giving feedback regarding their daily challenges, and often seeing direct solution answers in later 3Shape software releases.

Source: Greg Minzenmayer, Robin Bartolo, Rudy Ramirez

The Challenge

Glidewell’s proclaimed ambition is to be a pioneer in the Digital Dentistry Revolution, and, to achieve this, they know they must work with the best systems. Investing in a single CAD/CAM brand was not the important issue for them; Glidewell simply wanted to use best-of-breed systems for each service they provided.

With a dampened mood in the economy, more and more small and mid-sized laboratories were looking for sources of digital technology services in order to remain competitive, and this opened new business opportunities for full-service labs like Glidewell. More than ever it became imperative to have fast and productive systems that could provide attractive digital services and products of high quality.

Glidewell develops their own systems and methods for many applications, including abutments, implants, milling and special materials, and they required flexible and highly versatile software systems to support these. They needed a system that was not limited – a system that could grow with them, ensuring that they could continue bringing their in-house developed products to the market while broadening their range of services.

The Solution

Glidewell initiated a technology solution business plan whose goal was to become familiar with the market’s flexible CAD/CAM systems. 3Shape was one of the first to present itself, but other brands were installed later, and Glidewell technicians soon became familiar with operating a wide range of systems.

Despite Glidewell’s readiness to employ best-systems for different purposes, 3Shape accuracy, ease of use and efficiency continued to win preference in every department. Alternative 3D scanners and software systems were simply being pushed aside to make room for 3Shape. Glidewell’s dental technicians “at the bench” slowly but surely gravitated to 3Shape’s solutions for most of their tasks.

Today, Glidewell Laboratories has over 50 3Shape DentalSystem™ and D5oo series scanner installations spread throughout the full areas of Glidewell’s many departments. In step with the ever-increasing integration of 3Shape into their workflows, Glidewell has instituted convenient on-line services for other Dental labs using 3Shape; enabling them to upload their 3Shape scans or design files direct to Glidewell for special processing and production with Glidewell’s own materials.

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Clinical examination and treatment planning

The first part of the oral rehabilitation process involved a clinical examination in which the facial and dental conditions were analyzed. This investigation showed a significantly reduced vertical dimension of occlusion. The patient was missing 14 permanent teeth. Furthermore, several deciduous teeth were still in place. Tooth 36 had been destroyed by caries, making its extraction inevitable.

In order to provide the dental technician with the information required for waxing up a restoration, details related to the vertical dimension of occlusion and facebow records must be supplied in addition to the impression. If the vertical dimension of occlusion needs to be increased, the correct centric position has to be recorded in the occlusal plane or bipupillary line. In the maxillary jaw to the horizontal reference Lucia jig made of a thermoplastic material was used as a registration aid (Fig. 2). A facebow was used to establish the relationship of the maxillary jaw to the horizontal reference plane or bipupillary line. In the fabrication of extensive restorations, the protractor and the lateral positions have to be recorded in order to make any necessary adjustments to the articulator.

An additional silicone, for example, Virtual® CAD-bitte can be used for this purpose. In most cases, this type of material produces faster and more accurate results than wax. When wax is used for bite-taking, the patient has to be shown how to move into the protrusive or lateralocclusal position. Experience has shown that it is easier to let the patients produce these movements of their own accord and store them when they arrive at the “right” position (Fig. 3). Virtual CAD-bitte is injected while the teeth are in this closed position.

Wax-up and mock-up

The following minimum documentation was required for the fabrication of the wax-up: precision impressions of the upper and lower jaw, a facebow record transfer, a centric bite record in wax with the predetermined vertical dimension of occlusion, portrait pictures of the patient as well as close-up pictures of the situation when the patient is smiling. This information was used to build up the restoration in wax and bring the teeth into their ideal functional and esthetic position. Furthermore, the occlusal plane and the Spee’s curve were adjusted (Fig. 4). For the purpose of checking the laboratory work intraorally, a mock-up of the wax-up was made (Telio® CS C&B) (Fig. 5). All the functional and esthetic parameters were then checked in the patient’s mouth.

This stage of the treatment is very important for many reasons. Patients are given the opportunity to actively participate in designing their new smile, which is a very motivating experience. In addition, the functional wax-up, the maximum intercuspation, the new vertical dimension and the protrusive and lateralocclusal movements can be tested in a realistic situation. Moreover, the mock-up serves as a model for the provisional restoration. Therefore, it should be produced with the highest degree of accuracy. Once the patient is completely satisfied with the proposed result and the mock-up fulfills all the clinical criteria, the actual treatment can begin.

Preliminary treatment

At present, the preparatory measures for minimally invasive procedures and the topic of tooth preparation are receiving a lot of attention. Nevertheless, there are some other aspects that should not be neglected for example, the properties of the materials used strongly influence the result. State-of-heart materials are offering increasingly sophisticated solutions. Before using any new materials, it is important to learn more about the application recommendations of the manufacturer. Excellent photopolymer and a carefully crafted mock-up will reduce the preparations needed to the fabrication of the final restoration. With the help of the mock-up, for example, the teeth can be successfully prepared for veneers or even crowns.

The use of optical appliances such as dental veneers and crowns also makes work easier and more accurate.

In the present case, the teeth were first cleaned very thoroughly. The necessary extra-large preparations were performed and one tooth was endodontically treated. Then the teeth were prepared and a provisional esthetic treatment (Figs 6 and 7). The long-term temporary was fabricated using CAD/CAM equipment. Therefore, the wax-up was digitized with the help of a laboratory scanner. This information served as the basis for the computer-aided design of the provisional. The CAD/MicroFab® provisional made of tooth-coloured composite (Telio CAD) also served as a test object or “ground truth” during the healing process. Its function and esthetics were closely examined and adjusted in detail (Fig. 8).

Fabrication of the permanent restoration

The final prosthetic phase started after the long-term temporary had been worn for an adequate period of time. Before impression-taking, the teeth were prepared again and polished. It was very important to transfer the vertical dimension of occlusion and the information about the tooth-to-tooth relationship from the provisional to the final restoration with great care. The “cross-mounting” technique is suitable for this purpose. This method entails first making a bite record of the prepared teeth in the upper and lower jaw. Subsequently, a second record is taken of the provisional restoration in the upper jaw and the prepared teeth in the lower jaw. A third record is captured of the prepared teeth in the upper jaw and the provisional restoration in the lower jaw.

The dental technician required the following minimum information in order to fabricate the restoration: precision impressions of the upper and lower jaw, precision impressions of the provisionals, a facebow transfer record and three bite records (“cross-mounting”), and the recent trait pictures of the patient wearing the provisionals as well as photos of the patient smiling.

The aim at this stage was to “copy” the shape and occlusal plane of the provisionals and to accurately transfer this information to the final restoration. For this purpose, thecasts were placed in the articulator after the “cross-mounting” process. Since the final situation had been successfully attained by means of the provisionals, the frameworks could be fabricated relatively easily.

As a result of using the CAD/CAM approach, the final restoration could be visualized, modified and/or duplicated with the assurance that all the design guidelines would be observed. The digital layout (WPT, Natus, Italy) for the occlusal seating was responsible for fabricating the frameworks for the metal-ceramic restorations in the protrusive region as well as the zirconium oxide framework for the upper anterior teeth (Fig. 9). The framework was tried in to confirm the correct fit of the restoration. Most of the inaccuracies that usually occur are due to errors made during impression taking, casting or model fabrication. The failures of the lower teeth may also be assisted with the use of digital technology. They were subsequently pressed with lithium disilicate glassceramic (IPS e max®).

The metal frameworks were veneered with the new PFM system IPS Style®. It allowed us to achieve the desired natural-looking, translucent shade without having to sacrifice on brightness. The shade selection offers a major advantage in that it can be optically adapted in combination with IPS e max Ceram. As a result, the veneers on the metal frameworks could be optimally adjusted in the upper jaw. After the first bake, the restoration was tried in. At this stage, the need for smaller adjustments of the ceramic was identified. Subsequently, the restorations were duplicated with the assurance that the shades of the dual-curing (DC) and the light-curing (LC) luting composites are the same. The DC cement is used for crowns and bridges (Fig. 10) and the LC cement for veneers. Furthermore, we used Monobond® Plus and Triad® (Bisco) for the metal frameworks were veneered with the assistance of digital cementing. After gentle sandblasting, the zirconium oxide and metal-ceramic restorations were placed for preparation and polishing with Monobond® Plus and Triad® (Bisco). The final restorations were cleaned and polished (Fig. 11).

In the present case, the teeth were finished and adapted on the bridge. Finally, the metal frameworks were veneered with the new PFM system IPS Style®. It allowed us to achieve the desired natural-looking, translucent shade without having to sacrifice on brightness. The shade selection offers a major advantage in that it can be optically adapted in combination with IPS e max Ceram. As a result, the veneers on the metal frameworks could be optimally adjusted in the upper jaw. After the first bake, the restoration was tried in. At this stage, the need for smaller adjustments of the ceramic was identified. Subsequently, the restorations were duplicated with the assurance that the shades of the dual-curing (DC) and the light-curing (LC) luting composites are the same. The DC cement is used for crowns and bridges (Fig. 10) and the LC cement for veneers. Furthermore, we used Monobond® Plus and Triad® (Bisco) for the metal frameworks were veneered with the assistance of digital cementing. After gentle sandblasting, the zirconium oxide and metal-ceramic restorations were placed for preparation and polishing with Monobond® Plus and Triad® (Bisco). The final restorations were cleaned and polished (Fig. 11).

Conclusion

In extensive cases, it is particularly important to develop a well thought-out plan including all the treatment steps, which needs to be carefully followed at all times. In the described case, various ceramic materials were cleverly combined to produce a harmonious result. Excellent communication between the dentist and the dental technician together with well-coordinated stages of the restoration and the framework systems provided the basis for this highly satisfactory outcome.

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Minimally invasive prosthetic treatment with various ceramic materials

By Dr Marko Jakovac, Croatia, and Michele Temperani, Italy

In cases where a full mouth reconstruction is required, it is essential to follow a systematic procedure and use carefully coordinated materials. The following case study describes the treatment of a patient with tooth agenesis.

New materials and innovative techniques for modern esthetic and minimally invasive dentistry are coming to the market every day. As a result, patient-focused treatment protocols are continuously improving. If complex treatment is indicated, however, personal aspects in addition to the functional and esthetic requirements of the patient need to be addressed – for example, psychological stress or financial constraints.

In this article, we will explore the possibilities of providing minimally invasive treatment, taking these factors into consideration.

Case study
The twenty-three-year-old patient showed severe hypodontia (tooth agenesis) with a total of fourteen missing teeth in the upper and lower jaw. Severe hypodontia of this kind usually results in a very low vertical dimension of occlusion. In some cases, it disturbs the chewing function. At the beginning of this type of treatment, psychosocial aspects have to be taken into consideration. In the present case, the patient did not smile during the first appointment, and he covered his mouth with his hand when he spoke. Due to the financial constraints of the young candidate and his fear of an operative intervention (treatment with implants), it was decided to pursue a conventional prosthetic treatment approach. According to the treatment plan, the upper anterior teeth would be restored by means of an all-ceramic bridge and the lower anterior teeth with lithium disilicate veneers. The decision was taken to treat the posterior teeth with metal-ceramic restorations.

Fig. 1: Patient with hypodontia: portrait picture of the initial situation. A total of fourteen teeth were missing in the upper and lower jaw.

Fig. 2: Anterior Lucia jig for the evaluation of the centric relation.

Fig. 3: Capturing a protrusive bite record with Virtual CAD/CAM.
Fundamental misconceptions about Dental implants among patients

By Implant Magazine

Investigating patients’ knowledge and perceptions regarding implant therapy, a Chinese study has found that an alarming number of participants had inaccurate and unrealistic expectations about dental implants. Moreover, the study determined that only 81 per cent felt confident about the information they had about the treatment. In the study, the researchers investigated preoperative information levels, perceptions and expectations regarding implant therapy via a questionnaire. Responses from 277 patients were obtained during 2014 and 2015 in three different locations in China (Yichang, Sichuan and Jiangsu). The analyses established that about one third of the participants had mistaken assumptions about dental implants.

The study, titled “What do patients expect from treatment with dental implants? Perceptions, expectations and misconceptions: A multicenter study”, was published online ahead of print on 23 March in the Clinical Oral Implants Research journal.

Increase in caries rates after Fluoridation cessation

By Implant Magazine

Community water fluoridation is a matter of debate around the globe. While it is used widely in North America, many European countries have stopped the practice. Owing to a lack of contemporary research on fluoridation cessation, however, researchers in Canada have now investigated its impact on dental caries experience.

In Canada, community water fluoridation has been in place since 1945. In examining data sets on fluoridated its community water since 1967. In examining data sets on fluoridation cessation on dental caries in Grade 2 children using tooth surface indicators, the researchers focused on smooth tooth surfaces, where fluoride is most likely to have an impact.

The study titled “Measuring the short-term impact of fluoridation cessation on dental caries in Grade 2 children using tooth surface indicators,” was published online on Feb. 17 in the Community Dentistry and Oral Epidemiology journal ahead of print.

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veolar bone and 1.520 and 1.560 HFU at the basal bone. The highest bone density in the maxilla was observed in the canine and internal maxillary tuberosity showed the lowest bone density. Density of the cortical bone was greater in the mandible than in the maxilla and showed a progressive increase from the incisor to the retromolar area.

D5, known as the sinus zone, is a bilateral zone of the alveolar ridge of posterior maxilla located at the base of the maxillary sinus from the second premolar to the pterygoid plate. There are certain common features of replacement of missing tooth or teeth (tandem two premolars and commonly one or two molars) with dental implants in this zone. It often relates to the degree of sinus pneumatization and vertical bone deficiency that may require supplemental surgical procedures in the subantral area in order to place endosseous implants.

This bilateral maxillary posterior zone that extends from the second premolar to pterygoid plates is located at the base of maxillary sinus from the second premolar to the pterygoid plate. There are certain common features of maxillary sinus and the oral cavity. The bone height between the floor of the maxillary sinus and the alveolar crest is routinely analysed in oral implantology when posterior maxillary implants are contemplated. An increase in sinus volume or sinus pneumatization after a loss of posterior tooth/teeth often necessitates vertical bone augmentation with a sinus lift procedure. The bone of this region is also known to have compromised bone quality (types 3 and 4) that can increase an implant failure rate. The main blood supply to the posterior maxilla derives from the posterior superior alveolar artery, the greater and lesser palatine arteries (all from the maxillary artery), the ascending palatine branch of the external carotid artery, and the ascending palatine branch of the facial artery. An injury to the posterior superior alveolar artery during the lateral approach for maxillary sinus augmentation can cause haemorrhage that may require coagulation.

Materials and method

From a data base of 1,134 patients who had received 4,800 dental implants from 2001 till August 17th 2015, randomly a prosthodontist with no knowledge of these criteria was requested to select 100 files from the data base and present them for this study. The 100 files had received panoramic and cone beam computed tomography (CBCT; Table 1) during their diagnostic visit. The average HFU of the randomly selected 100 cases was calculated.

Results

Hounsfield unit. The data in table 1, out of 100 samples, demonstrated that the average HFU was the minimum in D5 (213 HFU), and followed by D4 (328 HFU), D3 (361 HFU), D2 (599 HFU) and D1 (564 HFU) in ascending order respectively (Fig. 1 and Table 2).

Discussion

There are few literature reports that attempt to study implant location, among a multitude of other factors, to determine its influence on the success or failure of dental implant treatment. Becker et al. evaluated 282 implants placed in the maxillary and mandibular molar positions in a prospective study.9 The six-year cumulative success rate (CSR) for maxillary posterior implants was 82.9 per cent, for mandibular posterior, 91.5 per cent. He concluded that CSR in the posterior regions is lower than usually reported for anterior regions of the maxilla and mandible due to differences in bone quality and quantity. Farkas et al. assessed 1,170 endosseous implants placed in partially edentulous jaws in a retrospective study.10 The CSR of all implants in the posterior mandible was 89.0 per cent at six years.

Fewer complications were found in implant prostheses located exclusively in the premolar region versus molar and mixed molar-premolar implant restorations. Drago investigated the location-related osseointegration of 673 implants placed in 169 patients that were observed from seven months to eight years follow-up occlusal loading. Implant osseointegration was 98.5 per cent in the anterior maxilla, 93.6 per cent in the posterior maxilla, 98.7 per cent in the anterior mandible, and 98.7 per cent in the posterior mandible. Moy et al. evaluated 282 implants placed in the maxillary and mandibular molar positions in a prospective study. The CSR of all implants in the posterior mandible was 89.0 per cent at six years.

Conclusion

There is a trend of escalating levels of HFU in different parts of the oral cavity. The highest being the anterior mandible, followed by the posterior maxilla, posterior mandible, anterior maxilla and posterior maxilla with sinus lift procedure respectively. Estimated HFU can assist the surgical phase, as the number of the ancillary procedures can be pre-estimated according to different areas in the mouth during the diagnostic phase.
CBCT zones of the jaw
Bone quality related to implant location

By Souheil Hussaini, Dubai

The causes of early implant failures during the osseointegration process include poor quality and quantity of bone and soft tissue.6,7 The patient’s medical condition, patient habits (alcohol, heavy long-term smoking, poor oral hygiene, others),38,39 should be made due to the following analysis and technique.7,8 Inadequate prosthesis analysis and technique (e.g., suboptimal implant design and surface characteristics)6,9 implant position or location and unknown factors. This article attempts to further investigate implant location as one of many factors in early stages of diagnosis that improves success rate in implant dentistry treatment. This article identifies the demands and clinical requirements in different jaw regions are discussed.

CBCT Zones D1 to D5 is formulated to better analyse implant dentistry procedure during the diagnostic phase based on the location that has a logical sequence during examination of the alveolar ridge of both maxilla and mandible to have pre-existing information regarding the demands and the clinical requirements in different zones of the jaw. This article identifies the Hounsfieal units (HU) of different alveolar jaw regions, according to which dental implants can be inserted with better understanding of what to expect.

Five CBCT zones are identified in this article in a logical sequence: the discrete zone D1 being the anterior mandible, the danger zone D2 being the posterior mandible, the death zone D3 being the anterior maxilla, the demand zone D4 being the posterior maxilla and the delicate zone D5 being the posterior maxilla that requires sinus lift procedure.

