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 percent compound annual growth rate from 2016 to 2021. The report analyses 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.
3Shape CAD/CAM in a major Dental Lab

It was the technicians’ choice

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.

The Challenge

Glidewell’s proclaimed ambition is to be a pioneer in the Digital Dentistry Revolution, and, to achieve this, they knew 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 “at the bench” slowly but surely gravitated aside to make room for 3Shape.

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.

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 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 Proco series scanner installations spread throughout the full areas of Glidewell’s many departments. In step with the ever-increasing integration of 3Shape into their workfl, 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.

The Results

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 a highly successful product that is enjoying explosive market growth. BruxZir® Full Zirconia restorations and Inclusive® Implant Abutment applications. No other CAD/CAM solution contained the powerful design capabilities necessary to morph the explicit full contour required. Designs made with 3Shape could be milled directly without flaws—thus opening windows to new productivity and profitability with Zirconia material.

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

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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 substantially 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 evaluated first. In this case, an anterior 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 prosthesis, and the protraction and lateral movements positions have to be recorded in order to make any necessary adjustments in the articulator. An additional silicone, for example, Virtual® CAD models 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 lateral movement positions. 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 CADNotes 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 transfer record, 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 Speer’s curve were adjusted (Fig. 4). For the purpose of checking the laboratory work intraorally, a mock-up of the wax-up was made (Fig. 10). 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 lateral 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 know more about the application recommendations of the manufacturer. Excellent planning and a carefully crafted mock-up will reduce the preparations needed to create the fabrication of the final restoration. With the help of the mock-up, for example, the teeth can be properly prepared for veneers or even crowns. The use of optical appliances such as dental loupes and microscopes also makes work easier and more accurate.

In the present case, the teeth were first cleaned very thoroughly. The necessary extraoral access was performed and one tooth was endodontically treated. Then the teeth were prepared and evaluated for the final restorative 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 digital data forms the basis for the computer-aided design of the provisional. The CAD/3MFabricate® provisional made of tooth-coloured composite (Tela® CAD) also served as a test object or blueprint 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 is 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-mouthing” 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 dentist 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-mouthing”), 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, the castings were placed in the articulator after the “cross-mouthing” process. Since the final situation had been successively attained by means of the provisionals, the frameworks could be fabricated relatively easily.

As a result of using the CAD/CAM approach, the final restorations could be visualized, modified and/or duplicated with the assurance that all the design guidelines would be observed. The Wieland Precision Technology (WPT, Naturns, Italy) milling center was responsible for fabricating the frameworks for the metal-ceramic restorations in the posterior 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 frameworks for the lower teeth were also made with assistance of the digital technology. They were subsequently pressed with lithium disilicate glass-ceramic (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 IPS Allceram® offers a major advantage in that it can be optimally combined with IPS e.max Ceram. As a result, the veneers on the metal frameworks could be optimally adjusted in the lower 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 attached to the frame using lithium disilicate glass-ceramic (IPS e.max®). The author received excellent adhesion properties and clinically beneficial characteristics such as easy removal of excess and long-term shade stability. The system offers an additional advantage in that the shades of the dual-curing (DC) and the light-curing (LC) luting composite 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, the modification agent for chemically bonding (adhesive cementation). After gentle sandblasting, the zirconium oxide and metal-ceramic restorations were prepared for placement by applying Monobond® Plus and OptraStrip® was applied in order to prevent the formation of an inclusion layer. The final restoration completely satisfied all the parties involved. The situation which was established during the treatment phase was exactly transferred to the final restoration (Figs 12a and b).

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 state-of-the-art materials provided the basis for this highly satisfactory outcome.
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 aesthetic 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 aesthetic 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.

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

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

Fig. 3: Capturing a protrusive bite record with Virtual CAD

Fig. 4: IPS e.max® press multi

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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 8 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 (Yin Xu Kong, 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 25 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 a recently published study, researchers at the University of Calgary therefore compared changes in caries experience in schoolchildren in Calgary with those in Edmonton, which has not fluoridated its community water since 1965. In examining data sets from the school years of 2004/2005 and 2013/2014, the researchers observed an overall increase in primary tooth decay in both cities, but the absolute magnitude of the increase was greater in Calgary. In their analysis, 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 indices,” was published online on Feb. 17 in Community Dentistry and Oral Epidemiology.
poral bone and 1,250 and 1,560 HFU at the basal bone. The highest bone density in the maxilla was observed in the canine and premolar areas, and 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 pterygoid plates. There are certain common features of replacement of missing tooth or teeth (rarely 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 the pterygoid plates is located at the base of the maxillary sinuses (antra of Highmore). Embryologically, the hard palate and the alveolar process of the maxilla form the barrier between the 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 maxillary artery, the ascending 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 subantral augmentation can cause haemorrhage that may require coagulation.

Materials and method
From a data base of 1,154 patients who had received 4,400 dental implants from 2001 to August 12th 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.

All presented reports appear to agree that the CSR of dental implants is generally high and that implant location plays an important role in implant success. CSR of implants in the mandible seems to be slightly higher than in the maxilla—a difference of about 4 per cent. The success rate of implants in the anterior regions seems to be higher than in the posterior regions of the jaws, mostly due to the quality of bone:

- Posterior maxilla and posterior maxilla, 96.7 per cent
- Anterior maxilla and posterior maxilla, and about 4 per cent difference between anterior maxilla and anterior bone augmentation with a sinus lift procedure. In his report, the location of implants did not appear to have any effect on implant survival, implant fracture rates, screw loosening, or screw fracture. Parent et al. analysed 392 consecutively placed Branemark implants that were inserted in 152 partially edentulous jaws in a retrospective study. The CSR of dental implants 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 maxillary artery, the ascending 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 subantral augmentation can cause haemorrhage that may require coagulation.

Materials and method
From a data base of 1,154 patients who had received 4,400 dental implants from 2001 to August 18th 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.
The causes of early implant failures during the osseointegration process include poor quality and quantity of bone and soft tissue, the patient’s medical condition,40,41 and the patient habits (flossing, heavy long-term smoking, poor oral hygiene, other habits) should be made due to the following: a radiographic analysis and technique;47 inadequate prosthetic analysis and technique;3,7,8,11–13 suboptimal implant design and surface characteristics;6,9 implant position or location and unknown factors.

This attempt attempts to further investigate implant location as one of many factors in early stage of diagnosis that improves success rate in implant dentistry procedure. Predicting factors to implant complications in different jaw regions are discussed.

CBCT Zones D1 to D5 are formulated to better analyse implant dentistry procedure preparation 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 jaws. This article identifies the Hounsfield units (HU) of different alveolar bone 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.

