Staining susceptibility tested

By DTI

Coffee is one of the world’s most popular beverages; however, it is known for its tooth-staining properties. A study has now tested how various CAD/CAM materials reacted to immersion in coffee.

New CAD/CAM composite resin blocks are industrially polymerised under standardised parameters at high temperature and pressure to achieve optimum properties at the microstructural level and a high degree of conversion. As a result, material characteristics have improved compared with direct restorative composite resin.

In the study, researchers from the Tokyo Medical and Dental University in Japan and Chulalongkorn University in Bangkok aimed to evaluate how modern composite resin block materials developed for CAD/CAM systems react to coffee exposure compared with conventional resin materials.

The researchers measured the change in colour in eight CAD/CAM blocks, including five composite resin blocks (Block HC, SHOFU, CERASMAST, GC, GRADIA Block, GC, K2R-CAD Hybrid Resin Black, Yamamoto Precious Metal, Lava Ultimate, 3M ESPE), one hybrid ceramic block (VITA ENAMIC, VITA Zahnfabrik), one PMMA block (Telio-CAD, Ivoclar Vivadent) and one feldspathic ceramic block (VITAROCS Mark II, VITA Zahnfabrik), and four conventional composite resins.

Higher tooth loss risk

Elderly Japanese residents who were forced out of their homes by the 2011 earthquake and tsunami disaster may be at greater risk of tooth loss, a survey by Tohoku University has found. Factors negatively affecting dental health were stress, financial problems, dietary changes and a lack of opportunities to brush teeth, it found.

Dental care in MS patients

Researchers from Queensland have found that most multiple sclerosis patients perceived dental care in Australia as inflexible and not tailored to individual experiences of the disease. Among other problems, patients reported experiencing difficulties accessing dental care, including transport and financial barriers.

Artificial enamel

Aiming to create a material that is able to withstand repeated stresses, such as unavoidable vibrations like those on airplanes, which cause objects with rigid structures to age and crack, researchers at the University of Michigan in the US have mimicked the structure of tooth enamel. They replicated the material by sequential growth of nanowires which cause objects with rigid structures to age and crack, researchers at the University of Michigan in the US have mimicked the structure of tooth enamel. They replicated the material by sequential growth of nanowires the structure of tooth enamel.

Detecting bacteria

LONDON, UK: A new method of detecting bacteria during root canal therapy could eradicate the need for follow-up appointments and prevent treatment failure, according to a new study. The Safelight device, created by a team of researchers at King’s College London Dental Institute, enables rapid bacterial detection inside the root canal through fluorescent staining and microspectroscopy, ensuring the procedure has been successful and reducing the need for tooth extraction or surgical intervention. During trials, the research team was able to successfully detect bacterial cells after just 3 minutes of testing.

Dental Institute, enables rapid bacterial detection inside the root canal through fluorescent staining and microspectroscopy, ensuring the procedure has been successful and reducing the need for tooth extraction or surgical intervention. During trials, the research team was able to successfully detect bacterial cells after just 3 minutes of testing. “Safelight will reduce the time for root canal completion and will increase the success rate of treatments by letting the dentist know when it’s safe to proceed with filling the tooth,” said Professor of Biomaterials and Restorative Dentistry Tim Watson from the Dental Institute.
Survey: Misconceptions about oral health practices revealed

By DTI

GENEVA, Switzerland: The results of an online survey, carried out in 12 countries for World Oral Health Day (WOHD) among 12,894 adults, have indicated a significant gap between what people believe to be good dental hygiene habits versus what they actually do and what is recommended by oral health experts.

In eight of the countries surveyed, 30 per cent or more of the respondents said they thought it is important to brush one’s teeth straight after every main meal. This incorrect oral health practice was worst in Brazil, Mexico, Egypt and Poland (34, 31, 30 and 30 per cent, respectively). FDI recommends waiting at least 30 minutes after eating to avoid weakening tooth enamel.

“This survey results highlight an alarming discrepancy between knowledge and actual good oral health practices,” said FDI President Dr Patrick Hescot. “We want everyone to take control of their oral health this World Oral Health Day and understand that by adopting good oral hygiene habits, avoiding risk factors and having a regular dental check-up, they can help protect their mouths. A healthy mouth allows us to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions with confidence and without pain, discomfort and disease. Good oral health matters and translates to a better quality of life.”

The respondents in the majority of the countries surveyed incorrectly believed that rinsing one’s mouth with water after brushing is important. This myth was found to be the greatest among the participants from Brazil, South Africa, Mexico, India and Canada (77, 75, 76 and 76 per cent, respectively). It is actually recommended not to rinse with water straight after brushing to allow maximum exposure to fluoride, which will optimise the preventative effects.

“Nearly half of the respondents surveyed in India, South Africa, Brazil and Poland (52, 49 and 42 per cent, respectively) thought that drinking fruit juice rather than fizzy drinks was better for good oral health. Fruit juice, however, can also be high in sugar, which causes dental caries. FDI recommends keeping consumption of sugary beverages to a minimum as part of a healthy, balanced diet.”

Dr Edoardo Cavalle, WOHD Task Team Chair, stated: “Understanding good oral health practices and adopting them early in life will help to maintain optimal oral health into old age and ensure you live a long life free from physical pain and often emotional suffering caused by oral disease.”

Other key findings on oral health practices included the following:

- Seventy-seven per cent of people surveyed agreed that visiting a dentist once per year is a good oral health practice, but only 32 per cent actually did so.
- Only 28 per cent of respondents identified drinking alcohol in moderation as important for good oral health.

The survey was carried out by YouGov on behalf of FDI. It was undertaken between 20 and 31 January 2017. The figures were weighted to reflect those of Dental Tribune Asia Pacific Edition | 4/2017
Australian Child Dental Benefits Schedule remains unchanged

By DTI

Canberra, Australia: Amid fierce criticism from dental groups and the opposition, the Australian government has decided to retain the Child Dental Benefits Schedule (CDBS) at its full rebate amount of A$1,000. Initially, the government planned to terminate the scheme completely according to the 2016–17 budget released last May. In December, it then announced that the scheme was to be saved, but with a watered-down amount of A$700 available per child—both propositions have now been abandoned.

The CDBS, which was introduced by the former Labor Party government and commenced in January 2014, allows low-income families to claim a rebate of up to A$1,000 per child every two years for dental care. However, at about A$312 on average, most families claimed less than a third of the full rebate in the past. “In light of this, the Government had previously set the cap at A$700 per child over a two-year period, which would still allow children to visit a dentist regularly,” Minister for Health Greg Hunt said previously in a statement.

However, after both Labor and the Greens indicated that they would veto the change in the Senate, Hunt announced the reinstatement of the full rebate just hours before the motions were to be voted on in February. According to Hunt, the decision followed consultation with the Australian Dental Association.

Commenting on the move, Australian Dental Association Vice President Dr Carmelo Bonanno said it was a common sense decision by the government. “The reduction of A$700 meant that about 20 per cent of children were going to miss out if they were going to try and utilise the scheme fully,” Bonanno told ABC News.

Regarding the low amount claimed on average in the past, Bonanno reasoned this could be attributed to a lack of awareness of the scheme. “Improving people’s awareness of that means that there’ll be better utilisation of the scheme and the outcomes are going to be far better,” he said, adding that the dental association had already discussed the need for better marketing of the scheme with the government.

Estimating general dental care costs, the Australian Health-care and Hospitals Association calculated that children with the top 10 per cent highest need would be likely to require up to A$2,050 worth of dental work over two years and children at moderate risk would need up to A$1,253 worth of work. Keeping the scheme at A$1,000 would therefore help parents to continue to provide much-needed dental health care for their children, rather than delay treatment because of a lack of money, the association stated.

© Nina Buday/Shutterstock.com

Tetric® N-Ceram Bulk Fill

The efficient posterior composite

Save 55% on time*

and achieve amazing results

NOW AS A FLOW!
By Kristin Hübner, DTI

Singapore-based dental solutions provider Structo has the mission of empowering businesses with its application-specific digital solutions. Just recently, it helped one of Singapore’s leading dental consortia, FDC, a service provider with 21 clinics in the city-state, to launch a new line of clear aligners that allow FDC to achieve cost savings of up to 50 per cent per patient. Dental Tribune had the opportunity to speak with one of the company’s founders, Huub van Esbroeck, about the cooperation.

Dental Tribune: What exactly are AAA Aligners, and what are the benefits of the solution compared with competing products?

Huub van Esbroeck: AAA Aligners offer an affordable alternative to other clear aligner treatments. These savings are then passed to the end user, making clear aligner treatment more accessible to a larger demographic, which will soon be expanded regionally.

Can you describe the role of Structo’s technology in the development of AAA Aligners?

Huub van Esbroeck: AAA Aligners is a software solution that serves multiple customers. Instead of relying on an external aligner manufacturer or a dental laboratory, FDC now has a clear aligner manufacturing line in its own facility. By managing the manufacturing process itself, FDC can now eliminate the bottlenecks of working with external manufacturers, for example the lead time being determined by an external party, such as a laboratory that serves multiple customers other than FDC. By managing the process itself, FDC has halved the turnaround time from one month to only two weeks upon receiving a case, giving it an edge over its competitors.

How is the manufacturing process streamlined at the FDC clinic?

Huub van Esbroeck: Structo’s dental 3-D printer and thermoforming equipment, as well as staff training. The Structo OrthoForm’s high throughput—30 models can be fabricated in 15 hours—translated to FDC only needing one printer for the entire manufacturing line of AAA Aligners.