Table 1: Average HFO of different areas in the mouth

<table>
<thead>
<tr>
<th>Zones (D1–D5)</th>
<th>No. of Cases</th>
<th>Avg. HFO per zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>655</td>
</tr>
<tr>
<td>2</td>
<td>39</td>
<td>599</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>562</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>529</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>213</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Technical Data

- **Anode voltage**: 60–90 kV
- **Focal spot**: 0.5 mm, fixed anode
- **Image detector**: Flat panel
- **Image acquisition**: Single 200-degree rotation
- **Scan time**: 7.5–27 s
- **Reconstruction time**: 2–25 s

- **Table 1:**

<table>
<thead>
<tr>
<th>Zone</th>
<th>Reconstruction time (s)</th>
<th>Scan time (s)</th>
<th>Image acquisition</th>
<th>Image detector</th>
<th>Focal spot (mm)</th>
<th>Anode voltage (kV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>2</td>
<td>7.5</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D2</td>
<td>15</td>
<td>14</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D3</td>
<td>25</td>
<td>27</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D4</td>
<td>10</td>
<td>12</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D5</td>
<td>20</td>
<td>23</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
</tbody>
</table>

By Souheil Hussaini, Dubai

The causes of early implant failures during the osseointegration process include poor quality and quantity of bone and soft tissue,6,7 the patient’s medical condition,38,39 patient habits (alcohol, heavy long-term smoking, poor oral hygiene, others),38,39 should be made due to the following analysis and technique.7,8 Inadequate prosthesis analysis and technique (e.g., suboptimal implant design and surface characteristics)6,9 implant position or location and unknown factors. This article attempts to further investigate implant location as one of many factors in early stages of diagnosis that improves success rate in implant dentistry treatment. This article identifies the demands and clinical requirements in different jaw regions are discussed.

CBCT Zones D1 to D5 is formulated to better analyse implant dentistry procedure during the diagnostic phase based on the location that has a logical sequence during examination of the alveolar ridge of both maxilla and mandible to have pre-existing information regarding the demands and the clinical requirements in different zones of the jaw. This article identifies the Hounsfieal units (HU) of different alveolar jaw regions, according to which dental implants can be inserted with better understanding of what to expect.

Five CBCT zones are identified in this article in a logical sequence: the discrete zone D1 being the anterior mandible, the danger zone D2 being the posterior mandible, the death zone D3 being the anterior maxilla, the demand zone D4 being the posterior maxilla and the delicate zone D5 being the posterior maxilla that requires sinus lift procedure.

Table 1: Average HFO of different areas in the mouth

<table>
<thead>
<tr>
<th>Zones (D1–D5)</th>
<th>No. of Cases</th>
<th>Avg. HFO per zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>655</td>
</tr>
<tr>
<td>2</td>
<td>39</td>
<td>599</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>562</td>
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<tr>
<td>4</td>
<td>19</td>
<td>529</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>213</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Technical Data

- **Anode voltage**: 60–90 kV
- **Focal spot**: 0.5 mm, fixed anode
- **Image detector**: Flat panel
- **Image acquisition**: Single 200-degree rotation
- **Scan time**: 7.5–27 s
- **Reconstruction time**: 2–25 s

- **Table 1:**

<table>
<thead>
<tr>
<th>Zone</th>
<th>Reconstruction time (s)</th>
<th>Scan time (s)</th>
<th>Image acquisition</th>
<th>Image detector</th>
<th>Focal spot (mm)</th>
<th>Anode voltage (kV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>2</td>
<td>7.5</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D2</td>
<td>15</td>
<td>14</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D3</td>
<td>25</td>
<td>27</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
<tr>
<td>D4</td>
<td>10</td>
<td>12</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
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<td>20</td>
<td>23</td>
<td>Single 200-degree rotation</td>
<td>Flat panel</td>
<td>0.5</td>
<td>60–90</td>
</tr>
</tbody>
</table>
Ten facts about dental implants

By Sebastian Saba DDS, Cert. Pros., FADI, FICD, Editor in Chief

Dental implant marketing often emphasizes “simplicity,” underplaying an inherent complexity in the product, procedure — and patient. Prosthetic dentistry is not simple. And patients rarely have simple problems. Potential complications can be far from simple to correct. To ease your learning curve with implant dentistry, following are some core variables that can be managed based on proven research.

1. Implant surface design: Choose implants that have micro-topography and bioactive surfaces that enhance bone contact and have macro-topography (overall shape) that better stabilizes bone profiles with little or no crestal bone loss.

2. Abutment connections: Internal connections have simplified abutment insertion. And if the abutment-implant margin is kept shy of the implant outer surface, a connective tissue zone will develop. The result is improved bone preservation at the crest. Abutments should be torqued to position and have specifically designed abutment screws that support long-term stability.

3. Provisionalization phase: Once thought optional, today this step is a critical diagnostic and management tool used to verify osseointegration, occlusion, esthetics, soft-tissue management, hygiene, prosthetic design and abutment selection.

4. Prosthetic options — screw versus cement: Some companies emphasize a “simpler” and familiar cement-only option that irretrievability — presence of subgingival cement — can be problematic. Plan your design to minimize complications.

5. Earlier osseointegration and restorative phases: Improved implant surfaces and shapes support primary stability in bone and enhanced osseointegration. Early loading is becoming more feasible — choose cases carefully.

6. Soft- and hard-tissue management: Timely placement of provisionalals can influence the support and contour of tissue. Advances in bone grafting and tissue preservation help preserve soft tissue, maintain anatomical bone contour and improve gingival esthetics.

7. Enhanced marketing: Implant dentistry is aggressively promoted. However, costs remain high for average-income patients. It’s critical that benefits a patient realizes far outlast any corresponding debt.

8. Technological improvements: Zirconia ceramics and CAD/CAM have created an explosion in design, customization and improved esthetics. Zirconium is doing for esthetics what titanium did for osseointegration.

9. Computer-guided implant therapy: You can’t deny the value of 3D software that helps measure and locate vital structures such as the mandibular nerve, sinus cavities and nasal floor. But most practices still rely primarily on conventional radiography.

10. Long-term studies: Implant companies provide education, solid research and ongoing support to customers (you). Incorporating up-to-date knowledge into the clinical variables you’re managing on a daily basis will enable you to achieve a predictable approach in your decision-making with dental implants.

This article was published in Implant Tribune Canada Edition, May 2015 issue.
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Fig 6
Fig 7
Fig 8
Fig 9
Fig 10
Fig 11. 6 weeks later
Fig 12. 6 weeks later

of the operator. Only all this in concert allows us to put the pieces of the puzzle together.

The patient’s subjective account can lead us or sometimes mislead us. We should keep in mind that most of our patients do not know how anatomy works or that pain can be referred from a distant area in the mouth. That is where the objective history and adequate analysis of the diagnostic and clinical findings lead the way.

Fixing the problem requires the most biological approach to root canal treatment, putting our clinical experience to work to provide the best treatment for our patients. Once we are sure we have done the best we can to eliminate all kinds of aggressive conditions and disease, we need to let nature take care of the healing process.

The author would like to thank Yuka Vorobyeva Sleiman, interpreter and translator, for her help with this article.

References
[1] “Find it, fix it, and leave it alone” – an axiom attributed to Dr Andrew Taylor Still, the founder of osteopathy, and recorded by his students and followers.


Prof. Philippe Sleiman is an endodontist at the Villafortuny clinic and training centre in Dubai in the UAE, the Advanced American Dental Center in Abu Dhabi in the UAE and the American Dental Clinic in Dubai. He can be contacted at profsleiman@gmail.com
By Prof. Philippe Sleiman, Lebanon

This three-part principle, though originating in the field of osteopathy, can find great application in modern endodontics, where we deal with routine root canal treatment, as well as with cases in which a patient is in a compromised state of health for which the solution may be a routine root canal treatment and anything more than that would be overtreatment.

Initially, we need to find the problem, by analyzing the clinical situation and identifying what is going wrong. This task is truly difficult. Making the correct diagnosis based on:
- the patient’s account; here, we need to listen to our patient, to learn about his or her local problem, where it is located and what triggers it;
- the patient’s history; that is overall health, any diseases and/or conditions, systemic medication, etc.
- the proper use of the appropriate diagnostic tools, including pulp testing, response to cold and hot, the bite test, radiographs and CBCT scans; additionally, the latest software can help us in reading and analysing the data that we have, including in 3D—recall the words of my radiology professor, reminding us to study radiographs and be attentive to every small detail, not just look at them—the logical connection between the patient’s account and history, the clinical findings and the imaging data—sometimes, putting the pieces of the puzzle together can be fast, sometimes, it may take longer.

Once the diagnosis has been established, the choice of treatment modality and selection of the best tools to perform the treatment follow. At this stage, focusing first and foremost on the patient’s health, it is important to choose the most effective and efficient treatment that would be as minimal as is practical and sufficient. The root should be taken care of by Mother Nature.

**Case presentation**

**Case 1**
The first case that I would like to present was a referral patient sitting in the dental chair, saying: “I have a lingering problem with my molar.” The patient was extremely satisfied that his molar could be preserved. He reported that two of his mandibular premolars were aching, since root canal treatments had been started at a different clinic, but the dentist had been unable to finish them. With the patient’s permission, a new CBCT scan was obtained, and I asked the patient to wait for an hour to give me time to study it.

Judging by the general view first and then going into details, I realized the two mandibular premolars were indeed in need of endodontic retreatment. However, knowing from clinical experience that premolars may have various clinical manifestations, I continued looking for other sources of potential problems, but without disregarding the premolar as the culprit (Fig. 2).

Having shared this, the patient reported that he felt his lymph node becoming swollen again, and he was anxious about it. His account was taken very seriously. Additionally, he reported that two of his mandibular premolars were aching, since root canal treatments had been started at a different clinic, but the dentist had been unable to finish them. With the patient’s permission, a new CBCT scan was obtained, and I asked the patient to wait for an hour to give me time to study it.

Judging by the general view first and then going into details, I realized the two mandibular premolars were indeed in need of endodontic retreatment. However, knowing from clinical experience that premolars may have various clinical manifestations, I continued looking for other sources of potential problems, but without disregarding the premolar as the culprit (Fig. 2).

Analysing the CBCT sections, trying different filters and settings, looking at the mandibular molar with a large filling, and studying the bone around it, my eye caught something unusual. There was a small abscess migrating towards the internal angle of the mandible (Fig. 2) and creating an area of bone erosion (Fig. 3). This could be the pathology causing the patient’s chief complaint, in addition to the two mandibular premolars.

At this point, one might be happy with the diagnostic findings and race to treat the problems affecting the mandibular dentition. However, still unsatisfied with the overall findings, I turned to analysing the maxilla, where I found that the second molar had internal decay and internal root resorption, creating an infection pathway into the maxillary sinus (Fig. 4). I explained the situation to the patient and proposed retreating the two mandibular premolars, as well as conducting primary root canal treatment on the mandibular molar and the maxillary molar. The patient agreed, and the four treatments were performed in one session, using the TF Adaptive system (Kerr) for shaping and EndoVac (Kerr) for chemical preparation according to the “A” sequence of irrigation protocol, followed by 3D obturation of the root canal system using the Elements Obturation Unit (Kerr; Fig. 5). Antihistamines were prescribed for the patient to help his body combat the submandibular infection. Although I prescribed systemic antibiotic medication very rarely, I did so in this case because it was not clear what had happened with the lymph nodes and if they were still functional in the immediate postoperative radiographs of the mandibular (Fig. 6) and the maxillary (Fig. 7). A minor postoperative reaction (moderate pain, no swelling) was observed and had completely resolved a week later.

**Case 2**
The next clinical case is somewhat similar and involved an extra-oral sinus tract (Fig. 8). A middle-aged female patient was referred to the office with an extra-oral fistula in the posterior submandibular area. According to the patient, she had had no pain or swelling and the fistula had appeared several weeks before she presented to the clinic.

At first, she thought it was a skin problem; then realized that there was pus draining and the opening was growing larger. Upon consultation with a dermatologist, who said the problem was most probably of dental origin, the patient consulted her dentist, who had previously placed an implant for her. The dentist thought the infection was associated with her third molar and not the implant, and suggested extraction of the tooth. The patient wanted to retain the tooth and hence sought an endodontic consultation regarding this option.

A new CBCT scan (i-CAT, Imaging Sciences International, Fig. 9) confirmed that the third molar had an internal sinus tract, which had created the fistula. This could all be solved by root canal treatment on the molar, followed by a crown and follow-up treatment, with a good prognosis for overall long-term success. The patient was happy to hear that and requested treatment as soon as possible.

The root canal was treated (Fig. 10), using the TF Adaptive system for shaping and EndoVac for chemical preparation according to the “A” sequence of irrigation protocol, followed by 3D obturation of the root canal system using the Elements Obturation Unit (Fig. 5). Follow-up records were taken (Figs 11 & 12), with radiographic control to check for bone healing and external facial photographs to compare. The patient was extremely satisfied that her molar could be preserved.

**Conclusion**

These clinical examples illustrate the importance of diagnosis as the main piece of the puzzle the importance of “finding it.” Today, the state-of-the-art approach in endodontics requires the use of sophisticated equipment and software to complement the expertise and experience.

**Dentsply Sirona** is the world’s largest manufacturer of professional dental products and technologies. As The Dental Solutions Company, Dentsply Sirona’s comprehensive solutions offering includes leading products and brands across consumables, equipment, technology and specialty products. With the broadest clinical education platform and an unmet customer demand for better solutions, the company’s vision is to deliver innovative dental solutions to improve oral health worldwide.

“The new software collaboration is further evidence that Dentsply Sirona is truly better together,” says Jeffrey T. Skovin, CEO of Dentsply Sirona. “Our unrelenting commitment to customers and to continuously introduce innovations and end-to-end integrated solutions will drive better, safer and faster dentistry around the globe.”
Dentsply Sirona Develops New 3D Endo Software for Better, Safer and Faster Endodontics

With the largest research and development platform in the industry, Dentsply Sirona is committed to its mission of empowering dental professionals to provide better, safer, faster dental care.

York/Salzburg: Dentsply Sirona has developed yet another innovation in endodontics: 3D Endo is the first CBCT-based software that enables endodontic treatments to be preplanned and optimized on the basis of imaging data from the ORTHOPHOS units. This new advancement is also the first software project to combine the know-how and experience of Dentsply Sirona’s market leading engineers, scientists and software developers in both its endodontics and digital radiography units. Based on 3D data and its specific visualization, the practitioner is able to case-specifically recognize the demands on the root canal treatment tooth, analyze the natural shape of the root canal and select the appropriate files using the integrated file database. As a result, the endodontic treatment is more efficient and safer, as well as with significantly improved patient communication.

For years, Dentsply Sirona has been collaborating and creating integrated solutions in the area of endodontics. Back in 2014, WAVEONE® by Maillefer and RECIPROC® by VDW, both leading reciprocal file systems, were first integrated into the TENEO treatment centers and more recently into the SINIUS centers, which considerably improved the workflow of the Endo function. Now, with new 3D Endo software, Dentsply Sirona will offer an even more comprehensive integrated approach to endodontics which will be available on the market this fall.

"Dentsply Sirona is working to shape the future of endodontics worldwide by continuously striving for better patient outcomes and by empowering dental professionals with world-class innovative solutions, education programs and clinical procedures. This new software is yet another way in which our platform will redefine endodontic care for dental professionals and patients by setting new treatment standards in efficacy, safety and simplicity," says Dominique Legros, Group Vice President, Dentsply Sirona Endodontics.

Endo Meets 3D
Dentsply Sirona Develops New 3D Endo Software for Better, Safer and Faster Endodontics

"KP-PRO" - The World's Endodontic Newspaper: Middle East & Africa Edition

By Dentsply Sirona

Dentsply Sirona announces the introduction of another integrated solution to the market: a new 3D imaging software to improve the planning and workflow of endodontic procedures.

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from Dentsply Sirona support this goal. Intelligent, automated rinsing programs satisfy the stringent hygiene requirements for instrument and suction tubes as well as for water hygiene, making everyday working life easier. VISION offers a historical overview of how treatment centers have changed through the years.

Hygienic instrument reprocessing has also undergone major developments. In Panama, the state health authorities are prescribing the use of Dentsply Sirona’s DAC Universal, the combined autoclave for mechanical instrument processing, in all clinics, a measure that is unique in the world.

Hygiene in all spheres of life

Hygiene is not just a term that is associated with germs and infection protection. A key element of practice life is radiation hygiene; X-rays must not endanger the patient’s health unnecessarily. In this edition of VISION, Marco Ahonen, a dentist based in Helsinki, explains how to combine a safe, reliable diagnosis with radiation protection. According to Ahonen, the secret lies in embracing technical advances and applying them to practice workflows.

We are also faced with hygiene-related issues in other spheres of life too – this is often not apparent at first glance; take company and process hygiene for example. A report in this edition of VISION looks at how Mr. and Mrs. Ritter (he is an OMS surgeon and she is an orthodontist) took over a joint practice in a clearly structured manner and transformed it into a specialist center.

Not just clean, but also safe and quick

CEREC Zirconia, the new way to produce full zirconia restorations in a single visit, is characterized by its safe, quick workflow. In this edition of VISION, power-user Dr. Michael Skramstad shows how the process can be implemented in the practice and the patient-friendly results that can be achieved.

In addition to user reports, the international customer magazine VISION offers the dentists, practice teams and dental technicians in its readership numerous suggestions and tips for day-to-day practice life, while offering an entertaining read. VISION is published in German and English, and can be requested free of charge from http://www.sirona.com/topics/vision/en/ as a print or e-paper edition.
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Cleanliness is Key: How hygiene improves our quality of life

By Dentply Sirona

The merger of DENTSPLY and Sirona at the beginning of the year created the largest manufacturer of technologies, equipment, and consumables in the dental sector. The company is now working together as one combined force to develop solutions for the current challenges in dentistry, including products for enhanced hygiene safety in practices. The recently published edition of the customer magazine VISION also focuses on this topic, where international experts take a closer look at the various facets of hygiene. The in-depth discussions clearly show that the scope of this issue extends far beyond germ-free dental practices.

"Hygiene is important and desirable because it protects us and others against infection and promotes health," explained Jeffrey T. Slovin, CEO of Dentply Sirona. "It affects all aspects of our lives and requires our constant attention – everywhere in the world." Because this issue is so prominent in the dental industry, the latest edition of VISION, the customer magazine from Dentply Sirona, focuses on and emphasizes the significance of dental hygiene.

