Cancer risk: Ill-fitting dentures

By DTI

MUMBAI, India: Chronic mucosal irritation resulting from ill-fitting dentures may be a risk factor for the development of oral cancer, researchers from the Department of Head and Neck Oncology at Tata Memorial Centre in Mumbai concluded after reviewing existing literature on the relationship.

In addition to a variety of factors that are known to increase the risk of oral cancer, including tobacco and alcohol use, poor diet and neglected oral hygiene, chronic mucosal trauma has been associated with the disease in the past. However, the connection between such trauma, which can be caused by sharp teeth, dentures or implants, among others, and the occurrence of oral cancer has not been scientifically established thus far.

In the current study, the researchers systematically reviewed 22 articles that described the role of chronic irritation in causing oral cancer. The results suggest that chronic mucosal irritation resulting from ill-fitting dentures may be considered a risk factor for carcinogenesis in the mouth. According to the researchers, trauma-related cancers might be seen more often at the lateral border of the tongue and at the alveolus. However, no association was found for the duration of denture use and cancer formation.

Chronic irritation caused by ill-fitting dentures may increase the risk of developing trauma-related cancer, a literature review in India has found. Referring to mechanisms behind the relationship, research has suggested different scenarios, the researchers wrote. It has been proposed that persistent mechanical irritation causes DNA damage and may eventually result in cancer formation. Another possible mechanism is that chronic mucosal trauma results in inflammation, thereby releasing chemical mediators such as cytokines, prostaglandins and tumour necrosis factor, which may result in carcinogenesis.

The study, titled “The role of chronic mucosal trauma in oral cancer: A review of literature,” was published online on 30 March in the Indian Journal of Medical and Paediatric Oncology.

Early-life stress

While low birth weight, for example, has been established as a primary marker of early-life stress, the findings of a new study have suggested that lower-face asymmetries, assessed according to the asymmetry of occlusion, are a marker of environmental stress and cerebral lateralisation during early development too.

In the study, researchers at the University of Washington assessed data on 6,654 US adolescents collected between 1966 and 1970. Retrospective asymmetries (17 per cent), the most common lower-face asymmetry in the US population, were found to fluctuate randomly between the left and right sides of the face. Such randomness indicates early-life stress, said lead author Prof. Philippe Hupel, from the university’s School of Dentistry.

Two new MALO CLINICS

The MALO CLINIC group has signed a partnership agreement with Data Pacific Medical Group that will result in the establishment of two new dental clinics in Macao. According to Dr Paulo Malo, founder and president of the group, the first will open this year at Centro Médico Fedder and a larger one will follow in 2018 in the islands.

Digital face reconstruction

In creating a digital reconstruction of the face of a woman who lived 13,640 years ago in what is today Thailand, researchers used measurements of skulls, muscle, skin and soft facial tissue derived from contemporary populations worldwide. While the approximated face shows characteristics of Late Pleistocene skulls, it is surprisingly modern-looking, the researchers said.

P. gingivalis in focus

MELBOURNE, Australia: The latest findings on the bacterium Porphyromonas gingivalis will be in focus at PgMelbourne2017 from 14 to 16 May. The conference, hosted by the Oral Health CRC [Cooperative Research Centre] at the University of Melbourne, is the third in a series of international conferences on P. gingivalis and related species in oral and systemic diseases. P. gingivalis is recognised as being a key factor in the development and progression of periodontitis. It can also influence the host response and the behaviour of other oral bacteria.

A definite point of discussion at PgMelbourne2017 will be the recent development of a vaccine for chronic periodontitis by researchers at the Oral Health CRC. This vaccine aims to reduce or even eliminate the need for antibiotics and surgery for the condition and clinical trials are to commence in 2018.

Drug-related oral health problems investigated

Hong Kong: Access to dental subsidy scheme to be widened

By DTI

HONG KONG: The age limit for the Community Care Fund scheme, which subsidises dental care for Hong Kong’s elderly population, among other assistance programmes, is set to be lowered from 75 to 70, fund task force chairman Dr Law Chi-kwong has announced. However, a general lack of services for this vulnerable group remains a problem in the city.

Last year, the age requirement for the scheme was already lowered from 80 to 75, giving an additional 24,600 senior citizens access to funding. However, even with this and the recently announced expansion of those eligible for aid, the sheer lack of public dental services in Hong Kong is still a limiting factor for adequate treatment for the elderly, according to experts.

Although the lower age limit will enable more people to obtain public dental care, the general capacity to provide services will remain the same. As reported by the South China Morning Post, out of the 39 government dental clinics across the city, only 11 offer emergency services to the public. This imbalance is worsened by the fact that most of the government clinics provide only very basic services and ways for dental professionals to improve these patients’ oral health.

Drug use is associated with problems such as xerostomia, an increased urge to snack, clenching and grinding of teeth, and chemical erosion due to applying cocaine to teeth and gingivae, research has shown. In addition, lifestyle-associated factors can worsen the oral health in patients with substance use disorders. These include high-sugar diets, malnutrition, poor oral hygiene and lack of regular professional dental care.

In order to lift the burden of oral health-related problems, a cautious dental approach was needed when treating these patients. However, according to lead researcher Dr Hooman Baghaie from the University of Queensland, there are simple measures that both dentists and doctors can take to improve these patients’ oral health.

“Dentists should screen their patients for substance use, notice any advanced dental or periodontal disease inconsistent with a patient’s age and consider referral to medical doctors for management,” Baghaie said. In addition, dentists should be aware of issues concerning treatment and consent when the patient is intoxicated and be alert to the possibility of resistance to painkillers, he emphasised.

Generally, doctors and clinicians who care for people with substance use disorders should screen for oral disease and warn patients of the oral health risks associated with xerostomia and cravings for sweet foods, Baghaie added.

The review combined the results of 28 studies from around the world, which collectively provided data on 4,086 patients with substance use disorders. The findings indicated that one in 20 people between the ages of 15 and 64 use drugs each year, with approximately 10 per cent of this number having drug dependence or substance use disorders.

The findings mirror those of increased dental caries and periodontal disease in people with severe mental illness, eating disorders and alcohol use disorders, compared with the general population.

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New cost-effective blue laser intra-oral scanning technology

By DTI

TAIPEI, Taiwan: Taiwan’s Metal Industries Research and Development Centre (MIRDC) has introduced a new blue laser line intra-oral scanning technology. According to the developers, the device is built with mostly Taiwanese electronic components and will be significantly cheaper than similar scanning devices from international competitors.

Through software, the device uses a triangular measuring method to focus a high-coherence laser light onto the object to be scanned. In this manner, it is able to accurately construct a dental model, taking precise measurements within an area of 22 x 18 mm, which reduces the margin of error, the developers said.

The blue laser line was introduced at a press conference held at the Ministry of Economic Affairs in the capital city of Taipei in April. According to the ministry, the technology has attracted nearly NT$70.61 million (US$2.4 million) in investments and generated nearly NT$200 million (US$6.6 million) in market value so far.

Developed by the MIRDC, a non-profit organisation established in October 1963 to research and develop leading technologies for use in the metal and related industries in Taiwan, the blue laser line was transferred to several Taiwanese companies, including EPED, ARIX CNC Machines, Gillion Technology and Ain Tec Industrial, Taiwan News reported online.

