BRILLIANT EverGlow has fabulous gloss retention

An interview with Dr Monik Vasant, UK

When it comes to composite materials for restorative procedures, many dentists look for a product that can combine ease of use with aesthetically appealing results. To learn more about this topic, Dental Tribune spoke with Dr Monik Vasant, a leading cosmetic dentist based in Bloomsbury, about how he decides what composite materials to use and his experiences with COLTENE’s universal composite BRILLIANT EverGlow.

Dental Tribune: As someone working in the field of aesthetic dentistry, what do you look for when choosing composite materials for restorations?

Dr Monik Vasant: When deciding on composite materials, there are many factors that I consider. The first factor is its shading system, that is, is it based upon the classic VITA shade guide or is it a layering material? The next thing I look at is the handling of the material. I want something that is soft enough to manipulate easily without being so soft that it does not stay where I put it. The final thing I look for is the surface polishability of the material, as I want my work to last for a long time and retain its lustre.

How long have you been using BRILLIANT EverGlow, and for what indications?

I have been using COLTENE’s BRILLIANT EverGlow ever since it was launched a couple of years ago. I use it in many different situations where I want to use a VITA-shaded material. This includes Class V indications, post-orthodontic edge bonding, wear cases, veneers and posterior teeth.

How does a product like BRILLIANT EverGlow help you to achieve your goal of minimally invasive dentistry?

Its opacity means I can often use it in a single layer often without having to bevel the tooth, as it blocks out the margin really well. It also maintains a high enough level of translucency to still look natural. Its predictable shading system and fabulous gloss retention mean I can avoid using ceramics and keep my restorative work to a minimum while still achieving great aesthetics.

Thank you very much for the interview.

The same efficiency with better plasticity

MTA Repair HP
Bioceramic high-plasticity reparative cement

- New formula: a much easier manipulation and insertion into the dental cavity after hydration
- New radiopaque Calcium Tungstate (CaWO4): prevent staining of the root or crown
- Initial setting time of 15 minutes: allowing the completion of treatment in a single session
- Setting expansion: high marginal sealing capability which prevents the migration of microorganisms and fluids into the root canal
- Regeneration stimuli: excellent biological sealing of root perforation (canal and furcation) inducing the formation of periradicular cement
- Pulp regeneration: induces the formation of a dentin barrier when used on pulp exposures
- Hydrophilic: enable its use in humid conditions without changing its properties

Ref. 843 - 2 capsules of powder with 0.085 grams each and 2 vials of liquid
Ref. 846 - 5 capsules of powder with 0.085 grams each and 5 vials of liquid

Images are courtesy of Prof. Dr. Fábio Duarte da Costa Aznar

QED - Quality Endodontic Distributors Ltd.
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www.angelus.ind.br
The market for dental imaging equipment in Europe is quite saturated and has not experienced any significant growth over the past several years. However, in recent years cone beam computed tomography (CBCT) scanners have increasingly begun incorporating 2-D capabilities into their systems, as well as offering a broad range of fields of view to provide greater flexibility. Clinical applications of CBCT systems include implant planning, root configuration, and sinus augmentation, root canal procedures, and bony defect detection. As several of these applications are expected to increase in number, the demand and need for CBCT scanners will continue to grow considerably throughout Europe over the next decade.

**Intraoral X-ray imaging device market in transition**

Analogue technology is a thing of the past and while it is still declining, the transition away from these types of systems has already taken place, resulting in a more stable market situation. Companies now offer two digital alternatives: photosensitive phosphor (PSP) systems and digital sensors. Larger clinics with several rooms, especially those who only recently made the switch to digital technology, typically opt for PSP systems due to the affordability of PSP plates and the similarity in equipment handling compared to conventional analogue film. In countries such as France and Italy, which are largely dominated by smaller clinics with only a single examination room, dentists often opt to use digital sensors instead.

Although the split between PSP systems and digital sensors is quite even, the PSP market has shown strong signs of growth, particularly in countries that were traditionally dominated by sensors, such as Spain, and will continue to be one of the main drivers in a rather stagnant market for imaging equipment as a whole. Part of this trend can be attributed to the fact that the thickness and rigidity of sensors are a greater nuisance when it comes to patient comfort, as well as the frailness of these sensors compared to PSP scanners. Furthermore, digital sensors are much more expensive than PSP scanners, and include parts that are prone to wear, such as cords that can be easily damaged, which further argues the case to switch to PSP systems.