Hygiene is of central importance when it comes to health. A prime example here is water, which is used for cleaning, personal hygiene and drinking water. Water was long considered a "dirty business," as infection and drinking water. Water was long considered a "dirty business," as infection prevention based on hygiene and disinfection did not emerge until the middle of the 19th century. Hygiene, what was treated back then as an innovation, is now standard practice and its working conditions are now the norm, especially in dental practices.

Practice hygiene: High-quality standards do not mean higher expenses

This starts with the treatment center. The transmission instruments must be kept germ-free, and the hygiene in the treatment center

References

Dr. Frank Simon and Dr. Sidney Liberman are dental surgeons and former assistants at the Nancy Faculty of Dental Surgery. They are both trained in surgical and prosthetic implants (Paris VII) and pre-implant and periimplant surgery (Paris XI) and work in private practice limited to implantology, prosthodontics and periodontics.
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![Graph showing air blast sensitivity scores](image)

* p < 0.05 compared to baseline
• p < 0.05 compared to control

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* When toothpaste is directly applied to each sensitive tooth for 60 seconds.
† Containing 5% potassium nitrate and 1450 ppm fluoride as sodium fluoride.
‡ Containing 1450 ppm fluoride as MFP.

References:

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PLACEHOLDER
Subgingival air polishing: A new method

The latest supra- and especially subgingival air polishing techniques, with innovative powders offer new prospects in periodontal treatment and implant maintenance.

By Dr Franck Simon and Dr Jérôme Liberman, France

Teaching our patients correct oral hygiene techniques is an obvious and essential part of our treatment of periodontal disease. Controlling the bacteria is essential and the aim of the etiological treatment phase of periodontitis is to remove all the elements that contribute to maintaining or developing inflammation and the destruction or loss of supporting tissues.

These include neglected, traumatic occlusion, calculus and supra- and subgingival biofilm.

Increasingly less aggressive instrumentation has been developed to remove biofilm from the root surface. Root planning that causes irreversible removal of cementum has evolved toward a concept of decontamination of the root and the periodontal pocket. Manual curettes can be substituted by ultrasonic micro-inserts. More recently, the new supra- and especially subgingival air polishing techniques, with innovative powders, appear to offer new prospects in periodontal treatment.

Non-abrasive powder

The same applies for implant maintenance. Peri-implant cleaning is very difficult to achieve. Indeed, it is difficult to find effective biofilm removal instrumentation that doesn’t cause deterioration of the implant surface. Ultrasorics as well as conventional mechanical instrumentation has been shown to damage titanium (Kawashima, 2007). Air polishing seems to be the most suitable technique, provided that a non-abrasive powder is used for the implant surface. However, only limited clinical success has been achieved with early generations of air polishing devices due to limited access to the subgingival area.

The “Air-Flow” (EMS) method now allows the spraying of a glycine-based powder (Air-Flow Pet)).of fine grain size (25 μm) or a new extra fine powder: “Air-Flow Plus” (4 μm), containing erythritol and 0.5% chlorhexidine subgingivally. The latter powder is particularly interesting because it offers superior effectiveness in the elimination of bacterial biofilm compared to powders of larger grain sizes (Drago et al., 2014).

The very small particle size has the advantage of striking the tooth surface (dentine or cementum) as well as the implant surface with minimal impact per particle. The effectiveness against biofilm is due to the large number of sprayed particles as well as the combined action of the erythritol and the chlorhexidine.

Recently, a Japanese study has shown that this powder inhibits biofilm formation, notably with an action on Porphyromonas gingivalis. This gives the powder, if retained, a possible effect on the treated periodontal pockets and a preventive action against periodontal disease (Fushimi et al., 2013).

This powder can be used supra-gingivally or subgingivally thanks to the handpiece (“Perio-Flow”) combined with the disposable tips. These provide delivery of powder to the bottom of the periodontal pockets with a duration of action of only five seconds per site (Figure 1).

Case No 1

A 29-year-old patient presented with generalised aggressive periodontitis. Periodontal treatment was performed with ultrasonic debridement and povidone-iodine rinsing. Polishing with supra-gingival air polishing was carried out supra-gingivally or subgingivally thanks to the action against Porphyromonas gingivalis.

Recently, a Japanese study has shown that this polyol inhibits biofilm formation, notably with an action on Porphyromonas gingivalis.
To floss or to brush—that is the (interdental) question

By Marc Chalupsky, DTI

LEIPZIG, Germany: Should dental floss still be used as a tool to combat plaque, caries and periodontal disease after almost 40 years? The US Department of Health and Human Services and Department of Agriculture have removed their recommendation to use dental floss from their latest Dietary Guidelines for Americans. And the dental world discussed a recent report which made worldwide headlines and concluded that no scientific evidence has proven the effectiveness of flossing. So: What are alternatives for dental professionals?

Dental Tribune Online posed these questions to three dental hygienists.

For a long time, dental professionals have recommended daily flossing as a necessary part of health care. However, the Associated Press reviewed 25 prominent studies that compared the combination of toothbrushes and floss and their effectiveness in plaque removal. As Dental Tribune Online reported earlier, the investigation found only weak and unreliable evidence. According to the article, some studies were not valid since they included very few participants and had a short duration of only a couple of weeks. When asked for a statement, dental floss manufacturers were not able to provide scientific evidence even though many of the previously mentioned studies were funded by this industry. In the meanwhile, manufacturers have already announced new funding for comprehensive research to determine the effects of flossing on oral health. As periodontal disease and caries develop over months and years, future research will have to focus on a larger study population over a longer period in order to measure periodontal health effectively. In the meantime, how should dental professionals deal with this issue? Do they have an alternative to dental floss?

Are interdental brushes another solution?

According to Swiss oral health care provider Curaden, not cleaning interdentally would be going too far. Choosing a suitable interdental cleaner and using the proper technique are always important. Floss is appropriate for anterior teeth, where long, flat approximal surfaces and narrow spaces make access with an interdental brush difficult. Ideally, one should use dental floss for the narrow interdental spaces between the anterior teeth and interdental brushes for the posterior teeth. According to the Swiss company, interdental brushes are very effective and extremely easy to use compared to dental floss, but must be used gently in order not to injure the gums. Interdental brushes help prevent build-up of plaque between teeth and that causes bleeding gums, gingivitis and periodontitis and dental caries. In addition to interdental brushes, the company produces toothbrushes and toothpastes under its CURAPROX brand and supports educational prophylaxis training called DOP for dental professionals.

CEO and owner of Curaden Ueli Brettich said, “Since 1972, our company has been the pioneers of interdental brushes, which remove both hard and soft plaque between the teeth and—more importantly—dental plaque. Since they do not damage tissue, our interdental brushes are not only recommended by the dental professionals globally, but are also prescribed to their patients and their use taught to each patient individually.” According to Curaden, the advantages of interdental brushes over flossing have been demonstrated in numerous studies. For example, in a study titled “Comparison of different approaches of interdental oral hygiene: Interdental brushes versus dental floss”, patients with periodontitis used dental floss and interdental brushes to reduce plaque over a six-week period. Interdental brushes were found to remove significantly more plaque than dental floss did. Furthermore, patient acceptance of the brushes to be higher with interdental brushes.

Interdental brushes are more effective for the prevention of gum disease. Interdental brushes can prevent interdental caries if applied correctly, which is below the interdental contact point. Of course, floss also cleans below the contact point. However, using floss just because it is normal, without thinking about the right technique, will not lead to the prevention of caries. At the same time, using an interdental brush without proper instruction will not lead to the prevention of gum disease. After all, it is not a government or institution that should decide about one’s oral hygiene, but the dental professional needs to choose which cleaning technique is most efficient for each of his patients. Individually trained oral prophylaxis has always been the key to one’s health.

Elizabeth van der Ham, a South African dental hygienist, agrees that one has to choose carefully between flossing and interdental brushing: “Dental floss throughout the years has been a saving grace for many patients overcoming oral health issues. Clinical observations over many years of floss usage in patients is strong evidence that floss indeed does have a place in the oral hygiene regimen. Discarding the use of it totally would be irresponsible to say the least. In 1965, Prof. Harold Loe and others did the famous ‘Experiment gingivitis in man’ study. The outcome was that gingivitis disappears within two weeks if the tooth structure is sufficiently cleaned. Therefore, there are three criteria we as dental professionals need to adhere to when selecting a treatment option for our patients: the regimen needs to be acceptable to the patient, it has to beatraumatic to the soft and hard tissue of the oral cavity, and it should be effective in removing biofilm and plaque to establish a healthy status quo in the oral cavity.”

However, no matter what interdental cleaner one chooses, almost every tooth has to be treated uniquely. “Flossing is more acceptable in the anterior and difficult crowded areas of the mouth. The interdental brush has easier access in the posterior regions that are more difficult to reach. Flossing is not as effective in the marginal regions of the crown and root of the tooth,” stated Van der Ham. “Most importantly, patients need to be constantly educated and their oral hygiene regimen adjusted to their individual needs and preferences.”

**Individual trained oral prophylaxis is the key**

According to dental hygienist Catheline Schubert, the space below the contact area should be the focus. “We need to carefully differentiate between gum disease and dental caries. Interdental brushes are more effective for the prevention of gum disease owing to their space-filling properties. However, a thin shaft and longer bristles are necessary to reach below the interdental contact point where caries mostly develops. Interdental brushes can prevent interdental caries if applied correctly, which is below the interdental contact point. Of course, floss also cleans below the contact point. However, using floss just because it is normal, without thinking about the right technique, will not lead to the prevention of caries. At the same time, using an interdental brush without proper instruction will not lead to the prevention of gum disease. After all, it is not a government or institution that should decide about one’s oral hygiene, but the dental professional needs to choose which cleaning technique is most efficient for each of his patients. Individually trained oral prophylaxis has always been the key to one’s health.”

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A new way of approaching the new patient examination

By Prime Practice

Every now and again a new way of thinking causes a paradigm shift that maligns the way people think. Often pioneers of these techniques are thought of as being wacky or misguided, but if the theory they espouse is sensible, it soon takes hold and can eventually come to define normality. One such movement is Primespeak, which is a new concept in patient communication, one founded in psychology and the nuances of patient behaviour. It incorporates a whole new way of thinking about how to communicate with patients in an ethical way, but one that encourages treatment uptake.

The philosophy of Primespeak

In a profession where ‘selling’ is often considered a dirty word, dentists face a dilemma in aligning their ethical status with the need to sell treatments and make profit. Primespeak is a philosophy that teaches dentists how to reconcile these two conflicting aspects. Traditional sales techniques more often than not fail in dentistry because in sales it’s often a question of numbers, ie, can you convert enough leads to sales? But this simply isn’t the case in the healthcare professions, and dentists have a duty of care to do their best for every patient, not simply those who choose or can afford the optimum treatment plan.

The essence of Primespeak is to encourage patients to take responsibility for their dental problems, deepening their concerns rather than simply being the supplier of solutions. Although professional recommendation is clearly the remit of the dentist, treatment is always the patient’s choice and the role of the dentist is to communicate the options, and importantly the consequences of not having treatment.

The Primespeak new patient examination protocol

As professionals, dentists should concentrate on the three-fold objectives of Primespeak areas and in so doing they will fulfill their ethical duty. Primespeak’s focus is primarily on the new patient examination as it regards this as a key influencer in creating a loyal and returning patient. Body language, eye contact (or the lack of it), interaction and objections are all factors that need to be addressed if the new patient examination is to be a successful ‘first date’. Failure to meet the expectations of a new patient at this first face-to-face meeting means you run the risk of the patient sharing their bad experience, and these days sharing is likely to take place, not within a small group of close-knit friends and family, but with a wide network of friends and acquaintances via social media.

Primespeak turns the traditional new patient examination protocol on its head, by focusing more time on the preclinical discussion than on the examination itself. The conventional new patient examination is an information-driven approach, during which the onus is on the clinician to find out what the patient needs. This is a process of education, recommendation and overcoming barriers. In contrast, a Primespeak new patient examination is concerned with building trust and confidence, exposing existing conditions and deepening awareness and concern. The preclinical discussion is used to build trust and rapport, dentists are encouraged to be curious and ask questions in such a way that shifts control of the discussion from the dentist, where it lies in traditional preclinical discussions, to the patient.

Adopting Primespeak methodology requires a change of mindset by the dentist and the acceptance of some actions, which on the face of it could be considered counter-intuitive. Using a combination of metaphors and patient-friendly language, dentists who have attended the Primespeak course are now using the techniques to diffuse patient objections and encourage treatment uptake in their practices.

By Prime Practice

www.primespeak.com
For more details please visit London on the 18 November 2016!
Primespeak Seminar is coming to London on the 18 November 2016!
Brett Cruilles, General Manager of Client Relations. Photograph: Jake Moss

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Dental Tribune International (DTI) publishers discuss future strategies at annual meeting

By DTI

BERLIN, Germany: The Dental Tribune International (DTI) publishing group, which consists of about 30 publishers around the world, customarily meets once a year to present its latest products and introduce new partners. This year, the 12th Annual Publishers’ Meeting was held from 4 to 6 September at the picturesque Greater Wannsee lake in the German capital of Berlin. Over 50 people from about 20 countries, including partners from Asia, Australia, Europe, the Middle East and the US, attended.

New publications
Over the past 13 years, the DTI publishing network has grown significantly. Today, DTI reaches over 650,000 dental professionals in 25 different languages in about 90 countries around the globe. The DTI group is continuously seeking new partners to expand its portfolio into new markets. At the meeting in Berlin, the group welcomed two new partners, from Israel and Iran, who will be publishing their respective localised versions of the Dental Tribune newspaper and providing updates on their particular market on local websites on www.dental-tribune.com.

Furthermore, the publishers were introduced to one of DTI’s newest publications, the Journal of Oral Science and Rehabilitation, which was launched in 2015. It originated from the efforts of a large group of researchers involved in the advancement of implant dentistry. The aim of the journal is to promote rapid communication of scientific information. Released quarterly in March, June, September and December each year, it publishes original and high-quality research and clinical papers in the fields of periodontology, implant dentistry, prosthodontics and maxillofacial surgery.

New services
The publishers had the opportunity to learn more about the DTI Communication Services offering. As the importance of content marketing is growing rapidly in all industries, including dentistry, DTI established this new division last year. The department aims to assist smaller and mid-sized companies, in particular, in communicating more effectively with their audiences through tailor-made targeted editorial support, video production, event organisation and publishing.

IDS 2017
A major topic covered at the meeting was the International Dental Show (IDS), the most important trade fair in the dental industry. In collaboration with its German licensee OE-MUS MEDIA, DTI will be publishing a new issue of its well-established today newspaper on each of the six days, providing comprehensive coverage of the previous day’s events. For the first time, the two publishers will be setting up a lecture forum at their booth—known as the Media Lounge, a restaurant and meeting area at which leaders in dentistry conventionally gather during IDS. At the forum, which will seat up to 200 participants, DTI will be holding Dental Tribune Study Club lectures and press conferences through DTI Communication Services.

New online activities
Moreover, the publishers were informed about DDS WORLD, a website that was recently launched by DTI and promises to become the most comprehensive resource in dentistry. It is a full-service digital marketplace for products, news, e-learning and practice management, and targeted at vendors, dentists, dental technicians and patients alike. Owing to its comprehensive approach, DDS WORLD has the potential to become the most important platform in dentistry and will thus help DTI secure its position in the market, as the importance of online marketplaces is growing in all industries.

DTI further announced the relaunch of its website, www.dental-tribune.com, which is scheduled to go live with a completely new design and layout in spring next year.

New verticals
For the meeting in Berlin, DTI also invited a number of representatives of Curaden, the Surgical Tribune and the Berufsverband für Orthopädie und Unfallchirurgie (German association for orthopaedic and trauma surgery), Architectural Tribune, Luna media Group, One Art Nation and MediCloud to present their projects to the publishers.

The 13th Annual Publishers’ Meeting will take place from 18 to 20 March 2017 at the Hilton hotel in Cologne, prior to IDS.
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*The final closing date for entries is Saturday, 31th December 2016. Multiple entries are possible, there is no maximum number, but the same image can only be entered once. Each image should be saved in the .jpg/.jpeg format not larger than 3 MB with a medium to high quality. Only entries submitted by e-mail to ifeelgood@ems-ch.com will be accepted. The price for the best entered picture is a trip to the EMS headquarters in Nyon, Switzerland (incl. air fare, free board and lodging and an exclusive EMS plant tour).

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Frequent dental scaling might reduce infection risk after knee replacement

By DTI

TAINAN, Taiwan: Oral bacteria that enter and spread through the bloodstream have been found to cause about 10 per cent of peri-prosthetic joint infections after total knee arthroplasty (TKA). Therefore, TKA patients are often advised to pay special attention to their oral health. A team of Asian researchers has now found that frequent dental scaling might reduce the risk of infection after TKA.

For patients with end-stage osteoarthritis, TKA is a common treatment to improve function and reduce knee pain. However, in some cases, patients contract subsequent peri-prosthetic joint infections. With a risk of about 2 per cent, these infections are the most frequent complication after TKA and may lead to functional loss, revision surgery and increased mortality.

In about one tenth of all cases, TKA infections are caused by oral bacteria that enter the bloodstream and cause transient bacteraemia, the temporary presence of bacteria in the blood. Oral bacteria may occur because of dental treatments, such as extractions or dental scaling, but also as a result of daily oral care, including toothbrushing and flossing. The condition has been found to occur more frequently in patients with poor oral health. Dental plaque accumulation and gingival inflammation in particular are thought to significantly increase the prevalence of bacteraemia after toothbrushing.

Regular dental scaling to remove plaque and calculus contributes to maintaining oral health and is provided by many dentists as part of routine dental care. Therefore, the researchers from National Cheng Kung University in Tainan hypothesised that it might be a possible way to reduce the risk of peri-prosthetic infection in TKA patients. In their study, the scientists investigated the association between the frequency of dental scaling and the risk of peri-prosthetic joint infection, using data from Taiwan’s National Health Insurance Research Database, which contains data on 99 per cent of the country’s population.

The researchers analysed 1,291 patients who had undergone TKA between 1999 and 2002 and needed revision surgery within five years after the initial operation owing to a peri-prosthetic infection. They compared these cases to a control group of age- and sex-matched TKA patients who had not had any peri-prosthetic infection.

