Implant treatment woes high among Japanese dental patients

TOKYO, Japan: Findings from a recent survey of dentists in Japan have revealed that in 2011 one in four had seen patients with health complications due to dental implant treatment. Over 90 per cent of the dentists surveyed also reported having treated patients last year with problems related to implants placed by a colleague.

Pointing to the general risks of implant procedures, the Director of the Japanese Academy of Maxillofacial Implants Kanichi Seto told the Asahi Shimbun newspaper that some of the cases might be related to dentists using clinically unsuitable methods or technologies. He called on patients suffering from problems after implant treatment to seek medical help at dental clinics immediately.

In Asia, Japan has the second highest penetration rate of dental implants after South Korea currently. According to figures from the AstraZeneca Group in London, UK, almost half a million implants were placed in the country in 2006, a figure that experts say has further increased in recent years, despite the recession and March 2011 tsunami.

Business figures from leading market players suggest that Japan’s dental implant market is growing by more than two per cent annually.

First dental implants were placed in Japan in the early 1970s. Although not covered by national dental insurance, the procedure has become a widely accepted treatment method among patients and dentists. The International Team for Implantology, a Straumann affiliate and one of the world’s largest providers of dental implant education, recently held its first Japanese congress in Tokyo in June.

Many patients in Japan seem to experience complications after dental implant surgery. (DTI/Photo Peng Guang Chen)

Europe closer to amalgam ban

A new study, conducted on behalf of the European Commission, has recommended phasing out dental amalgam use over the next five years owing to mercury’s negative impact on the environment. The decision to effect a ban would probably be made in 2015, and become applicable five years later, the authors suggested.

Mobile phones under scrutiny

Emission from handheld mobile phones like heat and radio frequency radiation can cause functional and volumetric changes in the parotid glands. In tests with heavy users, researchers recently observed an increase in the saliva flow rate and the volume of parotid glands on the side of the head where mobile phones were frequently held.

Thyroid drug could detect caries early

Researchers from India have successfully tested a method that could help dentists to identify children who are at risk of developing Early Childhood Caries, the highly virulent form of tooth decay. In clinical tests conducted on pre-schoolers from Mangalore, they reported a link between the children’s bitter taste perception of a drug used in the treatment of autoimmune disease and their oral health status.

According to the researchers, children who reacted to 6-propylthiouracil showed a greater dislike of sweet foods compared with those who could not taste the compound. They also had fewer dental problems than those who did not react to it.

Zhu to receive first FDI award

The FDI World Dental Federation has announced that China’s Minister for Health, Prof. Chen Zhu, will be the first recipient of the Inaugural World Oral Health Recognition Award. The 59-year-old haematologist was selected owing to his contributions to the development of dentistry in China, the organization said.

Politically independent Zhu was appointed Minister of Health of the People’s Republic of China in early 2007. Since then, he has implemented reforms of the country’s health care system, which included the expansion of basic health coverage to urban and rural areas, among other things. According to FDI officials, the award will be given to Zhu officially during the opening ceremony of this year’s FDI Annual World Dental Congress in Hong Kong in August.

It is the first time that the FDI has awarded an individual for his or her contributions to dentistry.
Unlicensed dentists plague the Republic of Fiji

Daniel Zimmermann

SUVA, Fiji: Locals and visitors to the Fiji islands have been warned by the country’s consumer council to be aware of fake dentists or those practicing without a proper licence after several cases of dental malpractice were reported throughout the island state in which patients were left with pain or lost their teeth owing to unprofessional treatment.

The Ministry of Health also released information recently about a Chinese couple who had been operating an illegal dental surgery for years in their home near the capital Suva. According to the Department of Immigration, they are currently being investigated and could face deportation owing to breach of the Immigration Act, despite the woman being a dental officer in her home country.

Prior to this, a woman from Canada had one of her front teeth extracted by an employee of a dental clinic who did not have a licence to practise dentistry but had posed as a dentist.

“The council is urging the public to be mindful of such unscrupulous dentists and run background checks on them before seeking their services,” the council advised in a press release. “People must ask the name of the dentist who is to perform the procedures on them and also ask to see his or her registration certificate.”

Dental professionals wishing to practise in the Fiji islands have to register with the Fiji Medical and Dental Council. In recent years, however, an increasing number of dentists have not renewed their annual licence, a circumstance that forced the regulatory body to run a widespread public campaign recently and threaten unwilling practitioners with disciplinary action. According to the council, they were also informed of a number of cases of dental graduates being employed by dental clinics and practices without them first being registered.