Do you think this kind of collaboration can be applied in other areas of dentistry as well?

Huub van Esbroeck: Collaborations such as these can be extended to any form of appliance manufacture. We have observed that the market is going through a stage of consolidation, and as a result, we are witnessing the emergence of more corporate dental service groups such as FDC. These groups would have tremendously higher volumes compared with individual practices. When these volumes hit a critical mass, these groups should and will eventually start looking at insourcing their manufacturing process to better manage their costs through economies of scale.

Does Structo have plans to venture into other businesses or regions any time soon?

Huub van Esbroeck: In 2016, we introduced our first dentistry-specific 3-D printer, the Structo OrthoForm, tailored for orthodontic applications. A few weeks ago, we introduced the Structo DentaForm, our second dentistry-specific 3-D printer, tailored for restorative dentistry, for example precision models.

We believe the way forward for 3-D printing in dentistry is to develop solutions for specific applications. This unique approach to product development has given Structo tremendous success, with installation bases in four continents from our base in Singapore, but in the short to medium term, we are increasing our presence worldwide, with an initial focus on markets where we have a concentration of customers so that we can guarantee the best technical support.

The Structo OrthoForm, the company’s first dentistry-specific 3-D printer, was presented at this year’s International Dental Show in Cologne in Germany.

Visit www.promedica.de to see all our products

**PROMEDICA**

Sino-Dental 2017
06.-12.06.2017
Beijing / China

Glass ionomer luting cement
- High level of adhesion
- Highly bio compatible, low acidity
- Continuous fluoride release
- Precision due to micro-film thickness
- Translucency for perfect aesthetic results
- High compressive strength and low solubility

Self curing calcium hydroxide pastes
- For indirect pulp capping and linings under dental filling materials
- Sufficient working time in combination with a short setting time in the mouth
- Bacteriostatic
- Antimicrobial effect due to a high pH-value
- Contains 26% calcium hydroxide
- Preservation of vitality due to pulp recovering

Dental Material GmbH
24537 Neumünster / Germany
Tel. +49 43 21 / 5 19 08
Fax +49 43 21 / 5 19 08
eMail info@promedica.de
Internet www.promedica.de
Another
CAD / CAM
Restorative Option

SHOFU BLOCK
SHOFU DISK

AESTHETIC • RESILIENT • FLEXIBLE • SHOCK RESISTANT
PRECISE MILLING • EASY INTRA-ORAL ADJUSTMENT & POLISH

Life-like Hybrid Ceramic
Ideal for Crowns, Inlays, Onlays, Veneers and especially Implant superstructures

For more information, simply contact your nearest Shofu Dealer Today!

SHOFU DENTAL ASIA-PACIFIC PTE. LTD.
Tel (65) 6377 2722  Fax (65) 6377 1121  eMail mailbox@shofu.com.sg  website www.shofu.com.sg
IDS 2017 SETS NEW RECORD

By DTI

COLOGNE, Germany. More than 150,000 people from 175 countries visited the International Dental Show (IDS) this year, according to the latest figures released by organizers Koelnmesse. This is an increase of 12 per cent compared with IDS 2015. Furthermore, the number of international attendees rose by almost 20 per cent to around 60 per cent.

This year’s edition focused on digital production and diagnostics, intelligent networking solutions for practices and laboratories, smart services for dentists and dental technicians, as well as the further improvement of patient care and thus oral health worldwide.

Read about this year’s show on the following IDS review pages.

Dentsply Sirona opens CEREC system

By DTI

At this year’s IDS, Dentsply Sirona was celebrating its first year as a combined company. “Who would have thought at the last IDS that Sirona and DENTSPLY would merge?” said Dr Jürgen Ser- aln, Vice President of Corporate Marketing, in greeting the audience at the celebratory press event. Commenting on the companies’ successful alliance in the past year, President and Chief Operating Officer Christopher T. Clark said that the partnership of both companies allows for an unrivalled combination of expertise in technology and solutions in the dental industry. “We truly believe we have the opportunity to shape the word of dentistry,” he said.

Clark further announced that the company would continue to grow and sharpen its profile in the field of endodontics with the acquisition of RTD (Recherches Techniques Dentaires). The French owner-managed company is a leading supplier of composite pens and will complement Dentsply Sirona’s endodontic and restorative portfolios.

“RTD’s innovative offering complements our new RZC—‘The Root to Crown Solution,’” said Jeffrey T. Slovin, CEO of Dentsply Sirona. “Thanks to RZC and RTD, we will be able to offer dentists an even more comprehensive end-to-end solution for better, safer and faster root canal treatments and dental restorations.”

Another important announcement was the opening of the CEREC system. Practitioners will now be able to export data from the digital impression in STL format for use with other applications in the dental laboratory or clinical planning software. This will make the world’s most used CAD/CAM system more flexible and therefore even more user-friendly for dentists.

According to the company, the STL format ensures compatibility with all common design programs used in laboratories. The corresponding software licence will be available with the new CEREC SW 4.5.

W&H previews new image campaign

By DTI

In addition to introducing the company’s latest advancements in Cologne, W&H Managing Director Peter Malata previewed a new image campaign and shared his vision for the family-run company in light of the dental industry’s recent trend towards mergers.

A new product highlighted by Malata and Roland Gruber, Head of Marketing and Sales for W&H Austria and W&H Germany, was the Primus Advanced Air System, the world’s first air-operated high-speed dental drive solution that combines the advantages of a turbine with the key strengths of an electric motor. “W&H has tamed the air,” said Malata in introducing the system. Owing to its adjustable drilling speed, cavities can be opened easily, old fillings can be removed simply, and even crowns and bridges can be separated with ease, according to the company. The innovative drive solution can either be integrated as a built-in solution into new or existing units or be used as an add-on.

Apart from its new products, the company will be promoting a new image campaign, titled “Because you care,” with a number of activities in 2017. Dentists take care of the well-being of their patients, and W&H seeks to support clinicians in their goal by providing reliable products and first-class service, explained Malata regarding the campaign.

In addition to the Austrian company’s ongoing development efforts, Malata highlighted the importance of establishing and fostering networks. According to him, it is most important to build synergies on various levels and with different partners in order to develop innovative products.

To this end, the company’s long-standing managing director also made a statement on W&H’s position regarding the international merger trend. Although merging could be considered both a threat and an opportunity, W&H sees the company’s strengths in maintaining a philosophy that is based on tradition and a close-knit community of partners and employees, he said. “There are different mindsets out there regarding consolidation versus family business and the benefits of both. However, in my opinion, in the future, it will be important to allow individual companies to pursue their own innovations while networking more closely with others.”

Ivoclar Digital launched

By DTI

Increasing digitalisation of the dental treatment workflow requires all the different components used in a process to be optimally coordinated. To meet this demand, Ivoclar Vivadent has extended its long-standing materials and processing expertise to the entire digital process chain with a comprehensive portfolio of CAD/CAM products for both dental laboratories and practices. The new range, under the brand Ivoclar Digital, was presented for the first time at IDS 2017.

For Ivoclar Digital, new products have been added to the company’s range of aesthetic, state-of-the-art CAD/CAM materials for fixed, removable and implant-supported prosthetic restorations, including versatile ZirCAD blocks and a range of discs for the IPS e.max system. Dentists and laboratories will be able to digitally produce dental restorations quickly and easily with four new ProGarmaill digital milling units that are suited for laboratories of all sizes. The range of high-end scanners from 3Shape has also been extended to include the new 5Shape E series, which, together with the Dental Designer software and exclusively developed Ivoclar Digital software add-ons, is aimed at increasing the reliability and efficiency of fully digitised processing procedures.

“We plan to enhance our customer-focused market strength significantly with the introduction of Ivoclar Digital. This is a unique new digital product portfolio based on our core competences in digital materials and processes,” commented CEO Robert Ganley.
Introducing Innovative and High-Quality Restorative Solutions

Glidewell Direct Europe is actively seeking distribution channels

For more information
glidewelldirect.com
orders@glidewelldental.de
DTI Publishers’ Meeting

By Julia Maciejek, DTI

The opportunity to stay innovative

By DTI

After only two years of development, Japanese company NSK presented the world’s first lightweight mobile dental treatment unit, among other new products, at IDS. At the show, President and Chief Operating Officer Eiichi Nakahashi spoke with Dental Tribune about the device and how his company has stayed ahead in developing innovative solutions for dentistry.

Dental Tribune: Mr Nakahashi, at IDS 2016, we spoke about sterilisers and premium handpieces. What is the focus of this year’s presentation by NSK?

Eiichi Nakahashi: We are focusing on two specific categories of products, in the fields of hygiene and prophylaxis, including the Varios Combi Pro. The device combines a prophylaxis scaler with powder treatment and will allow clinicians to effectively treat peri-implantitis, which has become a major issue around the globe.

We are also very proud of the new VIVA ace, our portable treatment unit, which is very lightweight and can perform all treatments. In Japan and in many other countries, including China, the population is increasingly ageing and many elderly people are not able to visit a dentist. Our device is aimed at addressing this issue by allowing people to be treated in their homes, for example. It is the first device of its kind in the world.

That is quite impressive. What has been the feedback from the device being in your home country and here at IDS?

We only introduced the device in Japan last year, but it has already proved to be a great success. Within only a few months, we sold over 1,000 units. The response here in Cologne has also been extremely positive, and we are in talks with German dealers regarding the distribution of the device.