The scientists found that the patients in the infection group had undergone less frequent dental scaling within the three-year period before their endoprostheses had to be removed. Of these patients, 73.1 per cent had not visited a dental clinic during that time to have dental check-ups and scaling, compared with 67.8 per cent in the control group. Only 7.1 per cent of the patients with a peri-prosthetic infection underwent regular dental scaling, whereas 10 per cent of the patients in the control group did.

Statistical analysis showed that patients who had received dental scaling one to four times during the three-year period had a 16 per cent lower risk of infection than patients who had not undergone the dental procedure. For patients who had seen the dentist five to six times for dental scaling the risk was 31 per cent lower. The researchers concluded that regular dental scaling might reduce the risk of peri-prosthetic joint infection in TKA patients, as it can improve oral health and thereby reduce the risk of transient bacteraemia caused by oral bacteria. However, further research is required to confirm this connection, they stated.

The study, titled “Frequent dental scaling is associated with a reduced risk of peri-prosthetic infection following total knee arthroplasty: A nationwide population-based nested case-control study”, was published online in the PLOS ONE journal on 23 June.

"For patients with end-stage osteoarthritis, TKA is a common treatment to improve function and reduce knee pain."

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By SHOFU

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Dental Hygienists – Welcome to Dubai

By DTI

DUBAI, UAE: On 05 November 2016, professionals from around the world with an interest in oral health care will meet at Jumeirah Beach Hotel in Dubai. They will be attending Dental Hygienist Seminar organized by CAPP & Colgate Oral Care Academy. The theme of this year’s seminar is “Dental Hygiene – Challenges & Opportunities for the dental professional” comprising of seven non-biased scientific lectures focusing on various aspects of the profession including:

- Periodontal Treatment
- Oral maintenance in the implants prosthetic phase
- Prevention of dental disease
- Treating Bleeding Gums, Sensitivity and Deep Pockets
- Dental hygiene and Periodontology
- Health, function and beauty related to orthodontic maintenance
- Anesthesia, infection control & occupational health safety
- Maintaining gingival health and prevention
- Infection Control
- Dental X-Rays

Following a series of three successful dedicated educational programs, CAPP has a commitment to dentistry and good oral health care towards the entire dental team and the organization of such focused professional events is an underlining of this obligation. The list of speakers has been carefully evaluated and selected by an independent scientific panel based on surveyed demands of the regions health professionals. The presentations held will be strictly scientific oriented around the theme whilst CAPP is following the strict guidelines of ADA C.E.R.P as a recognized provider. Multiple international speakers will give their best interpretations of what is important according to this year’s theme. Participants will be able to receive up to 7 ADA C.E.R.P. CE Credits after successfully attending all lectures. Further accreditations are expected by Health Authority Abu Dhabi (HAAD) and Dubai Health Authority (DHA).

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Design award for innovative sintering furnace: CEREC SpeedFire from Dentsply Sirona CAD/CAM wins a Red Dot Award

By Dentsply Sirona

The CEREC SpeedFire sintering furnace from Dentsply Sirona CAD/CAM has won the coveted Red Dot design award. The award ceremony was held recently in the Aalto Theater in Essen. Zirconium oxide restorations can be sintered in less than 15 minutes using induction technology.

BENSHEIM/SALZBURG. The “efficient interplay between the CEREC SpeedFire’s open and closed shape and rounded and straight lines” impressed the 41-member jury of the annual Red Dot Awards. The “dramatic tension” this created led to the award for the sintering furnace in the “Life Science and Medicine” category. The award ceremony was held at the Red Dot Gala on July 4, 2016 in the Aalto Theater in Essen. The CEREC SpeedFire induction furnace, which has been available for five months, is part of the CEREC Zirconia workflow that now enables dentists to offer their patients chairside restorations using the high-performance material zirconium oxide. The compact and user-friendly device combines the sintering and finalization process (glazing), making it unique on the market. Both processes take just a few minutes. A crown, for example, can be sintered in 10–15 minutes and glazed in nine minutes. Its connection to the system provides the furnace with all the necessary information on the material, colour, type and size of restoration via the CEREC software of Dentsply Sirona CAD/CAM. Based on this information, the furnace gets the right program for the restoration. An important benefit: The intuitive handling of the software makes all processes easy – there is no need for any special training or long practice sessions. The smallest and fastest sintering furnace on the market has become very popular with dentists in just a short time with the 1000th Dentsply Sirona CEREC furnace having already been manufactured. Outstanding products, design concepts, and communication designs have been awarded the globally acknowledged Red Dot Award since 1954. This year, the jury, which is made up of independent designers, design professors, and journalists, will evaluate a total of 5,314 products from 37 countries in 31 categories. The most important criterion for awarding the coveted prize is high design quality.
By E.M.S.

E.M.S. proudly welcomed a group of VIP visitors from well-known institutions in Saudi Arabia to its headquarters in Nyon, Switzerland. Dr. Mesfer Mohammed Abjadi (Military), Dr. Osamah Mohammed Almugeiren (Riyadh Private College), Dr. Sami Hussain Alqahtani (King Abdul Aziz Hospital, Riyadh) and Mrs. Sara Abduallatif Aleisa (King Faisal Hospital, Riyadh) got insights into the production and high quality assembly of the Piezon and AIR-FLOW products and were impressed by the “manufacture” style organization and work that goes into every single product.

During a visit to a Prophylaxis clinic in Geneva they learned about the business aspects of preventive dentistry and how popular it is for people from Geneva. But also tourists come only for a few days to town to get a real professional tooth cleaning according to the “GBT – GUIDED BIO-FILM THERAPY” concept. This new approach shifts the primary focus to the removal of biofilm by using AIR-FLOW, followed by the removal of hard deposits using Piezon NO PAIN – if necessary. This new concept enables an individualized, efficient and painless prophylaxis session with precision and quality control. It increases the revenue of dental practices by improving patient comfort as well as patient compliance.

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VIP visitors from Saudi Arabia at EMS headquarters in Switzerland

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guides were fabricated to ensure placement of the implants in the precise positions called for by the treatment plan (Figs. 5a & b).

At the next appointment, the tissue-supported surgical guides were tried in and found to be well fitting. The fixation pins of each surgical guide were tightened with a surgical index in place to ensure complete, secure seating of the appliances (Fig. 6). A tissue punch was used to provide access to the implant sites, facilitating a flapless surgical procedure that would minimize gingival trauma. The osteotomies were created through metal inserts placed in the surgical guides, which precisely controlled drilling depth and orientation according to the digital treatment plan (Fig. 7).

Eight BioHorizons® Laser-Lok® dental implants (BioHorizons, Birmingham, USA) were placed in each ridge, including 7 mm implants in the two distalmost locations of each arch, and 4.5 mm implants in the remaining sites. After placing healing abutments in the implants, a soft reseating was performed on the patient's arch reconstructions.

Impressions of the patient's edentulous arches and produced wax occlusal rims (Fig. 11). A provisional treatment plan was made virtually collapsed due to the extensive wear to his teeth. After measuring the distance between the patient's nose and chin during maximum intercuspation, the lab was instructed to open the patient's bite by 2 mm. Next, the lab used CAD software to design InHouse® Titanium Custom Abutments (Glidewell Europe GmbH, Frankfurt/Main, Germany) for both arches based on the scanned working models. The CAD/CAM-produced custom abutments were seated on the working models so their fit could be verified and they could be used in the design of the definitive prostheses (Figs. 12a & b). Based on the jaw relationship records and the impressions of the patient's immediate dentures, the lab prepared a diagnostic wax-up to help determine the initial design for the PFM restorations (Fig. 13). After fabricating the initial design, BioTemp® prostheses were fabricated from polymethyl methacrylate (PMMA) material, which is versatile enough to easily accommodate adjustments at the try-in appointment, yet durable enough for provisionalization (Fig. 14). The working models were sent out along with the custom abutments and BioTemp® interim restorations for patient evaluation. At the next appointment, the titanium custom abutments were transferred to the patient's mouth using the acrylic delivery jig provided by the lab (Fig. 15). The custom abutments achieved a precise fit and were thus tightened to the appropriate torque, establishing ideal soft-tissue margins and support. Complete seating was verified radiographically, and the screw access holes were covered.

Next, the BioTemp® prostheses were tried in and exhibited an accurate fit (Figs. 16a & b). The provisional restorations were transferred to the abutments using temporary cement, and the phonetics, aesthetics, bite and function were evaluated (Fig. 17). Minor modifications were made to the BioTemp® prostheses, and the patient wore the BioTemp® provisional for an interim of four weeks. This final trial was essential in verifying that the patient was happy with the look, comfort and function of the prosthetic designs before the final PFM restorations were fabricated. After patient approval was provided, alginate impressions were made of the BioTemp® prostheses. Models of the final approved BioTemp® restorations were fabricated from the impressions, and a new bite was taken so the definitive prosthetic designs could be adjusted accordingly. Crown R bridge impressions were taken of the final custom abutments in place and would be used by the lab to pour master models, upon which the final PFM prostheses would be produced. The gingival areas for the final PFM were marked onto the models of the BioTemp® restorations, and the case was returned to the lab along with final adjustments. The final PFM prostheses were fabricated by layering porcelain over a cast metal framework. Pink porcelain was layered on to form the gingival areas according to the markings indicated on the models of the BioTemp® restorations, thus replacing portions of the soft tissue as well as the teeth per Dr. Ara Nazarian's (Diplomate in Prosthodontics) principles of prosthetic design. Because the final prostheses were designed using the models fabricated from the final crown and bridge impressions, a precise fit over the patient's custom abutments was ensured (Fig. 19).

At the final delivery appointment, the PFM restorations were delivered over the custom abutments without issue. A panoramic radiograph was taken to confirm complete seating (Fig. 20). The final prostheses achieved the exact fit, aesthetics and function that the patient had come to expect after six weeks of wearing the BioTemp® provisional, which ultimately served as the base for the final restorations (Figs. 21–22).

The patient was ecstatic with the results, which reconstructed his teeth and gingiva, along with his confidence and quality of life. A night guard was produced for the patient to mitigate the impact of his parafunctional habits (Fig. 23).

Conclusion

The predictability of implant treatment and the adaptability of restorative materials enable clinicians to provide patients in the most dire of dental circumstances a complete overhaul, reversing the damage that can result from many years of dental wear and neglect. This goes beyond the restoration of oral function by presenting the facial aesthetics that are so fundamental to the emotional state and social life of the patient. Provided its life-changing capacity, the fixed full-arch implant restoration should be offered to all patients who present with untreatable destructive, without prejudging a patient's situation and the form of treatment that they will ultimately accept. As the precision, cost-effectiveness and prosthetic versatility of implant therapy expands ever further, so does the patient population that is able to receive high-quality treatment.

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Complete reconstruction for a patient with chronic tooth decay

The damage undone

By Dr Ara Nazarian, USA

When oral health is neglected for extensive periods of time, dental conditions like tooth decay and periodontal disease can advance to a point that, prior to the advent of implant therapy, was considered hopeless. If a patient presented with extensive caries and non-restorable set of dentition, practitioners had no choice but to extract the teeth and provide the patient with a complete denture. Although beneficial to patients as a fundamental replacement of their teeth, many patients have found the fit, comfort and retention of such appliances to be problematic. Without any anchorage to hold it in place, the traditional denture has a tendency to move around in the patient’s mouth, compromising speech and chewing capabilities. This problem is exacerbated by the recession of the edentulous arch that occurs following tooth loss or extraction. After decades of advancements in implant design, restorative materials, and digital dentistry, we can today provide patients with a higher level of care. Root form dental implants can be placed predictably to hold a full-arch prosthesis in place, providing the patient with comfort, function, and quality of life compared to traditional complete dentures. Further, osseointegrated implants serve to mitigate bone resorption. This means that in the long-term, implant supported restorations also help to preserve the edentulous ridge and the essential support it provides for the mouth and face. The positive impact this can have on personal confidence, emotional health, and social interactions is substantial.

Thus, patients who present with the most acute dental conditions can now be brought back from the brink where dental care has been compromised, they can be extracted, implants are placed, and a full arch restoration is delivered that closely emulates the form and function of natural dentition. This alternative should be presented to all patients for whom implant therapy is indicated, as individuals who at one time may not appear to have the means for high-quality treatment may in fact have the wherewithal after being apprised of their options. Additionally, all patients should be made fully aware of the long-term costs and benefits of traditional complete dentures vs implant-supported restorations before making a decision with such life-changing potential.

A treatment plan is developed that harnesses the classic principles of implant placement, the versatility of modern restorative materials, and the precision of digital diagnostics and CAD/CAM fabrication to achieve a predictable, aesthetic restoration for a case that would seem hopeless to many. The case illustrates how implant therapy can afford patients even in the most extreme of dental circumstances an excellent long-term prognosis, restoring not just the teeth, but also the bone, soft tissue, self-esteem, and quality of life.

Case Report

A 56-year-old male patient presented for treatment with advanced, extensive caries and localized periodontal disease (Figs 1a–c) in addition to not having seen a dentist in more than 20 years. The patient was recovering from an addiction to methamphetamine, which had caused extensive decaying and grinning that had substantially worn down the patient’s teeth. The many years of dental neglect combined with these parafunctional habits to render the patient’s severely decayed dentition unrestorable (Fig. 2). Further, the deterioration of the patient’s teeth was accompanied by significant soft tissue recession and bone resorption.

Although the patient had been quite apprehensive about seeking treatment, pain and discomfort eventually compelled him to take action. The patient had sought treatment from a practice where he could receive all of the necessary treatment from a single provider in the fewest appointments possible. After locating my practice, the patient found the courage to present for evaluation. It was apparent from the initial visit that he was ashamed of his condition.

The goal was to offer him the best treatment available in order to restore the patient’s smile, form and function. Without presuming the appropriate standard of care for the patient based on his condition, it was explained to the patient that his natural teeth could not be saved and a full range of treatment alternatives was presented, from complete dentures to fixed full-arch implant restorations. Before-and-after photos of similar cases were shown to the patient to assist his evaluation of the restorative options. The patient chose full-mouth reconstruction consisting of fixed prostheses delivered over dental implants. A treatment plan was developed that included extraction of the patient’s non-restorable dentition, the placement of eight implants in each arch, delivery of Inclusive® Titanium Custom Abutments and BiTemp® restorations (Glidewell Europe GmbH, Frankfurt/Main, Germany), and final restoration with fixed PFM prostheses. The latest tools in digital dentistry would be utilized to maximize the precision of both implant placement and prosthetic fabrication.

Because of the patient’s relatively youthful age and his continued bruising habit, eight implants were proposed for each arch in order to maximize the distribution of occlusal load, the preservation of his ridges, and the long-term prognosis of the patient’s maxillary and mandibular ridges necessitated a grafting procedure. To determine the amount of bone needed for implant placement, custom abutments would be used to position the prostheses for optimal aesthetics. Although BruxZir® Solid Zirconia Full-Arch Implant Prostheses (Glidewell Europe GmbH, Frankfurt/Main, Germany) would have been the ideal restorations given the need for long-term durability in this case, the product was not yet available at the time of treatment. Thus, PFM prostheses were chosen in order to avoid acrylic and its susceptibility to staining, wear and fracture. The proposed PFM restorations included layered pink porcelain to recreate the patient’s natural gingival contours. All aspects of treatment were explained to and accepted by the patient. The first phase of treatment began by autogeneously extracting the remaining teeth; eight implants were placed (Glidewell固特固公司, Detroit, USA), which allowed for removal of the teeth without causing any damage to the surrounding bone. The extraction sockets were filled with grafting material in order to preserve the sockets and rebuild the maxillary and mandibular ridges for ideal implant placement. The patient was provided with immediate dentures, which were prefabricated based on impressions that were taken at a previous appointment (Fig. 3).

After approximately five months of healing, the patient was called in so cone-beam computed tomography (CBCT) scanning could be performed. The soft tissue of the patient’s non- edentulous arches exhibited excellent health (Figs. 4a & b). CBCT scanning confirmed that the healing procedure was successful in increasing the bone volume available to accommodate the planned implants. The CBCT scanning data was used to design a virtual restorative plan that would place the eight implants for each edentulous ridge in the maximum amount of bone adhering to the key implant positions as taught by Dr Carl Mach’s Surgical

Figs. 1a–c. Retracted frontal, occlusal maxillary and occlusal mandibular views exhibit non-restorable preoperative state of the patient’s dentition.

Figs. 4a & b. Occlusal views of patient’s maxillary and mandibular ridges exhibit healthy tissue at the extraction sites.

Figs. 4c & d. Surgical guides were 3-D printed to help ensure placement of the implants in accordance with the digital treatment plan.

Figs. 4e. The surgical guides were seated in the patient’s mouth and secured using the fixation pins and positioning index.

Figs. 4f. The surgical guides controlled the positioning of the abutments during drilling.

Figs. 4g. Occlusal views of maxillary and mandibular implants illustrate excellent healing of the soft tissue four months after surgery.

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Stephen Curry’s mouthguard sells for over $3,000

By DTI

LAGUNA NIGUEL, Calif., USA: SCP Auctions, one of the largest auctioneers and private sellers of notable sports memorabilia and cards in the U.S., has recently sold the mouthguard of American professional basketball player Stephen Curry. As a signature habit, the 28-year-old Curry, who plays for the Golden State Warriors team, removes and chews on his mouthguard whenever he is about to shoot a free throw. This was the first time one of Curry’s game-used mouthguards from his special 2015–16 season was offered publicly. The flexible rubber mouthguard was custom-made to fit Curry’s teeth. It was specially designed with the Golden State Warriors logo on the left and “#30 CURRY” on both sides built into the molded material. Curry’s bite marks were evident.

According to the auction house, the mouthpiece was acquired by the consignor after a December road game. His seat was close to the Warriors bench and the mouthguard was apparently left behind under one of the team’s courtside chairs after the game.

At the end of August, a fan purchased the mouthguard for $3,189.60. In an interview with television host Jimmy Kimmel, Curry explained that chewing the mouthguard calms him, especially when he is at the free-throw line. He also stated that it was a habit that he formed in his junior year in college—after being hit in the face by another player, which resulted in a severe cut on his lip, he has worn a mouthguard for every game.
Invaluable Support with a First Case

By Dr. Brynja Björk Hardardóttir, Sweden

A 58-year-old patient presented to the practice in March 2015 with concerns that her upper laterals were sticking out – something that had bothered her all her life. She was otherwise healthy with no previous medical issues or current medications.