Fiji currently has slightly over 100 dentists, most of whom work for the government. Costs for dental treatment have increased in recent years owing to expensive imports of dental equipment, according to the Fiji Dental Association, which makes the cost of regular treatment prohibitively high for most patients.

The results of the last oral health survey conducted in 2004 indicate that caries prevalence among all age groups in the country is high.

Statistics from a new campaign launched in 2011 are expected to be released later this year.
Christian organisation in the Philippines breaks dental world record

by the mission in the Philippines’ capital in the second weekend of July, according to Guinness World Records in London.

The previous record was 3,377 people, checked during an oral health event organised by the Indian Dental Association and Wrigley in Mumbai in October 2009. With 66,522 people checked, India still holds the world record for the most people involved in a dental examination in multiple locations since November 2010. Guiness currently recognises a couple of dental records, including the longest tooth extracted and the oldest person to have received dental implants.

In addition to the most dental checks performed on one day, the Manila mission also broke two other records in the most blood pressure readings and blood glucose level tests categories. According to Guiness representative Tarika Vara, it was the first time that three records were broken simultaneously. She remarked that the standard of the health checks was very high and of great benefit to all those involved.

Over 1,000 medical and dental professionals are reported to have taken part in the event, which saw overall attendance by 100,000 people. The mission also provided medication, minor surgical treatment and relief food packs.

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Dental workers get a breather

JAKARTA, Indonesia: The Indonesian ministry of health has delayed the deadline for a new law that could mean the end for thousands of small dental businesses in the South-East Asian country. The regulations, originally intended to take effect in April, are aimed at preventing dental technicians, also called tukang gigi, from performing dental procedures on patients.

The postponement is the ministry’s response to the protests by thousands of dental workers, who claim that the ban will force them out of business. It has announced that it will use the six months for providing training opportunities to the affected workers in order to improve the situation and lessen the risk of maltreatment of patients.

An estimated 75,000 dental technicians are currently working in Indonesia, of which a large portion have been offering basic dental procedures, such as extractions and fillings, in addition to dentures, without a licence from the health authorities. In recent years, many low-income households who cannot afford regular treatment have become dependent on tukang gigi as their only means of receiving some form of dental care.

According to figures from the World Health Organization in Geneva, Indonesia has a current shortage of approximately 4,000 dentists. The situation is the most severe in many rural parts of the country, where oral health care is almost non-existent.

Representatives of dental technician organisations welcomed the decision to postpone the deadline but said that the six-month period would be too short to be able to improve the situation and that the government’s intentions beyond September still remain unclear.

They called on the ministry to develop a long-term plan for the profession, rather than punishing them for the misconduct of a few.
Dear reader,

The latest figures from Japan about complications due to dental implants are indeed alarming. While officials seem quick to downplay the issue, blame cannot be easily transferred to only a few bad examples in the dental community.

Of course, there are problems with training when clinicians with no former surgical experience are able to gain certificates for placing implants through courses that run over just a single weekend. The other side of the coin is the dental implant industry, whose interests are not always compatible with those of the patient.

While big manufacturers invest a great deal in clinical testing, a number of smaller companies have entered the market in recent years that simply duplicate designs. Therefore, it is not an exception that nowadays a number of implants are thrown on the market with only a few months of clinical testing or even no testing at all.

Unfortunately, with most of these implants, patients have more or less become guinea pigs. Therefore, it is not an exception that nowadays a number of implants are thrown on the market with only a few months of clinical testing or even no testing at all.

Yours sincerely,
Daniel Zimmermann
Group Editor
Dental Tribune International

Cases of seppuku are reportedly increasing in Japan

Evaluate the dental work force system

Last year, the Indonesian government announced legislation to stop dental technicians from performing dental treatment. This regulation was originally planned to come into force six months later in order to give the government time to implement short- and long-term planning and to reach consensus among all stakeholders on this issue.

The first law on dental technicians, introduced in 1969, legalised this profession and issued them with the authority to provide patients with removable full and partial acrylic dentures only. This regulation, however, was never really enforced for unknown reasons. Therefore, it has become common for dental technicians to also place fillings, fabricate and place fixed dentures, and perform orthodontic treatment and even extractions without the necessary education. As a result, no new registrations of dental technicians have been permitted since 1989.