Zones D1–D5 are related to the bone quality classification of Lekholm & Zarb.42 D1 known as an interforamina area in which a careful diagnosis should be made during preparation of the surgical procedure, bone density is very high and the osteotomy drills could hurt the bone, irrigation in the area could facilitate healing response, dullness of the drills during osteotomy should be counted for, tap drills are required, arterial supply in the masticatory muscle approach is not considered, if sinus lift is not required due to their common bone quality. These implants once restored are the longest support in front of maxillary sinuses. Park, Hyo-Sang et al reported that the cortical bone density of the maxilla ranged approximately between 870 and 940 HU at the alveolar bone except for the maxillary tuberosity (443 HU) at the buccal and (413 HU) at the palatal alveolar bone, and between 835 and 1,131 HU at the basal cortical bone except for tuberosity (541 HU).43 The cortical bone density of the mandible ranged between 800 and 1,380 HU at the alveolar ridge is a tooth loss. A tooth extraction or periodontal disease also leads to bone resorption. The progression of healing after a tooth extraction goes through certain resorptive stages of fibrin clot organisation (first four weeks), immature (woven) bone formation (four to eight weeks), mature (cortical bone development (eight to twelve weeks), and bone stabilisation stage (twelve to 18 weeks or about four months).44–46 Post extraction bone resorption is always three-dimensional, with the greatest loss of bone in the buccal-palatal or horizontal direction (the width) and occurring mainly on the buccal side of the alveolar ridge.47–49 Schropp et al reported that two thirds of the horizontal bone loss occurs within three months and one-third takes place within the remaining nine months of the first year post extraction.

29 A mean reduction of the width of the ridge has been reported to be 5 to 7 mm within a six month period or 50 per cent during the twelve months following tooth extraction.49 The loss of bone height is smaller; reported to be about 2 mm within the first six months post extraction. If a bone grafting and implant treatment approach is not considered soon after trauma, the atrophy of the alveolar process of the anterior maxilla continues with time. Resorption of the buccal plate compromises the anatomy of the edentulous alveolar ridge and makes it difficult to place an implant in the prosthetically favourable position.42 Even when a dental implant is placed, its strength is diminished without the presence of a buccal cortical plate. Using a two-dimensional finitelement model for stress analysis, Cellrand and associates demonstrated low stresses and high strains surrounding the implant for the all-concealed (lack of cortical plate) bone model. When a layer of thick cortical bone was added to the model, it had a significant impact and improved stresses and strains on the implant.
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 stabilize 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. But 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 provisionals 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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To give you more confidence during your canal preparations.
"Find it, fix it, and leave it alone"

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 test, 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 – I 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.

Case presentation

Case 1

The first case that I would like to present was a referral patient sitting in my clinic, giving his account: over the previous six months, he had twice travelled to Asia for surgery on his left-sided submandibular lymph nodes (Fig. 1), which had apparently been swollen. Each time, pathology tests were clear of any cancer-specific markers. CT scanning and conventional radiographic assessment were conducted, with no findings recorded. Having shared this, the patient 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 realised that 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 premolars as the culprits (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. 3) and creating an area of bone erosion (Fig. 3). This could be the pathology causing the patient’s 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 cervical internal resorption, creating an infection pathway into the maxillary sinus (Fig. 4).

This explained the situation to the patient and proposed retreatment 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 for shaping and EndoVac for chemically preparing the tooth. The patient wanted to retain his molar could be preserved. For the internal sinus tract (Fig. 5). The 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, but then realised that there was pus draining and the opening was growing larger. Upon consulting 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 showed a pathosis of the third molar (Fig. 6) and the maxillary sinus (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, but then realised that there was pus draining and the opening was growing larger. Upon consulting 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 showed a pathosis of the third molar (Fig. 6) and the maxillary sinus (Fig. 7). A minor postoperative reaction (moderate pain, no swelling) was observed and had completely resolved a week later.
Dentsply Sirona Develops New 3D Endo Software for Better, Safer and Faster Endodontics

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. 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 CRCT-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. Since, with the help of a planning report or demonstrative capabilities directly in the software, the practitioner can clearly explain the initial situation and the appropriate treatment to the patient. Dentsply Sirona plans to introduce this software in the coming months upon the receiving the necessary regulatory approval.

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.
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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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Dental Tribune Middle East & Africa Edition  |  5/2016

**Figure 5c. Bone loss distal to the implant.**

The absence of bone walls distal to 46. Figure 5d-f. Air-Flow Plus powder sprayed under anaesthesia at the level of the first three threads (Figure 5c). The implant was treated with decontamination of the implant attachment (Figure 5d). The goal was to achieve stability on bone level at +1 year.

**Figure 6a. Periimplantitis with purulent discharge.**

Figure 6b. Significant bone loss as well as the absence of bone walls distal to 46. Figure 6c. Treatment by “Perio-Flow” and powder (“Plus”). Figure 6d. Three months post treatment.

A method that is both healing and preventive.

The use of this new powder has several advantages. First, its effective

Cleanness is Key: How hygiene improves our quality of life

By Dentsply 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 practice. 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 gerr-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 Dentsply 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 Dentsply 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 to be harmful; it was not until the 19th century that scientific studies highlighted the cleansing effect of water, which, in turn, had a fundamental impact on society’s approach to hygiene. VISION traces this history and takes a look at the activities in clinics, which were initially a pretty “dirty business,” as infection protection 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 history and takes a look at the activities in clinics, which were initially a pretty “dirty business,” as infection protection 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.
The risks that carbonated soft drinks, alcoholic mixers and wine pose to your patients’ teeth are well-known – increased consumption of acidic food and drinks can lead to tooth erosion and hypersensitivity.

However, even your patients following a healthy lifestyle may be at risk due to the acidic nature of fruit juices and sports drinks. Hypersensitivity results when the tiny dentine channels directly linking to nerves in the tooth become exposed and is associated with pain and discomfort triggered by heat, cold or touch.

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<td>Colgate® Sensitive Pro-Relief™ toothpaste</td>
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Recommend Colgate® Sensitive Pro-Relief™ to your patients suffering from hypersensitivity due to acidic tooth erosion – clinically proven to treat hypersensitivity and relieve pain fast.*2

* 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. These include antibiotic and mechanical debridement, 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. Ultrasonics 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 Petri”) of fine grain size (<45 μm) or a new extra fine powder: “Air-Flow Plus” (14 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 preventive effect on the treated periodontal pockets and a preventive action against periodontal disease (Hashimoto 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 23-year-old patient presented with generalised aggressive periodontitis. Periodontal treatment was performed with ultrasonic debridement and povidone-iodine irrigation. Air polishing using powder (“Plus”) and tips (“Perio-Flow”). This gave the powder, if retained, a film formation, notably with an action against periodontal disease.

It also revealed a purulent exudate on 43.