The scanner, which is currently being tested in clinical trials, is to be introduced to the market later this year. According to the MIRDC, similar oral scanning devices made in Germany, Denmark and the US, for example, cost about NT$1.2 million–1.6 million (US$39,900–53,200). The MIRDC’s partners, however, hope that the commercialised product will sell for US$30,000 to hospitals and dental clinics.
Many Asian countries are experiencing a great deal of growth

An interview with Jeff Wong, Strategic Analyst Manager at medical market research firm iData

By DTI

The ever-progressing digitalisation, changing regulations and a tendency towards mergers are currently shaping the dental industry. At the International Dental Show in Cologne, Dental Tribune met with Jeff Wong, Strategic Analyst Manager at international medical market research and consulting firm iData, to talk about how—major and emerging—competitors have reacted to these trends.

Digitalisation is one of the main trends that is changing the industry. Other than that, what developments are dominating the dental market?

Yes, digitalisation is still the up-and-coming trend and everybody is trying to get into that market now. On the product side, I would say it is 3-D printing and intra-oral scanning. Three or four years ago, there was only a handful of competitors in both of those areas. This year at IDS, almost everybody is presenting some new product in these fields—knowing how fast these markets develop, everybody wants to participate.

What consequences will this have for the market in general?

Especially in these two areas, where the level of imitation is high, with so many competitors, it will definitely start diluting the market shares among the existing companies. However, if these participants start focusing on specific regions or niche audiences, I think there will still be a great deal of benefit.

What about the recent merger trend—is that something we will see more of in the future?

From what we have seen in other industries, we definitely predict that the trend will continue. Of course, there will always be a couple of smaller companies that will end up becoming fairly larger themselves and remain independent. However, we expect that many of the successful emerging companies will be acquired at some point. One advantage that the larger competitors have is the amount of resources they have. They can always stay ahead of the curve. If they see somebody come to the market with something unique, they have every year, but many are also either acquired or close down. There are definitely certain regions that are experiencing a great deal of growth, for example many Asian countries. At the same time, traditional markets such as Italy, Brazil and the US are doing very well. These markets are well penetrated at this point, so in terms of market growth it will definitely slow down. However, there is still substantial growth opportunity for the lower-priced competitors, while the traditional pre-

So, you are saying that larger companies are looking for smaller businesses to acquire in order to bring new technology to market?

Not only on the technology side, but also to compete on the pricing level as well.

In the current political climate, the Chairman of the Association of the German Dental Industry has issued a warning about protectionism and trade barriers. What are companies doing in this regard?

“Digitalisation is still the up-and-coming trend.”

At this stage, I think companies are mainly waiting to see what will happen. Nevertheless, in light of what is happening in other industries regarding the whole Brexit issue—for example, European Union chiefs have warned airlines, including easyJet and Ryanair, to relocate their headquarters to the EU if they wish to continue their routes within continental Europe after the Brexit—if that can happen in the airline industry, who is to say it cannot happen in the dental industry? Again, for example in Mexico, which has a major dental tourism industry, if that is going to be affected in terms of procedural volumes, it is definitely going to affect the dental manufacturers as well.

Thank you very much for the interview.

Jeff Wong in talks with Dental Tribune.

Jeff Wong in talks with Dental Tribune.

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Osteoporosis: Resolvable magnesium implants may promote bone formation

By DTI

MALMÖ, Sweden: According to new research from Sweden, a groundbreaking method for stimulating bone formation around implants could soon be available. In testing the cellular and molecular effects of magnesium-based implants in the early healing stages of implant integration, the researchers found that the release of magnesium promoted rapid bone formation and the activation of osteogenic signals near implants placed in osteoporotic bone.

“We observed that the implant material disappeared, having formed calcium and phosphate, which are similar to bone structure,” lead researcher and doctoral student Silvia Galli from Malmö University’s Faculty of Odontology told public broadcaster Sveriges Radio. By using magnesium-based implants that dissolve completely over time instead of titanium ones, osseointegration in osteoporotic patients thus might be enhanced.

The use of magnesium-based implants could be a potential method for restoring skulls after facial fractures through promoting new bone tissue formation as the implant dissolves over time. According to Galli, the amount of metal used in the implants is so insignificant that it leaves the body without a trace of the traumatic event having taken place and without any side-effects for the kidneys, or the need for a second surgical procedure to remove the implant, for example.

Thus far, the method has only been tested in animal models and will need more research before proceeding with clinical tests on human patients. Prof. Lars Magnus Bjursten from Lund University emphasised in the radio interview. However, he said that it is important to always look for alternatives, particularly in orthopedics, and magnesium seems to be a useful material. Whether the method could potentially assist osseointegration around dental implants was not addressed in the current research project.
“The Asian market is one of the most important growth markets for Adentatec”

Introducing German dental manufacturer Adentatec

By DTI

Based in Cologne in Germany, Adentatec is a global dental company specialised in the manufacture and distribution of non-precious dental alloys. Its medical devices are exclusively produced in Germany and certified to the highest standards (CE marking, US Food and Drug Administration, and China Food and Drug Administration). Adentatec is committed to the strict implementation of the quality and process requirements of DIN EN ISO 13485 and DIN EN ISO 9001 in relation to the entire manufacturing chain.

The company was established in 1997 and initially manufactured and distributed sandblasting material, dental plaster and consumables to dental laboratories. In 2003, Adentatec began production of dental alloys, for which it implemented a quality management system. As a manufacturer of medical products, the company has always given priority to patient health. Its products thus undergo bio-compatibility and corrosion resistance tests, among others, and are manufactured from high-quality raw materials to ensure consistent quality.

Over the last decade, the company’s export business has increased steadily. Consequently, Adentatec now has more than 20 agents worldwide who represent its product range. “The Asian market is one of the most important growth markets for Adentatec in the future,” Sales Director Julia Grabensee said. “We are very well positioned with our products and can optimally cover traditional casting technology and the new CAD/CAM technologies.”

CAD/CAM discs on cobalt–chromium and titanium bases

The company’s brand-name casting alloys, such as SYSTEM KN, SYSTEM MG and SYSTEM NE, have long been in use and been proven over many years. In 2009, Adentatec expanded the range to CAD/CAM discs on a cobalt–chromium base (SYSTEM NE-BLANK and SYSTEM SOFT-BLANK). The high-quality discs are available in many sizes and compatible with all open milling systems. Among the noteworthy features of SYSTEM SOFT-BLANK are its high corrosion resistance and biocompatibility, and its low weight.

The system is available in many diameters and heights, for almost every type of milling system. Among the noteworthy features of SYSTEM SOFT-BLANK are its high corrosion resistance and biocompatibility in accordance with DIN EN ISO 10271 and 10993-1. Owing to the special heat treatment, it is especially soft and homogeneous and has a high strength. The system is available in many diameters and heights, for almost every type of machine.

In addition, the CAD/CAM product portfolio was extended in 2012 with titanium milling discs (SYSTEM TI-BLANK) especially for the production of implant-supported restorations.

With the company’s planned exhibitions at Asian dental shows this year, Grabensee is confident it will win over customers. “At this year’s Sino-Dental, we would like to introduce the further developed cobalt–chromium milling system SOFT-BLANK. Based on our experiences at the recent International Dental Show in Cologne in March, we expect a great deal of interest, particularly because of the significant improvements regarding new milling properties and more improved compatibility with veneering ceramics,” she said.