NSK has a unique position in the market, as it is still family-owned, in comparison with many other companies in the market that have grown through acquisitions or mergers in recent years. Where do you see the benefits in this?

It is true, many companies, like Dentsply Sirona, are becoming constantly larger and they can virtually offer everything. This is, of course, something we may need to compete with in the future. However, we still see many benefits in having a more focused portfolio. It gives us the opportunity to stay innovative and develop unique products like the VIVA ace.

3Shape: TRIOS 3 Wireless

By DTI

Gathering an impressive crowd at 3Shape’s booth, Tais Clausen and Rune Fisker, 3Shape co-founder and Chief Technology Officer and Vice President for Product Strategy, respectively, at 3Shape, presented the company’s brand-new digital solutions at IDS. As part of its expansion, DTI is moving towards the events business and already organises the ROOTS SUMMIT, the discussion forum for endodontics. Following on the success of last year’s event in Dubai in the UAE, with over 900 attendees, the next edition will take place in Berlin in Germany from 28 June to 1 July 2018. The ROOTS SUMMIT began as a dedicated Facebook group, growing from a membership of 1,000 in 2013 to more than 22,000 currently, including dental professionals from all over 100 countries.

The next Publishers’ Meeting will take place at the Black Sea in 2018 and be hosted by Dental Tribune Bulgaria.

The opportunity to stay innovative

By DTI

After only two years of development, Japanese company NSK presented the world’s first lightweight mobile dental treatment unit, among other new products, at IDS. At the show, President and Chief Operating Officer Eiichi Nakahashi spoke with Dental Tribune about the device and how his company has stayed ahead in developing innovative solutions for dentistry.

Dental Tribune: Mr Nakahashi, at IDS 2016, we spoke about sterilisers and premium handpieces. What is the focus of this year’s presentation by NSK?

Eiichi Nakahashi: We are focusing on two specific categories of products, in the fields of hygiene and prophylaxis, including the Varios Combi Pro. The device combines a prophylaxis scaler with powder treatment and will allow clinicians to effectively treat peri-implantitis, which has become a major issue around the globe.

We are also very proud of the new VIVA ace, our portable treatment unit, which is very lightweight and can perform all treatments. In Japan and in many other countries, including China, the population is increasingly ageing and many elderly people are not able to visit a dentist. Our device is aimed at addressing this issue by allowing people to be treated in their homes, for example. It is the first device of its kind in the world.

That is quite impressive. What has been the feedback from the device being in your home country and here at IDS?

We only introduced the device in Japan last year, but it has already proved to be a great success. Within only a few months, we sold over 1,000 units. The response here in Cologne has also been extremely positive, and we are in talks with German dealers regarding the distribution of the device.

NSK has a unique position in the market, as it is still family-owned, in comparison with many other companies in the market that have grown through acquisitions or mergers in recent years. Where do you see the benefits in this?

It is true, many companies, like Dentsply Sirona, are becoming constantly larger and they can virtually offer everything. This is, of course, something we may need to compete with in the future. However, we still see many benefits in having a more focused portfolio. It gives us the opportunity to stay innovative and develop unique products like the VIVA ace.

3Shape: TRIOS 3 Wireless

By DTI

Gathering an impressive crowd at 3Shape’s booth, Tais Clausen and Rune Fisker, 3Shape co-founder and Chief Technology Officer and Vice President for Product Strategy, respectively, at 3Shape, presented the company’s brand-new digital solutions at IDS. As part of its expansion, DTI is moving towards the events business and already organises the ROOTS SUMMIT, the discussion forum for endodontics. Following on the success of last year’s event in Dubai in the UAE, with over 900 attendees, the next edition will take place in Berlin in Germany from 28 June to 1 July 2018. The ROOTS SUMMIT began as a dedicated Facebook group, growing from a membership of 1,000 in 2013 to more than 22,000 currently, including dental professionals from all over 100 countries.

The next Publishers’ Meeting will take place at the Black Sea in 2018 and be hosted by Dental Tribune Bulgaria.

The opportunity to stay innovative

By DTI

After only two years of development, Japanese company NSK presented the world’s first lightweight mobile dental treatment unit, among other new products, at IDS. At the show, President and Chief Operating Officer Eiichi Nakahashi spoke with Dental Tribune about the device and how his company has stayed ahead in developing innovative solutions for dentistry.

Dental Tribune: Mr Nakahashi, at IDS 2016, we spoke about sterilisers and premium handpieces. What is the focus of this year’s presentation by NSK?

Eiichi Nakahashi: We are focusing on two specific categories of products, in the fields of hygiene and prophylaxis, including the Varios Combi Pro. The device combines a prophylaxis scaler with powder treatment and will allow clinicians to effectively treat peri-implantitis, which has become a major issue around the globe.

We are also very proud of the new VIVA ace, our portable treatment unit, which is very lightweight and can perform all treatments. In Japan and in many other countries, including China, the population is increasingly ageing and many elderly people are not able to visit a dentist. Our device is aimed at addressing this issue by allowing people to be treated in their homes, for example. It is the first device of its kind in the world.

That is quite impressive. What has been the feedback from the device being in your home country and here at IDS?

We only introduced the device in Japan last year, but it has already proved to be a great success. Within only a few months, we sold over 1,000 units. The response here in Cologne has also been extremely positive, and we are in talks with German dealers regarding the distribution of the device.

NSK has a unique position in the market, as it is still family-owned, in comparison with many other companies in the market that have grown through acquisitions or mergers in recent years. Where do you see the benefits in this?

It is true, many companies, like Dentsply Sirona, are becoming constantly larger and they can virtually offer everything. This is, of course, something we may need to compete with in the future. However, we still see many benefits in having a more focused portfolio. It gives us the opportunity to stay innovative and develop unique products like the VIVA ace.
An interview with Dr Patrick Dipsche, Germany

When it comes to successful dental treatment, it is not only important to use solutions that facilitate the dentist’s work; physical comfort of the patient is equally important. With OptraGate, dental manufacturer Vivadent has introduced a lip and cheek retractor that considerably facilitates isolation of the treatment area in a multitude of dental procedures while being gentle and comfortable to wear for the patient. In the following interview, German orthodontist Dr Patrick Dipsche speaks about the benefits of the product for both patients and practitioners.

In which treatment situations do you especially like using OptraGate?

Dr Patrick Dipsche: As an orthodontist, I particularly like using OptraGate for intra-oral scanning and indirect bonding of lingual brackets. My assistants like to use it in the provision of prophylactic care, as they often perform these tasks alone and appreciate the effective retraction of the lips and cheeks that this device offers.

In your opinion, what are the key advantages of the product?

Although it may not seem so at first, OptraGate can actually be positioned easily and quickly in the patient’s mouth. This is something I greatly value. An auxiliary such as a lip and cheek retractor must be easy and quick to use in order to be integrated into regular treatment procedures.

How does OptraGate help you in your workflow?

I would say that the gentle and effective retraction of the lips and cheeks is the most helpful feature and this feature also makes it considerably easier to achieve relative isolation. I do not have to move the tissues out of the way with the mirror all the time and I can concentrate more intensely on the actual treatment.

Would you say that OptraGate allows you to work more efficiently?

Yes. As I can concentrate more intensely on the actual treatment procedure, I automatically work faster. This generally has a favourable effect on my treatment results. Is this not the definition of efficiency? The output is the same at least, if not better, while the use of resources is optimised. In this context, my resource is time and my output is the treatment result. I would say that I save about 5 minutes per patient on average.

What do your patients tell you after they have been treated with it?

Well, no patient ever likes wearing a retractor. However, I definitely feel that they tolerate OptraGate better than rigid retractors.

Do you feel that your patients find it comfortable to wear OptraGate?

I definitely feel that they tolerate OptraGate better than rigid retractors, because it is made of soft material and flexibly adapts to movements. However, subjective perceptions of comfort have to be taken with a grain of salt. All patients prefer not to be restricted in their movements. Compared with the existing alternatives, however, OptraGate always elicits a positive reaction from my patients.

Is it easy to place in the patient’s mouth?

Yes, in most cases. At first, it takes a bit of time to get used to. However, after that, placement is easy and quick. Once one has got the hang of it, one would not want to do without it.

Viewed German orthodontist Dr Patrick Dipsche speaks about the benefits of the product for both patients and practitioners.

In which treatment situations do you especially like using OptraGate?

Dr Patrick Dipsche: As an orthodontist, I particularly like using OptraGate for intra-oral scanning and indirect bonding of lingual brackets.

In your opinion, what are the key advantages of the product?

Although it may not seem so at first, OptraGate can actually be positioned easily and quickly in the patient’s mouth.

How does OptraGate help you in your workflow?

I would say that the gentle and effective retraction of the lips and cheeks is the most helpful feature.

Would you say that OptraGate allows you to work more efficiently?

Yes. As I can concentrate more intensely on the actual treatment procedure, I automatically work faster.

What do your patients tell you after they have been treated with it?

Well, no patient ever likes wearing a retractor. However, I definitely feel that they tolerate OptraGate better than rigid retractors.

Do you feel that your patients find it comfortable to wear OptraGate?

I definitely feel that they tolerate OptraGate better than rigid retractors, because it is made of soft material and flexibly adapts to movements.

Is it easy to place in the patient’s mouth?

Yes, in most cases.

How would you describe OptraGate in one sentence?

Hmm. The silent assistant for efficient relative isolation for nearly all indications.

Do you have any placement tricks?