**2-D extraoral X-ray imaging vs 3-D CBCT scanners**

Extraoral X-ray imaging systems are predominantly used for viewing a patient’s teeth relative to his or her jaw and skull. They aid in monitoring impacted teeth, temporomandibular joint disorder, and possible tumours in and around the intraoral cavity. These specific uses of extraoral X-ray systems are limited to procedures performed by orthodontists, prosthodontists and oral surgeons, resulting in a relatively small market. Most professionals prefer working with a CBCT scanner, which has 3-D imaging capabilities and can perform at a much greater capacity than traditional 2-D extraoral imaging systems, but are limited by the high acquisition cost of these systems. Recently, however, not only have prices of CBCT scanners dropped significantly, but it is now standard for these systems to also incorporate both panoramic and cephalometric capabilities, resulting in so-called ‘combo-units’, which has resulted in a drastic change in the market. The popularity of these CBCT ‘combo-units’ has increased significantly in recent years and is expected to continue outpacing all other market segments in terms of growth.

Consequently, the outlook of the extraoral X-ray system market in Europe is negative. Already being a replacement market without much innovation, the demand for traditional 2-D systems is on the decline as consumers continue to opt for technologically superior CBCT scanners. Manufacturers have also recognised this, and as such have shifted their focus to capitalise on this trend, investing in producing combo 2-D and 3-D units with the option for future upgrades, greatly improving the marketability of these systems.

**Analysis of the current situation of CBCT scanners**

CBCT scanners are extremely efficient machines that are capable of performing a quick and non-invasive scan, resulting in a high level of patient comfort. It is also possible to instantly show the patient a 3-D image of their jaw and teeth structure, making it easier for dental professionals using these scanners to convince patients regarding necessary treatments. However, the biggest advantage of CBCT scanners is their low cost relative to traditional CT systems found in hospitals. While CBCT scanners are a bit more expensive than other dental imaging equipment, they are much more affordable alternative for capturing 3-D images of a patient’s jaw compared to past methods.

In the European market, sales of CBCT systems have increased considerably, with growth rates surpassing that of nearly all other dental imaging devices. This will most likely continue to be the case throughout the next several years as the technology is constantly improving and prices are dropping. Although most units now offer a variety of field of views (FOVs), the most popular choice continues to be 8 cm x 8 cm, as this size is sufficient to capture the complete maxilla or mandible in one image. Anything above this size has a much more niche usage and typically comes at a greater cost, thus dentists opting to purchase a CBCT scanner are less likely to be persuaded by anything larger, as it is more of a luxury than a necessity. As such, all of the major competitors, including Carestream, Planmeca, Sirona, Danaher Group, Vatech, and Cerfia Group, have multiple systems with this size already incorporated into their product line. Today, smaller FOV (sizes smaller than 8 x 8) scanners have essentially all been consolidated with medium FOV scanners, and large FOV scanners are extremely expensive and represent only a very minor percentage of the market.

**Final thoughts**

All in all, the market for dental imaging equipment in Europe is relatively static in terms of growth, but it is in a state of transition. Companies are continuously improving the technology in their products, and the stiff competition is placing intense pressures on prices. Consequently, a growing demand for CBCT scanners is countered by these falling prices, and in the end, the companies that will be the most successful are the ones who provide the greatest value with their products. The intraoral X-ray imaging sector has almost completely transitioned into a digital market, but is now split between digital sensors and PSP scanners. With new entrants in various segments of the market, the future of this market seems promising and exciting, with many new opportunities on the horizon.

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**Sasha Stephanian** is a research analyst at Data Research and was the lead researcher for the 2016 European Dental Operatory Equipment and CAD/CAM Materials, U.S. Medical and Dental Imaging Equipment, 2017 European Robotics and Surgical Navigation, U.S. and European Dental Lasers, and European Dental Imaging Devices Market Report Suites. His current work includes the 2017 U.S. Soft Tissue Regeneration Market Report Suite.

**Jeffrey Wong** is the strategic analyst manager at Data Research and has been heavily involved with the company’s dental division throughout his tenure. As a research analyst, he led several research projects on the global dental markets, including dental prosthetics, digital dentistry, CAD/CAM materials, dental implants, bone graft substitutes, hygiene, dental imaging and dental lasers.
A 28-year-old male patient presented to our practice with an asymptomatic clinical picture of chromatic alteration of tooth #11 (Fig. 1). He had a history of dental trauma during childhood. Clinical and radiographic examination found traces of pulp necrosis (Fig. 2), for which he was referred for endodontic treatment.