Just last year, the company expanded its product range with a metal-free alternative, the new ceramic-filled CAD/CAM high-performance polymer SYSTEM PEEK-BLANK. Owing to the material’s good physical properties and low weight, the patient will enjoy wearing comfort and be assured of a strong material, the company said. SYSTEM PEEK-BLANK meets all of the biocompatibility requirements of DIN EN ISO 10993 and is an ideal option for removable dentures, particularly for allergic or sensitive patients. According to the company, it has been particularly optimised for implant-supported restorations, secondary structures on telescopic crowns, two-piece abutments, gingiva formers, denture bases and many other indications.

More information about Adentatec and its product range can be found at www.adentatec.com.
Change requires motivation
The iTOP approach to oral prophylaxis

According to Bourgeois, the majority of his studies have found a positive significant difference in the plaque index when using an interdental brush compared with floss. In general, interdental brushes were found to be more effective in removing plaque compared with brushing alone or the combined use of toothbrushing and dental floss. Establishing the accessibility and widths of the interdental spaces should therefore be part of the routine examination of all patients. An interdental brush that is sized correctly for each space is easy to handle and atraumatic, yet effective. However, this routine examination needs to be taught.

In fact, one major problem with interdental cleaning has always been patient ability and motivation. “Interdental cleaning does not readily become an established part of daily oral hygiene,” according to Bourgeois. Damage to the interdental papilla and abrasive trauma to the dental surface result from a lack of motivation and instruction. From a clinical perspective, it is therefore necessary to emphasise individual instruction and selection of high-quality oral hygiene products. The ultimate goal should be a high level of cleanliness with little or no harm to either soft or hard tissue. Oral prophylaxis should therefore be taught individually to dental professionals and not in lectures. By correcting and repeating the right cleaning technique, prevention of oral and systemic disease can be achieved.

Change through motivation: The iTOP programme
The iTOP (individually trained oral prophylaxis) programme covers the necessary techniques, knowledge and instructions for dental professionals. This established educational system provides simple and practical training for dental staff, who can then apply this approach to their dental hygiene delivery and teach an effective prevention technique to their patients. All iTOP seminars are led by independent dentists and dental hygienists who have completed the courses themselves. Only iTOP facilitates individual training with regular check-ups and corrections to the prophylaxis techniques learnt.

The iTOP trainers use the principle of “Touch to Teach” in their seminars. “Only someone who has experienced it in his or her mouth knows the exact pressure of an interdental brush and understands the importance of oral hygiene and can thus teach this to others,” said Dr Jiri Sedelmayer, founder of iTOP. Through the iTOP approach, which combines efficient tools with a thorough knowledge of cleaning techniques, dental professionals and patients can achieve optimum and sustainable oral health. In 2016, 200 seminars were held in 44 countries.

Four-day English-speaking course in Vietnam
The next iTOP teacher will take place in Ho Chi Minh City in Vietnam from 24 May 2017. The four-day course offers theoretical and practical training. The intensive theoretical part includes presentations by several international iTOP lecturers covering the main topics of this prophylaxis approach in more detail.

In the practical part, certified instructors will demonstrate the requisite instruments and techniques using the “Touch to Teach” principle. Around 22 participants from seven countries are expected to attend. “Our iTOP seminars will allow you to experience motivation and education from the patient’s perspective and transmit this knowledge to your patients in an individual and tailored way,” said Dr Ana Stefanov, Head of Education at iTOP.

After the iTOP seminar, you will simply rediscover the meaning of oral health,” said Dr Ana Stefanov, Head of Education at iTOP.

Introductory and advanced iTOP seminars in Ho Chi Minh City are being offered on 30 and 31 May as well as 1 June.

Dental professionals interested in attending can obtain more information at info@itop-dental.com.

By DTI

Despite advances in oral health care, patients and dental professionals remain uncertain about good oral hygiene, particularly regarding interdental cleaning. Prof. Denis Bourgeois, Dean of the University of Lyon’s dental faculty in France, has presented scientific evidence that interdental brushes are efficient tools for interrupting the biofilm between teeth. In order to use them correctly, dental professionals need to offer a certain level of instruction to their patients. How can this be achieved easily?

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Stronger together

An interview with Jean-François Tivoly, CEO of the TIVOLY group, and Christian Fontaine, CEO of FFDM Pneumat

What are the secret ingredients that make a partnership successful?

Christian Fontaine: The founding of both of these family companies was based on a commitment to the service of society. Lucien Tivoly, for example, built his first factory to manufacture the cutting tools essential to the arms industry during the First World War. FFDM was established during the Second World War. One war may have separated us, but we share common values. Throughout our history, we have always striven for progress and contributed to efforts on becoming a centre of excellence regarding our core business. Our teams have the ability to listen and share a spirit of open-mindedness that fuels innovation. We are, in fact, creating added value, by using an approach that focuses on adapting our products and services to the needs of today’s consumers. Our aim is not simply to anticipate their expectations, but to surpass them.

For example, in the era of smartphones, no tool is available to dismantle, clean and repair these devices, so we created a toolkit to address the problem. It is difficult for dental surgeons to remove posts of any kind from root canals, so FFDM, along with Prof. Pierre Machtou, improved an existing kit, the Gonon kit, which is now used in innumerable dental practices around the world. Whatever the problem, our expertise and knowledge of precision tools for the machining of materials can always provide a concrete, tailor-made solution. The exchanges that will inevitably be created between the teams in charge of research and development will definitely enable us to serve new markets linked to our craftsman origins.

Mr Tivoly, could you briefly introduce us to your company?

Jean-François Tivoly: TIVOLY is a family business that was established in 1917 and has its headquarters in Savoy. It is a highly international industrial company that designs and manufactures cutting tools (drills, milling cutters, taps, etc.) and the related accessories. TIVOLY is a publicly traded company (Bursone) and its annual turnover is €85 million (one full year with FFDM).

TIVOLY is structured around two business units. The first, the consumer unit, supplies tools for the construction, DIY and industrial maintenance markets. The second, the industrial unit, offers machining solutions for industries, for example the aeronautic and automobile industries. At present, FFDM’s dental offering is part of the industrial unit at group level, but with a view to these activities being expanded, it seems logical to create a medical unit at group level, encompassing dental products at first, but eventually including all of the other areas we have planned for the future.

TIVOLY is aiming for strong growth, strengthened over the next few years by its products and international positioning. To speed this growth up further, TIVOLY making other acquisitions is a possibility, on condition that these are part of its strategy.

Which indicators make you believe medicine is the field of the future?

Tivoly: Dentistry, which is an FFDM specialty, is part of the broader field of medicine. Globally, it is widely believed that this area will continue growing. Indeed, populations always continue to increase in number and age. In many areas, such as India, Africa and China—where we have a factory—living standards are improving, and as the proportion of income spent on necessities decreases, more income is left over to invest in health.

However, there is strong competition in the medical equipment field, with many companies of various sizes—some quite modest—in France. The market and technolog-
gies are developing simultaneously. Thus, it is evident that there are many factors that may influence the future. All of these can be viewed as opportunities and that is why medicine is the field of the future.

Mr Fontaine, could you tell us about FFDM?

Fontaine: FFDM, with its THOMAS brand, is a French company that has been active in the dental field for over 70 years, along with the companies NICHROMINOX, Anthogyr and MICRO-MEGA. This seniority explains our strong international presence. We are present in over 65 countries with our own brands and/or under the trademarks of our distributors, and more than 80 per cent of our annual turnover comes from exports. The first dental products produced by FFDM were milling cutters in 1946, sold under our THOMAS brand or private labels (under our clients’ brands). Our THOMAS range was then expanded through the design, manufacture and sale of conventional endodontic files, marketing Gonon extraction kits, etc.