Although political stakeholders still argue over the real cause of the dental health crisis in Indonesia, it might be the result of a complex interrelation of factors. Socio-economic disparity has created an imbalance in accessing dental care, resulting in services that are focused on income rather than actual need. The costs of dental treatments have exploded owing to the absence of pricing regulations, forcing disadvantaged parts of the population to rely on dental technicians to maintain their stomatognathic function, and resulting in often illegal practices. Recent reports have also described the high, unmet demand for and persistent inequality in dental care in Indonesia owing to the dental work force shortage, as well as geographical and economic barriers. A lack of commitment to preventive community-based dental health promotion might also be a factor. Prevention is still very far from being appreciated. Needless to say, investment in prevention is still rare in this country.

The Indonesian government has demonstrated its willingness to improve the nation’s dental health by committing itself to the establishment of universal health-care coverage systems. However, it also has time to evaluate the dental work force system and start distinguishing clearly between the authorised roles of dentists, hygienists and dental technicians. Moreover, resisting globalisation is like defying the law of gravity; therefore, increasing the quality and quantity of the dental work force based on need is necessary for competing in the global market.

Evaluate the dental work force system

Dr Diah Ayu Maharani
Indonesia

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To the Editor

Re: “A keen eye on post-market activities”

(Dental Tribune Asia Pacific, Vol. 10, No 5, page 4)

This looks like one of the cases in which a few companies will suffer some financial losses, but hopefully many more will benefit from the new changes to the regulations. As dental tourism continues to grow, it is always nice to hear that the bar is being raised around the globe. We at the Johns Hopkins Dental Group concentrate exclusively on the Costa Rican market, but we realise what happens abroad may have an impact on the entire industry.

Howard Siegel, 04.06.2012

Re: “Un-cosmetic dentistry”

(Dental Tribune Asia Pacific, Vol. 10, No 6, page 15–17)

I agree with most of what you have said. At two feet, you cannot distinguish between porcelain and well-done composite. In my 36 years of working as a GP, I have seen a lot of less-than-desirable composite and C&B. It does not take much extra time to do it well and that is your best advertising in the long run.

In the last few years, I have removed some bonding that was done 20 years ago and simply bleached the teeth and we were done. Bleaching 20 years ago was not what it is today. I still have my Union Broach heating instrument with its heating paddle. We used 35 per cent superoxol with a rubber dam and cotton soaked in supercool and heated it. It worked but was tedious and slow.

The best part of removing old bonding is that the teeth are never cut, and I often see decent looking teeth that only need a little whitening but in the wrong dental chair would be sliced and diced.

Terry Share, 10.06.2012
Father of CT scanner dies

Daniel Zimmermann

KENSINGTON, Md. & WASHINGTON, D.C., USA One of the pioneers of CT scanning technology for use in medicine has died at the age of 86. Robert S. Ledley, a trained dentist turned biomedical researcher from New York City, passed away in July, family members told US media.

Ledley had suffered from Alzheimer's disease. He died in a nursing facility in Kensington, Md., near Washington, D.C.; leaving his wife, two sons and four grandchildren, according to the notice of death.

Ledley started work on CT scanning technology while he was working as a professor in the Department of Physiology and Biophysics at the Georgetown University Medical Center's School of Medicine. There, he presented the first functional device able to perform a full-body scan to the public in 1975. The original is currently on display at the Smithsonian Institute in Washington, D.C.

“Bob lived a wonderful and productive life. He certainly will be missed,” Wong added.

Ledley held a dental degree from the New York University College of Dentistry received in 1948. During his dental career, he served both at the Walter Reed Army Medical Center of the US Army Dental Corps and at the former National Bureau of Standards’ Dental Materials Section, where he developed a system to optimise the fitting of dentures.

For his scientific work, Ledley was awarded the National Medal of Technology, among other honours. He is also an inductee of the National Inventors Hall of Fame since the year 1990.

In addition to his achievements in the field of CT scanning, Ledley also helped to develop the Film Input to Digital Automatic Computer, an image-scanning technology used in the analysis of chromosomes, as well as a diagnostic device to assist in the diagnosis and study of neurological and ophthalmic disorders called the Computerized Electro Neuro Ophthalmograph.

He was also founder of the National Biomedical Research Foundation, a non-profit organization intended to support the development of computer technology for use in biomedical research.

“Bob’s intellectual span and pioneering always amazed me,” radiologist and Editor-in-Chief of Computerized Medical Imaging and Graphics, a scientific journal Ledley founded in 1976, Stephen Wong told Dental Tribune: “His relentless efforts in applying electronics, computing, and mathematics to improve medicine not only made lasting impacts to the fields of medical imaging, bioinformatics, and health informatics, but also has inspired many generations of scientists, engineers, and researchers, including myself, to dedicate their lives to this profession.”
Boys genetically more prone to mercury-induced neurobehavioral effects

SEATTLE, Wash., USA: According to the World Health Organisation, neurological and behavioural disorders may be observed after inhalation or ingestion of different mercury compounds. Researchers from the University of Washington’s Department of Environmental and Occupational Health Sciences have now suggested that children and boys in particular are susceptible to the effects of mercury from dental amalgam fillings owing to their genetic predisposition.