Figure 2a. 8 mm pockets on 12 and 22 with a mobility of 2 + on 12 were found at the initial visit in 2011.

Figure 2b. Initial x-ray.

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

Case No 2

A 30-year-old patient was referred for periodontal assessment. Bacterial plaque was found in the area of the crown and interdentally. Clinical examination revealed periodontal pockets of 6 mm in the cuspid area and in the palatine area from the crown and interdentally. Clinical examination revealed periodontal pockets of 6 mm in the cuspid area and in the palatine area from the crown and interdentally. Orthodontic treatment could then begin under good conditions.

Figure 2c. Initial long cone results showing the presence of subgingival tartar and a significant osseous dehiscence.

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

Figure 2d-f. One year after the start of periodontal and occlusal therapy. The very good response of bone lesions initially observed in 27 and 36 can be observed.

Case No 3

A patient presented with a periodontal abscess in the 36-37 sector in April 2013 (Figures 4c-f).

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

The maintenance phase was established with supra- and subgingival air polishing every four months. More than a year after initial treatment, the situation is stable (Figure 3d to f).

Case No 4

The patient presented with a chronic toothache in the 36-37 sector in April 2013 (Figures 4a-b). The occlusal examination, an important class I was found with only posterior contacts. Evidence of bruising was also discovered and associated with atypical swelling. Initial therapy involved the construction of a nocturnal splint as well as occlusal equilibration conducted at the same time. Following this, the patient underwent two sessions of periodontal debridement including the use of ultrasonic scalers and subgingival air polishing (Figures 4c-f).

Figure 4a-b. Retroalveolar x-rays at the initial consultation. Note the advanced bone loss distal to 47 and at the level of 36.

Figure 4c-d. X-rays in January 2014, six months after periodontal cleaning and night mouth guard.

Figure 4e-f. Situation one year after the start of periodontal and occlusal therapy. The very good response of bone lesions initially observed in 37 and 36 can be observed.
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 world 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. 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 cause bleeding gums, gingivitis and periodontitis and caries. In addition to interdental brushes, the company produces toothbrushes and toothpastes under its CURAPROX brand and supports educational prophylaxis training called IDOP for dental professionals.

CEO and owner of Curaden Ueli Brentschelm said: “Since 1972, our company has been the pacesetter for interdental brushes, which remove both food residue 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 interdental brushes to be higher with interdental brushes.

“Everyone knows dental floss, but only few like to do it—because they do not know how,” according to Edith Maurer, a Swiss-based dental hygienist, agrees that dental professionals globally, but are also not recommended by the dental professionals. Even so, dental flossing and interdental brushing: one has to choose carefully between the two and—more importantly—dental plaque. Since they do not damage tissue, our interdental brushes are not only recommended by the dental professionals, 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 interdental brushes to be higher with interdental brushes.

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Individual trained oral prophylaxis is the key

According to dental hygienist Catharine 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 narrow interdental brushes 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.”

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 regime. Discarding the use of it totally would be irresponsible to say the least. In 1965, Prof. Harold Loe and others did the famous ‘Experiments on 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 regime 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 molar regions because of the concave-shape of the root structures. Flossing is also more technique-sensitive and greater dexterity needs to be applied when doing it effectively and without damage interdental brushes need to be selected with careful consideration of the tooth and interdental shape and size,” stated Van der Ham. “Most importantly, patients need to be constantly educated and their oral hygiene regime adjusted to their individual needs and preferences.”
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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 malagies 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 doing they will fulfil their ethical duty. Primespeak’s focus is primarily on the new patient examination as it regards this as a key influence 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 final consultation element. The philosophy is that if the preclinical discussion is conducted in the right way you can pre-empt issues and barriers before they occur and in this way the consultation takes place the patient is already well on their way to making their choice.

Focus on preclinical discussion

The preclinical discussion provides an opportunity to ‘scatter seeds’, which the patient can pick up and start to consider subliminally whilst the examination itself is taking place. 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.
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 OEC MEDIA, DTI will be publishing a new issue of its well-established IDS 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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Frequent dental scaling might reduce infection risk after knee replacement

By DTI

TAIPEI, 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.
**Vintage LD... The Better Lithium Disilicate**

By SHOFU

Vintage LD is an innovative lithium disilicate system from Shofu that offers you greater flexibility, more treatment options and aesthetic versatility for a variety of all-ceramic anterior and posterior restorations. A synergy of three perfectly compatible components comprising of high strength Lithium Disilicate glass ceramic ingots in varying levels of translucency, a naturally shaded, opalescent silicate based veneering porcelain and a comprehensive range of low fusing fluorescent stains offers the choice of pressing, staining and highly aesthetic cut back or full build-up layering techniques.

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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
- 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 orientated 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).

We look forward to welcoming you to the event.

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**“It gives a different approach and dimension to the clear aligner system”**

Dr Makbule Sipahi-Ogretme

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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 3,214 products from 57 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 Alwadai (Military), Dr. Osamah Mohammed Almugeiren (Riyadh Private College), Dr. Sami Hussain Alqahtani (King Abdul Aziz Hospital, Riyadh) and Mrs. Sara Abdullatif Aleisa (King Faishal 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.

Since its foundation in 1981, the Swiss company E.M.S. has evolved into one of the most successful dental companies worldwide. Due to the concentrated power of the medium-sized company, consisting of innovative technology, perfection, precision and Swiss quality, the dental prophylaxis has achieved an entirely new and virtually pain-free standard.
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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 so impressions could be taken.

A tissue punch was used to provide access to the implant sites, facilitating a flapless surgical procedure that would minimise 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 reline was performed on the patient’s temporary dentures that would minimise gingival trauma. The healing abutments were evaluated for proper occlusion, function and esthetics.

The gingival areas for the final PFMs were marked onto the models of the definitive prostheses. Pink porcelain was produced using temporary cement, and the definitive prostheses were delivered at the next appointment, the titanium custom abutments being sent out along with the custom abutments and BioTemp® interim restorations for patient evaluation. At the same time, the titanium custom abutments were fabricated from the final crown and cast metal framework. Pink porcelain was used to finish 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 in Dr. Nazarian’s FPDs (Fixed-Prosthesis Design) principles of prosthetic design.

The provisional restorations 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. 20).

At the final delivery appointment, the PFM restorations were delivered over the custom abutments without any issues. A panoramic radiograph was taken to confirm proper seating (Fig. 21). 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 restorations, which ultimately served as the bases for the final restorations (Figs. 22a–c).

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 overhang, 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 un treatable denture function, 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.

Editorial note: Reprinted by permission of ©2015 Glidewell Laboratories, inclusive magazine. The dental lab work in this case was performed by Glidewell Laboratories. A complete list of references is available from the publisher. 