Parallel to developing in the dental industry, FFDM has expanded its knowledge base into the industrial area through the design, production and sale of cutting tools and assembly solutions, also under the THOMAS trademark, and the design, manufacture and sale of machinery and assembly solutions under the Pneumat trademark. Today, we are recognised as a major and essential partner.

Getting back to the dental field, we have designed dental implant drills for about 20 years. This activity has been a strong lever for our company’s growth. We currently work with some 50 implant companies across the world, many of which are very well known, demonstrating our expertise and quality products in this domain. We have more than doubled our turnover in the past decade, owing to a highly sustainable investment and development policy. More recently, we have invested over 10 per cent of our annual turnover. We now have an assemblage of modern, high-performance machines at our disposal. We will continue following this approach in the future, so we can provide our clients with an even better service.

Now, we have a stakeholder that is a family-managed manufacturer just like FFDM has been since it was founded. It was surprising to discover the similarity of the industrial paths that the TIVOLY group and FFDM have taken. We are now part of a group that employs over 500 members of staff, with commercial and manufacturing plants in many countries, spanning three continents. Jamy Tivoly, the grandson of the founder, was recently honoured with a distinguished national award in recognition of his remarkable industrial career.

How do you see the future, and what are your plans?

Fontaine: Currently our implant drills are sold exclusively to implantology companies. The drills are made according to specifications from these companies (we are subcontractors: our brand name never appears on the instruments). We intend to offer a range of standard drills to be sold under our THOMAS trademark with our own CE marking. The aim is to sell these directly to distributors and practitioners to boost the THOMAS brand and give it greater visibility. With standard drills, another advantage for interested implantology companies would be that they would not have to take care of the CE marking themselves, as this would be an additional service we would offer them.

We plan to strengthen our technical and regulatory services to help our clients with their new products throughout all the stages of registration. We also intend extending our product ranges (mainly the endodontic range) so we can provide complete solutions to our clients.

We also have our sights set on other markets, like cutting tools for the ancillary orthopaedic segment. We have strengthened our collaboration with well-known dentalists to gain greater visibility on the market. We have achieved this in the past with Prof. Machtou with immense success.

Online sales is also an area we are looking into. Through integration into TIVOLY, which guarantees committed and transparent management, we now have the financial capacity to implement all of our development projects, both industrial and commercial. TIVOLY’s commercial and industrial sites in Europe, Asia and North America will give us access to facilities that are closer to our clients and to our markets.

Thank you very much for the interview. Combining your respective expertise should enable you to achieve even greater things. We hope you enjoy many successes together.
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Acupuncture: Probing its way into dentistry—Part II

Dental applications of acupuncture in managing xerostomia, dental anxiety and gag reflex

By Dr Wong Li Beng, Singapore

After a general introduction to acupuncture and its practical applications in contemporary dental practice, this second part of the article will discuss the use of the method in managing oral conditions such as xerostomia and its effect in reducing dental phobia and the gag reflex before illustrating the recent uptake of acupuncture in the mainstream health care sector in Singapore.

Management of xerostomia

Xerostomia may be medication-induced and other common causes are autoimmune conditions like Sjögren’s syndrome and irradiation of the head or neck region. Conventional management of xerostomia includes palliative treatment, such as a saliva substitute or chewing gum, and systemic medication, like pilocarpine.

The use of acupuncture as an alternative treatment modality for xerostomia has been documented in Western medicine since the 1980s. Observational studies have demonstrated that acupuncture treatment may increase salivary flow in healthy volunteers, patients with Sjögren’s syndrome and patients who have undergone radiotherapy of the head or neck region. In a long-term retrospective study involving 70 patients with xerostomia due to primary and secondary Sjögren’s syndrome, irradiation and other causes, the patients received a course of 24 acupuncture treatment sessions over the first six months. The salivary flow rate (SFR) for stimulated and unstimulated saliva was measured six months after the baseline acupuncture treatment and according to subjective changes observed by the patients. Data for up to three years was also analysed, comparing those who chose to receive additional acupuncture treatment with those who did not. The results showed that the SFR in both stimulated and unstimulated saliva was significantly higher after six months compared with the baseline and this was consistent with the subjective improvement described by the patients. In addition, patients who received additional acupuncture treatment after six months had a consistently higher median SFR in both stimulated and unstimulated saliva compared with those who did not, suggesting that supportive acupuncture treatment given over a long period may help to maintain its therapeutic effect. This finding is in accordance with the traditional Chinese medicine (TCM) concept that the treatment effect of acupuncture may be accumulative after repeated sessions.

Acupuncture treatment may provide relief for pilocarpine-resistant xerostomic patients after radiotherapy for head or neck malignancies. However, the treatment outcome for the study cited was only based on the Xerostomia Inventory score, which is a self-report questionnaire. Acupuncture seems to be able to increase the SFR, provided that the salivary glands are still functional. For those patients whose salivary glands have been structurally affected by radiotherapy and become resistant even to pilocarpine, acupuncture may provide subjective relief to a limited extent, although the patients should be advised on realistic expectations of acupuncture therapy.

The mechanism behind how acupuncture can increase the SFR is still not fully understood. It can be a placebo effect as shown in Pavlovian conditioning, in which expectation alone of those receiving treatment can induce saliva production. Local acupoints in the head and neck region may also directly stimulate the nerves innervating the salivary glands. Some authors have suggested that acupuncture treatment triggers the release of neuropeptides and this can affect blood flow, have anti-inflammatory properties and exert a trophic effect on the salivary glands. Another possibility may be related to neuronal activation. In a descriptive study, cortical regions were evaluated using functional magnetic resonance imaging of volunteers undergoing acupuncture treatment. It was observed that acupuncture treatment activated the parietal, Rolandic and frontal opercula, as well as the insula, overlapping with the regions involved in gustation and salivation. The authors proposed that acupuncture treatment may tap into the neuronal circuit that activates the salivary nuclei in thepons and subsequently the salivary glands via the cranial nerves. More studies are needed to investigate how acupuncture therapy may increase salivary flow.

Management of dental anxiety and gag reflex

A recent Cochrane review showed that 31 per cent of adults are fearful of dental treatment. A phobic patient may develop reluctance towards or avoidance of dental treatment and thus not seek dental care. During dental...
procedures, an anxious patient may hinder the operator from executing procedures properly.

Traditionally, medications like benzodiazepines and midazolam have been used to manage dental anxiety. The use of acupuncture may provide an alternative treatment modality without possible adverse drug reactions. Several reports on the use of auricular acupuncture for treating chronic and acute anxiety have shown promising results. A randomised controlled trial comparing auricular acupuncture with intranasal midazolam for managing dental anxiety suggested that both treatment methods were similarly effective. More large-scale studies are needed to verify this finding.

The gag reflex is a normal protective, physiological mechanism that occurs to prevent foreign objects or noxious material from entering the pharynx, larynx or trachea. Its causes may be somatic, that is brought about by stimulating certain trigger areas in the oral cavity, or psychogenic, that is induced by thought stimulus mediated by the higher brain centres. A hyperactive gag reflex can be a hindrance to dental procedures, such as during taking of alginate impressions for denture fabrication.