They hypothesised that CPOX, a genetic variant of the enzyme coproporphyrinogen oxidase, which increases sensitivity to the neurobehavioral effects of mercury in adults, also influences the neurotoxic effects of mercury in children. In order to evaluate the neurobehavioral effects of mercury from amalgam tooth fillings, they assessed neurobehavioral performance and urinary mercury levels in 750 schoolchildren (164 boys and 166 girls) at baseline and at seven subsequent annual intervals after initial placement.

According to the researchers, performance in all five tested domains of neurobehavioral decrees with increasing mercury exposure in males with the CPOX4 variant. Significant mercury dose-response effects were observed in 11 of the 23 test outcomes, all in the direction of impaired performance. In contrast, no such relationship was found in girls, who performed similarly in two tests only.

Among boys, diminished performance was observed in tests of attention, suggesting possible impairment of attentional vitality and flexibility. Significant effects on tests of learning and memory and of visual acuity were also found, suggesting possible decrements of verbal learning and memory, as well as of perceptual cognition.

“These findings are the first to demonstrate genetic susceptibility to the adverse neurobehavioural effects of mercury exposure in children,” the researchers concluded. Since neither mercury nor CPOX4 alone substantially affected neurobehavioral performance in same-age girls, the researchers think that sex-related genetic predisposition affects susceptibility. They recommended that these observations be taken into consideration in risk assessment and prevention, especially in children.

The WHO lists mercury and its compounds as one of the top ten groups of chemicals of major public health concern. In 2009, the organisation recommended a global amalgam phasedown by promoting disease prevention and alternative dental fillings.

While some European countries, such as Norway, Sweden and Denmark, have banned the use of dental amalgam in recent years, its use is still widespread.

The US Food and Drug Administration recognises that high levels of mercury vapour exposure from elemental mercury are associated with adverse effects in the brain and the kidneys. However, owing to low levels of mercury vapour associated with amalgam fillings, the organisation considers them safe for adults and children aged six and above, except for certain risk groups like pregnant women and people with known allergies.

Study data was obtained from the Casa Pia Study of the Health Effects of Dental Amalgam in Children, conducted between 1996 and 2006 with 507 pupils aged 8 to 12 in the Casa Pia school system in Lisbon, Portugal.

The article was published online on July 2 in the Neurotoxicology and Teratology journal ahead of print.
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Schein Dental expands into Asia
Dental equipment provider also buys US ortho and lab biz

Left: Stanley M. Bergman (DTI/Photo: Henry Schein, USA) – Right: View of Bangkok’s business district. (DTI/Photo: Natapong Pimpanit)

DTI

BANGKOK, Thailand: In a recent acquisition spree, Henry Schein has bought a major share in dental products provider Accord from Bangkok. While financial details of the deal were not disclosed, the Thai company is expected to add US$15 million in sales to Schein’s global dental business and expand its position in the growing Asian dental markets.

In addition to its purchase of Accord, the world’s largest supplier of medical and dental products has bought OrthoTechnologies, a provider of orthodontics supplies, to facilitate the growth of its orthodontics offering. In a third buy, Henry Schein also acquired medical laboratory services provider MLS in Bakersfield, California.

The partial takeover of Thailand’s largest dental dealer may come as a surprise for some, as Henry Schein had earlier announced that it was pursuing growth opportunities in Asia but mentioned expansion into India and China as its first priority. Chairman and CEO Stanley M. Bergman said in a statement that the latest acquisition of Accord will not only give his company the opportunity to establish its presence in the fifth largest dental market in Asia, but also serve as an anchor for further expansion into South-East Asia. According to figures from the US Commercial Service in Bangkok, the heavily import-dependent dental market in Thailand was estimated to be worth more than US$120 million in 2008.

According to the paper released by the Canadian market intelligence provider in July, CAD/CAM markets in Europe will not show improvement before the Far East, as growth in this industry segment in countries like Japan is expected to outpace traditional markets in Europe and North America, a report by Millennium Research Group predicts.

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Despite its recent economic troubles, Japan is currently the largest market for dental CAD/CAM technology from abroad, the field is largely dominated by products from abroad, as the field is largely dominated by products from Europe and US manufacturers, such as Sirona, Nobel Biocare and 3M ESPE.