Dr Ara Nazarian
DCD Diplomate International Congress of Oral Implantologists
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B. A diagnostic wax-up was created to assist in the development of the full-arch reconstructions (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.

The healed sites were evaluated for proper occlusion, function and esthetics.

Once the healing abutments were removed and the definitive prostheses were fabricated, pink porcelain was used to finish 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 in Dr. Nazarian’s FPDs (Fixed-Prosthesis Design) 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. 20).

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Complete reconstruction for a patient with chronic tooth decay

The damage undone

By Dr Ava Nazarian, USA

When oral health is neglected for ex-
tensive periods of time, dental condi-
tions like tooth decay and periodont-

dal disease can advance to a point

that patients pursue treatment by all
means possible. The dilemma is un-
avoidable. Implant therapy was consid-
ered hopeless. It was not according to
the normal manner of discussing the

life-changing potential. The pres-
teination that follows documents a
case in which a patient with severely
decayed dentition underwent a com-
plete oral reconditioning.

A treatment plan is developed that

harnesses the classic principles of
implant placement, the versatility of
modern restorative materials, and the
digitalization of present-day CAD/CAM
fabrication to achieve a predictable,
esthetic restoration for a case that would seem hopeless to many. The case illustrates how implant therapy can afford patients in even the most extreme of dental circumstances an excellent long-
term prognosis, restoring not just the
tooth, but also the bone, soft tis-
ue, self-esteem, and quality of life.

Thus, patients who present with
the most acute dental conditions
can now be brought back from the
brink. Patients who had been ashamed
of their teeth, many patients have
found the fit, comfort and retention
dental neglect combined with these
parafunctional habits to render the
patient’s severely decayed dento-

ture unattainable (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
inquisitive about seeking treat-

ment, pain and discomfort eventual-
ly compelled him to take action. The
patient had sought treatment from a
practice where he could receive all of
the necessary treatment from a sin-
gle provider in the fewest appoint-
ments possible. After locating my prac-
tice, the patient found the courage
to present for evaluation. It was
apparent from the initial visit that he
was ashamed of his condition.

Case Report

A 36-year-old male patient presented
for treatment with advanced, exten-
sive caries and localized periodontal
disease (Figs. 1a–c) in addition to not
having seen a dentist in more than
20 years. The patient was recover-
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The goal was to offer him the best
treatment available in order to re-
store the patient’s smile, form and
function. Without presuming the
appropriate standard of care for the
patient based on his condition,
neural reconditioning was recom-

mended that he receive the best
possible care. The patient had been
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The latest tools in digital dentist-
ics during the healing phase.

The impression copings were tight-
ed into place using the ball-top screws.

The latest tools in digital dentist-
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The soft tissue of the patient’s now-
edentulous arches exhibited excel-

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

After approximately five months of healing, the patient was ready for the definitive restorations.

Figs. 7. The surgical guides were seated in the patient’s mouth and secured using the fixation pins and positioning index.

Figs. 5a & b. Surgical guides were seated in the patient’s mouth and secured using the fixation pins and positioning index.

Figs. 6. The surgical guides were seated in the patient’s mouth and secured using the fixation pins and positioning index.

Figs. 4. Occlusal views of patient’s max-
illary and mandibular ridges exhibit healthy tissue at the extraction sites.

Figs. 3. Following extraction of the pa-

tient’s dentition, immediate dentures were delivered to provide the patient with a minimum level of function and aesthet-
ics during the healing phase.

Figs. 2. Panoramic radiograph further il-
lustrates the extensive tooth decay the
patient had suffered, which had caused a
major infection as evidenced by the radi-
lucent lesions visible at the tips of several
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Figs. 1c. Retracted frontal, occlusal maxillary and occlusal mandibular views exhibit the non-restorable preprosthetic state of
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decayed dentition underwent a com-
plete oral reconditioning.
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.

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.

White Crown Building, Apt. 1901, P.O. Box 12135, Dubai, U.A.E.
Tel.: +971 4 3329201, Fax: +971 4 3329210, Email: info@mdentlab.com, www mdentlab.com

Middle East Dental Laboratory
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 patient was also instructed to maintain this and feedback from the instructors through the online support, was excellent. The laterals have been very mobile at that point but the patient reported no pain.

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 this consultation, potential bleaching, changing restorations in the anterior teeth and composite 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.

Treatment provision

In May, the IAS Inman Aligner was fitted in vitro, removal and cleaning 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 fifth day, but no more than 12 times in total.

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™ calculation and it was confirmed that the case was suitable for treatment. A video demonstrating the predicted result was also provided, which made it easy for the patient to visualise the outcome and made an informed decision.

Upon her consent to proceed the treatment plan was discussed in detail, including frequency of appointments, importance of compliance, possible speech difficulties in the beginning, potential bleaching, changing restorations in the anterior teeth and need for a permanent retainer.

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! 😊

Figure 1. Pre treatment anterior
Figure 2. Pre treatment retracted
Figure 3. Pre treatment right lateral
Figure 4. Pre treatment left lateral
Figure 5. Pre treatment upper occlusal
Figure 6. Two months into treatment
Figure 7. Three months into treatment
Figure 8. Post treatment anterior
Figure 9. Post treatment retracted
Figure 10. Post treatment upper anterior
Figure 11. Post treatment right lateral
Figure 12. Post treatment left lateral
Figure 13. Post treatment upper anterior
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Discover the new time-saving composite
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 dentitions. 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 regularly through follow up and lifelong preventive strategy.

References

The full list of references is available from the publisher.
migrants, patients with learning difficulties and those with physical and medical disabilities. The dental
surveys of children aged one and two years old had found that 22% of four year olds had visible tooth decay [16].

The prevalence of ECC in one country cannot be compared with another. This is because the prevalence worldwide has been reported to vary greatly in 5%-50%. This wide range may be due to several factors such as: 1) children studied, their age and the type of study, 2) socio-economic status, 3) ethnic and cultural factors and 4) criteria used to define ECC (Figure 4).

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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 feeding. 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 in the world.

Definition and Terminology
ECC 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, migrants and ethnic minority populations [5]. In the United Arab Emirates (UAE), ECC is the most common childhood disease. The prevalence of ECC in GCC countries 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 socio-economic 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 carious 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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- Extraction (Wisdom Teeth)

Before

After

To refer cases contact:
Patricia DELGADO | Treatment Coordinator
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patricia@dradubai.com
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 two-dimensionality 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 dental pedicle, inverted and shows a pericoronal cyst in the vicinity of the pericoronal cyst. 48 vertical is particularly low-located, its roots projecting on the area of the basilar border. 28 and 48 included high-located, show divergent roots positioned in the sinus cavities. Radicular ankylosis is objective to the absence of periodontal radiolucent area.

The computed tomography examination specifies the diagnosis and confirms the surgical difficulty of these extractions.