The use of certain acupoints like PC6 (neiguan) and CV24 (chengjiang) have been reported to reduce the gag reflex significantly. Auricular acupuncture too has been suggested for treating a severe gag reflex. According to the TCM theory, the acupoint PC6 (neiguan), located on the palmar side of the forearm 2 in. (50.8 mm) above the transverse crease of the wrist, falls on the pericardium meridian, which has the effect of “calming the heart which houses the spirit.” It is often used to treat heart palpitation, nausea and vomiting. In providing an explanation in the context of Western medicine, it has been proposed that acupuncture may trigger an increase in circulating endorphin, which binds to the opioid receptor, exerting an antiemetic effect. The anti-gagging point located on the ear corresponds with the area of the skin innervated by the auricular branch of the vagus nerve and adjacent to the area innervated by the auriculotemporal branch of the mandibular division of the trigeminal nerve, both are responsible for the sensory and motor function of the larynx, pharynx and palatal region. It can be postulated that stimulation of the auricular acupoint may inhibit the muscular function in the gag reflex. More studies to verify the effectiveness of acupuncture in controlling the gag reflex should be carried out.

Growing interest among medical and dental professionals

A recent press report in Singapore indicated that there are an increasing number of medical and dental professionals also trained in providing acupuncture treatment. Based on the official figure at the end of 2015, there were 249 registered acupuncturists in Singapore, of which 134 were medical doctors and dentists, constituting 54 per cent of the group. In addition, acupuncture treatment for pain management is currently being offered in four major public hospitals in the country, a major step towards its recognition as a treatment modality in the mainstream health care sector.

Conclusion

The use of acupuncture has a long history and has been proven to be an effective treatment modality in TCM. The scientific evidence for its role in pain management is strong, although more large-scale studies with better experimental designs should be carried out to verify its application in other areas. The use of acupuncture in dentistry may provide an added dimension to the patient-orientated holistic treatment approach that all health care providers should strive to achieve.

Editorial note: A list of references is available from the publisher.
Minimally invasive inlay restoration using the VITA ENAMIC hybrid ceramic

By Dr Gerhard Werling, Germany

Inlay restorations using CEREC procedures (Dentsply Sirona) have been an established process in digital dentistry for decades. However, owing to the required minimum wall thickness, a great deal of tooth substance frequently had to be removed in reconstructions using conventional ceramics. Owing to reduced minimum wall thickness, VITA ENAMIC (VITA Zahnfabrik) allows for minimally invasive restorations and can be precisely ground to thinly tapering edges. In this case report, I explain the clinical procedures for an inlay restoration using this hybrid ceramic on teeth #24–26.

Initial situation

Figures 1 and 2 show the initial situation of the 38-year-old male patient. On the basis of his history and in accordance with his request, he was not treated with alternative methods (infiltration technique, fluoridation, regular controls, etc.). Instead, a cavity was carefully prepared on the teeth in which caries was radiographically shown to have already penetrated the approximal enamel. Surprisingly, it was found clinically that the caries had penetrated deep into the dentine, such that after extensive excavation, a considerable defect in the tooth substance was present.

Material selection

As the patient wanted a permanent enamel-like and tooth-like restoration, composite could not be used as a restorative material. It was decided to proceed as possible—"Virtually no transition between the tooth and the restoration remains visible."—with alternative methods?—Fig. 3: Care was taken with the careful preparation of a cavity, but in the course of the excavation, there were clinically extensive undermining defects.—Fig. 4: Extension for prevention—but as minimally invasively as possible.—Fig. 5: A radiographic impression was taken with an intraoral scanner.—Fig. 6: The digital impression was taken with an introral scanner.—Fig. 7: The occlusal surfaces were reconstructed using the software.—Fig. 8: By overlaying the opposing occlusal surfaces, the contact points could be checked.—Fig. 9: In the grinding preview, the designs were placed optimally in the blank (the inlay for tooth #26 is shown).—Fig. 10: For the adhesive bonding, absolute isolation was ensured with a rubber dam. Fig. 11: A defect-oriented restoration with composite fillings was planned. The result was a minimally invasive restoration with VITA ENAMIC inlays.

Processing and integration

It is advantageous that there is no firing process, and shade characterisation is possible if desired. The available shade selection (OM1–4M2) in two translucency levels and the good light transmission of the material allow for aesthetically pleasing results. The inlays were polished to a high gloss with the VITA ENAMIC Polishing Set in the clinic. The hybrid ceramic can be processed very simply and quickly by machine and manually. Owing to the high load-bearing capacity and edge stability, constructions with comparatively thin wall thicknesses and thin edges are also feasible. Edge chipping, which can occur with conventional ceramics, is rare with this material.

CAD/CAM workflow

Three VITA ENAMIC inlays were fabricated using the CEREC system (Sirona Dental Systems, now Dentsply Sirona). The intraoral scan was performed using the CEREC Omnicam. With the bioporic software, the reconstruction was done corresponding to the missing occlusal surfaces. In the grinding preview, the inlays were placed in the material blanks. The EM-10 (8 × 10 × 15 mm) geometry was chosen according to the shade determination with VITA Easyshade (VITA Zahnfabrik) in Shade IM3/4H. The hybrid ceramic can be processed very simply and quickly by machine and manually. Owing to the high load-bearing capacity and edge stability, constructions with comparatively thin wall thicknesses and thin edges are also feasible. Edge chipping, which can occur with conventional ceramics, is rare with this material.

Fig. 1: Initial situation.—Fig. 2: Radiographic situation: does the apparent caries have to be treated or can it be addressed with alternative methods?—Fig. 3: Care was taken with the careful preparation of a cavity, but in the course of the excavation, there were clinically extensive undermining defects.—Fig. 4: Extension for prevention—but as minimally invasively as possible.—Fig. 5: A radiographic impression was taken with an intraoral scanner.—Fig. 6: The digital impression was taken with an introral scanner.—Fig. 7: By overlaying the opposing occlusal surfaces, the contact points could be checked.—Fig. 8: In the grinding preview, the designs were placed optimally in the blank (the inlay for tooth #26 is shown).—Fig. 9: For the adhesive bonding, absolute isolation was ensured with a rubber dam. Fig. 10: A defect-oriented restoration with composite fillings was planned. The result was a minimally invasive restoration with VITA ENAMIC inlays.
Shade analysis: See, determine, realise

By Bastian Wagner, Germany

The wide variety of ceramic materials available today allows the dental technician to reproduce the natural, dynamic light qualities of natural dentition. Determining and realising these visual characteristics, however, are challenges that can only be mastered with a great deal of patience and knowledge.

Each patient case requires the full attention of all involved—patient, dentist, dental technician—to the finer details in this complex piece of work. It is the dental technician’s job to produce a durable prosthetic restoration that, with its functional, biological and aesthetic characteristics, is adapted to the individual requirements and specifications of the patient. The advancement in technologies and new materials within the last several years has dramatically changed the work of dental technicians. We are, however, still often faced with a significant challenge to recreate nature’s perfection in harmony with the surrounding dentition. In particular, consistency and discipline are needed to fabricate anterior teeth.

In order to produce an aesthetic restoration, the dental technician must determine the correlation between the tooth shape, surface structure and function, and the effects of phonetics and colour. These factors form the foundation. With a passion for the work involved and the necessary sensitivity and specialist knowledge, a lifelike appearance can be successfully imitated. At times, this can be a laborious task and require a great deal of patience; sometimes, it takes quite a few attempts to achieve the desired results. In order to realise a harmonious and aesthetic smile in the end, good communication between the patient and dental technician is essential. The patient’s expectations must be clearly understood by all parties and his or her wishes transposed as a team. This article concentrates on shade selection and reproduction using the veneering ceramic IPS e.max Ceram (Vivadent Vivadent). The fabrication of an anterior tooth is demonstrated based on a patient case.