A few domestic companies have launched their own systems in recent years, such Kuraray Noritake Dental’s KATANA system, which is now distributed worldwide.

Millennium Research Group predicts that the global market for dental CAD/CAM will exceed US$540 million by 2016, to constitute one tenth of the overall market for dental equipment.

With over 60 per cent, chairside systems like intra-oral scanners will have the largest share in this segment, the company said.

DTI signs new partners in Vietnam and South Korea, sees visit by FDI executive

DTI

BERLIN, Germany: The FDI World Dental Federation and DTI have announced the strengthening of their efforts to lead the world to optimal oral health. During the eighth Dental Tribune International Publishers’ Meeting in Berlin, joined by FDI Executive Director Jean-Luc Eiselé, they discussed joint strategies to address changes and future challenges in dentistry, including the FDI’s Global Caries Initiative.

With this campaign, launched in 2009, the dentists’ organisation aims to facilitate the development and implementation of a new universal approach with regard to caries classification and management. The Dental Tribune International Publishing Group will support these efforts through an exclusive media partnership and educational materials produced via the Dental Tribune Study Club, which will be presented for the first time to 190 members of the World Dental Parliament at the upcoming Annual World Dental Congress in Hong Kong.

“With these efforts, Dental Tribune and the FDI will again lead the change in dentistry,” DTI president and CEO Torsten Oemus said.

Both organisations have been collaborators since 2005, when Dental Tribune was appointed official media partner for the FDI’s Annual World Dental Congress in Montreal in Canada. Since then, the German-based dental media company has published the FDI’s official daily congress newspaper, WorldDental Daily, at its congresses in Dubai, Stockholm and Singapore, among others.

This year marks the eighth time that international partners of the Dental Tribune International network have gathered for the annual licence partner meeting since the group was founded in 2002. It saw the launch of new projects in markets like South Korea, Australia and the Middle East. DTI’s global operations have grown significantly in the last decade and now include media businesses in 50 countries around the world. Besides a large portfolio of general and specialised dental publications, the company also offers dental education through its sister company DTI Study Club in various markets.

The next meeting is to be held during IDS Cologne in March 2013.
Surgical trade between Pakistan and Malaysia increased by agreement

Dental Tribune Asia Pacific

SIALKOT, Pakistan & KUALA LUMPUR, Malaysia: New sources have reported that dental and surgical instruments provider Care & Cure Surgico from Sialkot in northern Pakistan has recently closed a multimillion-dollar distribution deal with AM Medicare, a supplier of medical and dental products from Kuala Lumpur. Under the agreement, the Malaysian company will market and distribute Care & Cure’s instruments under the new name AM Surgical in the South-East Asian country for the next two years, the reports said.

Founded only two years ago, AM Medicare is currently one of Malaysia’s largest distributors of medical and dental implants. It also sells surgical instruments and hospital equipment and furniture. Care & Cure Surgico currently manufactures and distributes a wide range of instruments for use in medical and dental surgery worldwide, including scalpels, scissors, probes and forceps.

The deal between the two companies, valued at PKR9 million (US$2.8 million), is considered a major achievement for the Pakistani surgical supplies industry, developed under British rule, that already exports a large quantity of its equipment to developed markets like the US, Japan, Germany and France. According to the former Federal Bureau of Statistics in Islamabad, total exports of surgical equipment accounted for US$280 million in 2011.

Until now, Malaysia has not been a major buyer of medical or dental surgical equipment from Pakistan. Even though the country exported goods worth US$250 million last year to Malaysia, these were mainly in the form of agricultural goods like rice, cotton fibre and fruit.

Total bilateral trade has increased significantly between both countries since a free-trade agreement was signed in 2008.

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New ortho planning tool for Romexis

HELSINKI, Finland: The Finnish manufacturer Planmeca has added a new Cephalometric Analysis module to its Romexis software that is intended to bring benefits to orthodontic planning and treatment by providing flexible and easy-to-use features for creating cephalometric analyses and composing superimpositions of 2-D cephalometric images, facial photos and images of the dental arch.

According to the company, the Planmeca Romexis Cephalometric module renders routine analyses fast and easy. An analysis can be performed in minutes and the results are displayed and shared effortlessly, they said. During a treatment process, superimposing patient images from different time points can be also used for follow-up purposes.

The novel concept also offers possibilities for customising the analysis and software properties in order to meet different professional needs and requirements.