A full dental assessment revealed a skeletal Class II division 2 malocclusion, as well as an overbite and a small overjet. The lower arch had minimal crowding which did not bother the patient. The upper right lateral had undergone endodontic treatment many years previously and it was now discoloured. Many large restorations were present in the molars, both composite and amalgam. Aside from minimal plaque and calculus, good oral hygiene was recorded. The upper anterior teeth showed a little mobility but no periodontal pockets were detected.

Treatment options

Many years ago the patient was referred to an orthodontist, but she did not desire fixed braces. Prosthodontic solutions were also discussed at the time, which would have included veneers on the upper centrals and laterals, resulting in loss of a lot of tooth substance on the laterals and an elective endodontic treatment on 22.

With this in mind, the IAS Inman Aligner method was suggested as an alternative option. X-rays and photographs were taken during that appointment to ascertain suitability and no pathology or abnormalities were identified. Both the upper and lower jaws were then scanned with CAD/CAM technology and the digital impressions sent to a certified lab. The lab did the Spacewize™ calculations and it was confirmed that the case was suitable for treatment. A video demonstrating the predicted outcome and make an informed decision. Upon her consent to proceed the treatment plan was discussed in detail, including frequency of appointments, importance of compliance, potential complications, and feedback from the instructors through the online support, it went really well. I would, however, advise others to begin with an easier case and do not hesitate to contact the instructors through the online support with any questions!

Treatment provision

In May, the IAS Inman Aligner was fitted retention, removal and clean- ing instructions were given and the patient was advised to wear the appliance for 20 hours per day. The aligner had an expansion screw and the patient was also instructed to turn the screw by a quarter of a circle every 3rd day, but no more than 12 times in total.

A composite anchor was placed on the palatally, IPR and PPR were also performed according to the lab instructions – distally on the centrals and mesially on the laterals. I was a little too careful at first so more IPR and PPR was needed along the way. Consequent appointments were made at two-week intervals.

Six weeks after treatment began, the upper centrals had moved buccally and the expansion screw no longer required turning. Tooth 11, which had the palatal composite anchor, had over-erupted a little. Following advice from the IAS online support, it reduced in size and moved as far onto the incisal edge as possible to minimise the extrusion force. A similar anchor was placed on 21 to spread the force across both teeth. Both incisors were very mobile at that point but the patient reported no pain. Two weeks later composite anchors were placed buccally on 12 and 22 and a little more PPR was carried out on these teeth distally to encourage rotation. After another fortnight, the anchors were removed from the centrals and new ones were placed palatally on the laterals. At this point the laterals had both buccal and palatal anchors to increase rotation.

The IAS online support was once again consulted because not enough rotation of the laterals was being achieved. The IAS Inman Aligner was sent to the lab for a bow reset and the patient had an Essex retainer in the meantime.

The IAS Inman Aligner was then used for four more weeks. Treatment was concluded with two IAS Clear Aligners. Bleaching trays were also constructed and bleaching was carried out with Philips Zoom. Finally, the fillings were changed in the anterior teeth and composite restorations made according to the lab instructions and a bonded retainer was fixed.

Outcome

The patient is very happy with the outcome achieved. The laterals have always bothered her but she was not ready to have fixed orthodontics. She was amazed this result was possible with the IAS Inman Aligner.

From my point of view, this was my first case and I found it very challenging. It was also not totally without complications – but thanks to patient compliance and fantastic help and feedback from the instructors on the IAS online support, it went really well. I would, however, advise others to begin with an easier case and do not hesitate to contact the instructors through the online support with any questions!

Dr. Brynja Björk Hardardóttir is a GDP from Iceland. She qualified as a dentist in 2003 and has worked at Tandvårdsgruppen in Sweden since 2012.
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education program through regular home visits to mothers with infants, commencing at or soon after the time of the eruption of the first deciduous teeth, was shown to be effective in preventing the occurrence of caries, improving oral hygiene and dental attendance of young children. An added benefit was that the mothers of the children also significantly improved their oral hygiene in terms of debris, gingivitis and calculus scores [9]. Young children are dependent on their parents or caregivers for their daily dietary and oral hygiene practices. Therefore, it is important that the dental health messages should focus on educating and changing the behaviour of parents or caregivers. Moreover, the dental health messages should be practical by giving alternatives, for example substituting milk with water, formula or directing caregivers to be the best option in terms of cost, safety and acceptability to parents or caregivers. Other alternative options include oral or intravenous sedation and dental rehabilitation under general anaesthesia (Figure 2) is preferred by many clinicians as it is more acceptable and favoured for class I Cavities and in uncooperative preschool children requiring comprehensive dental care or those with special needs.

Restorative treatment of ECC

In recent years there has been a shift from the traditional (drill & fill) to a more conservative treatment modality (tooth to heal) with better understanding of the caries process biology. Managing caries through minimally-invasive and low-cost treatment modality such as minimally invasive restorative technique (MIS) is important especially in developing countries. It helps in slowing caries progression and hence minimizing the child’s discomfort and preventing other decay complications. Studies have shown that, although caries causes demineralization of dental hard tissues and dematuration of collagen, the inner layer is minimally damaged or even not infected by bacteria [44]. The inner part of decayed dentine contains a high concentration of minerals and can be remineralized [45]. Management of ECC should take into consideration the biology of dental tissues, remineralization process and other protective mechanisms. The goal should be to minimize lifelong caries experience while performing the least possible intervention consistent with level of risk (Table 1).

The type of restoration chosen depends on: the tooth to be restored, present and past caries history, child cooperation and medical history. For example a decayed primary molar in a special need child is best restored with a durable restoration like stainless steel crowns (SSC). A multi-surface decayed primary molar also should preferably be restored with SSC [46]. Gradually decayed maxillary incisors are best restored with either composite strip or zirconia crowns with or without pulp therapy (Figure 3). Depending on patient cooperation, the severity and number of decayed teeth and medical history, dental treatment of paediatric patient can be performed under behaviour management and local analgesia, which is considered to be the best option in terms of cost, safety and acceptability to parents or caregivers. Other alternative options include oral or intravenous sedation and general anaesthesia (GA). Full dental rehabilitation under GA (Figure 2) is preferred by many clinicians in uncooperative preschool children requiring comprehensive dental care or those with special needs. All restorative techniques exhibit strengths and weaknesses for example:

- Glass ionomer Cement (GIC) is favourable for class I Cavities and in uncooperative children
- Composites shows best long-term performance. The cooperation has to be sufficient, at least during bonding and layering
- Resin composites after rubber dam application and correct technique – sensitive adhesion can reach the level of composites
- In severely decayed teeth and after pulp therapy, preformed SSC should be the restoration of choice.

Conclusion

Early Childhood Caries (ECC) is a chronic, transmissible infectious disease affecting the primary teeth. The etiology of the condition is a combination of frequent consumption of fermentable carbohydrates as drinks, especially when a baby is sleeping, with on-demand breast- or bottle-feeding, oral colonization by cariogenic bacteria (especially mutans streptococci), poor oral hygiene and poor parenting. It is the most common chronic disease among children and is still considered a continuing oral health problem in developing countries and also in most developed countries. It can result in considerable suffering, pain, disfigurement, reduction of quality of life of affected children and frequently compromises their future directions. The treatment of ECC is very costly, time consuming and in most cases, requires full dental rehabilitation under general anaesthesia by a paediatric dentist. ECC, however, is a preventable disease and the solution for this continuing problem can be achieved by educating parents of young children and pregnant mothers. It is important that the dental health messages should focus on educating and changing the behaviour of parents or caregivers. Moreover, the dental health messages should be practical, consider the socioeconomic status of the parents and be culturally sensitive. The management of ECC should take into consideration the biology of the caries process and protective mechanisms and to be effective, the restoration of active lesions should be monitored through regular follow up and long-term preventive strategy.

References


The full list of references is available from the publisher.
cayed, missing, or filled score of 0-4, those aged three and half to four and half years had some experience of tooth decay” [4]. These terms are of- ten used interchangeably in dental literature. They describe the condi- tion and magnitude of the etiological fac- tors of the decay as understood by parents, public and professionals. However, the term used by parents of a sweetened pacifier, which may be defined as the EU or by the USA to de- scribe cavities in infants and young children. This term has been widely accepted as the correct term by most dental clinicians and educators [13].

Pattern and Clinical Appearance of ECC

ECC has a specific pattern and clinical picture, which is a specific form of rampant caries with the only feature differ- entiating it from generalized rampant caries being the absence of decay of the mandibular incisors (Figure 1). The most commonly affected teeth in ECC are maxillary incisors and maxillary first permanent molars (Figure 2). Premature extraction of these teeth is less than in the maxim- al incisors. The mandibular incisors are not affected because the tip of the tongue is usually held above the tongue during sucking, so the teeth are not protected by the tongue and also by the flow of saliva, which decreases the risk of decay (Figure 3) [4]. The role of the infantile physiological tongue pattern during sucking is therefore important in protecting the lower incisors [4].

In most cases of ECC, the clinical sign is a band of dull white demin- eralization along the gingival line of the maxillary anterior teeth. As the lesion progresses, the white bands disappear to reveal a brown or black collar around the necks of the incisors. In advanced cases, the enamel may be so severely involved that the crowns of the teeth are amputated leaving only decayed bone and tooth structure (Figure 4) [4]. The commonly involved surfaces are the occlusal, labial, and lingual surfaces of the anterior and mandibular canines. In the first and second primary molars, the occlusal surface is commonly affected [12]. According to RIPA [4], the reason for this unique distribution is related to three factors: 1) the chronology of tooth eruption; 2) the duration of the deleterious habits; and 3) the muscular pattern of infant sucking.

Prevalence of ECC

The prevalence of ECC varies greatly in different populations. A recent worldwide prevalence has been reported to vary from 5% to 50% [5, 6]. This wide range may be due to several factors such as: 1) children studied, their age and the socio-economic and cultural back- ground, 2) socio-economic status, 3) eth- nic and cultural factors and 4) criteria used to define ECC along with the inclusion criteria [5].

The prevalence of ECC in one coun- try usually cannot be compared with another. According to RIPA [4], studies have reported that even results from one ethnic group cannot be extrapolated beyond that group, even within the same country [5]. In western socie- ties, ECC is present in 20% of the population commonly in children from low socio-economic groups, certain im- migrants, patients with learning difficulties and those with physical and medical disabilities. The den- tal survey of children aged one and two years of age in the UK [12] showed that the proportion of children affected increased with age: 4% of one and half to two and half year-olds, 16% of two and half to three year-olds, 30% of three and three and half year-olds and 40% of those aged three and half to four and half years had some experience of dental caries (Figure 5). In the city of Abu Dhabi in the UAE, ECC in 3, 4 and 5 year olds is 13%, 15.7% and 15.8% respectively [6]. Hashim et al. (2006) in Amin, UAE studied car- iology survey and prevalence of ECC in 6-7 year-old children. They high caries prevalence (76.1%) and an average score of missing, filled and flared surfaces (dmfs) score of 12.2 and that the Emirati (local) children had higher caries severity than other children [13]. Al-Hosani and Buggi- Gunni (1999) examined year-old children in Al Ain and found a mean decayed, missing and filled teeth (dmft) score of 8.6 [4].Recently, Kawash (2015) in a cross sectional study in the same city reported a higher mean dmft of 10 [16]. The aforementioned ECC prevalence re- sults are clearly a cause of concern when designing programs in the UAE especially when comparing it with the internationally accepted definition of severe ECC (Figure 6).

Etiology of ECC

The exact etiology of dental caries is still obscure. However, there is good scientific evidence to show that for deciduous teeth to occur, four main factors and some other minor or physiological factors have to be present. Thus dental caries is a multifactorial etiology [7]. The four main factors are: 1) a susceptible host (teeth and saliva); 2) a fermentable carbohydrate substrate or food; 3) the absence of saliva, and 4) the availability of bacteria (aerobic and anaerobic) in the mouth [7]. Prejudicial factors such as the nutrition, habits, oral hygiene practices, general health and nutri- tional status; Socio-economic factors on parental and occupational family income, number of siblings, parental attitude and knowledge of factors that can influence ECC and demographic fac- tors such as race, age, gender, soil and marital status are also contributing factors. However, these factors are often used as indicators to identify caries risk. In most cases, ECC is indistinguishable from other coro- nial carious lesions in older children and adults, however, the lesion pro- gresses rapidly and the carious challenge overwhelms the protec- tion of the tooth enamel [8]. The etiology of the combination is a frequent consumption of ferment- able carbohydrates as drinks especially at night-time, with on-demand or bottle-feeding because during sleep, salivary flow is greatly reduced. Other contributing factors include oral colonization by cariogenic bacteria (especially mutans streptococci) and poor oral hygiene [4]. In most cases of ECC, the etiology will be a combination of several of these factors [9].

There is a considerable debate in the literature regarding the effect of milk on teeth. Several studies considered it to be cariogenic under certain conditions [9, 20, 21]. Others have reported that breast milk is anti-cariogenic [22, 23, 24, 25, 26, 27]. They reported that the factors for controversy are due to the difficulty of studying the effect of one item of food on dental health in humans. In addition, the difficulty of designing definitive nutrition experiments even in animals, 3) the different effects of food processing on milk and 4) basic dif- ferences in the composition of milk of different species. The lactose (a di-saccharide composed of glucose and galactose) content of human and bovine milk aids the implantation of cariogenic bacteria and produces enamel demineralization and caries by mineralization of the tooth surface [19]. The collects of milk on teeth depend upon the dental health of the parents and the feeding practice and time of weaning. It is difficult to identify which type of microorganisms are contributing in caus- ing dental caries due to the com- plexity of plaque micro-organisms. However, mutans streptococci (MS) and lactobacilli (LB) are considered the major etiological micro-organisms in ECC [26]. MS and LB can grow at an intracellular pH value lower than 6.9 which is much lower than the pH of most other bacteria, they can also produce lactic acid when exposed to high acidic conditions. In the presence of other bacteria, they can also produce other acids, which are associated with tooth decay. Depending on the severity and the extent of dental decay, ECC may lead to a significant impact on the child’s quality of life. Untreated carious lesions lead to pain and discomfort, inability to prop- erly chew food and the child may avoid eating because of fear which may lead to loss of sleep, nutritional failure and failure to thrive [10]. In severe cases, palatal necrosis in primary teeth may lead to a dental abscess formation which can cause pain and damage the de- veloping permanent tooth. If there is a need for premature extraction, primary tooth loss may result in various orthodontic complications (Figure 2). Premature extraction of primary maxillary incisors may also lead to perturbation of lip and palate development. Untreated ECC lesions may cause abscesses, cellulitis and spread of infection. A range of public health concerns and fatal complications such as brain abscess and Ludwig’s angina (Figure 2). Management of ECC complica- tions requires immediate emergency treatment visits and hospitalization. The socio-economic consequences of ECC manifest in increased treatment and hospitalization costs in addition to time off from employment for parents [12, 19].

Management of ECC

Prevention is the solution for the continuing problem of ECC. Despite following a high caries risk method for proper restoration of decayed teeth, recurrence of decay and its com- plications continue to be an ongoing problem. The absence of an adequate prevention program and follow up visits (Figure 2) makes ECC an infectious and transmissi- ble disease but it is preventable. There are two main preventive programs: individual-based interventions and community-based inter- ventions.

Individual-based preventive programmes

This approach is used for high-risk populations because it is simple and does not require much effort from the parent or caregiver. The dis- advantages of an individual-based approach are twofold. Firstly, it re- quires identification of risk factors in children and secondly, it can be costly as it requires professional or auxiliary staff to provide individualized care. A general approach by treating the mother by counseling, tooth brushing, and limiting the use of fluoride to reduce the number of maternal micro-organisms trans- mitted to her infant. The mother’s open cavities and the use of anti-microbial agents can reduce the transmission to her infant [8].

The American Academy of Paediatric Dentistry (AAPD) [34] recommended dental health education program for parents with young children to improve their dental awareness and attitude toward dental health. The AAPD recommendations for the im- port of oral health include:

- Premature extractions
- Orthodontic problems

Premature extractions

The problem of ECC there should be collaborative efforts of car- egivers, health professionals, and the community [40, 41]. Weinstaub [41] believed that public health or com- munity approaches are more effective than individuals- or behavioural approaches. Oral health education of public health professionals and hygienists should be trained for skills, as necessary, for developing community-based initiatives and dental programs. These skills would be developed through training of knowledge of social beliefs, culture and practices and establishing and implementing community-based initiatives [40]. A successful long-term dental health...
Early Childhood Caries
A Continuing Epidemic Oral Health Problem in the United Arab Emirates

By Dr Mawlood Kowash, UAE

Early Childhood Caries (ECC) is a chronic, transmissible, infectious disease affecting the primary (milk) teeth. The etiology of the condition is a combination of factors including frequent consumption of fermentable carbohydrates as liquids, especially when the baby is sleeping, with on-demand breast- or bottle-feeding. Other factors include oral colonization by cariogenic bacteria (especially mutans streptococci), poor oral hygiene and poor parent-menting. It is the most common chronic disease among children. The prevalence of ECC in infants and preschool children has been reported to vary between 3% and 94% worldwide. In United Arab Emirates (UAE) the prevalence is one of the highest reported to be over 60% in Abu Dhabi emirate. ECC can result in considerable suffering, pain, disfigurement and frequently compromises future (permanent) dentition. This ultimately leads to a reduction in the quality of life of affected children. This paper provides an updated review of ECC covering its definition, aetiology, prevalence, clinical picture, complications and management and a solution to the continuing problem of ECC is suggested.

Introduction
Caries or dental decay in children has been known to exist for many centuries [1]. Early Childhood Caries (ECC) is a chronic, transmissible infectious disease affecting the primary (milk) teeth. It is defined as the presence of one or more decayed, filled or missing tooth surfaces in any primary tooth in a child 71 months of age or younger [2,3]. It can result in considerable suffering, pain, reduction of quality of life of affected children and disfigurement and frequently can compromise their future dentition. The etiology of the condition is a combination of frequent consumption of fermentable carbohydrates as liquids, especially at night, with on-demand breast- or bottle-feeding, oral colonization by cariogenic bacteria (especially mutans streptococci) and poor oral hygiene [4]. In most cases, the aetiology will be a combination of several of these factors. The prevalence has been reported to vary worldwide. Higher prevalence has occurred in children from lower socio-economic status families, migrant and ethnic minority populations [5].