The most important step is choosing the correct size. Surprisingly, an OptraGate that is too small appears to be more difficult to insert than one that is slightly too large. Once the two lateral tabs have been positioned, it is also important to ask the patient to slightly close his or her mouth to allow the soft tissue to relax.

How do you select the appropriate size for the patient?

So far, this has been a matter of judgement because the manufacturer did not previously provide specific instructions in this respect. However, the new blue and pink variations include an orientation aid printed on the packaging to assist in choosing the correct size. In my opinion, this scale works really well. One simply estimates the distance between the corners of the mouth (taking the slight curve of the lip into account) and then selects the most suitable size with the help of the guide marks.

Are there fewer interfering movements of the lips and jaws when the OptraGate retractor is worn?

Yes. I feel that, on the whole, the treatment goes more smoothly. Usually, one has to constantly remind patients to keep their mouths open during treatment, as they tend to reduce their mouth opening after a while to relax their muscles. Additionally, sometimes a protective reaction is inadvertently elicited from the patient when the tissue is moved away somewhat abruptly with a mirror. Such occurrences are clearly reduced with OptraGate because the mouth stays wide open without active involvement of the muscles, allowing the patient to rest against OptraGate. As the tissue is retracted evenly throughout the treatment, spontaneous protective movements of the patient can be avoided.

How would you describe OptraGate in one sentence?

Hmm. The silent assistant for efficient relative isolation for nearly all indications.

Do you have any placement tricks?

The most important step is choosing the correct size. Surprisingly, an OptraGate that is too small appears to be more difficult to insert than one that is slightly too large.

How do you select the appropriate size for the patient?

So far, this has been a matter of judgement because the manufacturer did not previously provide specific instructions in this respect. However, the new blue and pink variations include an orientation aid printed on the packaging to assist in choosing the correct size.

How would you describe OptraGate in one sentence?

Hmm. The silent assistant for efficient relative isolation for nearly all indications.

Do you have any placement tricks?

The most important step is choosing the correct size. Surprisingly, an OptraGate that is too small appears to be more difficult to insert than one that is slightly too large. Once the two lateral tabs have been positioned, it is also important to ask the patient to slightly close his or her mouth to allow the soft tissue to relax.

How do you select the appropriate size for the patient?

So far, this has been a matter of judgement because the manufacturer did not previously provide specific instructions in this respect. However, the new blue and pink variations include an orientation aid printed on the packaging to assist in choosing the correct size. In my opinion, this scale works really well. One simply estimates the distance between the corners of the mouth (taking the slight curve of the lip into account) and then selects the most suitable size with the help of the guide marks.

Are there fewer interfering movements of the lips and jaws when the OptraGate retractor is worn?

Yes. I feel that, on the whole, the treatment goes more smoothly. Usually, one has to constantly remind patients to keep their mouths open during treatment, as they tend to reduce their mouth opening after a while to relax their muscles. Additionally, sometimes a protective reaction is inadvertently elicited from the patient when the tissue is moved away somewhat abruptly with a mirror. Such occurrences are clearly reduced with OptraGate because the mouth stays wide open without active involvement of the muscles, allowing the patient to rest against OptraGate. As the tissue is retracted evenly throughout the treatment, spontaneous protective movements of the patient can be avoided.

The silent assistant for efficient relative isolation for nearly all indications

Using the OptraGate lip and cheek retractor in daily dental practice

“We definitely feel that they [patients] tolerate OptraGate better than rigid retractors.”

Dr Patrick Dipsche
Acupuncture: Probing its way into dentistry—Part I

An introduction to acupuncture and its practical applications in contemporary dental practice

By Dr Wong Li Beng, Singapore

The history of traditional Chinese medicine (TCM) can be traced back to the Warring States and the Qin and Han dynasties more than 2,000 years ago. The Huangdi’s Inner Classic of Medicine, of comparable importance to the Hippocratic corpus in Greek medicine, is a scholastic collection of medicinal doctrines and philosophies accumulated over the years. To date, it still provides a theoretical guide and basis for the development of contemporary TCM. It consists of two parts, Suwen (plain questions), which mainly addresses the theoretical aspects and diagnostic methods, and Lingshu (spiritual pivot), which covers the practice of acupuncture.

Acupuncture, according to the definition of the TCM Practitioners Act in Singapore,1 means ‘the stimulation of certain points or points on or near the surface of the human body through any technique of point stimulation (with or without the insertion of needles), including through the use of electrical, magnetic, light and sound energy, cupping and moxibustion, to normalise physiological functions or to treat ailments or conditions of the human body’. In order to understand the role of acupuncture therapy in TCM, we must first appreciate the fundamental treatment philosophies in TCM.

TCM is premised on the concept of holism, according to which the human body is seen as an organic whole; all the constituent parts are interconnected and they coordinate and interact with one another functionally. There is also recognition of humans’ interaction with the external environment and its effect on the human body. The state of the constitution of the human body at the point of challenge by pathogenic factors (both internal and external), will determine the occurrence and progression of disease. The constitution of the body can be regulated by maintaining the yin–yang and qi–blood balance. The vital qi, or life force, is viewed as keeping the entire body system going. It circulates all over the body along designated pathways called ‘meridians’. To put it simply, acupuncture therapy involves the stimulation of certain points along the meridians to allow the free flow of qi to maintain yin–yang and qi–blood balance. The pathogenesis of disease based on TCM philosophy is summarised in Figure 1.

This concept of host–pathogen interaction, according to which the manifestation of disease presentation depends on both the virulence of the invading pathogens and the host response, has parallels with some of the modern concepts of disease progression in Western medicine, for example the pathogenesis of periodontitis (Fig. 2)—an inflammatory disease initiated by oral micro-organisms, resulting in the loss of supporting structures around the dentition.

The story of New York Times editor James Reston, whose post-appendectomy pain was relieved by acupuncture, and the visit of US President Richard Nixon to China in 1971 brought acupuncture into the limelight and created much interest in the Western medical field. In 1979, the World Health Organization (WHO) endorsed the use of acupuncture for treatment of 43 symptoms. In 1996, WHO’s endorsement of acupuncture was extended to 64 indications. In the Geneva 2003 WHO report, pain in dentistry (including dental pain and temporomandibular joint dysfunction syndrome), facial pain and postoperative pain were listed among the conditions for which acupuncture had been proven, through controlled trials, to be an effective treatment.

Scientific basis of acupuncture

Acupuncture treatment involves the excitation of qi or ‘de qi’, which is the transmission of needle sensation along the meridians, often described by patients as soreness, numbness, ache, fullness or a warm sensation as a result of needle manipulation. This is also perceived by the acupuncturist as a needle grasp sensation, which is key in achieving

**Exogenous pathogens**
- wind
- cold
- summer heat
dampness
- fire heat
- pestilent pathogens

**Endogenous pathogens**
- 7 emotions
- improper diet
- maladjustment of work and leisure

**Constitution of patient**
- yin–yang balance
- qi–blood balance
- status of vital qi
- qi flow in the meridian

**ConClinical presentation of disease based on 8 principles for syndrome differentiation**
- exterior and interior
- cold and hot
- deficiency and excess
- yin and yang

**Secondary pathogenic factors**
- phlegm
- stagnant fluid
- stagnant blood

**Fig. 1** Pathogenesis of disease based on TCM philosophy.
therapeutic efficacy. Recent histo-
logical evidence using rat models
suggests that this needle grasp
sensation is the result of collagen
and elastic fibres tightening
around the needle during needle
manipulation.\(^1\) The authors went
further to postulate that this me-
chanical coupling between the
needle and soft tissue is responsi-
bile for transducing mechanical
signals to fibroblasts and other
cells, with resultant therapeutic
downstream effects.

How acupuncture can relieve
pain can be explained by the gate
control theory of pain. It proposes
that the activation of alpha delta
and C afferent nerve fibres through
acupuncture point stimulation
sends signals to the spinal cord,
with local release of dynorphins
and enkephalins.\(^6\) Upon reaching
the midbrain, both excitatory and
inhibitory mediators are activated
in the spinal cord. Neurotransmit-
ters, like serotonin, dopamine and
norepinephrine, are produced,
causing pre- and postsynaptic
inhibition of pain transmission.
When the signals reach the hypo-
thalamus and pituitary gland,
adrenocorticotropic hormones
and endorphins may be produced.
This forms the basis of our current
understanding of the analgesic
effect of acupuncture in Western
medicine, although other ther-
paeutic effects of acupuncture, such
as in the treatment of nausea,
gastritis, asthma and dysmenor-
rhoea, are yet to be fully ex-
plained. In the case of asthma, one
of the therapeutic acupuncture
points, BL13 (feishu), lies approxi-
mately 1.5 in. (38.1 mm) lateral
to the level of the spinous process
of vertebra T3. It has been hypothe-
sised that the location of BL13
corresponds roughly to the
sympathetic ganglion at the
level of T3, which sends postgan-
glionic fibres to the pulmonary
plexus and cardiac plexus.\(^7\)

**Dental application of
acupuncture**

Managing dental pain, analgesic
effect and postoperative pain relief
According to TCM theory, local
acupuncture points on the facial
regions, like ST6 (jiache) and ST7
(xiaguan), and distant points, like
LI4 (hegu), can be used to treat
dental pain. They are part of the
stomach and large intestine me-
idians, which converge at the fa-
cial region and link up with the
maxillary and mandibular teeth,
respectively. Western medical lit-
erature has proposed that acu-
puncture can produce an analge-
sic effect at a distant site by dif-
fuse noxious inhibitory control.\(^8\)
This provides a possible explana-
tion as to how the acupuncture
point LI4 (hegu), which is located
on the radial side of the second
metacarpal bone on the dorsum
of the hand, can elicit an analgesic
effect in the orofacial region.