Launched in dental markets in Planmeca Romexis is a comprehensive software used by medical and dental professionals for acquiring, viewing and processing 2-D and 3-D images.
Endodontic retreatment
Achieving success the second time around

Dr Brett E. Gilbert
USA

Root-canal treatment has been shown to have a success rate of 85%. However, as research methodologies move towards higher levels of substantiation, clinicians must rely on the best current evidence available to gain insight into the expected outcomes of their treatment. The highest level and best current evidence we have on the clinical success of endodontic treatment comes from a meta-analysis of the literature.

A meta-analysis done in 2007 by Ng et al. provided a thorough review of endodontic success rates from a variety of classical outcome studies. They found a weighted pooled success rate of 68 to 85%, with at least one year of follow-up. This review considered the strictest of criteria for determining that a tooth has healed, and includes many studies that were completed prior to the clinical use of dental operating microscopes and other advanced armamentaria.

When considering treatment for a tooth that has not healed successfully with root-canal therapy, there are significant challenges to address to be able to attain complete healing of the diseased tooth. The armamentarium and techniques available today allow us the ability to disinfect the root-canal system properly after initial treatment and has led to post-treatment disease.

The success rate of retreatment has been shown to be in the range of 80% healing. Phases III and IV of the Toronto Study showed such a healing rate from four to six years after nonsurgical retreatment. In a systematic review by Torabinejad et al. comparing nonsurgical retreatment to endodontic surgery after four to six years, it has been shown to be in the range of 83% versus 71.8% for endodontal retreatment had a success rate.

In many studies that were completed with at least one year of follow-up,2 there is a decrease in the operative presence of apical periodontitis, a ten-year success rate to 74 to 86% over the ten years.5 From this, it is evident that endodontic healing is attainable through retreatment procedures, allowing us to maintain our patients’ natural teeth (Figs. 4a-c). Although the alternative clinical treatment option of implant placement can provide an effective method for replacing a missing tooth, healthy maintenance of the natural tooth should remain the overall goal.

Post-treatment disease is, inevitably, an area of bacteria and the host response of the patient to the bacteria. These micro-organisms are the most critical aetiology of post-treatment disease, as they are present within the root-canal system of a previously endodontically treated tooth owing to a combination of substandard endodontic techniques, iatrogenic treatment issues and restorative failure.

The intra-radicular bacteria present in the previously treated tooth are persistent and resist removal methods. Bacteria are able to hide and survive in canal ramifications, deltas, irregularities (fins) and dentinal tubules. The intra-radicular bacteria present are the primary aetiology of post-treatment disease and eradication of these bacteria is the primary goal of retreatment procedures.

Intra-radicular bacteria are the primary aetiology of post-treatment disease and eradication of these bacteria is the primary goal of retreatment procedures. The intra-radicular bacteria present in the previously treated tooth are persistent and resist removal methods. Bacteria are able to hide and survive in canal ramifications, deltas, irregularities (fins) and dentinal tubules.

Figure 2 shows the complex root-canal anatomy with at least one year of follow-up.2 There are high numbers of Enterococcus species,2 Enterococcus faecalis, for example, has been shown to be a common isolate in 27 to 77% of teeth with post-treatment disease.4 It is also resistant to calcium hydroxide application in the canal system, which is an interappointment treatment technique used to help remove micro-organisms and their by-products, such as lipopolysaccharides, from the canal space.2 Enterococcus faecalis has a variety of characteristics that allow it to evade our best efforts to eradicate it from the root-canal system, including the ability to invade dentinal tubules and adhere to collagen.1 It is also resistant to calcium hydroxide and neutralises the high pH value.7 Enterococcus faecalis is also able to resist calcium hydroxide by being part of a biofilm. The protection of bacteria within a biofilm matrix prevents the contact of the bacteria with the treatment technique used to help remove micro-organisms and their by-products, such as lipopolysaccharides, from the canal space.2

The bacteria present in the initial infection of a root canal differ markedly from the bacteria infecting a previously treated tooth. Pre-treatment flora is polymicrobial with equal numbers of Gram-negative and positive bacteria. Post-treatment bacteria are predominantly Gram-positive2 and they have been shown to be able to survive in harsh environments and to be resistant to many treatment methods.

Intra-radicular bacteria are the primary aetiology of post-treatment disease and eradication of these bacteria is the primary goal of retreatment procedures. The intra-radicular bacteria present in the previously treated tooth are persistent and resist removal methods. Bacteria are able to hide and survive in canal ramifications, deltas, irregularities (fins) and dentinal tubules.
with irritants and medicaments, and allows communication between bacteria to aid in survival capabilities. The presence of E. faecalis is well documented; however, it is often overlooked in post-treatment disease as it has yet to be proven definitively. Its survival mechanisms, however, shine a light on the persistent capabilities of these bacteria, and our clinical techniques must be focused on the challenge of eliminating them.