**At the Mandible**

38, in addition to its close proximity 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 reten tion character (Figures 2a to 2d) 48, vertically positioned, is located on the lingual side of the inferior alveolar nerve, its roots contained in the lingual table. The apices are located below the myo-osteal muscu- cle in immediate contact with the submandibular gland and near "the facial foramen" which runs through the posterior superior part of the gland before turning around the bottom edge of the mandible” (1). 48 shows a pericoronal cyst developed mainly on the distal side of its crown. (Figures 3a to 3d)

**At the Maxilla**

Two maxillary wisdom teeth high- positioned, leaning against the pterygo-palatine suture and which endo-antral roots are divergent. 28 shows a very large intrasinus lesion of liquid density, not visible in the dental panoramic, filling substantially all of the sinus cavity (Figures 4a and 4b). Although asymptomatic and despite a significant risk of intraoperative and postoperative complications in such a context, the extraction of maxillary wisdom teeth and the extraction of the left maxillary wisdom teeth are confirmed. Indeed, as regards 9 and 48, the inevitable development of bone defects (cystic lesions) inevitably exposes to:

- a mandibular fracture
- an infectious decompensation requiring urgent extraction (with an increased risk of iatrogenic complications due to low accessibility generated by the trismus accompanying the infection).

The progressive and fatal destruction of the lesion of the alveolar bone (we note on the right and on the left the disappearance of the bony canal in the vicinity of the pericoronal cysts. The existence of adhesions between the cystic envelope and the pedicles fosters (besides the risk of bleeding) nerve traumas (Figures 3a and 3d). Concerning 28, the subtotal development of the endo-antral cystic lesion exposes in a near future to a sudden infectious decompensation by complete blockage of the sinus due to the high risk of oro-antral communication, 28 clearly and radiologically asymptomatic is main tained as it is (there is especially no endo-antral connection).

**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 destruction of the alveolar nerve by direct hit (section, burning) or indirect hit (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 communication is clearly indicated.

**Surgical Strategy**

In order to perform the surgery in the best technical conditions (espe cially in the absence of trismus as a result of an infectious decompensation) it is recommended to perform these extractions 'in cold situation' and in two times (high fracture risk) 38 and 28 are programmed in a first phase and 48 in a second phase to 6 months.

**Surgical Procedures and Anesthesia**

In order to have the best accessibility, the intubation is performed using an endobular probe during both surgeries.

Concerning 38: several technical features are worth mentioning:

- The route for the approach and the separation are expanded (the incision covers the entire sill of 37 and the retromolar triangle and is completed by two long discharge incisions).

- The use of ultrasound allows, due to ankylosis, an efficient cleavage between the dental tissue and the bone tissue.

- The separation of the cystic lesion is performed using the micro rapi dly on the flat.

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 subcral incision spreads from 26 until the impacted tuberosity, completed by two wide vertical incisions incised until the bottom of the vestibule.

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

Concerning 48, despite a widened approach path (in 47, the vestibular subcral incision 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 basal margin of the mandible. The extraction is performed through the lingual path. Careful subperiosteal separation concerns the lingual table with regard to 47 and the retromolar triangle. A malleable blade to protect the lingual nerve is gradually posi tioned in the separation space.

The double vertical ostectomy of the lingual table framing 48 impacted is performed with ultrasound under heavy irrigation with refrigerated serum. A controlled fracture of the lingual bone flap made with Obwegeser raspatory will complete the procedure, 48 being finally fractured (Figures 6a to 6c).

In addition to the systematic recommendations given to the patient, preoperative and postoperative information insist particularly on the prevention of secondary mandibu lar fracture (soft diet for 45 days) and on the prevention of oro-antral communication (intering mouth open and gentle nose blowing during 45 days).

The histological analysis of the man dular lesion confirms the diagnosis of cystic and lingual subcral incision that eliminates any unusual or suspici ous element of malignancy.

**Postoperative, Medium Term Monitoring**

Apart from an acute painful episode on the right side that occurred dur ing, chewing on the third postopera tory or pathological radiographic image, no complication was noted and in particular no fracture or nerve symptoms (dental nerve, lingual nerve) in immediate post-operative and secondary postoperative period (due to scarcing mechanisms in the vicinity of nervous pedicle).

The panoramic shot of late medical supervision reveals a satisfactory bone healing, in particular the disappearance of radioluent images in 38 and 48 and the 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 anoma lies (ectopia, ankylosis, cystic lacunae, nervous vicinity) imposes an increased obligation to provide further information. Nevertheless, with lesions having a possible risk of acute infectious decompensation, the preventive extraction in the absence of infectious lockjaw seems to be recom mended. The two-sidedness of the lesions imposes a two-step pro cedure. Despite the implementation of a sequence and a suitable surgical technique, nervous or fracture complications are always possible due to adhesions, ankylosis and loss of preoperative cystic and postoperative iatrogenic bone substances.

**References**


**Dr. Benoît Philippe**

Maxillofacial Surgery and Stomatology
Dr. Roze & Associates Dental Clinic

Villa 747 Jumeirah Beach Road
Umm Suqeim 2, Dubai, UAE
Tel: +971 4 388 1313
Email: info@dradubai.com

Dr. Benoît Philippe, UAE

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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 right-time use Figs 37, 38).

The final smile shows the aesthetic improvements (Figs 39, 40).

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- Mr Jeff Caddick – Dental Technician, Castle Ceramics, Staffordshire

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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 1989, 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.hard.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 this is easily accomplished in most cases. 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 centric relation 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. Mohammadruda showed that increasing VDO resulted in a younger looking patient.

Space

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

Case Study 1

Mrs S (Fig 1) was referred to me because her anterior teeth showed severe wear (Figs 2 and 3) and because she wanted an improvement of her smile (Fig 4). As part of the initial diagnosis, an assessment was made of her vertical height by using an intra-oral face and wax jaw 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 upper 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 11-14) and placement of prototypes in sections as per the previous article.

The stages in the full mouth reconstruction were followed as in article no. 4 of the series and the final result can be seen in Figs 15-19 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 retruded 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 by 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 pilaster, a reduction cannot be tried out prior to tooth preparation 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-
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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 this treatment and the technology that makes it possible.

Dr Nigil 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 cool, 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 decolourises 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 that it is required to still appear white). The light absorbed by the pigment activates the chromophore and that energy causes a set of fast-cros 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 ‘scalpel-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.’

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.

Follow-up. Dr Young says, is essential. The team has been researching this area and product since 2012, and made ‘absolutely sure that Zoom! was safe and effective for use’.

The only way is up

Philips is keen to invest, research and innovate in oral healthcare, maintaining its position as one of the key figures in the dental industry. The company aims to improve the lives of three billion people by 2025 on a daily basis, and bring this healthy living into prevention, diagnosis and therapy.