The role of acupuncture in
contemporary dentistry may not
be so much the removal of the ae-
tiology of dental pain, but rather
as an adjunct in achieving anaes-
thesia during dental procedures
and providing postoperative pain
relief. A pilot study was conducted
to investigate whether the induc-
tion time of local anaesthesia can

...studies have shown that acupuncture
can reduce postoperative pain.”

---

**Complete line of MTA**

Bioceramic and Bioactive materials

**MTA Angelus®**

Bioceramic reparative cement

**MTA Repair HP**

Bioceramic high-plasticity reparative-cement

**MTA-Fillapex**

Bioactive root canal sealer

**The first MTA-BASED sealer of the world.**
be reduced if acupuncture is given before injection. The results showed that, in the group in which local acupuncture points SI9 (tinggong), ST5 (daying) and ST6 (jiache)—within the innervations of the mandibular branch of the trigeminal nerve—were stimulated before an inferior alveolar nerve block was given, findings from this study suggest that regional acupuncture can accelerate the induction time after an inferior alveolar nerve block. The results of another study indicate that acupuncture before inferior alveolar nerve block may increase its effectiveness in endodontic treatment of mandibular molars with symptomatic irreversible pulpitis.

Several studies have shown that acupuncture can reduce postoperative pain. A systematic review of 16 studies found that acupuncture therapy can help to alleviate postoperative pain, although heterogeneity in terms of methodological details among the studies reviewed may limit the conclusions that can be drawn.

The practical implication of acupuncture therapy in alleviating postoperative pain may be helpful in reducing the patients’ dependence on systemic analgesic medications. It is well documented that the use of non-steroidal anti-inflammatory drugs for pain control is associated with increased risk of gastrointestinal complications, like ulceration and bleeding. A randomised placebo-controlled trial was conducted to evaluate the efficacy of acupuncture in treating postoperative oral surgery pain. The treatment group that received real acupuncture treatment immediately after the surgical removal of impacted lower third molars had a significantly longer pain-free postoperative period (72.9 minutes) compared with the placebo group (93.8 minutes). More importantly, the treatment group took a significantly longer time to request analgesia (1.1 tablets of 600 mg and 1.65 tablets) compared with the placebo group (466.2 minutes). They also took significantly less medication (1 tablet of 600 mg acetaminophen with 60 mg codeine) compared with the placebo group (1.85 tablets); this difference was still evident at the seven-day follow-up (7.7 tablets versus 11.3 tablets). More randomised controlled clinical trials to verify the role of acupuncture therapy in dental pain management, particularly in postoperative pain, may be warranted.

Management of temporo-mandibular joint dysfunction syndrome and orofacial pain

Temporomandibular joint dysfunction syndrome (TMD) is a term that includes a group of conditions that affect the temporomandibular joint (TMJ), the muscles of mastication, and the associated head and neck musculoskeletal structures. The clinical diagnostic criteria for TMD classify the most common forms of TMD into the main subgroups of masticatory muscle disorder, TMJ internal derangement and TMD degenerative joint disease.

The treatment of TMD depends on the aetiologies of the conditions. While acupuncture therapy may not be useful in eliminating the cause if it is due to structural anomalies, like capsulitis and degenerative changes, it may help to relieve the pain and discomfort associated with the conditions, especially if it is muscular in nature. It has been documented that acupuncture can help in muscle relaxation and reduce muscle spasm. Relaxing the lateral pterygoid muscles can reduce the anterior displacing force on the meniscus of the TMJ and help to minimise TMJ clicking.

A systematic review of 99 randomised controlled trials was conducted to assess the effectiveness of acupuncture for symptomatic treatment of TMD. The findings suggest moderate evidence for acupuncture as an effective intervention for the reduction of TMD symptoms, although more studies of larger sample sizes are needed to investigate the long-term effectiveness of acupuncture.

Trigeminal neuralgia is a sudden, unilateral, brief, stabbing, recurrent pain in the distribution of one or more branches of the trigeminal nerve. Carbamazepine is often the first-line treatment for this condition and is considered the gold standard, but it also has various side-effects, including drowsiness, dizziness and constipation. There are several case reports and case series in the Chinese literature on the success of acupuncture treatment on patients with trigeminal neuralgia. Acupuncture points GB4 (yangbai) and EX-HN5 (taiyang) are used if the ophthalmic branch is affected, ST2 (sishu) and ST3 (yulan) if the maxillary branch is affected, and ST6 (jiache) and ST7 (xiaguan) if the mandibular branch is affected. The choice of acupuncture points coincides with the distribution of the nerve branches. There is however, a paucity of reports in the Western literature and a lack of randomised controlled trials to verify its effectiveness in treating trigeminal neuralgia.

Editorial note: A list of references is available from the publisher.
Management of a non-vital central incisor with an open apex
Using a novel MTA-based repair material in a young patient

By Drs Mario Luis Zuolo & Arthur de Siqueira Zuolo, Brazil

The treatment of immature necrotic teeth with non-vital pulps and open apices often presents a challenge to the clinician. Cleaning and shaping the thin canal walls, controlling the infection, and performing satisfactory sealing of the apex are sometimes not possible. In most cases, the treatment involves the induction of apical closure by apexification procedures to allow more favourable conditions for the conventional treatment.

Traditionally, calcium hydroxide has been the material of choice used to induce the formation of an apical hard tissue barrier before placing the permanent filling. Although many studies have reported favourable outcomes when this treatment is used, disadvantages have also been reported. The use of calcium hydroxide apical barriers has been associated with some problems, such as unpredictability of apical closure, risk of re-infection due to leakage of the provisional filling, and risk of root fracture as a result of the long-term application of calcium hydroxide. Furthermore, poor patient compliance has a negative influence on the prognosis of conventional apexification procedures.

With the advent of the mineral trioxide aggregate (MTA), a calcium silicate-based, biocompatible, non-absorbable material, another treatment option was proposed. This material has the ability to set in a short period and in addition, its use can cause discoloration of the tooth, and it should be used with caution in aesthetic zones. A novel material, MTA REPAIR HP (high plasticity; Angelus), was recently introduced with the intention of improving some of those characteristics. This new formula retains all the chemical and biological properties of the original MTA, however, it changes its physical properties of manipulation, resulting in greater plasticity, thereby facilitating handling and insertion. Additionally, its formula uses a different radiopaque material inside the canal and to place a calcium hydroxide dressing. Then, after one to two weeks, with the regression of the symptoms, we would recreate an apical barrier with a new MTA-based material, obturate the tooth and restore it.

The treatment plan was to first perform the cleaning and shaping of the canal and to place a calcium hydroxide dressing. Then, after one to two weeks, with the regression of the symptoms, we would recreate an apical barrier with a new MTA-based material, obturate the tooth and restore it. The treatment plan was presented to the patient’s parents, who agreed to it.

After the consent form had been signed, 1.8 ml of local anaesthetic (2% lidocaine with adrena...
line 1:100,000 was administered, the restorative material was removed, and endodontic access corrected. After rubber dam isolation, the material inside the canal was removed under thorough irrigation using a 2.5 % sodium hypochlorite solution (Formula & Ação) and a CPR-7 ultrasonic tip (Obtura Spartan Endodontics). After the removal of the material from the canal, #2 and #3 Large burs were used to prepare the first two-thirds of the canal. Then, the apical foramen was located with the aid of an apex locator (RAYPEX, VDW), and the working length was established at 0.0 and confirmed with a radiograph. Instrumentation proceeded using stainless-steel K-type hand files in a crown-down technique until a #80 hand file achieved the working length. Between each file change, copious irrigation with 2.5 % sodium hypochlorite solution was performed (approximately 100 ml throughout the entire treatment).

During the procedure, passive ultrasonic irrigation was performed for 1 minute several times to ensure complete removal of the old material and to maximise the irrigation technique. After the completion of instrumentation, the canal was irrigated with 5 ml of 17 % EDTA (Formula & Ação) for 3 minutes and a final rinse with 5 ml of saline solution. A calcium hydroxide-based paste was placed in the canal as an inter-appointment dressing, and the tooth was temporarily restored (Fig. 2). After ten days, the patient came to the clinic for conclusion of treatment. The tooth was asymptomatic, and the area was no longer swollen. The temporary filling was removed, and the calcium hydroxide paste was removed from the canal using a 2.5 % sodium hypochlorite solution and passive ultrasonic irrigation as previously described. The #80 hand file was used again to working length. The canal was then irrigated with 5 ml of 17 % EDTA for 3 minutes to remove the smear layer, and 5 ml of saline solution was used for the final rinse. The canal was dried with paper points, and MTA REPAIR HP was manipulated according to the manufacturer’s instructions and placed with the aid of plugs (Bi&L Biotech) in the last 3 mm of the root canal, forming an apical plug. After 30 minutes, the material was set, and the tooth was obturated using BC Sealer (Brasseler) in the last 3 mm of the root canal, forming an apical plug. A high-resolution CBCT scan of the patient was requested immediately after treatment so that it could be used for comparison later in the follow-up.