After the initial consultation with the patient, anaesthesia was given, followed by establishment of absolute isolation. Subsequently, coronary access was achieved and the presence of pulp necrosis confirmed. A crown-down disinfecting instrumentation was performed using 2.5% sodium hypochlorite as irrigation agent and odontometry by radiographic method (Fig. 3), owing to not being able to use a foramen locator under these anatomical conditions, as its accuracy may have been influenced.

A manual preparation technique (step-back) was performed, using third-generation K-Files (DENTSPLY Maillefer) and 2.5% sodium hypochlorite as irrigation agent for the purpose of widening the entire root canal system. At each instrument encounter, passive ultrasonic irrigation was performed with flat inserts (Fig. 4) in order to enhance the cleaning effect. Complementing the intra-channel decontamination process, two biweekly exchanges of UltraCal calcium hydroxide (Ultradent) were performed (Fig. 5), also with the purpose of analysing quality of cleaning through the radiopacity of the filling observed radiographically (Fig. 6).

After the removal of the intra-canal medication and drying, the apical plug was prepared with MTA REPAIR HP (Angelus; Fig. 7) and inserted through the direct technique using previously measured endodontic condensers (Fig. 8). The aim was to fill and subsequently seal the apical 4 mm (Fig. 9). After 24 h, a root canal filling was performed with Tagger’s hybrid thermomechanical technique using an MTA-based sealer (MTA-FILLAPEX, Angelus). Radiographically, ideal sealing of the entire root canal area was observed (Fig. 10). The patient showed no postoperative complications. A follow-up examination was conducted after six months, which revealed new bone formation in the apical region (Fig. 11).

Apexification treatment with MTA REPAIR HP
By Dr Fábio Duarte da Costa Aznar, Brazil

Fig. 1: Clinical appearance of tooth #11. – Fig. 2: Initial radiographic appearance of tooth #11. – Fig. 3: Radiography for odontometrics. – Fig. 4: Supplementary cleaning process using ultrasonic irrigation. – Fig. 5: Intra-canal medication with calcium hydroxide. – Fig. 6: Radiographic appearance of the root canal filling with calcium hydroxide. – Fig. 7: Presentation of MTA REPAIR HP. – Fig. 8: Direct condensation of MTA REPAIR HP.

Fig. 9: Radiographic image of the apical plug. – Fig. 10: Final radiograph. – Fig. 11: Follow-up after six months.

Dr Fábio Duarte da Costa Aznar works in applied dental sciences at the University of São Paulo in Brazil. He also coordinates a specialisation course in endodontics offered at various Brazilian universities. Aznar can be contacted at fabio@aznar.com.br.
Applying evidence-based practice in oral hygiene education

By Rachael England, UAE

I have worked as a dental hygienist for the last 10 years, since qualifying in the Royal Air Force in 2006, and have practised throughout the UK in a whole range of settings, military, NHS hospital and private practice. I have also served in dental units of humanitarian initiatives, such as a mobile clinic in Kenya. Currently, I am working in a private practice in Dubai and delighted to be a key opinion leader for Philips. Throughout that time, I have consistently recommended one brand to my patients and anyone else asking for help choosing an electric toothbrush. Clinically, I have seen an improvement in oral health when people begin using Philips Sonicare toothbrushes and most recently toothbrushes from the DiamondClean range.

Philips Sonicare has reinforced its commitment to patient and professional partnership by continually developing new products, which undergo rigorous testing and clinical trials to demonstrate their safety and efficacy. Philips is committed to improving the lives of three billion people a year by 2025, through its ongoing collaboration with scientific experts, research scientists and dental professionals.

The associations between oral and systemic health are being discovered year on year, including serious conditions, such as diabetes, atherosclerosis, preterm or low birth weight babies, Alzheimer’s disease, chronic kidney disease and certain cancers. We know that gingival inflammation and periodontal disease are initiated by the complex microflora biofilm, and the destruction of the supporting tissue, including the periodontal ligament, bone and cementum, is mainly caused by the host-mediated innate and adaptive immune response. Periodontal disease is the most prevalent ailment affecting humankind globally, and severe periodontitis is responsible for the absolute majority of tooth loss and edentulosity in adults. Clinicians are thus constantly on the lookout for the most reliable and evidence-based aids to enable their patients to manage their oral health.

With the publishing of the latest research carried out by Philips in a special issue of the Journal of Clinical Dentistry, I can be sure that the advice I am giving patients is evidence-based. High on the evidence pyramid are systematic reviews with meta-analyses, which provide reliable conclusions because they integrate all the relevant evidence. This meta-analysis comparing the effectiveness of manual versus high-frequency, high-amplitude sonic powered toothbrushes showed that plaque removal was increased by 20% and gingivitis was decreased by 10%, thus reducing the systemic inflammation and improving the patient’s oral and general health.