Iatrogenic issues encountered during the initial root-canal treatment may be the cause of intra-canal bacterial infection. These issues may include perforation, incomplete cleaning and shaping, inadequate canal enlargement, missed canals, ledge formation, or any other factor that may be responsible for their own oral health and must commit to effective oral hygiene techniques. Failure of the patient to perform effective oral hygiene can result in the failure of even the most well executed root canal and restorative treatments.

With the bacterial challenges clinicians have to face, retreatment techniques must be capable of effective elimination of bacteria and their substrates. The use of a dental operating microscope and ultrasonic instruments allows clinicians to uncover all existing canal anatomy properly to ensure that they are able to cleanse the root-canal system completely. The following clinical case (Figs. 8a-c) illustrates the extent of the canal space left untreated in the initial root-canal therapy by not opening the mesiobuccal canal adequately and not locating and cleansing the hidden second mesiolingual canal. Pathogens and bacteria that cannot be seen under a microscope are capable of producing disease when proper disinfection has been accomplished. This case illustrates the reason that retreatment is the primary treatment option for post-treatment disease.

Once debridement and disinfection have been completed, appropriate obturation methods are used to seal the canal spaces. The warm vertical technique using gutta-percha or resin with an appropriate sealer provides a thoroughly sealed and cleansed canal system. The final restoration must provide a proper seal of the pulpal chamber and prevent coronal micro-leakage.

Current evidence has demonstrated that we can retreat previously treated teeth successfully and properly. The literature has shown that specific bacteria, such as E. faecalis, are able to survive inside a previously filled canal. The use of a dental operating microscope, ultrasonic instruments, irrigants, rotary NiTi files and appropriate obturation materials increases our ability to attain effective post-treatment healing after retreatment. As we continue to drive towards performing successful root-canal therapy and restorative dental procedures, failure of the patient to perform effective oral hygiene techniques must be guaranteed, and we aim to meet the challenge of effectively eliminating bacteria from the canals to provide a success for the patient.
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Frank J. Milnar DDS, Aacd

A graduate of the University of Minnesota, School of Dentistry, he is an accredited member of the American Academy of Cosmetic Dentistry and a Grand Examiner for accreditation. Dr. Milnar maintains a full-time practice in St. Paul, Minnesota emphasizing appearance-related dentistry.

He has published numerous articles about the direct placement of composites, shade selection and porcelain materials. Dr. Milnar is co-founder of the Minnesota Academy of Cosmetic Dentistry and has lectured extensively within the U.S. Armed Forces as well as internationally on the subject of direct composite restorations, shade selection and porcelain materials. He has been voted “Top Dental” for the last several years in the Minneapolis/St. Paul Magazine.

He has been voted by Dentistry Today as one of the top 100 dentists contributing to dental education. Log on to our website for more details.
In recent years, gender aspects in periodontal disease have been described and studied by researchers worldwide. At the Europerio 7 congress in Vienna, Austria, DTI Group Editor Daniel Zimmermann had the opportunity to speak with Dr Christiane Elisabeth Gleissner, Germany, about the current state of research and why the sex should be considered as an individual risk factor in the risk assessment of periodontitis.

Daniel Zimmermann: Two years ago, scientists from the University of Maryland, USA, released a paper in which they claimed to have found a sexual dimorphism with regard to periodontal disease. Have any results been published since then that support their hypothesis?

Dr Christiane Elisabeth Gleissner: In a systematic review of the prevalence and the severity of periodontitis according to sex, the University of Maryland scientists attempted, for the first time, to find a sexual dimorphism in periodontal disease. They found little data on this subject. Out of almost 2,000 studies, only 12 were considered in the review.

These studies demonstrated that men have a higher risk of attachment loss than women. This sexual dimorphism was observed across different countries and cultures, and therefore cannot be explained by socio-cultural factors alone. The male sex, however, seems to be an independent risk factor for periodontitis. New epidemiological studies from Hungary, for example, have also confirmed a higher prevalence of periodontitis in men.

It is interesting to note that this dimorphism already existed 100 years ago, as shown by a recently published study of skeletons from the late 19th and early 20th centuries by a female Portuguese scientist.

There are also differences with regard to tooth loss, the final stage of periodontal disease, which affects women more than men—for which we have no explanation. The latest figures from the Study of Health in Pomerania (SHIP) in Germany confirm that among men and women of similar socioeconomic status, women have fewer teeth. This study also reported associations with men’s marital status.