In the United Arab Emirates (UAE), ECC is the most common childhood disease. The prevalence of ECC in the UAE has been reported as 93.8% in 5-year-old children [6]. Prevention of ECC can be achieved by the education of prospective and new parents, as well as by the identification of ‘high risk’ children [7]. Strategies have focused on the individual mother and child by preventing transfer of cariogenic bacteria from mother to her infant; using preventive agents such as fluoride and teaching good oral hygiene practices [8]. Community-based approaches have been attempted. An example of a successful program was reported by Kowash et al [9] which investigated the effect of dental health education provided by trained, non-professionals (not dentists) carrying out regular home visits in a low socioeconomic high-caries area in Leeds, UK. The study was able to demonstrate a significantly reduced occurrence of ECC after three years.

The treatment of ECC is very costly, time consuming and in most cases, requires full dental rehabilitation under general anaesthesia by a paediatric dentist. Unfortunately, in many countries, even in the developed world, these curious teeth end up being extracted.

This paper provides an updated evidence-based review of ECC. The literature in regards to ECC definition and terminology, aetiology, prevalence, clinical picture and management is discussed. A solution to the continuing problem of ECC is suggested.

Definition and Terminology of ECC
ECC has been defined as ‘the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces’ in any primary tooth in a child 71 months of age or younger [2,3]. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages three through five, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a de-
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Wisdom Teeth in Adults. Strategy and Management Based on a Rare Case.

By Dr. Benoît Philippe, UAE

Extractions of wisdom teeth in adults are known to have sometimes certain peculiarities in particular ankylosis and increased frequency of extensive cystic lesions favouring immediate or secondary iatrogenic fractures.

The objective of this publication is to present, from a specimen case as per the size and twosidedness of the abnormalities noted, the thinking that preceded the surgical procedure and the execution of the surgical act.

Diagnosis Circumstances

The patient is an adult male aged 48, without specific medical and surgical history. He was referred for medical advice and possible surgical care with regard to his asymptomatic impacted third molars. The clinical situation contrast with the radiographic table found.

Dental Pan

Four (4) impacted third molars are highlighted: 38 is positioned along the distal side of its crown. (Figures 2a and 2d). 48, vertically positioned, is located on the lingual side of the inferior alveolar nerve; its roots contained in the lingual table. The apexes are located below the mylohyoid mus- cle in immediate contact with the submandibular gland and near “the facial pterygo-tuberosal junction” (due to the posterior superior part of the gland before turning around the bottom edge of the mandible). (Figure 1). 38 shows a pericoronal cyst developed mainly on the distal side of its crown. (Figures 3a and 3d).

At the Mandible

38, in addition to its close proximit- y to the dental pedicle it shows a pericoronal cyst in contact with the inferior alveolar nerve. Its crown, in- verted and extremely large stresses its retentive character (Figures 2a to 2d). 48, vertically positioned, is locat- ed on the lingual side of the inferior alveolar nerve; its roots contained in the lingual table. The apexes are located below the mylohyoid mus- cle in immediate contact with the submandibular gland and near “the facial pterygo-tuberosal junction” (due to the posterior superior part of the gland before turning around the bottom edge of the mandible). (Figure 1). 38 shows a pericoronal cyst developed mainly on the distal side of its crown. (Figures 3a and 3d).

Clinical Case

Given the inflammatory adhesions, a special attention is given to the lower pole of the cystic lesion:

- The enucleation of the pericoronal cyst is performed without any pull- ing on its envelope.

Concerning 48, the subalveolar incision spreads from 26 until the impacted tuberosity, completed by two wide vertical discharge incisions led until the bottom of the vestibule.

The vestibular ostectomy carried out using the piezotomography, spreads over the entire height of 28. The cystic lesion (polyps) is enucleated in full (Figure 5).

Concerning 48, despite a widened approach path (as 47, the vestibular lesion is extended from the distal surface of the tooth until the anterior edge of the ramus), the procedure is to keep intact the outer table and the basilar margin of the mandible. The extraction is performed through the lingual path. Careful subperidental separation concerns the lingual table with regard to 47 and the retromolar triangle. A malleable blade to protect the cystic envelope and the pedicles focuses (besides the risk of bleeding) nerve traumas (Figures 3a and 3d).

Concerning 28, the subtotal develop- ment of the endo-antral cystic lesion exposes in a near future to a sudden intracystic decomposition by complete blockage of the sinus because of the high risk of oro-antral communication, 38 clinical and radiologically asymptomatic is main- tained as it is (there is especially no endo-antral image).

Information and Informed Consent Strengthened

The surgical indication is confirmed to the patient despite the absence of symptoms. The option of general anaesthesia is selected because of the difficulty of the surgical procedure.

Given the mandibular anatomical lesions and especially their bilateral nature, the information provided to the patient insist on the increased intraoperative and postoperative risk of mandibular fracture and destruc- tion of the alveolar nerve by direct hit (section, burning) or indirect hit (heat in case of fracture). The information stresses the same way on the risk of direct or indirect hit of the lingual nerve itself particularly fragile and located in the immediate vicinity of the roots of 48. Because of the high- location of 28 and the divergence of its roots, the risk of oral sinus commu- nication is clearly indicated.

Surgical Strategy

In order to perform the surgery in the best technical conditions (espe- cially in the absence of trauma as a result of an intracystic decomposi- tion) it is recommended to perform these extractions ‘in cold situation’ in two times (high fracture risk). 37 and 48 are programmed in a first phase and 28 in a second phase to 6 months.

Surgical Procedures and An- esthesia

In order to have the best accessibility, the intubation is performed using an endobronchial probe during both surger- ies.

Concerning 38, several technical fla- tures are worth mentioning:

- The route for the approach and the separation are expanded (the incision covers the entire sillon of 37 and the retromolar triangle and is completed by two long discharge incisions).
- The use of ultrasound allows, due to ankylosis, an efficient clearance be- tween the dental tissue and the bone tissue.
- The separation of the cystic lesion is performed using the micro raspa-
ture on the flap.

Postoperative, Medium Term Monitoring

Apart from an acute painful episode on the right side that occurred dur- ing chewing on the third postopera- tive day, the patient did not experience any side effect. The panoramic shot of late medical supervision reveals a satisfactory bone healing, in particular the dis- appearance of radiolucents images in 38 and 48 and an absence of opacity in the left sinus cavity which is a proof of a good ventilation (Figure 7).

Conclusion

With impacted wisdom teeth in adults, the importance of anomala- ties (ectopia, ankylosis, cystic lacuna, nervous vicinity) imposes an in- creased obligation to provide further information. Nevertheless, with le- sions having a possible risk of acute infectious decompensation, the preventive extraction in the absence of infectious lockdown seems to be recom- mended. The two-sidedness of the lesions imposes a two-step proce- dure: Despite the implementation of a sequence and a suitable surgical technique, nervous or fracture com- plications are always possible due to adhesions, ankylosis and loss of pre- operative cystic and postoperative iatrogenic bone substances.

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Maxillofacial Surgery

Dr. Benoît Philippe

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Figure 1: Sinus view of the left side.

Figure 2: a) Endo-antral lesion, (b) Subalveolar cysts, (c) Lingual and Posterior table.

Figure 3: a) The cystic lesion is enucleated in full, (b) Lingual table with ultrasound.

Figure 4: a) The piezotomography, b) Lingual and Posterior table.

Figure 5: 28, pericoronal cyst and polyps endo-antral.

Figure 6: a) Double ostectomy of the lingual table with ultrasound, b) Lingual aspect showing the polyps.

Figure 7: 48, Lingual and Oblique aspect and Retromolar triangle (2 fragments).

Figure 8: a) Sinus lesion of liquid density, (b) Soft tissue adhesions, (c) the path of the piezotomography.

Figure 9: a) The incision is extended, b) Lingual and Posterior table.

Figure 10: a) The lesion is enucleated, (b) The piezotomography, (c) The posterior table with ultrasound.

Figure 11: a) The operative field, b) Lingual and Posterior table.

Figure 12: a) The piezotomography, b) Lingual and Posterior table with ultrasound.

Figure 13: a) The lesion is enucleated, (b) Lingual and Posterior table.

Figure 14: a) The incision is extended, (b) Lingual and Posterior table.

Figure 15: a) The lesion is enucleated, (b) Lingual and Posterior table.

Figure 16: a) The incision is extended, (b) Lingual and Posterior table.
upper anterior crowns (Fig 35). The final restorations show better overjet and overbite with anterior guidance now on the anterior teeth and full interdigitation of all teeth around RAP, and no slide between RCP and ICP (co-incident position) (Fig 36). Careful post restorative adjustment was performed after fitting of the crowns and a post restorative splint fabricated, for night-time use Figs 37, 38). The final smile shows the aesthetic improvements (Figs 39, 40).

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• President of the British Academy of Restorative Dentistry (BARD)
Advanced Restorative Techniques and the Full Mouth Reconstruction. Vertical Dimension And Changes During Restorative Treatment. Part 5

By Prof. Paul A. Tipton, UK

A highly respected specialist in Prosthodontics, Paul has published many scientific articles in the dental press and is an expert lecturer in his field with Tipton Training Academies in Manchester, Leeds, London and Dublin. After gaining his Masters Degree in Conservative Dentistry in 1984, he was awarded the Diploma in General Dental Practice by the Royal College of Surgeons four years later and received Specialist status in Prosthodontics in 1999 from the GDC. An ex-professional cricketer with Lancashire County Cricket Club, he is currently the President of the British Academy of Restorative Dentistry (www.bard.org.uk). He is one of the UK’s most successful dental teachers in the fields of Restorative, Cosmetic and Implant Dentistry over the last 20 years with more than 2000 dentists completing a yearlong certificate courses from one of the Tipton Training Academies (www.tipton-training.co.uk).

Introduction

Changes in vertical dimension are often required for either gaining restorative space during restorative procedures or for improving facial aesthetics. Occlusal splints are used to first verify that the increase in vertical dimension can be tolerated and this is easily accomplished in most cases as long as this increase is done around RAP or Centre Relation so that the condyles are in their most relaxed, bone braced and reproducible position. Increases and decreases in vertical dimension will be discussed showing positive changes in facial aesthetics as treatment is completed.

Increasing VDO

There is some debate among professionals as to what constitutes the need to open VDO (vertical dimension of occlusion) in the restoration of anterior teeth or partial or full mouth reconstruction. In most cases, clinicians look to alter vertical dimension for one or all of the following reasons: to gain space for the restoration of the teeth, to improve aesthetics, to correct occlusal relationships. Understanding what determines the VDO and what the effects of altering it have on the temporomandibular joint (TMJ), muscle comfort, bite force, speech, and long-term occlusal stability are prerequisites to restoring the worn dentition. Spear clearly outlines the principles of VDO and concludes that “patients can function at many acceptable vertical dimensions, provided the condyles are functioning from central relations and the joint complex is healthy.” He states that “vertical is a highly adaptable position, and there is no single correct vertical dimension.” He further concludes that the best vertical dimension is the one that satisfies the patient’s aesthetic desires and the practitioner’s functional goals with the most conservative approach. Article no. 3 in the series dealt with the diagnostic approach to increasing VDO. Mohd. Sha showed that increasing VDO resulted in a younger looking patient.

Space

When starting from retracted axis position, opening of the anterior teeth by 3 mm will yield a posterior separation of approximately 1 mm and stretch the masticator muscle length approximately 1 mm. If the condyles are not in retracted axis positions and are subsequently seated to a more superior position, every millimeter of vertical seating will reduce the masticator muscle length by 1 mm, thereby eliminating the need for a true opening of vertical dimension.

Case Study 1

Mr. S (Fig 5) was referred to me by her General Dental Practitioner for a full mouth reconstruction because of the poor aesthetics of her upper crowns (Fig 2) and the wear taking place on her lower anterior teeth (Fig 5) and because she wanted an improvement of her smile (Fig 4). As part of the initial diagnostics, an assessment was made of her vertical facial height by using an intra-oral face and jaw wax registration as described in article no. 3 (Figs 5 and 6) followed by a diagnostic wax-up at the increased vertical dimension (Figs 7 and 8).

Her anterior teeth showed severe wear in the lower and poor width/length ratio of her upper crowns (Fig 9) together with a centre line shift of approximately 2 mm. Crown-lengthening procedures were done (Fig 10) followed by tooth preparations (Figs 11 and 12) and placement of prototypes in sections as per the previous article.

The stages in full mouth reconstruction were followed as in article no. 4 of the series and the final end result can be seen in Figs 13-19 showing a facial improvement and a younger looking patient.

Reduction of VDO

Conversely, although not as predictable a procedure, reduction or shortening of vertical dimension is both possible and often advisable. It cases where there may be an overall anterior open bite, a simple posterior occlusal adjustment (reduction in vertical dimension) will result in anterior teeth meeting with the condyles in retracted axis position. This then allows for the development of a mutually protected occlusion and anterior guidance on the anterior teeth. The following case study will show how occlusal adjustment can improve patient comfort. A reduction in vertical dimension can also have a positive effect in facial aesthetics in taking a long, thin face and making it look more in proportion. However, a word of warning. While increases in vertical dimension can be tried out without any tooth destruction with an occlusal pilot, a reduction cannot be tried out prior to tooth preparaation and so is not reversible. A great deal of experience is required before taking on a case such as this.

Case Study 2

This lady was referred to me because of her failing upper anterior com-
Brush your TEETH WHITE and toughen up your ORAL HEALTH.

tough WHITENING TOOTHPASTE with ACTIVATED CARBON

WHITE IS BLACK

Brush your TEETH WHITE and toughen up your ORAL HEALTH.

TAKE BLACK GET WHITE

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Where the magic happens

What goes on behind the scenes at Philips? We find out how in-lab research and years of innovation helped create Philips Zoom! whitening

By Philips

Tooth whitening has been at the forefront of cosmetic dentistry for years – centuries, even. Its history can be traced back thousands of years, long before the toothbrush was invented, and certainly before dentists were around.

Philips has been at the centre of this journey for years. Away from oral healthcare, the first Philips’ patent dates back to 1905 – an invention by Gerard Philips to extend the burning time of a light bulb. The company has been innovating light research ever since, so you can bet Philips knows a thing or two about adapting light for optimum tooth whitening.

Six shades lighter

Last month, Aesthetic Dentistry Today attended a live demonstration of Philips Zoom! Whitening in its lab, learning about the science behind light and basic colour theory along the way.

Dr Nigel Young, lead research scientist at Philips, says that when it comes to whitening, patients want something that works – which may sound obvious. But most of the time, patients are looking for ‘instant gratification’, and often, home whitening will not last as long, or be as effective, as professional chairside whitening. Here’s where Philips comes in: Zoom! is an in-office tooth whitening procedure, with a blue light-activated system. The action of the lamp activates the stains on the teeth and makes them react faster with the hydrogen peroxide. Essentially, this means that whitening lasts longer: set at the optimum pH level (approximately eight), and with the incorporation of amorphous calcium phosphate (ACP) in a dual barrel syringe, Zoom! ensures that teeth are not damaged and that the patient does not experience sensitivity.

The process is cold, too; the team wants to debunk the myth that heat activates whitening (which only causes dehydration and ‘false’ whitening). It achieves up to six shades of whitening with 6% hydrogen peroxide, in compliance with EU regulations – and only blue light-activated whitening can achieve this. But how?

The face lift

In basic colour theory, yellow light naturally absorbs blue. (Think of yellow light as the ‘stains’ on teeth.) The energy absorbed by the chromophore (which is yellow) excites its bonds, making them easier to break – called photobleaching. Once excited, the bonds are more likely to interact with peroxide, which breaks the network of double and single bonds and decolours the molecule. Blue light greatly enhances the reaction rate.

Light-cured restoratives work on the same principle: a yellow pigment (camphorquinone) is added to the restorative (so little is required that it still appears white). The light absorbed by the pigment activates the chromophore and that energy causes a set of fast cross-linking reactions that solidify the restorative.

Dr Zaki Kanaan, a dentist in London and a past president of the British Academy of Cosmetic Dentistry, describes tooth whitening as a ‘scapel-free face lift’.

According to Dr Kanaan, it is the most common treatment in practice, increasing revenue and offering patients a choice; home tooth whitening is still the ‘gold standard’, he says, but if you don’t offer tooth whitening in practice, someone else will.

Zoom! can be done in 90 minutes, but Dr Kanaan is quick to point out that one session will not be enough. ‘It reduces what you have to do at home, and that’s important to patients,’ he says. ‘It helps kick-start the process, and patients who really want this procedure will be happy to watch a 90-minute film while they have it done.’

He adds, ‘It offers huge PR and marketing potential, too – patients come in to practice and ask for Zoom! by name, showing they trust it as much as professionals.’

Myths about whitening

• Heat does not accelerate whitening.
• Hydrogen peroxide is not activated by blue light (as it is colourless).
• Dehydration actually causes ‘false’ whitening.
• Home care whitening has a place, but it can take longer to achieve ideal results.
• Zoom! does not harm enamel or exacerbate tooth sensitivity.

Safety first

Tooth whitening is a complex mix of chemistry and physics, and Philips has ensured that it works with the right researchers to understand the process behind whitening.

Philips works with four of the world’s top 10 universities and partners with leading academic institutes in the UK for oral healthcare, including the Eastman Dental Institute and King’s College London.

Dr Young says the lab at Philips headquarters in Cambridge is where ‘the magic happens’. The team assessed Philips Zoom! whitening here, looking at pH levels, sensitivity tests, experiments in a dark room, as well as ensuring extracted bovine and human teeth were not dehydrated to skew results. In vitro testing of coffee, tea and red wine stains on extracted human teeth were also conducted.

Dr Young says, ‘We came to Cambridge for a reason – we work with some of the best researchers in the world, and we hope to continue this learning and innovating long into the future.’

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* Love your teeth
My Teeth are important

“My Teeth are important”, is the feedback when asking people about their teeth.

By Jordan

A majority of the people asked, confirmed that their teeth are more important than other high interest personal care categories, for example, hair and even skin care. The reason for this is that we need our teeth to be healthy and strong in order to eat and drink like eating, throughout our lifetime. In the past, it was an assumption that as we age we would lose our natural teeth. That is not the case for today’s older adults who are keeping their natural teeth longer than ever before. More and more people are even keeping their teeth throughout their lifetime.