In order to encourage patients to swap from a manual to an electric toothbrush, I tell them it is like comparing riding a bicycle with a motorcycle: one is much more efficient and doing the work for them. This is confirmed by studies comparing gingivitis reduction using a Philips Sonicare DiamondClean versus a manual toothbrush. After just two weeks, the DiamondClean realised a 52% reduction in gingival bleeding compared with only 17% using a manual toothbrush. After four weeks, the Sonicare achieved a 57.4% reduction in gingival bleeding compared with only 17.0% using a manual toothbrush.

**Study 1**
Comparison of Gingivitis Reduction and Plaque Removal by Philips Sonicare DiamondClean and a Manual Toothbrush


<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results - Percent reduction at Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philips Sonicare DiamondClean vs. MTB</td>
<td>141</td>
<td>week 2 &gt;&gt; 4</td>
<td>Gingivitis: 25.5% vs. 19.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bleeding: 57.4% vs. 31.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plaque: 34.9% vs. 8.0%</td>
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</tbody>
</table>

Key conclusion
Twice daily brushing with Philips Sonicare DiamondClean is significantly better than using a manual toothbrush for reducing plaque and improving gingival inflammation and gingival bleeding within just two weeks, persisting to four weeks.

**Study 2**
Comparison of Plaque and Gingivitis Reduction by Philips Sonicare FlexCare Platinum with Premium Plaque Control Brush Head and a Manual Toothbrush


<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results - Percent reduction at Week 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philips Sonicare FlexCare Platinum vs. MTB</td>
<td>143</td>
<td>week 2 &gt;&gt; 6</td>
<td>Gingivitis: 45.79% vs. 0.71%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bleeding: 58.36% vs. 3.14%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plaque: 46.55% vs. 1.58%</td>
</tr>
</tbody>
</table>

Key conclusion
Twice daily brushing with Philips Sonicare FlexCare Platinum with Premium plaque control brush head is significantly better than using a manual toothbrush for reducing plaque and improving gingival inflammation and gingival bleeding within just two weeks. Statistically significant differences in all metrics persisted until study completion at Week 6.

**Study 3**
The Effectiveness of Manual versus High-Frequency, High-Amplitude, Sonic-Powered Toothbrushes for Oral Health: A Meta-Analysis

de Jager M, Rmatie A, Darch O, Bikker JW.

<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results Percentage change after everyday use</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-frequency, high-amplitude power toothbrushes vs. MTB</td>
<td>1,870</td>
<td>4 weeks &gt;&gt; 3 months</td>
<td>20% more plaque removal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Randomized, controlled clinical trials</td>
<td>10% greater decrease in gingivitis</td>
</tr>
</tbody>
</table>

Key conclusion
Results of this comprehensive meta-analysis showed that high-frequency, high-amplitude, sonic-powered toothbrushes decrease plaque and gingivitis significantly more effectively than manual toothbrushes in everyday use, in studies lasting up to three months.
28 June – 1 July 2018
Berlin, Germany
www.ROOTS-SUMMIT.com
Key conclusion
Philips Sonicare DiamondClean with Premium plaque control* brush head is statistically superior to Oral-B 7000® with CrossAction™ brush head and SmartGuide accessory in reducing gingival inflammation, gingival bleeding and surface plaque.

*Brush head formerly called AdaptiveClean.

Study 4
An Assessment of Gingivitis Reduction and Plaque Removal by Philips Sonicare DiamondClean with Premium Plaque Control Brush Head and Oral-B 7000 with CrossAction Brush Head

Results - Percent reduction at Week 6

<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results - Percent reduction</th>
<th>Subjects</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philips Sonicare DiamondClean vs. Oral-B 7000</td>
<td>284</td>
<td>Mean age 38.6</td>
<td>week 2 &gt; 6</td>
<td>Randomized, parallel, single-blind</td>
<td></td>
</tr>
<tr>
<td>Gingivitis</td>
<td>45.68%</td>
<td>26.83%</td>
<td></td>
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<td></td>
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<tr>
<td>Bleeding</td>
<td>75.81%</td>
<td>58.76%</td>
<td></td>
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<tr>
<td>Plaque</td>
<td>37.58%</td>
<td>20.70%</td>
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</tbody>
</table>