The patient presented for recall one month later without any symptoms. Postoperative radiographic and clinical evaluations were performed at three, six and nine months. The tooth was asymptomatic, and the area did not have any signs of inflammation. After nine months, another CBCT examination was conducted. Comparison of the CBCT images was performed, and bone healing and apical closure of the open apex could be observed (Figs. 4a & 4b, 5a & 5b).
Previous clinical studies in humans have demonstrated that an apical barrier of MTA can be used with success in the technique of apexification of teeth with open apices. El-Meligy and Avery ran a clinical trial comparing the use of calcium hydroxide and MTA in 30 teeth of 15 patients who had lost pulp vitality through caries or trauma. The conventional technique of apexification with calcium hydroxide was performed in one tooth, whereas the barrier technique with MTA was applied to the other tooth in the same patient. The teeth were then followed up for three, six and 12 months. Two of the teeth filled using calcium hydroxide failed, while none of the teeth filled with MTA showed clinical or radiographic signs of pathology. Simon et al. carried out a prospective clinical trial in 57 teeth of 50 patients with open apices treated with MTA plugs and definitive filling of the canal and observed success in 81% of the cases.

In this case report, the use of a modified MTA (MTA–bioceramic-based high-plasticity reparative cement) achieved a good clinical result over the short follow-up period. Comparison of CBCT images just after placement of the MTA barrier and after a nine-month period demonstrated bone formation and apical closure by hard tissue. It should be noted that a radiolucent area could be seen at this time. Such a healing pattern could be classified as incomplete healing, according to Molven et al.

From a clinical perspective, the handling and placement of the MTA REPAIR HP was easier than with the conventional MTA. According to the manufacturer, the difference between MTA REPAIR HP and the original Angelus MTA is the replacement of distilled water with a liquid that contains water and another organic plasticizer that gives the new product high plasticity.

The importance of case reports is the demonstration of what is possible in our patients using scientific clinical treatment protocols. Reports from clinical practitioners have played important roles in the field of dentistry, but should be validated through proper laboratory and clinical research studies. In conclusion, the clinical protocol using the new MTA REPAIR HP, as described in this case report, enabled the successful apexification of a central incisor in a young patient.

Editorial note: This article first appeared in the Endodontic Practice US magazine (Vol. 9, No. 2). Reprinted with permission. A list of references is available from the publisher.

Dr Arthur de Siqueira Zuolo runs a private practice in São Paulo and is Adjunct Professor of Endodontics at the Associação Paulista de Cirurgiões Dentistas, the São Paulo association of dental surgeons. He can be contacted at artz@mns.com.

Endodontist Dr Mario Luis Zuolo from São Paulo in Brazil is an internationally prominent speaker in the specialty. He can be contacted at mlzuolo@uol.com.br.

Figs. 6a & b: MTA REPAIR HP. (a) Capsule containing the powder. (b) Vial containing the liquid.

Fig. 6c: The material after proper manipulation.
“Our approach to business remains uniquely different in the implant segment”

An interview with MegaGen CEO Dr Kwang-bum Park

By Claudia Duschek, DTI

MegaGen is one of the fastest-growing dental implant companies in the world market. After the South Korean company only recently announced that it was discontinuing its business relationship with a global implant manufacturer, Dental Tribune had the opportunity to speak with Dr Kwang-bum Park, CEO of MegaGen, at the International Dental Show (IDS) about the company’s participation at the trade fair and its future global market strategies.

Dental Tribune: IDS is a unique opportunity for dentists to experience implant products live and gain an overview of the latest developments in the field. What are your expectations for IDS?

Dr Kwang-bum Park: We have always viewed IDS as the key location to meet international partners and to present our new products to the market. This year, we look forward to getting to know more dentists and involving them in our MegaGen family. In 2017, we continue to highlight our AnyRidge implant system, which has seen increasing demand from patients for instant smiles. In addition, we are promoting R2GATE, a digital solution for dentists, bringing a streamlined digital approach to implant treatment ever closer.

Dental implants were first introduced in South Korea about 20 years ago. How has implantology evolved in the country since then?

The growth of implant dentistry in South Korea has been a phenomenon that can be equalled only in a few other countries, such as in Italy and Israel. High-level implant surgery is the standard in South Korea, and unless strong contra-indications are present, implants are the absolute standard for replacing missing teeth. Dental care in general is a high-priority health care consideration in all South Korean families. It is widely available and the average overall dental health of the population is good.

Today, MegaGen exports its products to 50 countries worldwide, including many European countries. How important is this market for you, and how do your products perform in this market?

As it is one of the world’s largest implant markets, the European market remains our greatest export market. We have been active in Europe for ten years now and are still experiencing a growth of over 20 per cent on average in this market, which we expect to see continue over the coming year. Our largest expected growth, however, is in the newer markets, with key product launches in India and Japan, Russia and other countries of the Commonwealth of Independent States last year. We expect to rival our European market share across the Asian, Middle Eastern and African markets. We also expect to achieve double-digit growth in the US in 2017.

With a number of major company mergers and increasing competition worldwide, the international implant market is expected to change and grow over the next few years. How do you evaluate this development, and how does MegaGen intend to compete in the future?

MegaGen is growing strongly as an independent company. We remain focused on customer satisfaction, product development and better patient outcomes. We have clinicians at the top of our company who are still practising implant dentistry, which gives us a unique insight into what dentists need to improve their and their patients’ lives. We believe that the implant business is going to continue to grow as implants become the standard of care for tooth replacement worldwide.

We have found that our approach to business remains uniquely different in the implant segment. We remain open, of course, to discussing possible future partnerships if we find compatible partners with whom we can establish a clear and good understanding. Meanwhile, we will continue to develop our implant product line and the digital approach, which we believe is the future for reliable patient outcomes. Our strong partners worldwide stand with us and we foresee continued excellent growth for our company.

PROSEC: New quality initiative for metal-free implantology

By DTI

COLOGNE, Germany: At the International Dental Show (IDS) in Cologne, VITA Zahnfabrik has introduced a new specialist network for metal-free implantology PROSEC (Progress in Science and Education with Ceramics), which was established with the aid of the vitaprint network.

PROSEC President Dr Jörg Strub said that PROSEC aims to act as a bridge between science and practice. Its goals are to foster close collaboration between specialist organisations, practitioners and science in order to establish high-quality standards in metal-free implantology and thereby improve the well-being of patients.

On its website, www.prosec-network.org, the organisation will present the latest findings, promote joint clinical studies and provide a platform for expert discussion, he said. In addition, an annual conference will serve to document the progress in the field and share knowledge on a global scale.

“It is great fun for me to accompany the ‘cereals project’ scientifically,” panel speaker and founding member Prof. Wilfried Wagner, Director of the Department of Oral, Maxillofacial and Plastic Surgery at the Mainz University Medical Center in Germany, said.

Concerning the organisation’s scientific approach, he said that, ideally, knowledge will be gathered in a three-stage process. First, all data in the field will need to be collected and edited, before new data can systematically be accumulated in field research and randomised studies, which will form the second and third stages of the process.

PROSEC President Dr Jörg Strub

PROSEC: New quality initiative for metal-free implantology

By DTI

COLOGNE, Germany: At the International Dental Show (IDS) in Cologne, VITA Zahnfabrik has introduced a new specialist network for metal-free implantology PROSEC (Progress in Science and Education with Ceramics), which was established with the aid of the vitaprint network.

PROSEC President Dr Jörg Strub said that PROSEC aims to act as a bridge between science and practice. Its goals are to foster close collaboration between specialist organisations, practitioners and science in order to establish high-quality standards in metal-free implantology and thereby improve the well-being of patients.

On its website, www.prosec-network.org, the organisation will present the latest findings, promote joint clinical studies and provide a platform for expert discussion, he said. In addition, an annual conference will serve to document the progress in the field and share knowledge on a global scale.

“It is great fun for me to accompany the ‘cereals project’ scientifically,” panel speaker and founding member Prof. Wilfried Wagner, Director of the Department of Oral, Maxillofacial and Plastic Surgery at the Mainz University Medical Center in Germany, said.

Concerning the organisation’s scientific approach, he said that, ideally, knowledge will be gathered in a three-stage process. First, all data in the field will need to be collected and edited, before new data can systematically be accumulated in field research and randomised studies, which will form the second and third stages of the process.
Nano-coating effective in reducing peri-implantitis risk

By DTI

PLYMOUTH, UK: Investigating the effect of a new approach using a combination of silver, titanium dioxide and hydroxyapatite (HA) nano-coatings on the surface of titanium alloy implants, researchers from Plymouth have found that the method was successful in inhibiting bacterial growth and reducing the formation of bacterial biofilm. In addition, the coating created a surface with anti-biofilm properties, thus supporting successful integration of the implants into surrounding bone and accelerating bone healing.

One of the main reasons for dental implant failure is peri-implantitis, an inflammatory process affecting the soft- and hard-tissue surrounding dental implants caused by pathogenic microbes that develop into biofilms. Current approaches to managing the development of biofilms include application of antimicrobial coatings loaded with antibiotics or chlorhexidine. However, these are usually only short-term measures. In addition, chlorhexidine has been reported to be potentially toxic to human cells.

Investigating a new approach, researchers from the University of Plymouth tested the effectiveness of a dual-layered silver–HA nano-coating on titanium alloy medical implants. The antibacterial performance of the coating was quantitatively assessed by measuring the growth of Streptococcus sanguinis, the proportion of live and dead cells, and lactate production by the microbes over 24 hours.

The results showed that the combination successfully inhibited bacterial growth and reduced the formation of bacterial biofilm on the surface of the implants by 97.5 per cent. Uncoated controls and titanium dioxide nano-coatings showed no antibacterial effect.