What many people do not know, is that the risk of cavities increases with age. One of the reasons is dry mouth, a commonside effect of many prescription medications. About 40 per cent of older people suffer from this type of medicine that could cause tooth damage. Another reason is that nerves inside the tooth become smaller and less sensitive. By the time you feel pain from a cavity, it may be too late.

So how can we best take care of our teeth, so that we last our lifetime?

The answer lies in daily care and regular visits to the dentist or hygienist. Follow the dentist’s recommendations and brush twice a day, and use, at least once a year, an additional product of choice to clean where a toothbrush cannot reach. Fluoride strengtheners can be used and reduces the risk of decay, so it is important that the toothpaste contains the recommended amount of fluoride. Dentists also recommend a soft toothbrush that has good reach in order to clean between and difficult areas in the mouth properly. Diet and lifestyle also eat teeth, so stop smoking and minimizing the intake of alcohol and other acidic sugary drinks and foods are important steps to make. By daily removing plaque and around on teeth, as well as along the gum line, teeth and gums have the best chance of keep- ing healthy.

There are several factors that affect our brushing results. How we brush and how long we brush are two of the most central Dentists recommend brushing for two minutes to get the best results, but few people actually do this. 50% of health care recommendations are not practiced.

People also have a bad conscience when it comes to brushing their teeth. They know they should brush better and put more effort to keep their teeth healthy for life. Another study shows that men are notably more likely not to be in widespread use to oral hygiene than women.

75% of women brush their teeth the recommended twice a day versus 60% of men. Women are also flowing more frequently than men. Here are a few suggestions for taking care of the teeth:

- Use a toothbrush that feels comfortable to hold. These are different shapes and sizes. In a study it was found that the design of the toothbrushes affected the way people brushed and that people had a preference for how they brushed. If you hold the toothbrush in a light grip (not clasp fingers around the toothbrush) it will be softer and turn the handle a few times when you brush, you most likely prefer a slimmer, precision style handle. On the other hand, if you prefer a thicker handle you probably have a more static power grip.
- The size of the head comes in different sizes and the preference is also very personal. The important thing is that you can easily and comfortably brush the teeth easily around your mouth in order to reach and properly clean all areas, especially the back molars.
- The bristles are shaped can affect performance. Dentists recommend soft bristles that are gentle to teeth enamel and to your gums. It’s important that the toothbrush leaves you feeling clean and does not irritate the softer gum tissue.
- It’s important that you do not share your toothbrush and keep it hygien- ish between brushing sessions. Keep the toothbrushes standing upright and leave the bristles to air dry for best results. If travelling, keep bristles protected from the other items in the toilet bag. A travel cap or case is recommended. Make sure to wash and dry the toothbrush.

Keeping our teeth strong and healthy is important and it’s daily efforts that help us achieve this.

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Interview: “The focus should be on maximum preservation of tooth structure”

By Dr David Alexander, Singapore

With the Minamata Convention on Mercury signed in 2013 and its pro- posed phase-out of mercury-con- taining products, including dental filling, dentistry has entered a new era in which new and less harmful filling materials than amalgam are increasingly becoming available. This year at IADOM, an entire sympo- sium will be dedicated to that topic. Scientists explain that, since Dr David Alexander spoke with pres- ident Prof. Hen Ngo from the Uni- versity of Queensland in Australia about the post-amalgam era and its impact on dental practice.

Dr David Alexander: Why is now the time to be organising such a detailed symposium on dental restorative ma- terials?

Dr Hen Ngo: The scope of the Mi- namata Convention is much wider than the main objective to protect human health and the envi- ronment from anthropogenic emis- sions and releases of mercury and mercury compounds. In 2014, the FDI World Dental Federation issued a policy statement on dental amalgam, supporting the recommendations of the Minamata Convention, which in- cludes a phase-down of amalgam.

As this material has been one of the mainstays of dentistry for over 150 years, it has had a great impact on the way dentistry is practised every day and it’s need to start preparing to- day.

Surely with all the various tooth col-oured restorative materials available we are already in the post-amalgam era?

You are right, with the choice of tooth-coloured restorative materials and their improved performance, we are well equipped to enter the post-amalgam era in dentistry. How- ever, the call by the FDI and United Nations Environment Programme (UNEP) for the phase down, rather than removal of amalgam from our profession, indicated that these improvements have long been an important tool in many parts of the world. This is mainly because of its perceived low cost, long track record and high treatment tolerance. There are billions of amalgam resto- rations still in service and the search for the ideal tooth replacement ma- terial is still ongoing.

In preparation for the eventual re- moval of amalgam, the FDI policy statement stresses that authorities should work with the dental profes- sional on a comprehensive global dental materials research agenda together with effective preventive strategies in the post-amalgam era, the profession has to focus on both restorative and preventive ap- proaches to the management of dental diseases.

Briefly, how did the United Nations treaty on limiting the use of mercury come about?

It started with the realisation of the negative impacts of mercury on the global environment, which led to this issue in 2001. By 2003, it had come to light how long amalgam was still an important tool in many parts of the world. This is mainly because of its perceived low cost, long track record and high treatment tolerance. There are billions of amalgam resto- rations still in service and the search for the ideal tooth replacement ma- terial is still ongoing.

As you already stated, dental amal- gam has been one of the mainstays of dentistry for over 150 years. How can dental professionals acquire the knowledge, learn the skills and train their supporting staff to adopt the new techniques? Will patients be able to enjoy the benefits of these mod- ern materials, in most cases, in place of amalgam?

The alternative restorative materials to dental amalgam are not that new, but the dental professionals and their supporting staff will already be familiar with these materials, even if not widely used in their clinics. New are the features and benefits that the most recently developed materials offer. The sym- posium will place much emphasis on this aspect, especially regarding the clinical techniques. Therefore, the adoption of new techniques, un- derstanding the strengths and the limitations of various materials, and then the training of the wider dental team will be the main focus.

A benefit for every member of the dental team will be seen in patient satisfaction, as the aesthetics and longevity are so much greater now. The symposium will address restor- ing a single tooth as well as the en- tire dentition, and re-establishing a healthy oral environment.

What are the major learning out- comes of the whole-day symposium?

This symposium will enable par- ticipants to have a better understanding of the techniques behind the need to phase down the use of dental amalgam and to gain a detailed and complete update on the latest advances in dental materials and the optimal techniques for clinical use.

By the end of the symposium, par- ticipants will have gained practi- cal knowledge on how to deliver effective, evidence-based and patient-centred preventive and restorative solutions in the everyday practice of dentistry.

We have assembled a panel of inter- national experts, dentists, scientists and clinicians to share their knowledge and clinical experiences, which will enable a greater understanding of the opportunities for oral health and dental care in the shift towards the post-amalgam era of dentistry.

By attending the symposium, will dentists be able to gain sufficient knowledge and skills to initiate the changes required in their practices?

The secret to success in responding to this call to action is to focus on the changes required in their practices? 50% of health care providers are not participating.

The answer lies in daily care and reg- ular visits to the dentist or hygienist. Follow the dentist’s recommendations and brush twice a day, and use, at least once a year, an additional product of choice to clean where a toothbrush cannot reach. Fluoride strengtheners can be used and reduces the risk of decay, so it is important that the toothpaste contains the recommended amount of fluoride. Dentists also recommend a soft toothbrush that has good reach in order to clean between and difficult areas in the mouth properly. Diet and lifestyle also eat teeth, so stop smoking and minimizing the intake of alcohol and other acidic sugary drinks and foods are important steps to make. By daily removing plaque and around on teeth, as well as along the gum line, teeth and gums have the best chance of keep- ing healthy.

There are several factors that affect our brushing results. How we brush and how long we brush are two of the most central Dentists recommend brushing for two minutes to get the best results, but few people actually do this. 50% of health care recommendations are not practiced.

People also have a bad conscience when it comes to brushing their teeth. They know they should brush better and put more effort to keep their teeth healthy for life. Another study shows that men are notably more likely not to be in widespread use to oral hygiene than women.

75% of women brush their teeth the recommended twice a day versus 60% of men. Women are also flowing more frequently than men. Here are a few suggestions for taking care of the teeth:

- Use a toothbrush that feels comfortable to hold. These are different shapes and sizes. In a study it was found that the design of the toothbrushes affected the way people brushed and that people had a preference for how they brushed. If you hold the toothbrush in a light grip (not clasp fingers around the toothbrush) it will be softer and turn the handle a few times when you brush, you most likely prefer a slimmer, precision style handle. On the other
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*Versus a manual toothbrush
2 Data on file, 2010
client care to make sure that there is an adequate interocclusal space for the implant restoration. It is, therefore, critical to establish optimal intra- and inter-arch spaces, even more so if the planned treatment is to be carried out cartoonographically (Fig. 12) respectively, for proper implant placement and long-term predictable restoration.

It is best to place an implant during the finishing stage of orthodontic treatment which allows finer manipulation of the various spaces and sufficient time for osseointegration by the time the appliance is removed. However, if the implant placement procedure is planned after the removal of orthodontic appliances, the site should be maintained during the retention phase.

Consider biologic augmentation
One of the prerequisites for placing an implant and subsequent good soft tissue integration for more esthetic tooth restoration is to have an excellent alveolar ridge. It is a common clinical observation that patients who have esthetically typical exhibit compromised bone levels due to alveolar bone atrophy. Research studies have shown that the majority of natural anterior teeth are extractable with a crown-root ratio of 1:3 over 3% of over 5 years (16).

Orthodontic implant site development is a process involving the root movement of teeth that creates adequate alveolar bone width through vertical and horizontal expansion of bone structures prior to the implant placement. This can be accomplished in any phase of orthodontic treatment. In addition to the compromised alveolar ridge width, vertical bone deft is even more critical. It can be influenced by controlled vertical root movement of teeth to create adequate bone and tissue life activity before implant placement (Fig. 13-15). The goal is to create an ideal implant site by establishing adequate alveolar ridge width and height for a predictable and more esthetic implant restoration.

6) Optimize pre-restorative orthodontics
Often management of adult patients necessitates modification from usual orthodontic procedures, thus alveomuscular dissections displayed in common in their dentition by the patient. Interdisciplinary treatment required for the holistic rehabilitation of these integrated treatment plans include involvement with periodontal, endodontic, restorative, orthodontic, surgical, etc. Interdisciplinary care in such cases may play a vital role in repositioning of the tooth and in conjunction with restorative procedures. Such movements may either elaborate alteration of occlusal relationships or undergo control of the orthodontic occlusal forces may be modified to work in conjunction with the prosthodontist to achieve the prosthodontist’s objectives. This treatment is a reliable foundation for predictable distribution of occlusal forces from the tooth. Long-term functionality and esthetic stability in the rehabilitation of such patients undergoing during the finishing stage of orthodontic treatment can be completed with a high degree of success. The movement of the alveolar ridge in conjunction with the prosthodontist in a dentist’s office can be achieved by such a coordinated effort where the technical advantage of an appropriate inter-arch tooth movement. Proficient synchronization between orthodontic and restorative treatments is also a fundamental aspect for interdisciplinary treatment success.

7) Use customized orthodontic splints to maximize aesthetics
Contrary to traditional orthodontics that is focused solely on improving the alignment and the patient’s esthetics, contemporary orthodontics incorporates patient-specific goals and modalities which aim at achieving good occlusal outcomes in conjunction with the alignment of the teeth. Both gingival apparatus and gingival apparatus include pristine emphasis on its aesthetic outcome.

In a cosmetically concerned society, aesthetics forms an integral part of patient expectations. This directs orthodontic professionals to systematically explore various factors that promote optimal aesthetics. Adhering to principles of balance and functional efficiency, treatment planning should diligently incorporate distinctly determined goals and patient specific objectives. Various procedures from metal wire bonding to implant placement can be amalgamated with orthodontic treatment to refine aesthetic potential.

White and pink harmony
Well-aligned anterior teeth with uniformity of the tooth and the incisal edge appear to elongate the face. Vertical discrepancies such as loss of papilla formation and wide spacing between the incisal edges of the upper central incisor may cause a disfiguring effect. Adequate inter-incisal relationship is critical at every stage. Establishment of appropriate inter-incisal relationship ensures predictability and enhances treatment results.

In the initial approach, this may seem to be out of reach of most practitioners, however, when implemented regularly, this collaborative approach results in very efficient protocols and execution that patients appreciate and benefit from.

The author has, since the initial days of orthodontic practice, enjoyed the professional collaboration from other disciplines of dentistry in a fruitful career and continues to maintain professional enthusiasm with them.

This unique interdisciplinary management approach to manage complex clinical problems will certainly inspire readers to engage in their own interdisciplinary collaboration and continue the practice of dentistry for the benefit of the patient and community at large.

Acknowledgements
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Dental arch crowding presents nar-
treatment protocol for interdiscipli-
(Fig.3). Figure 4 illustrates 11-point
procedure performed by one of the
in such a way that each treatment
it is critical to organize the sequence
ations in morphological configura-
sequence varies significantly from
events; however, the treatment se-
almost always follows the same
regarded as final and definitive treat-
plan that enhances the
sible solutions to individual prob-
problems makes sure that all areas
possible to address the patient's
multiple disciplines of dentistry, it
its texture and its margins. Biologic
crown contours, restorative material,
interplay of gingival tissues with
flOLLOW THE MECHANICS FOR THE RESTORATION, PROVISIONAL TOOTH
RECOGNIZE ORTHODONTICS TO BE MUCH
PERIODONTAL RATIONAL FOR ORTHODON-
OTHER THAN THE AESTHETIC REASONS,
(Fig. 6).
DECROWDING OF THE DENTITION BY
PERIODONTISTS AND PROSTHODON-
INTERPROXIMAL SPACE CAN BE A CHALLENGE FOR
COMPROMISED BONE AS A RESULT OF SEP-
INTERRADICULAR DISTANCE (Fig. 5). This
INTERPROXIMAL BONE DUE TO REDUCED
MAY RESULT IN A CONSTRUCTION OF THE ALVEOLAR
BONE (7).

5) IMPROVE IMPLANT SITE WITH ORTHODONTICS
There are several orthodontic proce-
dures employed to improve implant site
for predictable restorations.
Determine the timing of implant placement
Facial growth is the determinant of
the age for implant placement in
adolescent patients. The osseous-
integrated implant’s lack of eruptive
potential makes it to behave like an
ankylosed tooth, often causing a dis-
crepancy in the occlusal plane due to
continuous eruption of the adjacent
tooth. Therefore, early implant place-
ment poses a greater risk of com-
promised esthetics in the long term.
Several studies on young adults who
were treated with implant support-
ed restorations to replace missing
orthodontic tooth alignment widens
the interproximal bone, which can
result in a constriction of the
implant–supported restorations, with a
vertical step of 0.15–0.16 mm and 0.02–
0.03 mm in adolescents and adults
respectively (15).

Therefore, lack of proper occlusion
and unesthetic situations in the an-
terior region may be common obser-
vations due to jaw growth in patients
with implant – supported restora-
tions even if the implants are suc-
cessfully integrated. The best meth-
ods to determine the eruption space
of the adjacent teeth is to perform sequen-
tial lateral orofacial radiographs
taken at an interval of six months (Fig. 8). Generally, the implant should
be placed after completion of facial
growth (around 17 years in females
and 21 years in males.)

Establish optimal implant space
Adequate space gained for the resto-
ration of the normal width of miss-
ing lateral incisor based on esthetics
and occlusion will determine the
appropriate size of the implant to be
placed. When selecting the size of the
implant, it is important to have 15 to
20 mm space between the coro-
nal illustration of the implant and the
adjacent teeth for the development
and maintenance of the papillae (14).
After the eruptive space is estab-
lished, it is important to radiographically
evaluate the interradicular space.
The roots of the adjacent teeth
should be parallel to slightly diver-
gent with adequate space between the
roots for implant placement (Fig.9 A and B).

The final implant restoration is
significantly influenced by the po-
sition and angulation of implant
placement. For proper placement
of an implant, the minimum space
between the adjacent tooth roots is
usually 3 mm, providing enough
room for small diameter implant
placement, leaving about 0.75 mm of
space for the bone between the im-
plant and the adjacent roots (16).

Position adjacent teeth to fa-
cilitate restorative treatment
It is a common observation that
when an orthodontist is opening up
the space for missing lateral incisor,
as the force is applied on the crowns
of the central and canine teeth, the
roots get tipped into the lateral in-
cisor region. This leads to an adequate
implant crown space but the space
between the adjacent roots gets reduced,
making it impossible for the surgeon
to place an implant (Fig.10).

It is equally important to take suffi-

3) Recognize ‘minor dental arch crowding’ as a ‘major’ periodontal concern
Dental arch crowding presents nar-
row interproximal spaces, which
may result in a construction of the
interproximal bone due to reduced
interradicular distance (Fig. 5). This
compromised bone as a result of
separation can be a challenge for
both periodontists and prosthodent-
ists. Decrowding of the dentition by
orthodontic tooth alignment widens
the interproximal bone, which can
significantly enhance local host re-
sistance and improve the prognosis
of compromised or infected teeth
(Fig.6).

Other than the aesthetic reasons,
the resolution of interproximal tu-
sue construction and faulty contacts
and pointers are the predominant
periodontal reason to eliminate
dental arch crowding (6).

This integrated orthodontic and
periodontal approach as an alveolar
developmental exercise, should
be considered as the most compelling
periodontal rationale for orthodon-
tic therapy. Hence, it is important
to recognize orthodontics to be
much more than just an esthetic
domain.

4) Use orthodontic treatment in correction of ‘Biologic width’ violations
Restorative therapies essentially re-
quire a healthy and stable perioden-
tum for long-term success. A den-
tal unit exhibits a constant interplay of
gingival tissues with crown contour,
restorative material, its texture and its margins. Biologic width is defined as the dimension of
space that the healthy gingival tu-
sue occupies coronal to the alveolar
bone (7).

It is further elaborated as a total
of supracrestal fibers, junctional epi-
thelium and sulcus (8). This concept
of existence of a specific width was
first published by Gustav Villiger in
1961 through cadaveric experiments
which revealed a mean measurement
of a total of epithelial attachment
plus connective tissue attachment to
be 2.04 mm (Fig. 7) (9).