Dr Young also emphasised Philips’ role in future oral healthcare, saying: ‘Our aim is to push oral healthcare to the forefront of general wellbeing. The main question we ask ourselves is: how can we make people more aware of how to take care of their body? 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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Master of Science in Leadership & Dental Education (MLSE)

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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
Jordan Expert Clean
Proven effective clean

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ActiveTip
- Effective reach of back molars

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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 hand and even our skin.

The reason for this is that we need our teeth to be healthy and strong in order to eat and be able to enjoy like eating, throughout our lifetime.

In the past, it was an assumption that as a child, we grow our teeth in our lifetime. 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 people older than 65 suffer from this type of medication that could cause tooth damage. Another reason is that nerves inside the teeth become smaller and less sensitive. By the time you feel pain from a cavity, it may be too late.

So how can you 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 recommendation and brush twice a day, and use, at least once per week, a professional product of choice to clean where a toothbrush cannot reach. Fluoride strengthens the enamel 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 tough areas and difficult areas in the mouth properly. Diet and lifestyle also affect your teeth and gums so stop smoking and minimizing the intake of alcohol and other acidogenic drinks are important steps to make. By daily removing plaque on and around teeth, as well as along the gum line, teeth and gums have the best chance of keeping 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 less likely to brush than women.

- How the bristles are shaped can affect performance. Dentists recommend soft bristles that are gentle to tooth enamel and to your gums. It is important that the toothbrush leaves you feeling clean and does not irritate the softer gum tissue.

Keeping our teeth strong and healthy is important and it’s our daily habits 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 proposed phase-out of mercury containing products, including dental fillings, dentistry has entered a new era in which new and less harmful filling materials than amalgam are increasingly being used.

As this material has been one of the mainstays of dentistry for over 150 years, this move has huge impact on the way dentistry is practiced every day. The Minamata Convention on Mercury signed in 2013 and its proposed phase-down of amalgam.

Mercury is one of the most toxic substances known to mankind. It is a toxic poison to humans in its various forms, including as a liquid, a gas and in the form of mercury vapours. In 2014, the World Health Organisation warned of the risk of long-term exposure to mercury compounds. In 2014, the FDI World Dental Federation issued a policy statement on dental amalgam. The statement stresses that authorities should work with the dental profession, indicated that these amalgams are still an important tool in many parts of the world. This is mainly because of its perceived cost, long term and high record tolerance. There are billions of amalgam restorations still in service and the search for the ideal tooth replacement material is still ongoing.

In preparation for the eventual removal of amalgam, the FDI policy statement stresses that authorities should work with the dental profession 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 the prevention and early repair of the 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 health of ecosystems and the health of humans. The UNFCCC included this into its issue in 2001. By 2003, it had become clear that there was enough evidence to recommend reducing the use of mercury globally. However, by August 2008 it was realised that there was insufficient voluntary action, so it was decided to step up the phase-down of amalgam. The introduction of a legally binding instrument. This was the birth of the Minamata Convention on Mercury, which was formally signed in 2013 today. Over 182 nations have signed it.

As far as dentistry is concerned, what will be the main changes in everyday practice?

The main changes include focusing on managing dental diseases, early detection and empowering patients to take care of their teeth themselves. When repair is required, the focus should be on maximum preservation of tooth structure. This can be achieved only with the use of adhesive-dentistry and not amalgam.

In order to gain public confidence, dental practitioners should demonstrate their commitment to safe handling of and disposal of dental restorative materials. The public should be educated on the implications of the Minamata Convention and the choice of restorative materials should be based on a sound cost-benefit analysis of each particular case. In this new era, dentists need to be vigilant and keep up with new advances in this area, and turn the handling 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 based on personal choice. The size of the head comes in different sizes and the preference is also based on personal choice.

For the majority of dental treatments, patients feel ready to see changes to members of the dental team and patients. At the end of the day, participants will feel ready and empowered to embark on this shift towards new techniques, unregulated.

Clear choice clearly is at the heart of the health and the prevention of dental care, but what do you see as other benefits to both the dentist and, of course, the patient?

The fact that states with free mercury has been well acknowledged by the dental profession. Waste management and safe handling of amalgam have been observed, and they are well regulated. One can argue that, for the majority of dental practitioners, the transition to tooth-coloured restorative materials has happened a while back. These materials have much improved performance and they are now very popular. The main advantage of this system is to bring together a group of expert professionals to provide the latest information to the participants, as well as dentists, contributing to the knowledge and skills that enables other dental professionals to gain a better understanding of the opportunities for oral health and dental practice 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 recommended in their practices?

The success in responding to this call to action is to focus on preparing for the new era. This symposium is intended to provide participants with an understanding of the rationale behind the phase-down of amalgam, and participants will gain in-depth knowledge on tooth-coloured materials, learn new skills on the selection and application of these materials, in most cases, in place. The symposium will address restoring teeth in general, tooth filling in general and tooth filling for different restorations.

The main changes include focusing on managing dental diseases, early detection and empowering patients to take care of their teeth themselves. When repair is required, the focus should be on maximum preservation of tooth structure. This can be achieved only with the use of adhesive-dentistry and not amalgam.
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\(^1\) Versus a manual toothbrush

\(^2\) Data on file, 2010
The presence or absence of adequate alveolar ridge width and height for a predictable and more esthetic implant restoration.

6) Optimize pre-restorative orthodontic treatment

Often management of adult patients necessitates modification from usual orthodontic treatment paradigms. Various clinical situations, which may differ from the usual orthodontic treatment guidelines, may result in a need for pre-restorative orthodontic treatment. This is often necessary when there is a need to create a harmonious occlusion, to provide more adequate space for the implant restoration, or to address other pertinent esthetic issues.

The ultimate goal of pre-restorative orthodontic treatment is to achieve an optimal occlusal relationship that enhances the predictability of the proposed treatment. This can be achieved by resolving any existing occlusal discrepancies and by creating adequate space for the implant restoration.

Orthodontic treatment for implant site development is a process involving the root movement to generate osteogenic spaces or simplified movements. This may include elaborate restorative interventions along with controlled vertical stop, which gradually lead to supra-eruption and subsequent anterior guidance without definitive intervention. White and pink harmony demands a harmonious balance of both, white and pink components. The restorative connection, Part 1: Biomechanics. Orthodontics: Current concepts, goals and strategies. Chicago: Quintessence publishing; 1990:124–127.

treatment protocol for interdisciplinary procedures employed to improve implant site for predictable restorations. There are several orthodontic procedures designed to improve implant site for predictable restorations. The optimal space has been gained with appropriate treatment mechanics, acrylic teeth of proper size and color shade can be bracketed and attached to the archwire for esthetic purpose. The space gained for the lateral incisor is in excess, therefore additional space can be used as a template, which will help determine the residual space required for implant placement. Clinical evaluation of the edentulous space and radiographic evaluation of the root position of the adjacent teeth should precede appliance removal.