The visual properties of natural teeth

Three shade characteristics must be taken into account when determining the shade: the colour (hue), the brightness (value) and the colour intensity (chroma). The colour itself is the most obvious part of a shade. The brightness refers to how light or dark a colour is. The colour intensity describes the purity of a colour. The greatest attention should be paid to the brightness. If the value of a restoration is not ideally matched to the rest of the dentition, even the slightest deviation can be detected within normal speaking distance by the person standing opposite.

The shade should be selected at the start of the restorative treatment so that it is not affected by a dried tooth structure. In order to select the hue, value and chroma, individually fabricated shade samples in the relevant ceramic assortment are useful (Fig. 1). The ceramic materials are designed in such a way that the complex shades and characteristics of natural teeth can be better distinguished.

The colour of the gingiva or other surrounding influences can affect the shade selection. For example, the background colour during shade selection can change the perception of the colour intensity and the colour tone. In order to avoid any misinterpretation, it is advisable to cover the dark oral cavity with a grey card. Another method is to use a gingiva-coloured holder (Gumy, SHOFU) for each individual shade sample in order to provide simultaneous and successive contrast effects.

The samples are surrounded by a colour that imitates their natural environment. The Gumy gingival mask is available in four different colours. When a shade is selected, the sample is then placed into the Gumy so that it can be checked against the gingiva. For basic shade determination, it is advisable to take a photograph of three different shade samples on one photograph. This provides a comparison. One sample should represent the brightness of the tooth to be prepared, the second should have a lower value and the third a slightly higher value. Furthermore, during the pre-operative shade determination, important information on the selection of a suitable material should be considered.

The principles of shade selection

For shade selection, a shade guide is used and it presents the following colour tones:

- A = orange
- B = yellow/orange
- C = grey/orange
- D = brown/orange.

The shade determination of the internal structures.

Fig. 1: Individual shade samples for the IPS e.max Ceram ceramic range.
Fig. 2: Reconstruction of tooth #81. Shade determination at the beginning.
Fig. 3: Shade determination with a gingiva-coloured holder for the shade samples.
Fig. 4: Shade determination of the internal structures.
Fig. 5: Selection of the individual Opal Effect materials using self-fabricated shade samples.
Fig. 6: The crown framework IPS e.max Press (MO 1 ingot) before the wash bake.
Fig. 7: The wash bake and characterisation with MM light before firing.
Fig. 8: The crown framework was built up with Dentin #81 and MM light, and Deep Dentin and MM light were built up towards the edges.

For each individual shade sample the following colour tones:

- A = orange
- B = yellow/orange
- C = grey/orange
- D = brown/orange.
Photographic documentation of the shade selection

In addition to the shade selection, photographic documentation is essential. A photographic shade comparison of the natural tooth colour and the corresponding shade tabs provides further details. In general, digital photography is a unique communication tool for the entire treatment team, and it should be firmly established within the treatment process.¹

When taking photographs, the following procedure must be observed. The shade sample and the natural tooth must both be parallel to the sensor level on the camera and receive the same amount of light exposure from the camera flash. The shade information in the photograph and the anatomical and morphological characteristics can then be analysed on the screen. In order to avoid falsified information on the screen, it should be calibrated perfectly. If a grey card is used while photographing, differing camera values can be corrected using white balance with an image-editing programme (e.g. Adobe Photoshop Lightroom, Adobe System). So that information is not lost or distorted. When the photographs are converted in the image-editing programme into black and white images, the surface texture and difference in brightness are clearly visible. In order to better identify internal characterisation, the contrast control can be adjusted to “maximum” and the highlight function to “minimum”. This will show all of the details clearly. The collected information is converted into a shade diagram, which is synchronised with the ceramic material to be used, and a layering concept is created. The following case demonstrates one possible procedure for realising the determined tooth shade.

Patient case

This patient case with the reconstruction of tooth #11 illustrates clearly how the determined shade can be reproduced. The pre-operative shade analysis showed that the adjacent tooth #21 had a very high degree of brightness in the cervical area and in the body (Figs. 2 & 3). The natural tooth exhibited opalescent/transparent areas on the ridges and in the incisal region. The mamelon structure had a high value and a slightly yellowish chroma (Figs. 4 & 5). The basic shade selected was BL3.

Various methods can be used to increase the brightness of the IPS e.max Ceram ceramic. In this case, owing to the high degree of value, the brightness of the Den- tin BS ceramic material was increased with the highly fluorescent MM light ceramic material from the IPS e.max range. The framework material used was an MO 1 Press ingot (Fig. 6). The structure was lightly covered in a wash with MM light and then fired (Fig. 7).

During the first dentine bake, the framework was evenly covered with Dentin BS and MM light. The area towards the ridge that had a high degree of value was imitated using Deep Dentin BS and MM light in a ratio of 4:1 (Fig. 8). The tooth shape was then completed using Dentin BL3 (Fig. 9). Cutting back the incisal area and the edges made space for the Effect materials. Before the actual build-up, in order to create the mamelon structure, the material MM light was mixed with Essence lemon and white until the ideal mixing ratio had been found and then a firing sample was fabricated. The exactly mixed ratio was then applied to the incisal plate (Fig. 10) and the edges were built up with OE3. The incisal plateau was completed by alternately layering OE2 and OE3 (Fig. 11). Finally, the halo effect was imitated from the incisal edge to the proximal area and the crown was then fired (Fig. 12). The second bake included slight shape corrections. In order to achieve a natural appearance, the ceramic surface was given structure and then fixed with a glaze bake (Figs. 13–15).

Conclusion

The diverse spectrum of a modern ceramic range gives the technician the ability to reproduce a variety of dynamic light properties. Determining and realising the tooth shade pose significant challenges. This is why the intensive study of chromatics and of one’s own ceramic assortment is essential. Even though the material prerequisites for reproducing lifelike restorations are available, each dental technician is responsible for developing his or her own skills and capabilities. The challenge of recreating a shade will always be unique for each patient case.

In autumn 2015, Ivoclar Vivadent introduced the IPS e.max Ceram Power Dentin and Incisal layering ceramics, which feature a high brightness value. These materials are ideal for use on less-reflective translucent substrates. In cases such as the one presented in this article, in which a high degree of brightness is required, the Power materials can also be used on opaque frame-works to realise the desired results with little effort.

Editorial note: A list of references is available from the publisher.

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Figs. 14—Completion of the internal structure with Dentin BL3.—Fig. 15—Completion of the mamelon structure with a mixture of MM light and Essence materials.—Fig. 16—Completion of the incisal plate with Opal Effect materials.—Fig. 17—The result after the first bake.—Fig. 18—Checking the surface structure.—Fig. 19: The finished piece of work after the glaze firing.—Fig. 20: The finished restoration of tooth #11 in situ.

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From 17 to 21 May, the 37th Australian Dental Congress (ADC) 2017 is bringing together over 4,000 dental practitioners at the Melbourne Convention and Exhibition Centre. Established in 1907 and organised by the Australian Dental Association (ADA), the event is set to be the biggest ever this year. Held under the theme ‘Educating for dental excellence’, ADC 2017 has attracted an impressive line-up of four keynote speakers: acclaimed UK prosthodontist Dr John Bedford, UK periodontics and prosthodontics specialist Dr Andrew Davies, endodontist Prof. Azil Kushe from the University of Toronto in Canada and prosthodontist Dr Ken Mainement from the US.