According to the researchers, no dissolution was detected for the HA nano-coatings. Thus, application of a dual-layered silver–HA nano-coating on titanium alloy implants further created a surface with anti-biofilm properties without compromising the HA bio-compatibility required for successful osseointegration and accelerated bone healing.

“In this cross-faculty study we have identified the means to protect dental implants against the most common cause of their failure. The potential of our work for increased patient comfort and satisfaction, and reduced costs, is great and we look forward to translating our findings into clinical practice,” commented Prof. Christopher Tredwin, Head of the Peninsula School of Dentistry.

In the next step, the effectiveness of the approach needs to be tested in vivo, according to the researchers.

The study, titled “Antibacterial activity and biofilm inhibition by surface modified titanium alloy medical implants following application of silver–titanium dioxide and hydroxyapatite nano-coatings”, was published online on 17 March in the Nanotoxicology Journal.
"Implant failure is a failure for both the dentist and the patient"

By Marc Chalupsky, DTI

Originally from Syria, Dr Iyad Estoiny obtained his master’s degree in fixed and removable prosthodontics in France before moving to Dubai in 1997. An implantologist and oral director at OMClinics in the heart of Dubai, Estoiny also focuses on prosthodontics and aesthetics. In an interview with Dental Tribune, the implant specialist spoke in favour of proper oral hygiene and individual prophylaxis training, two areas of dental care that are essential for long-term implant success.

Dental Tribune: You are originally from Syria. How was the dental training at your school?

Dr Iyad Estoiny: I received my DDS in 1995 from Tishreen University in Syria. There are four dental schools in Syria, along with many practitioners. A number of Syrian dentists have moved to the UAE because of their good dental education. The dental education is still excellent in Syria.

Can you summarise the state of oral health in Dubai?

As Dubai is a multicultural city, one sees problems from all over the world. Some patients are highly motivated in terms of their oral hygiene, while one has to put in a great deal of effort with some others. In terms of oral hygiene, I have seen that people have started to become aware of dental problems and products. In the last five years, people have become more focused on beauty and aesthetics, which in turn has led to a higher interest in healthy teeth.

We also have an overwhelmingly young population in this country, consequently, there are only a few older dentists here. Eighty per cent of expats are young. This means that one does not see any advanced periodontal problems, but one does increasingly see stress-related bruxism, which in turn leads to periodontal problems.

How would you evaluate the market for oral hygiene in this region?

The market here is competitive and small. We do not sell the products, but give it to our patients. If they like it, they can buy it at the pharmacy. This has worked well.

For us, it is important to ensure that patients have the correct interdental brush. This means that we tell them what size they need. A dental hygienist or prosthodontist usually gives instructions and explains everything. One always needs to determine the correct sizes and give proper instructions.

As an implant specialist, what do you think about prevention?

There does not seem to be a strong connection between implantology and prevention at first, but just look at the problem of peri-implantitis. One needs to treat peri-implantitis as a bacterial problem and thus one must give clear instructions for cleaning, which involves interdental brushes and mouthwashes. Prevention is always the golden rule for any implant. If I do not see good oral hygiene in my patients’ mouth, I do not place the implant. I wait for a couple of months for the oral hygiene to improve. If I consider it acceptable, then I place the implant.

How do you deal with implant failure?

Implant failure is a failure for both the dentist and the patient. It is a headache for dentists, and in the worst case, patients will not be able to enjoy a beautiful smile. Periodontal treatment and oral hygiene are important before and after every implant placement. Before and after surgery, I usually explain oral hygiene and motivate my patients just recently. I placed an implant in an 84-year-old patient. Six months after placement, I have seen improvement owing to interdental brushes. Oral hygiene treatment is mostly taken care of by dental hygienists. Most larger clinics employ at least one dental hygienist and it seems that Dubai citizens make extensive use of them. Is there a good partnership between hygienists and dentists?

There is very good cooperation. I am not interested in cleaning and my dental hygienist is not interested in placing implants. We are both happy to do our work. The profession of dental hygienist does not exist in some countries, such as in France, where I lived for a long time. There, the dentist cleans and polishes for 30 minutes; here, our appointments last for 45 minutes. We explain to the patient how to perform the necessary post-operative care.

How do you explain it usually?

We simply show them how to brush their teeth and interdental spaces properly. If one just prescribes a certain toothbrush to patients on a piece of paper without instructing them, they will likely go to the pharmacy and buy a different one. If you give it to them, let them try it and help them use it correctly. The possibility of the patients buying the correct brush is higher.

You completed a programme on individually trained oral prophylaxis (iTOP). What was your impression?

I did the iTOP programme a year ago. Although I liked the programme a great deal, we have still seen that not all patients take the time and really apply what they have learnt. Some patients are really motivated and sit down with us to learn more about the system. The dentist and dental hygienist then work together. In today’s fast-paced world, we need to convince patients that they have to take care of individual prophylaxis. For dental hygienists and dental students, iTOP gives dental professionals a gradual awareness of how to provide oral hygiene for their patients. I think that iTOP for students will work well for future dentists.

Thank you very much for the interview.
Robotic guidance system could be game-changer for implant dentistry

By DTI

MIAMI, US: Implant dentistry is about to make a leap in development, at least if things go the way US company Neocis predicts. After introducing Yomi, the first robotic system developed for dental implant placement, and receiving Food and Drug Administration (FDA) 510(k) clearance to market its pioneering surgical assistance system, the company has now announced the completion of the first sale of its device.

The dental implant and prosthetic market is one of the fastest-growing markets in the US. Equally thriving is the surgical robotics market, which is estimated to reach $20 billion across several medical markets by 2021. Combining both medical fields is Yomi, which is intended to provide assistance in both the planning (pre-op) and the surgical (intra-op) phases of dental implant surgery.

Commenting on receiving FDA clearance in March, Neocis CEO and co-founder Dr Alon Mozes said, “We are excited to achieve this important milestone for Yomi. We look forward to further demonstrating the benefits of Yomi to the surgeon’s practice and their patients and to bringing the system to select key opinion leaders in the United States.”

According to Neocis, Yomi is engineered to eliminate dentists’ dependence on plastic drill guides, which can impede the site of surgery and block proper irrigation and visibility. The computerized navigational system delivers physical guidance through the use of haptic robotic technology, which provides sensory feedback and constrains the drill in position, orientation and depth. Notwithstanding its digital guidance, the surgeon remains in control and can dynamically change the plan during the procedure, the company emphasised.

Neocis further noted that it is committed to ensuring that dentists who choose to use Yomi in their practice undergo sufficient training on the use of the software and the workflow of the system. The first clinic to use Yomi in daily practice will be the South Florida Center for Periodontics and Implant Dentistry in Boca Raton, Florida. Neocis stated in a press release. The system has been installed, and Drs. Jeffrey Ganeles, Frederic Norkin and Liliana Aranguren have completed training.

OSA and implant complications

By DTI

VITORIA, Spain: There has been increasing awareness of the reciprocal relationship between obstructive sleep apnoea (OSA) and dental problems, for example sleep bruxism and a higher clench index. However, few studies have investigated the role of OSA in the occurrence of technical failure in prostheses, especially those that are implant borne. A Spanish study has now found that over 80 per cent of the patients with OSA experienced implant problems—suggesting a potentially strong correlation between the sleep disorder and implant complications.

Aiming to analyse the frequency of prosthetic complications in implant-borne prostheses, a group of researchers from Vitoria investigated implant failure in 67 patients. They identified 30 complications affecting 22 prostheses among 16 patients. Of these, 13 also had OSA (81 per cent).

Complications included porcelain fracture (14 events), screw/implant fracture (eight events), screw loosening (three events) and de-cementation (five events). According to the researchers, most of the complications occurred in the posterior segments. Moreover, the highest apnoea-hypopnoea index score, and thus the severity of OSA, was identified in patients with a fracture complication related to an implant, a screw or a porcelain crown, the study showed. The average time for problem occurrence was 73 months after insertion of the implant.

The study, titled “Frequency of prosthetic complications related to implant-borne prosthesis in a sleep disorder unit”, was published in the February issue of the Journal of Oral Implantology.
Clinical Masters™ Program in Implant Dentistry

Las Vegas: July 19–23 a total of 20 days on location

Louie Al Faraje    Christopher A. Church    Domenico Casdine    Patrick Palacci
Mamaly Reshad    James L. Ruckowski    Kamil J. Zborowski    Renzo C. Casellini
Natalie Richards    Philip J. Kroll

Course fee:
$15,900.00 for the full program

Request further details:
Tel: +32 486 920 435 (WhatsApp)
Email: request@tribunecme.com

www.TribuneCME.com

Tribune Group GmbH is an ADA CERP-recognized provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by Boards of dentistry.
The use of narrow implants

By Dr Huub van’t Veld, Netherlands

The development of very narrow implants can provide a solution for interdental spaces in the aesthetic zone that are smaller than 5–6 mm and in which implant placement is indicated to fill the diastema with an implant-supported crown. Increasingly, in the choice of implant, not only the quantity (> 1 mm) and quality of the surrounding bone are important, but the supporting function of the bone to obtain a good mucosal seal is too. The major implant brands have developed small-diameter implants for these narrow spaces. Nobel Biocare has the 3 mm NobelActive implant, concerning which many publications have already appeared. Dentply Sirona has the OsseoSpeed 3 mm implant (part of the Astra Tech Implant System) and the Xive 3.0 implant.