The final implant restoration is significantly influenced by the position and angulation of implant placement. For proper placement of an implant, the minimum space between the adjacent teeth roots is usually 3mm, providing enough room for small diameter implant placement, leaving about 0.75mm of space for the bone between the implant and the adjacent roots (19).

Position adjacent teeth to facilitate 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 incisor region. This leads to an adequate crown space but the space between the adjacent roots gets reduced, making it impossible for the surgeon to place an implant (Fig.19). It is equally important to take sufficient 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 (Fig. 1). A well-structured and organized list of problems makes sure that all areas have been evaluated in the diagnostic phase, and also serves as a valuable reference tool during the course of treatment. All specialists involved in formulating the treatment plan for the patients should provide possible solutions to individual problems 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 treatment plan.

The treatment planning process almost always follows the same events, however, the treatment sequence varies significantly from patient to patient due to large variations in morphological configurations and treatment priority. First, 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 a 10-point treatment protocol for interdisciplinary cases.

3) Recognize ‘minor dental arch crowding’ as a major periodontal concern

Dental arch crowding presents numerous interproximal spaces, which may result in a constriction of the interproximal bone due to reduced interradicular distance (Fig. 5). This compromised bone as a result of periodontal and prosthetic degradation, crowding of the dentition by orthodontic tooth alignment widens the interproximal bone, which can significantly enhance local host resistance and improve the prognosis of compromised or infected teeth (Fig. 6).

Other than the aesthetic reasons, the resolution of interproximal tissue constriction and faulty contact points and embrasures is the predominant periodontal reason to eliminate dental arch crowding (6).

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

4) Use orthodontic treatment in correction of ‘Biologic width’ violations

Restorative therapies essentially require a healthy and stable periodontium for long-term success. Adontogenic ultrasonic 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 tissue occupies coronal to the alveolar bone (7).

It is further elaborated as a total of supragingival fibers, junctional epithelium and sulcus (8). This concept of existence of a specific width was first published by Gargiulo et al. in 1961 through cadaveric experiments which revealed a mean measurement of a total of epithelial attachment plus connective tissue attachment to be 2.99mm (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, Ingber recommended a distance of 3mm minimum to be kept between restorative margins and alveolar crest for adequate gingival health maintenance (10). This 3mm consists of 1mm of supragingival connective tissue, 1mm of junctional epithelium and 1mm of sulcular depth. Violation of this natural seal disrupts dentogingival apparatus making it susceptible to attachment loss and alveolar crest destruction causing gingival disturbances such as inflammation, recession and alveolar bone loss (11 and 12).

Thus it is imperative to minimize intrusion to this zone. This measure of 3mm allows for optimization of the mean value of 2.99mm and provides clinical comfort even when the margins are placed 0.5mm within the sulcus.

5) Improve implant site with orthodontics

There are several orthodontic procedures 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 osseointegrated implant’s lack of eruptive potential makes it to behave like an ankylosed tooth, often causing a discrepancy in the occlusal plane due to continuous eruption of the adjacent teeth. Therefore, early implant placement poses a greater risk of compromised esthetics in the long term. Several studies on young adults who were treated with implant-supported restorations to replace missing teeth have observed discrepancy between implants and adjacent teeth in a study that followed the vertical changes of maxillary incisors adjacent to implants in a group of adolescent boys and girls, 20-55 years demonstrated microinchocclusion of the implant-supported restorations, with a vertical step of 0.15–1.65 mm and 0.12–1.86 mm in adolescents and adults respectively (13).

Therefore, lack of proper occlusion and esthetic situations in the anterior region may be common observations due to jaw growth in patients with implant – supported restorations even if the implants are successfully integrated. The best method to determine the status of facial growth is to superimpose sequential lateral cephalometric 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 restoration of the normal width of missing 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 central and canine teeth, as the force is applied on the crowns of the central and canine teeth, the roots get tipped into the lateral incisor region. This leads to an adequate crown space but the space between the adjacent roots gets reduced, making it impossible for the surgeon to place an implant (Fig.19).
Seven Keys to Optimize Interdisciplinary Orthodontics

By Dr. Ashok 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, 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 simplified and rapid intervention has created compromises in treatment outcomes. Lack of fundamental diagnosis and systematic understanding of certain 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 surgery 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 patients. 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 dential problems that have undergone some degree of mutilation 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.

2) Define treatment goals

In the management of a patient with multiple dental problems, it is extremely important for a clinician to define the goal of treatment at the beginning of treatment and to continue to focus on the treatment goal throughout the treatment process 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 direct the treatment 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 these oscillations per second is the frequency, measured in hertz (Hz). The laser beam forms the treatment of this case (ECR-YSSG) functions at a wavelength of 2780 nm, and has a frequency of 1,000 Hz. Hertz also states the number of laser pulses per second of emitted energy. To give an example, if you look into a perspective, light from a household bulb is white and diffuse, it is not focused. Laser light differs in that it is monochromatic (a beam of single color), and the beam is coherent. 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 in the laser is similar to a solar array of cells. While a solar panel may light a room, a 24Watt laser may perform a surgical excision. Of course, all photons in the laser light are focused and act in concert.12 A laser consists of three structural components, namely the active medium, the pumping mechanism, and the optical cavity or resonator (Figs. 7a, b). In-depth electromagnetism physics may not be essential knowledge for the clinician, but it may be helpful to know that lasers derive their energy from the active medium of these components. The active medium may consist of a container of gas, liquid, or a solid crystal (ECR-YSSG laser), a solid-state semiconductor (diode laser), or a liquid (thick electric, cold laser, stripe, etc.).

The excitation source will excite electrons, and as they return to their respective energy level, they emit energy in the form of photons. Cooling the laser cavity are optical resonators (typically mirrors) that reflect waves back and forth, thereby collapsing the amplitudes of the beams.13 As with normal light, the clinician may note that laser light waves are not bent, dispersed, or polarized and can correlate the type of laser to its respective wavelength (Fig. 8). All commercially available dental lasers emit light and wavelengths ranging 500–10,800 nm.14 As such, a dental laser may be tuned to the visible or invisible and nonionizing range of the EM spectrum. An erbium laser for example may have an additional light source in the device for the application point. Furthermore, the point of caution that the clinician may note is all persons in the laser operating room are to wear laser protective eyewear.15

The amount of absorption further depends on the tissue’s water content and pigmentation. The fourth interaction is scattering, whereby the photons bounces the tissue change directions and leads to absorption in a greater area. As laser light is absorbed by the tissue the interaction is photothermal (laser energy transferred into thermal energy). The effect then is either incision, ablation, vaporization, or hemostasis/coagulation.16 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 coagulation can be performed. In the treatment of this gingival hyperpigmentation case, a larger beam diameter was used for superficial tidied edges. The laser light should also target the basal and suprabasal epithelial layer rich in melanocytes. The ablative action of the laser on a wider area allowed for removal of the superficial gingival layers rather than traditional scraping. 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° and 100°C proteins will denature without vaporization of underlying tissue, ideal for the removal of diseased degeneration tissue, for hemostasis and coagulation.17 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 chromophores ablate. Conversely, higher energy would be needed to excise fibrotic tissue.