With an additional 100 speakers from all over the world and a range of topics in all fields of dentistry, including oral cancer screening, root canal irrigation, ergonomics and infection control, ADC 2017 is the largest continuing professional development (CPD) event for dental practitioners in Australia and an ideal way to fulfil CPD requirements. According to the ADA, the main scientific programme and associated workshops, forums and “lunch and learn” sessions offer over 32 hours of CPD for dentists, 12 hours for dental hygienists, oral health therapists and dental therapists, and 11.5 hours for dental therapists.

Another key part of the congress programme is the ADA/PFA National Emerging Young Lecturer Competitions. Sponsored by the ADA and Pierre Fauchard Academy (PFA), the competition gives ADA branch nominated young clinicians the opportunity to present their clinical, research and lecture skills, providing insight into the latest work being undertaken in dental schools across Australia. Candidates hold 15-minute presentations, with a Q&A session and are judged by a panel of four experts from both sponsoring organisations.

The presentations will be held on Friday from 10.30 to 14.30. The winners will be announced at 15.00. The National Emerging Young Lecturer is granted a sponsorship from the PFA of A$7,000. A second prize, the Encouragement Award, is worth A$1,000.

Free industry exhibition
For the first time, the accompanying exhibition—the largest of its kind in Australia—is free, not just for congress attendees, but also for all those in dental practice. Hosting over 100 major companies, the exhibition is showcasing a wide selection of products and services available to the dental profession. It runs from 18 to 20 May in a building adjacent to the venues where the main congress programme will be presented. The exhibition, which is open all day from the morning and afternoon teas.

Graduate dentists should check out the extensive range of work opportunities at the Employment Fair, which has been brought back after its successful premieres at the 2013 event. The fair features organisations from across the dental industry, including private practices, public sector employers and companies, with whom graduates will be able to book appointments to discuss the opportunities available.

Read about the ADC’s numerous networking opportunities on pages 4 and 5.

“ ADC 2017: All about education

Melbourne welcomes dental community to biggest event to date

“ This year’s congress is not limited by a theme”
An interview with Dr Gordon Burt, Chairman of the Scientific Programme Division for the 37th Australian Dental Congress (ADC)

As well as providing general information about sessions and speakers, the congress app allows those attending the main scientific, dental hygiene and therapist, or dental assistant programmes to accrue CPD hours by entering a unique code specific to the session they are attending into the app. The code is only displayed in the session venue.

For ADA members, the recorded CPD hours will flow back to the members’ CPD portal. For other participants, this information will form the basis of a CPD certificate of attendance of the congress. The app is available for smartphones and tablets.

Could you introduce the concept of the “whole of practice” sessions? The “whole of practice” sessions are a first for the congress. The dental profession has always relied on various clinicians and support from others to provide the best care for an individual. To include those providers who work closely with the dentist is logical.

The opportunity for the whole team to attend lectures together is invaluable in reinforcing the bond between us all and building mutual respect.

Melbourne is your home town. Could you give attendees some tips on making the most of their time in the host city after hours? Walk the streets and be spontaneous. Melbourne is one of those cities that really need to be explored. Within a few metres from the congress site, there are arts venues, live music, clubs, bars, restaurants, laneways and graffiti-and-coffee. In my opinion, it is the best in the world. One of Melbourne’s most successful international exports seems to be the barista. There are plenty of online publications that will tell attendees what is on (apart from the ADA events). Do not worry about the weather; there will be some—a coat and umbrella may be necessary.

Thank you very much for the interview.
The link between lifestyle, the oral microbiome, health and well-being

An interview with ADC speaker Prof. Philip Marsh, UK

Prof. Philip Marsh

Professor of Oral Microbiology at the University of Leeds in the UK. He has received national and international awards for his research in the field and is a regular conference speaker. In Melbourne, he will be addressing the topics of dental biofilms and oral microbial ecology in three lectures. Ahead of the event, today international had the opportunity to speak with him about the relationship between lifestyle factors and the microbial composition and how to best maintain a healthy bacterial balance in the mouth.

Humans and microorganisms have evolved to have a close and important symbiotic relationship, to the extent that we are 90 per cent microbial. These microorganisms [the microorganisms of the human microbiome] are natural and deliver essential health benefits. In the mouth, the normal oral microbiome prevents colonisation by external microbes—some of which would be potentially pathogenic—and contributes to the development of our host defenses and cardiovascular system. The normal oral microbiome is closely linked to oral health and is not associated with oral disease.

The oral microbiota is vulnerable to disruption by lifestyle and environmental changes. What exactly can cause a shift and what are potential consequences?

Symbiotic: The relationship between the oral microbiota and the host is dynamic and can alter if the oral environment undergoes a substantial change, often as a consequence of an altered lifestyle. A clear example is when salivary flow is reduced or when an individual more regularly consumes sugar-containing foods and beverages. In this situation, the dental biofilm spends more time at an acidic pH. This leads to an enrichment of acid-producing and tolerating bacteria at the expense of beneficial organisms and increases the risk of dental caries. Similarly, the host accounts for inflammatory responses if biofilm accumulates around the gingival margin. If this fails to reduce the microbial load, then the protein-rich gingival exudate that delivers the host defenses inadvertently acts as a novel supply of nutrients for the proteolytic and obligately anaerobic bacteria in subgingival biofilms. These bacteria subvert the host response and continue to drive inflammation; this exaggerated response is responsible for host tissue damage.

The composition of the oral microbiota is based on heredity or can it be managed through external factors?

Some elements of the make-up of the oral microbiota are linked to heredity, but the general composition and activity of these microbes can be managed by effective oral hygiene and an appropriate lifestyle, for example reducing the amount and frequency of intake of fermentable sugars in the diet, avoidance of tobacco, and maintaining saliva flow. An unintended side-effect of some medications can be a reduction of saliva flow; this would disturb the natural balance of the oral microbiota and increase the risk of dental caries.

Dental care products aim to reduce harmful bacteria while maintaining the good ones. Is there a danger of using too much product and thereby destroying the oral flora?

The oral microbiota is natural and beneficial and therefore needs to be managed and maintained at levels compatible with oral health. Oral care products are designed and evaluated to support the patient in maintaining an appropriate level of oral microorganisms, so if they are used as intended, there is little danger of negatively disrupting the oral microbiota. In contrast, the long-term use of broad spectrum antibiotics can lead to the suppression of significant numbers and types of beneficial oral bacteria, and this can result in overgrowth of yeasts or environmental microbes.

In dentistry experiencing greater challenges with regard to biofilms and bacterial shifts today than in the past, and if so, why?

The main differences today compared with the past probably surround the increased amounts of sugar in meals and drinks. Also, people are living longer and are retaining their teeth into later life, so the dentin is vulnerable to dental disease for longer and is coupled with the fact that a side-effect of many medications taken by the elderly is a reduction in salivary flow.

What strategies for keeping a healthy balance in the mouth can dentists teach patients?

The main strategies are for patients to practise effective oral hygiene and thereby reduce biofilm accumulation and to appreciate the impact of sugar in their diet on their risk of dental caries. It may be helpful if patients realise the relationship and direct link between their lifestyle, their oral microbiome, and their oral and general health and well-being.