In 1976 already, the US Food and Drug Administration defined implants with a diameter of 3 mm and greater as conventional dental implants. In 1997, this agency defined implants with a diameter smaller than 3 mm as small-diameter implants. This mainly concerns one-piece implants used in very narrow jaws for a removable device or as an anchor for orthodontic appliances. These implants often consist of one piece owing to the fragility of the connection between the implant and abutment in such a narrow diameter. Unfortunately, they offer too few options for a crown because it is not possible to choose abutments with different angles for a perfect prosthetic solution. Therefore, the practitioner has to choose an implant with a separate abutment. Most narrow implants have a conical connection between the implant and abutment. This connection is attached via a screw. Stress tests have shown that the screw is the most limiting factor with stress. A solid abutment and a conical connection with a Morse taper of sufficient length and a cone of between 15 and 4° result in a nearly leak-proof and rigid connection between abutment and implant. This is referred to as a "cold weld". This makes such an implant almost as strong as a one-piece implant.

In this article, I discuss the treatment procedure of two patients treated with 2.8 mm Axiom implants (Anthogyr) and present the final results.

**Case 1**

The first patient was referred to me by her dentist owing to a persistently caused pain and had begun to exhibit mobility. Tooth #3 was congenitally absent, as was tooth #23, which I had already replaced with an implant with a crown in 2011 (Fig. 2). At the time, the left side of the upper jaw still had sufficient space for a 2.4 mm implant (Ankylos, Dentply Sirona). In the top right at tooth #53, I only measured an interdental space of 4.8 mm. I decided to use a 2.0 × 8.8 mm implant with a 4.0 mm and 1.5° Morse taper. I chose this implant on the one hand because the manufacturer promised that considerable primary stability could be achieved owing to the aggressive threading in the lower third of the implant and on the other hand because the residual root of tooth #53 was very short. The latter allowed a small extraction alveolus and thus sufficient bone for good primary stability and consequently the possibility of seating a temporary crown immediately after implantation.

I removed tooth #53 atraumatically; the mesial and distal papillae remained intact. By using a very sharp osteotome (Nentwig) as a guide, I determined the location (more palatally and direction of the preparation (Fig. 3). I gently tapped the osteotome to approximately 8 mm (according to calibration) into the jaw bone, and by rotating it slightly, I achieved a good guide preparation. After this, I used the K-system (Dentak) for further preparation. This set consists of a hollow drill shaft containing a grinder in which, during further preparation, the bone is collected and then used to fill the space around the preparation and the residual alveolar bone. I drilled to no more than two-thirds of the desired preparation length. The narrowest K-drill has a 3.2 mm diameter so that the preparation at the top is slightly wider than the 2.8 mm implant to be used. This allows one to adjust the implant somewhat in the axial direction if necessary. I used a 2.8 mm drill of the Anthogyr implant system (Fig. 5) to prepare to the correct length. The total length of the preparation was 13 mm, allowing placement of the implant 1 mm below the bone crest (Fig. 6). In this manner, very good primary stability is achieved (> 35 Ncm; Fig. 7).

After fitting a temporary abutment made of PEEK (Fig. 8), I fabricated a temporary composite crown. A PEEK temporary abutment is easy to construct using composite or temporary resin. This
temporary abutment also has a 1.4’ Morse taper, which provides good friction retention and does not damage the crown in the implant.

Before placing the temporary crown, I applied the bone obtained in the hollow drill shaft on the labial side and condensed it so that the alveolus was filled properly (Fig. 16). The temporary crown was shaped in such a way in the cervical area that the alveolus was completely covered. I checked that there was no functional stress (Fig. 17). At the follow-up a week later, good adaptation of the mucosa was already visible and the patient reported no problems.

After ten weeks, I removed the temporary crown and abutment. This is easy using crown removal pliers vertically. Using a pop-in impression coping, I took an impression in a closed tray. The laboratory then made the permanent crown. The temporary crown with PEEK abutment was easily repositioned. In this case, I arranged for the crown to be returned from the laboratory separately from the abutment. The construction then had to be fitted from the model of the mouth with a transfer key (Fig. 1a) because the structure is not indicated. Therefore, it can be cemented in several ways because there is no internal indexing, such as a trilobe or internal hex. After fitting the crown, which was ideal in both colour and shape, the structure was secured using the Safe Lock instrument (Anthogyr; Fig. 1b). This device is connected to the micromotor and produces short micro-strokes after activation using the foot pedal. Five strokes is sufficient to lock the abutment in place in the implant.

The cold weld is then complete. I then cemented the crown accurately in the mouth with luting cement. At the six-month (Fig. 12a) and 20-month (Figs. 12b & 4) follow-ups, good adaptation of the mucosa was seen, and the results were considered to be good too.

Case 2

The second patient approached me at the suggestion of a dental student who had read an interview about my first experiences with implants—international magazine of oral implantology, issue 4/16.

I approached this challenge with a 2.8 mm implant. I immediately took an impression to make a new temporary crown later. After I had removed the bonded bridge, I placed my first 2.8 implant in 2013. Initially, I had some doubts about implants of such small diameter and bad questions such as: Is the construction strong enough? Will it not break? Will the abutment–implant connection remain intact? However, although the use of such narrow implants remains a challenge, it has so far only yielded positive results. Nevertheless, I would like to make some remarks based on my experiences:

1. All of the major brand implant systems marketing narrow implants have paid much attention to the root shape of the implant with threads that have a condensing effect. This significantly increases the primary stability, which enhances osseointegration.

2. This primary stability also results in greater stability in immovable implant–implant connection and provides the option of seating a temporary crown immediately.

3. The PEEK abutment used in this system has been proven to allow trouble-free retention over a longer time. Because in these cases, the implant was placed subcrestally and despite the small space, there was still enough surrounding bone, I observed good support of the mucosa and the presence of a good mucosal seal. In these cases, a 2.8 mm platform was used as a superstructure with a platform switch. As a result, a proper emergence profile was achieved with the temporary crown.

4. Particularly with regard to reduced mesiodistal spaces, the use of an implant with a small diameter is a solution, but only in the aesthetic zone, where no extreme transverse stress will be placed on the implant. I believe that with excessive stress and great forces, because the implant is so narrow, the abutment–implant connection could be a limiting factor.

5. The faco-lingual bone thickness is less restrictive in the application of a small-diameter implant because with several techniques, such as bone splitting and harvested autogenous bone with the K-system or possibly with a bone graft, more volume can be created in a less invasive way.

6. In order to achieve a good result, it is necessary for the practitioner to have the choice of various abutments. Therefore, one of the two-piece implant systems should be chosen. A narrow piece-one implant is less suitable for the aesthetic zone.

The solid connection between abutment and implant with the Morse taper connection is indeed strong and pose no risk of screw fracture, but there is no return. The implant becomes a one-piece implant with the solid abutment. By using Grade 5 titanium, strength is assured: extensive stress tests have been carried out up to 10,000 N. The positioning and permanent fixation of the restoration do require more attention than with a screwed abutment. For instance, a break in the crown may only be repaired by using the abutment for a new impression of the crown. It is unfortunate that only titanium abutments are available (owing to the strength). However, these are so narrow that there is enough body for the crown to make the restoration aesthetically pleasing.

Discussion and conclusion

I inserted my first 2.8 implant in 2013. Initially, I had some doubts about implants of such small diameter and bad questions such as: Is the construction strong enough? Will it not break? Will the abutment–implant connection remain intact? However, although the use of such narrow implants remains a challenge, it has so far only yielded positive results. Nevertheless, I would like to make some remarks based on my experiences:

1. All of the major brand implant systems marketing narrow implants have paid much attention to the root shape of the implant with threads that have a condensing effect. This significantly increases the primary stability, which enhances osseointegration.

2. This primary stability also results in greater stability in immovable implant–implant connection and provides the option of seating a temporary crown immediately.

3. The PEEK abutment used in this system has been proven to allow trouble-free retention over a longer time. Because in these cases, the implant was placed subcrestally and despite the small space, there was still enough surrounding bone, I observed good support of the mucosa and the presence of a good mucosal seal. In these cases, a 2.8 mm platform was used as a superstructure with a platform switch. As a result, a proper emergence profile was achieved with the temporary crown. I believe that with excessive stress and great forces, because the implant is so narrow, the abutment–implant connection could be a limiting factor.

6. The faco-lingual bone thickness is less restrictive in the application of a small-diameter implant because with several techniques, such as bone splitting and harvested autogenous bone with the K-system or possibly with a bone graft, more volume can be created in a less invasive way. In order to achieve a good result, it is necessary for the practitioner to have the choice of various abutments. Therefore, one of the two-piece implant systems should be chosen. A narrow piece-one implant is less suitable for the aesthetic zone.

The solid connection between abutment and implant with the Morse taper connection is indeed strong and pose no risk of screw fracture, but there is no return. The implant becomes a one-piece implant with the solid abutment. By using Grade 5 titanium, strength is assured: extensive stress tests have been carried out up to 10,000 N. The positioning and permanent fixation of the restoration do require more attention than with a screwed abutment. For instance, a break in the crown may only be repaired by using the abutment for a new impression of the crown. It is unfortunate that only titanium abutments are available (owing to the strength). However, these are so narrow that there is enough body for the crown to make the restoration aesthetically pleasing.

The use of a narrow implant in a very limited space requires a well thought out diagnosis, great precision of work, and good use of and experience with different implant techniques. These cases were not treated using any guided surgery, but this could be recommended for precise implant positioning.
Dental Tribune International

ESSENTIAL DENTAL MEDIA

www.dental-tribune.com