Results - Percent reduction at Week 2

<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results - Percent reduction</th>
<th>Subjects</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philips Sonicare AirFloss Pro vs. MTB and string floss vs. MTB</td>
<td>286</td>
<td>Mean age 35.6</td>
<td>week 2 &gt; 4</td>
<td>Randomized, parallel, single-blind</td>
<td></td>
</tr>
<tr>
<td>Gingivitis</td>
<td>8.52%</td>
<td>1.10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bleeding</td>
<td>36.79%</td>
<td>4.03%</td>
<td></td>
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<tr>
<td>Plaque</td>
<td>22.41%</td>
<td>5.70%</td>
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</table>

Key conclusion
Daily use of Philips Sonicare AirFloss Pro with antimicrobial rinse as an adjunct to manual toothbrushing was shown to improve gum health and reduce plaque significantly better than manual toothbrushing alone. Moreover, a non-inferiority test showed AirFloss Pro to be similar to string floss in reducing plaque and gingivitis.

Study 5
A Study to Assess the Effects of Philips Sonicare AirFloss Pro, when Used with Antimicrobial Rinse, on Gum Health and Plaque Removal

Results - Percent reduction at Week 4

<table>
<thead>
<tr>
<th>Products</th>
<th>Subjects</th>
<th>Design</th>
<th>Results - Percent reduction</th>
<th>Subjects</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB + AirFloss Pro + rinse vs. MTB and Premium plaque defense brush head</td>
<td>286</td>
<td>Mean age 35.6</td>
<td>week 2 &gt; 4</td>
<td>Randomized, parallel, single-blind</td>
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Daily use of Philips Sonicare AirFloss Pro with antimicrobial rinse as an adjunct to manual toothbrushing was shown to improve gum health and reduce plaque significantly better than manual toothbrushing alone. Moreover, a non-inferiority test showed AirFloss Pro to be similar to string floss in reducing plaque and gingivitis.

Reflecting in a study comparing the Sonicare FlexCare Platinum and Premium plaque defense* brush head with a manual toothbrush. After two weeks of use, the 354 participants showed a 47.97% reduction in gingival bleeding using a FlexCare Platinum compared with only 8.64% for a manual toothbrush, and after six weeks, a 58.36% reduction versus 31.4% with manual brushing. Similarly, the FlexCare Platinum showed a 50.93% plaque reduction after two weeks and manual brushing a 5.08% reduction, and after six weeks, 46.55% and 1.38%, respectively.*

The next common question is whether to use sonic or rotary. I have always said that, if one had 100 dental hygienists in a room and asked their opinions, there would be a 50/50 split. However, in a recent comparative study with a statistically significant number of participants, the Philips Sonicare DiamondClean and Premium plaque defense brush head showed gingival inflammation reduced by 44.73% after two weeks, compared with just 27.92% using the Oral-B 7000 with CrossAction brush head, and by 45.68% and 26.83%, respectively, after six weeks.7

*Also known as ROW, Premium plaque defense

Gingival bleeding indices are often used as a benchmark for dental hygienists to commence periodontal therapy, encouraging patient compliance with treatment and better clinical results in a study, using a Sonicare DiamondClean for two weeks reduced gingival bleeding by 66.7%, compared with 49.38% using an Oral-B 7000, and for six weeks resulted in an impressive 75.81% reduction in gingival bleeding, compared with 37.58% for the Oral-B brush.

Eliminating plaque is critical to ensuring ongoing oral health. After two weeks of using a Philips Sonicare DiamondClean with a Premium plaque defense brush head, participants recorded a 38.68% reduction in plaque compared with just 18.28% using an Oral-B 7000 with CrossAction brush head. This trend continued after six weeks of use, with the Sonicare achieving a 37.58% reduction and Oral-B 80.70%.8

I am sure all dental professionals will agree that gaining patient compliance regarding daily interdental cleaning is one of our greatest challenges. Patients cite difficulty flossing or interdental brushes that bend or break as the main barriers. The Philips Sonicare AirFloss Pro offers an effective and easy-to-use alternative. When filled with an antimicrobial rinse and used daily, it is as effective as flossing. In a study, after two weeks of use, floss achieved a 26.90% reduction in gingival bleeding, compared with 24.61% using an AirFloss Pro and BreathRx mouthrinse. After four weeks, this remained consistent at 43.31% for floss and 36.79% for the AirFloss Pro and BreathRx.8

Dental health is a basic human right, and I believe that as dental and public health professionals it is our duty to ensure our patients, friends and family are using the most effective aids to fight the global epidemic of oral disease.

Editorial note: This article originally appeared in Dental Tribune Middle East & Africa No.4/2017. A list of references is available from the publisher.

Conflict of interest: Rachael England is a key opinion leader for Philips Middle East.