Lasers used for the aesthetic 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.18–20 The formation of pro-coagulants on the laser treated wound surface reduces postoperative pain. Laser light may also “seal” small vessels ending.19 The patient treated in the case presented here required only a局部alamide local anes- thetic and minimal intraoperative sedation. Postoperative pain was low and void of any profuse bleeding. Nearly the entirety of the hyperpigmented lesions had the superficial layers of tissue removed. Healing was rapid with no report of pain, infec tion, or discomfort. At as early as 10 days postoperative the area was nearly entirely healed with radical results in tissue colour and contour. The literature reports the expected chronology and degrees of regeneration following repetition by various modes of treatment. Depigmentation by laser ranks low (1.16%) in terms of percent age repigmentation (Table 2).

Conclusion
ECR-YSSG laser therapy for epider- mithelialization can successfully alter blue–black/dark brown gingiva to uniform pink colour with numerous benefits for both clinician and patient. The results can be dramatic for patients with gingival hyperpigmentation, remaining stable over the long-term, contributing greatly to an aestheti- cally pleasing smile.

References
Aesthetic laser therapy correction of physiological 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 scaffold Symmetry, proportion, as well as color and appearance of the gingiva are critical to an aesthetically pleasing smile. Physiological gingival hyperpigmentation does not present as clinical pathology requiring intervention; nonetheless it may be of aesthetic concern to the patient. Minimally 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 hyperpigmentation. Blue-black/dark hyperpigmentation was noted on the Takashi melanin pigment index in terms of its extension on the Takashi melanin pigment index in terms of its extension (formation of continuous ribbons extending from the neighboring solitary units). In both the mandible and the maxilla the hyperpigmentation appeared mostly as singular, posteriorly extending, macular lesions with well demarcated borders limited coronal to the mucogingival junctions. A diagnosis of physiologic gingival hyperpigmentation was made and intervention for aesthetic correction was indicated. The patient initially sought treatment of the mandible only. Digital smile design (DSD) and smile analysis of the patient indicated need for correction of the altered passive eruption. De-epithelialization of the affected areas as well as crown lengthening by laser gingivoplasty was opted for. The working field was retracted and isolated (OptiGrip, IvoCare Vivident) and local anesthesia achieved by slow infiltration of a 4% articaine with adrenaline (1:200,000), local anesthetic solution (Ustesten™ forte, 3m ESPE). The area, mucosa and teeth surfaces were cleaned with sterile gauze soaked in chlorhexidine solution. Laser therapy (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 (MGG6) and the maxilla the hyperpigmentation was limited coronal to the mucogingival junction. The crown lengthening by gingivectomy was applied parallel to the tooth, with the unit’s power settings at 75 Hz, with water and air settings 50 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 painted areas up to 2–3 mm beyond the lesions’ borders. To conclude the procedure, the unit was set to “laser handpiece” mode, with lowered power settings at 1W 75 Hz, and water and air off for hemostasis, leaving a layer of coagulum that would aid with 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 a day). 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/reserved as zero for both pigmentation indices. Following dental bleaching the patient presented at the 2-year recall with no noticeable signs of repigmentation. 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 1965. The first commercial laser for use in dentistry, the diode 300 nm YAG laser, was introduced in 1980. 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 500 nm.

Table 1: Lasers currently used in dentistry

![Figure 1: Preoperative view of the patient’s smile](image1)

![Figure 2: Retracted, preoperative, intraoral view demonstrating the degree of pigmentation and extension of the affected areas](image2)

![Figure 3: Immediately postoperative, crown lengthening and de-epithelialization of pigmented tissue completed](image3)

![Figure 4: 10-days postoperative, rapid healing with dramatic results in gingival colour](image4)

![Figure 5: The patient’s smile 10 days after the laser de-epithelialization and crown lengthening](image5)

![Figure 6: Patient’s smile at the 2-year recall, dental bleaching, incisal chisel crowns, cani, pink gingiva, all contribute to a healthy, aesthetic smile](image6)
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Filtek™ Z350 XT Universal Restorative polished with Sof-Lex™ Diamond Polishing System (left) vs. TPH Spectra® Universal Composite polished with Enhance® Finishing System and PoGo® Polishing System (right).
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 visibility of this restoration lead to a variety of clinical challenges such as composite placement and proper light curing.

Fig. 1: Initial situation: mandibular second molar with restorations require replacement.

Fig. 2: After placement of rubber dam the insufficient fillings were completely removed.

Fig. 3: After selective enamel etching, Single Bond Universal Adhesive was applied.

Fig. 4: Adhesive was cured for 10 seconds with Elipar™ DeepCure-S LED Curing Light after scrubbing and air drying steps were completed.

Fig. 5: Filtek™ Z350 XT Flowable Restorative, shade A3 was used as a liner for easy adaptation.

Fig. 6: Dentin was replaced with incremental placement and curing of Filtek™ Z350 XT Universal Restorative, shade A3B.

Fig. 7: Enamel was replaced with Filtek™ Z350 XT Universal Restorative, shade A3E and light cured. Stains were applied in the fissure.

Fig. 8: The initial finishing was completed with Sof-Lex™ Discs, followed by pre-polishing with Sof-Lex™ Pre-Polishing Spiral and high gloss polish with Sof-Lex™ Diamond Polishing Spiral.

Fig. 9: Final restorations with an excellent esthetic appearance.

Dr. Chiodera graduated from the University of Brescia with a degree in Dentistry and a scholarship of Kings College University of London in 2004. Dr. Chiodera is an author of articles in various national and international magazines. At the moment he is working in a private practice in Brescia and specialising primarily in conservative dentistry and endodontics.

Fig.10: Dr. Giuseppe Chiodera.

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Fig.11: 3M logo.
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March 1 - 3, 2017
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Bright Smiles into the Future
An International Association of Pediatric Dentistry (IAPD) Regional Meeting

Hands on workshops on 1st March, 2017
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* SPEAKERS *
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* Prof. Richard Welbury (UK) * Prof. Zafer Cehreli (Turkey) * Dr. Aziza Al Jobar (Saudi Arabia)
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