Thank you very much for the interview.
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Welcome reception
Giving the opportunity to reconnect with close friends and colleagues in celebration and anticipation of the event to come, the welcome reception kicks off at 18:30 on Wednesday and runs until 20:30. The reception event is included in the registration fee regardless of the category you fall in.

For those still looking to party after the official event has ended, the nearby South Wharf Promenade offers many opportunities, including wonderful waterside dining options—likely boasting the most beautiful waterside views in Melbourne.

A ride along the Yarra River will add to the holiday feeling. Melbourne Water Taxis offer a pick-up and drop-off service for passengers at the Melbourne Convention and Exhibition Centre landing point. The water taxis operate day and night all week. More information can be found at www.melbournewatertaxis.com.au.

Accompanying persons programme
Not to be forgotten at ADC 2017 are the partners of dental professionals attending the congress. This year’s programme for accompanying persons has undergone some changes to make the event even more memorable. Instead of the traditional lunch, held on the Friday in the past, a Thursday meet-and-greet event will give accompanying persons the opportunity to become acquainted with one another in a relaxed and convivial setting.

Another addition is a tourism desk operated by Best of Victoria, which will be open for the duration of the event, allowing visitors to plan their own experience of the beautiful host city of Melbourne.

One thing that remains unchanged is the Accompanying Persons’ Lounge, where visitors will be able to help themselves to a range of hot and cold beverages while catching up with friends and colleagues from Australia and around the world.

Congress Late Night
What could be better than wrapping up a stimulating three days of learning from the best dental minds with Congress Late Night on Saturday? Under the theme “Dia de los Muertos” (Day of the Dead), attendees will witness calacas and calaveras—skeletons and skulls—adorning every vantage point, and brightly decorated altars covered in candles, fruit and toys, all of which are part of rituals to welcome the dead back into the land of the living.

Providing musical entertainment will be Los Románticos, a 22-piece Mariachi band whose music embodies the essence of Mexico and who play a vibrant mix of traditional folk and modern pop. Attendees can while away the evening strolling through the festively decorated space filled with Mexican dancers and food and drink stands serving tequila and churros. Visitors can even have their faces painted in the vividly coloured sugar skull tradition that is the literal face of this iconic Mexican festival.

More information on the social events is made available after registration.
Join friends and colleagues in celebration and anticipation kicks off at 18:30 on Wednesday and runs until registration fee regardless of the category you fall in. Social event has ended, the nearby South Wharf Promenade, waterfront dining options—likely boasting the benefits of the location itself. Melbourne Water Taxis offer a pick-up and drop-off service for passengers at the Melbourne Convention and Exhibition Centre landings all week. More information can be found at www.melbournewatertaxis.com.au.

 oferent of dental professionals attending the congress. ADC has undergone some changes to make the event al lunch, held on the Friday in the past, a Thursday event. This year's programme for accompanying persons has undergone some changes to make the event more accessible and enjoyable for all. The magazine and all articles and illustrations therein are protected by copyright. Any duplication without prior consent from the editor or publisher is inadmissible and liable to prosecution. The responsibility shall be assumed for information provided about associations, congresses and commercial matters. General terms and conditions apply legal issues in Leipzig, Germany.

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PRODUCTION

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There is mounting evidence in the literature of the diagnostic superiority of 3D imaging versus 2D. As a result, many clinicians today are using 3D imaging either by referring their patients to a CBCT scanning centre or having mobile units visit them—the only benefit of this is that there is no initial capital outlay to buy the machine. In contrast, the benefits of an in-house CBCT device are many, including the convenience of an on-demand service at any time (pro, peri or postoperatively if needed), learning one software programme and utilising it fully, rather than having to learn different ones for different machines from various manufacturers and thus not employing it to its full potential. Additionally, patients appreciate the convenience of not having to travel to another location.

Our X-Mind trium CBCT unit from ACTEON is rather new to our practice, and we have yet to fully utilise it. Every day we find new uses and ways to benefit our patients by using 3D imaging where applicable. Following the latest evidence from experts in the utilisation of 3D imaging, we can help a great deal in deciding where and when to use it, consequently minimising radiation dosage and improving diagnostics and planning.

We owe our patients the lowest possible dose with the corresponding acceptable diagnostic value, and sometimes, a 2D image does not provide satisfactory diagnostic value. A great deal of guesswork is often involved with 2D imaging and triangulation and other settings that reduce the radiation significantly, individual assessment of every case is still very important to obtain the most from the 3D image without pared with a 2D image that generally does not make sense to the untrained eye.

In order to show how a CBCT unit can affect day-to-day dentistry in a small family practice, it would be beneficial to share a week’s diary of its use. This article provides a small selection from a week’s diary regarding the use of the X-Mind trium CBCT unit in the clinic. More CBCT scans were often obtained on any one day depending on the cases on that day; however, owing to space limitations in this article, only one to two cases per day are described. It must be borne in mind that each patient’s needs are different, but one thing should be common above all and that is to assess every case individually and never take 3D scans routinely, despite their clear diagnostic benefits.

Day 1

The patient had had all of his mandibular teeth extracted many months before, owing to mobility.

“Assess every case individually and never take 3D scans routinely, despite their clear diagnostic benefits.”
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Day 2

An implant was planned to replace a missing mandibular molar, and the position of the mandibular canal was not very clear on a 2-D image, so the position was still a little confusing. For this case, we decided to use the ACTEON Imaging Suite’s FlyMode option, which is like a virtual endoscope that follows the mandibular canal tract from within and clarifies the path to confirm that our nerve tracking is correct (Fig. 5). This is one of the unique features of the software.

Day 3

Obtaining the correct position and trajectory of a retained maxillary canine has conventionally been dealt with by taking 2-D images (periapical radiography) at different angles and possibly an occlusal film to determine the correct position in the buccal/lingual aspect, together with some guesswork. 3-D imaging can be an invaluable tool for this indication. The patient refused orthodontic extrusion of the maxillary left canine and wanted both the primary and permanent canines extracted and replaced.

Day 4

Case 1

A mandibular molar case was in the planning stage, and the position of the mandibular canal was located. At this stage, different implant sizes were tested to check for best fit and the prognosis for maximum integration in the future. The ACTEON Imaging Suite indicated that the first implant considered was too long and there was a risk of nerve damage (Fig. 9). Thus, another implant size was chosen to allow sufficient clearance above the nerve, and the density of the bone was checked at the same time, indicating good values in green, which the patient too could understand (Fig. 10). These tools, as mentioned above, can be quite a revelation for patients, and their use can affect the outcome positively.

Case 2

A broken and loose bridge was planned to be removed. The main issue here was whether the patient could benefit from the bone by placing the implant(s) in the sockets to keep the bone density from being lost.

Day 5

This case was performed by another clinician, who was hoping to achieve good integration after placing two anterior implants with grafting material. According to the clinician, primary stability was good at the time of placement and the implants were placed in bone with some buccal fenestration, hence the grafting. It thus appeared that the post that was used for the implant would be removed. After the patient complained about some threads showing through the soft tissue, the clinician suggested further grafting to secure the implant. A CBCT scan was obtained (Fig. 14) as part of the case planning.

“We know that 3-D imaging is here to stay.”

Values are acceptable or high and red if the values are low (Fig. 5), allowing the clinician to make the right decision. This can also be a very good educational tool to show the patient the bone density around any potential implant. In our experience, patients like this feature once shown what it means.

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