D. Walter Cohen was credited to first
coin the term ‘biologic width’.
The significance of this width lies in
the fact that it prevents penetration
of microbes into periodontium. In 1977,
higher recommended a distance of
3 mm minimum to be kept between
restorative margins and alveolar crest
for adequate gingival health main-
tenance (10). This 3 mm consists of
1 mm of supracrestal connective tis-
sue, 1 mm of junctional epithelium
and 1 mm of sulcular depth. Violation
of this natural seal disrupts dentog-
adal apparatus making it suscepti-
able to the ingress of oral macromolecules
and consequently causing gingival
disturbances such as inflammation,
progression and alveolar bone loss (11
and 12).

Thus it is imperative to minimize ir-
ritation to this zone. This measure of
3 mm allows for optimization of the
mean value of 2.04 mm and provides
clinical comfort even when the margins
are placed 0.1 mm within the sulcus.

Multiple disciplines of dentistry, it
is important to address the patient’s
main concern, whether the patient
is seeking treatment for functional
or aesthetic improvement or both.
Finding a solution to each individual
problem leads to the formulation of
a definitive treatment plan (7). A
well-structured and organized list of
problems makes sure that all areas
have been evaluated in the diagno-

tic phase, and also serves as a valu-
able reference tool during the course
of treatment. All specialists involved
in formulating the treatment plan
for the patients should provide possi-
sible solutions to individual prob-

blems based on their own areas of
expertise, and no problem should be

treated as less important. Provisional

treatment plans are then compared
with respect to their overall effects,
and the plan that enhances the

treatment and provides maximum
benefit to the patient, considering
the patient’s chief complaint, is then
regarded as final and definitive treat-

The planning process almost always follows the same

events, however, the treatment se-
quence varies significantly from

patient to patient due to large var-
tions in morphological configura-
tions and treatment priority. Here,
it is critical to organize the sequence
of various treatment procedures
in such a way that each treatment
procedure performed by one of the
specialists from the interdisciplinary
team facilitates the next in order
(Fig.5). Figure 4 illustrates 10-step

treatment protocol for interdiscipli-
Seven Keys to Optimize Interdisciplinary Orthodontics

By Dr. Asish Karad, India

Orthodontics has always been the discipline that sets the stage for dento-facial esthetics. With the increasing demand for appeal and appearance, orthodontic treatment of adults has been the fastest growing area in the field of orthodontics. In addition to aesthetics, increased awareness of malocclusion, functional benefits of orthodontic treatment, advances in materials, aesthetically pleasing and biomechanically sound appliances, and interdisciplinary treatment philosophy have all played an important role in making orthodontic treatment popular in adult population.

However, in recent years, increased focus on stable and rapid intervention has created compromises in treatment outcomes. Lack of fundamental diagnosis and systematic sequenced treatment plans are being circumvented by technology and reliance on laboratory assistance. Diagnostic process, essence of treatment planning and biologic basis seem to be diminishing in importance. Often orthodontic treatment can be of significant assistance in periodontally and restoratively compromised patients. The primary goal of orthodontic therapy in such clinical situations is to reduce or prevent excessive periodontal destruction by establishing a physiologic alveolar crestal topography and to establish better occlusal relationships for predictable long-term prostheses by customized orthodontic tooth movements. This article explains the philosophy and treatment approach that brings together a diverse group of professionals into a cohesive interdisciplinary team to provide treatment strategies for adult patient. It explains existing and new orthodontic, periodontic, surgical and restorative techniques that provide the best possible solution to complex dento-facial problems.

In clinical practice, orthodontic treatment of adults may be somewhat different from that of most adolescents (1). Compared with adolescents, adults are more likely to have dentitions that have undergone some degree of maturation over a period of time and they may have other problems like missing teeth, restored teeth, periodontally compromised teeth, endodontically involved teeth etc., which demand some alterations in treatment strategy.

In patients with periodontally compromised dentition with significant bone and attachment loss, conventional approach to orthodontic tooth movement does not produce the desired results, as this may lead to increased tipping of teeth (2). Therefore, in such clinical situations, entirely different biomechanical strategies are required for efficient and desired tooth movement (3). Absence of growth potential in adults as opposed to growing patients is another factor that influences the orthodontic treatment strategy to resolve adult malocclusions.

1) Establish organized approach to diagnostic and treatment planning process

To formulate proper treatment plan, clarity in the final treatment and to prevent any complications and confusion, establishing accurate diagnosis is the most important step. The goal of the diagnostic process in an interdisciplinary treatment is to produce a comprehensive but concise list of patient’s problems and to incorporate various treatment options into a plan that gives maximum benefit to the patient (4). The orthodontist should:

i) recognize the various elements of malocclusion contributing to the development of a problem. This can be achieved by developing a comprehensive but concise database of useful information derived from patient’s history, clinical examination and analysis of diagnostic records (study models, full-mouth radiographs and facial and intraoral photographs) (Fig 1)
ii) have comprehensive knowledge of different disciplines of dentistry to generate the pertinent data other than orthodontics
iii) and finally, define the nature of the problems to design a treatment strategy based on the specific needs and desires of the patient.

This database is then well organized in such a way that it gives a systematic description of the patient’s problems. The team involved can easily refer to this during the treatment planning process. While arranging the database of a complex dento-facial problem in a systematic manner, if the problem list becomes very extensive, it is advisable to classify the problem list into various areas like orthodontic problem list, restorative problem list and periodontal problem list (Fig 2).

2) Define treatment goals

In the management of a patient with multiple dental problems, it is extremely important for a clinician to define finishing goals at the beginning of treatment and to continue to focus on them till the finishing stage, in order to achieve them with a combination of appropriate orthodontic treatment mechanics, restorations and periodontal procedures. The treatment goals are mainly focused on establishing optimal oral health, aesthetics, good stomatognathic function and long-term stability.

The clinician should be able to visualize the end result before implementing the definitive treatment plan. This requires clearly defined treatment goals that set the direction to the proposed treatment plan. Ideally, interdisciplinary treatment plan should be the one that addresses maximum number of highest priority problems including the chief complaint and optimizes the treatment results with maximum benefit to the patient with less risk involved. Since complex dento-facial abnormalities frequently present multifaceted problem list involving...
nanometer (nm). Waves rise and fall around the zero axis many times a second, referred to as oscillations, and the number of oscillations per second is the frequency, measured in hertz (Hz). In the treatment of this case (Er:YSGG) functions at a wavelength of 2'970 nm, and at frequency of 5'300 Hz. Hertz also states the number of laser pulses per second of emitted energy. To carry out this process effectively, a laser beam is focused on an area. This means they are identical in size and shape. The amplitude as well as the frequency of all the waves of photons are identical. The production of focused electromagnetic (EM) energy requires a laser. Laser light is produced from a variety of sources, Whalet a 20Watt laser may light a room, a 24Watt laser may perform a surgical excision, whilst all the photons in the laser light are focused and “work together.” A laser consists of three structural components, namely: the active medium, the pumping mechanism, and the optical resonator. The resonator (Fig. 7a, b). In-depth electromagnetic physics may not be necessary knowledge for the clinician, but it may be helpful to know that lasers derive their energy from matter outside these components. The active medium may consist of a container of gas (in this case CO2 laser), a solid-state semiconductor (diode laser, or as a liquid. The laser medium is surrounded by the pumping mechanism which is an excitation source (source of energy). The electric, light, or heat stimulation (stimulus), may create high temperature in the laser medium and make the laser active. The excitation source will excite electrons, and as they return to their resting state they emit energy in the form of photons. Converting the laser energy into a laser beam is called optical resonance (tightly mirrors) that reflect waves back and forth, thereby collimating and amplifying the beam. As with normal light, the clinician may notice that laser light looks grey but deep penetrating. It can correlate the type of laser to its respective wavelength (Fig. 1). All commercially available dental lasers emit light and wavelengths ranging 500–10'000 nm. As such, a dental laser can be used for a large number of procedures involving the visible or invisible and non-ionizing range of the EM spectrum. An erbium laser for example may then have an additional light source in the device for a different purpose. This point will be discussed further. Furthermore, the point of caution is that there is no laser in the laser operating room to wear laser protective eyewear. The laser light is activated there may be four possible interactions between the laser light and the target area, depending on the tissues’ optical properties, depending on the surface, with no effect. This may cause erosion or damage to the tissue, absorbing tissues, and may cause injury to a nearby person’s unprotected eye. If the target tissue can be transmitted, again present on the target tissue, but possible unintended or detrimental effect to neighbouring tissue. Absorption may be the most desirable property. The amount of absorption further depends on the target’s water content and pigmentation. The fourth interaction is scattering, whereby the photon’s momentum is scattered and affected. The photons penetrating the tissue change directions and leads to absorption in a greater area. As laser energy is absorbed by the tissue the interaction is photothermal (laser energy transformed into thermal energy). The effect then is either excitation, ablation, vaporization, or photomechanical effect. When the beam’s spot size (diameter) is small and focused, it is suited for an incision/excision process. A wider beam size will interact with the tissue more superficially producing surface ablation. And when the beam is out of focus or less focused light can be coupled. In the treatment of this gingival hyperpigmentation case, a larger beam diameter for superficial tissue treatments may be employed to target the basal and suprabasal epithelial layers rich in melanocytes. The ablative action of the laser over a wider area allowed for removal of the superficial gingival layers rather than the deeper level. Oral mucosa is high in water content and the laser effect primarily involves the thermal change in the tissue. When water temperature is raised to 100°C vaporization of the water within the mucosa occurs, called ablation. Incision and excision of oral soft tissues here at this temperature: Between 60°C and 100°C tissues will denature without vaporization of underlying tissue, ideal for the removal of diseased degranulation tissue, for homogenized and coagulation. Charring of the tissues will however occur at temperatures around 100°C. When removing hyperpigmented tissues, lower temperatures are needed, and much less energy is needed since chemokines attract lasers. Conversely, higher energy would be needed to excise fibrotic tissue. Lasers used for the cosmetic correction of physiological hyperpigmentation have been extensively described in the literature, and suggested as superior to other treatments due to the fast healing, reduced pain and discomfort, clean and dry operating field, and stable results. The formation of procoagulants on the laser treated wound surface reduces postoperative pain. Laser light may also “seal” surgical wounds and wounds with less chemical degradation. The clinician to visualize the application point. The choice of laser is often based on the optical properties, depending on the dose, energy delivered, and the number of oscillations per second, referred to as oscillations, or hemostatic/coagulation. Depigmentation by laser treatment. Depigmentation by laser issued on the working area. Depigmentation by laser licensed (16.1%) in terms of percent age repigmentation (Table 2).

Conclusions

BKH laser therapy for the epithelialization can successfully alter blue – black/dark brown gingiva to uniform pink with numerous benefits for both clinician and patient. The results can be dramatic from a therapeutic standpoint, remaining stable over the long-term, contributing greatly to an aesthetically pleasing smile.

References

Aesthetic laser therapy correction of pigmentation of gingival hyperpigmentation

By Howard Gluckman, Jonathan Du Toit, South Africa

A beautiful smile is dependent on many factors. One of those factors is the gingival framework. Symmetry, proportion, as well as color and appearance of the gingiva are critical to an aesthetically pleasing smile. Periodontal gingival hyperpigmentation does not present as clinical pathology requiring intervention, nor necessarily is it of aesthetic concern to the patient. Although invasive intervention by means of cryosurgery, electrosurgery, laser therapy or other may produce dramatic change in the appearance of the patient’s smile with a sustainable, long-term aesthetic outcome.

Hereafter a case is presented demonstrating laser therapy removal of gingival hyperpigmentation with stable, pink gingival aesthetics at the 2-year follow-up.

Case report

A 34-year-old female patient of Indian descent presented by referral to a specialist in periodontics and oral medicine at her request for “pink gums”. The patient was a non-smoker and the medical history was non-contributory. Examination of the face denoted multiple, poorly defined, hyperpigmented macules of the lips, mild in severity and greater in number on the lower lip. The patient’s high smile line was noted with excessive gingival display, the entirety of which involved the mandible and maxilla, with limited clinical crowns extending from the neighbouring solitary units. In both the mandible and the maxilla the hyperpigmentation appeared mostly as singular, point-like, extending, macular lesions with well demarcated borders limited coronal to the mucogingival junctions. A diagnosis of physiologic gingival hypopigmentation was made and intervention for aesthetic correction was indicated (Fig. 3). Digital smile design (DSD) and smile analysis of the patient’s smile demonstrated the degree of pigmentation and extension of the affected areas.

Hereafter a case is presented demonstrating laser therapy removal of gingival hyperpigmentation with stable, pink gingival aesthetics at the 2-year follow-up.

Aesthetic laser therapy correction was indicated (the patient initially sought treatment of the mandible only). Digital smile design (DSD) and smile analysis of the patient’s smile demonstrated the degree of pigmentation and extension of the affected areas as well as crown lengthening by laser gingivoplasty was opted for. The working field was retracted and isolated (OptiGrip, IvoCare Vivadent), and local anesthesia achieved by slow infiltration of a 4 % articaine with adrenaline at 0.200000/local anesthetic solution (Uistenm™, forte, 3 mL ESPE). The area, mucosa and teeth surfaces, were cleaned with sterile gauze soaked in chlorhexidine gluconate aqueous solution (never used an alcohol solution with medical lasers). An Er:Cr:YSGG laser (Waterlase Plus 2.0, Biolase) was used for all the periodontal soft tissue surgeries.

The crown lengthening by gingivectomy was first carried out as per the DSD guide, with a fine tip (MG66), applied more parallel to the tooth, with the unit’s power settings at 75 Hz, and with air and water settings 30 and 40 respectively thereafter. A broader, chisel tip (MC2) was interchanged for the depigmentation/gross de-epithelialization, with power settings increased to 75 Hz. The tip size and power allowed for faster removal of tissue with water and air settings on for cooling.

Broad, gradual strokes de-epithelialized the pigmented areas up to 1 – 2 mm beyond the pigmented borders. To conclude the procedure, the unit was set to “laser handpiece” mode, with lowered power settings at 15 W at 75 Hz and water and air off for hemostasis, leaving a layer of coagulum that would aid in the tissue healing. After the entire affected area was de-epithelialized (Fig. 3), post-operative instructions were given (no tooth brushing near the treated area for 1 week, rinse with chlorhexidine mouthwash 3 times per day (Adecucal G, Novo Pharmaceuticals), soft diet avoiding spicy/irritating foods). The patient was recalled at 10 days, reporting having had no pain or discomfort, and demonstrating complete healing of the entire treated area (Fig. 4). There were no areas of hyperpigmentation noted (Fig. 5). The patient was rescued as zero for both pigmentation indices. Following dental bleaching the patient presented at the 2-year recall with no notable signs of regimens.

The patient remained a score of zero on both indices. The gingival contour and colour remained stable with aesthetic results pleasing to the patient (Fig. 6).

Discussion

Pigmentation of the gingiva may pose an aesthetic concern to the patient seeking cosmetic correction thereof. Laser depigmentation is an evidence-supported, beneficial treatment modality. “Laser” is an acronym for light amplification by stimulated emission of radiation (Possibly the first report of laser radiation on oral soft tissues was as early as 1966). The first commercial laser for use in dentistry, the diode 532 Nd:YAG laser, was introduced in 1985. At present, a range of laser wavelengths are used in dentistry for a plethora of applications (Table 1). The fundamental mode of action of lasers is that waves consisting of photons (basic unit of radiant energy, light) travel at the speed of light and these waves can be defined by their wavelength and amplitude. Amplitude is the vertical height of the wave, and in lasers this corresponds to “brightness”, its potential energy to do work. Wave-length is the distance between two corresponding points on the wave – the unit typically in laser dentistry is...
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Esthetic replacement of two restorations on mandibular second molar

By Dr. Giuseppe Chiodera, Italy

About the Case
Male patient, 28 years old. The patient came to the office for a routine check-up. The mandibular second molar showed two insufficient fillings (occlusal and buccal) with secondary caries, open margins and occlusal wear. Both restorations needed to be replaced. The patient opted for an esthetic, multi-layer composite restoration for a natural looking outcome.

Challenge
Poor accessibility and viability of this restoration lead to a variety of clinical challenges such as composite placement and proper light curing.

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Aljohar (KSA) and will benefit pediatric dentists, dental students, general dental practitioners and other dental specialties. A pre-conference workshop on Primary Zirconia Crowns sponsored by NuSmile crowns and Pre-veneered Stainless Steel Crowns supported by 3M will also be held on 1st of March, 2017.

It gives us great pleasure to invite you all to the joint first EPDC and the regional IAPD conference to be held in Dubai, the beautiful city in the United Arab Emirates. Please note that all registered participants will be entitled to free 2-year IAPD membership. Details of the congress can be found at www.epdc.ae.

The Centre for Advanced Professional Practices (CAPPI) is the official event organizer.

Bright Smiles into the Future
An International Association of Pediatric Dentistry (IAPD) Regional Meeting

Hands on workshops on 1st March, 2017
“Pediatric Zirconia Crowns and Primary Stainless Steel Crowns”

* SPEAKERS *

* Prof. Tim Wright (USA)  * Dr. Bill Waggoner (USA)  * Prof. Jorge Luis Castillo (Peru)
* Prof. Richard Welbury (UK)  * Prof. Zafer Cehreli (Turkey)  * Dr. Aziza Al Jobar (Saudi Arabia)
* Dr. Yousef Alaswadhi (Kuwait)  * Prof. Suhad Al Jundi (Jordan)  * Dr. Catherine Hong (Singapore)
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The 1st Emirates Paediatric Dentistry Club Conference

By EPDC

DUBAI, UAE: The Emirate Paediatric Dentistry Club (EPDC) has the great honor of hosting the regional Congress of the International Association of Paediatric Dentistry (IAPD) March 1 - 3, 2017. We are committed to make this joint EPDC first dental conference and the prestigious IAPD conference in Dubai, United Arab emirates a very successful and memorable conference. This will be the first meet of IAPD in the middle-east region.

The theme of IAPD Dubai 2017 is Bright Smiles into the Future and this conference will present a very comprehensive scientific program highlighting the latest evidence-based research and clinical topics in the field of paediatric dentistry. These up-to-date topics will be delivered by high profile and renowned international speakers including: Prof Tim Wright (USA), Dr Bill Wagoner (USA), Prof Jorge Luis Castillo (Peru), Prof Richard Wellbury (UK), Prof Zafer Cehreli (Turkey), Dr Aziza...