In comparison with women, men seem to be more susceptible to the more aggressive forms of periodontitis. What biological basis is behind this observation?

There is clear evidence in the literature for a sexual dimorphism regarding non-specific and specific immune systems. This is demonstrated by the fact that, for example, men are more frequently affected by severe infections like sepsis than women.

In contrast, more women than men tend to develop autoimmune diseases like rheumatoid arthritis, Hashimoto’s thyroiditis and Sjögren’s syndrome.

The rejection of transplants is also more frequent in women. A possible explanation for this is that the immune system is controlled by genes and that approximately 1,000 genes play a part in the regulation of the immune system located on the X-chromosome. The sexual dimorphism can be at least partly explained by this.

Other than susceptibility, are there other aspects of disease that are influenced by sex?

If your question asks whether sexual dimorphisms are also known in systemic disease, then I can assure you that they are. Currently, particularly in the medical field, much effort is directed at researching sexual dimorphisms. We are aware of the fact that women and men exhibit different symptoms of cardiovascular disease, which results in different diagnostics and pharmacotherapy, which can significantly influence the prognosis. Findings by gender medicine in view of the association between systemic disease and gingivitis in particular have become interesting for periodontology.

There is still much to do in this respect.

What effect could this knowledge have on the risk assessment of periodontal disease treatment? It is described that sex should be considered as an individual risk factor in the risk assessment of periodontitis. In view of a patient-centered approach to periodontology, it becomes increasingly important to recognize individual needs of the patient and incorporate them into the therapy and long-term care. Supportive periodontal therapy in particular benefits from sex-specific treatment of patients of long-term value.

The fact that men and women should be motivated differently has been successfully demonstrated by the advertising industries. A sex-specific communication concept can be of high value and would be, at least from my perspective, a significant step in achieving long-term success, since it respects the different needs of the sexes.

Besides this, is there anything else that clinicians should be aware of in treating men and women?

I do not think that women and men should be treated differently—although scientific data in this field is also lacking. Priorities of anamneses and clinical diagnostics for male patients will probably be different from those for female patients. Furthermore, knowledge gained from medicine and pharmacology regarding sex-related aspects has to be integrated into periodontal therapy, such as the selection of analgesics and antibiotics or the care of female patients with diabetes mellitus, who tend to develop more complications than men.

It may also be necessary to reflect critically upon one’s own practice concept and adjust it to the different needs of men and women. This could include the design of educational material, the breadth of treatment, the organisation of adjunct long-term care and other care necessities. Individualised care by the dental team will generally lead to an improvement in oral health regardless of the patient’s sex.

Thank you very much for this interview.
The pros and cons of a smile makeover with indirect veneers

A clinical case of closing multiple diastemas in a 37-year-old female patient

Fig. 1: Pre-op situation: Multiple diastemas were present. The patient’s wish was to have them closed. — Figs. 2a & b: The wax-up on the model with the gingival mask in place gave an idea of how the situation could be improved. — Fig. 3: A digital image of the wax-up was superimposed over a photograph of the pre-op situation to get an impression of how the procedure would look. — Fig. 4: Full-contour veneers were pressed using highly translucent IPS e.max Press Lithium Disilicate (layer thickness of 200 to 300 µm). — Fig. 5: In the mandible, the diastemas were closed with lithium disilicate edge-ups.

Dr Eduardo Mahn & Volker Brosch
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For quite some time, we have known about minimally invasive techniques for the aesthetic restoration of the oral cavity. Whether a patient wishes to have stains removed, teeth bleached or tooth shape and general appearance improved, the range of treatment options is almost limitless. Procedures include tooth bleaching, enamel micro-abrasion, direct composite restorations, and the whole spectrum of laminate veneer restorations, involving more aggressive preparation, and the different types of thin or micro-veneers to non-prep veneers and edge-ups.

In cases in which a major improvement in the shade and shape is desirable, indirect veneers are clearly the clinician’s first choice. Owing to their superior aesthetic and mechanical properties, indirect veneers are ideal when extensive aesthetic adjustments are required.

Before selecting a material, the clinician needs to be aware of the two main challenges of aesthetic oral restoration: selecting the proper shade and opacity of the material and determining the amount of tooth structure that needs to be removed in order to achieve the desired result. For example, in cases in which teeth are moderately to severely misaligned and orthodontic treatment is not possible, aggressive preparation will be needed. The same applies to teeth with heavy staining caused by fluorosis or tetracycline.

Multiple diastemas may be present when teeth are too small for the maxilla and mandible or after the patient has undergone orthodontic treatment to achieve an adequate Class I canine relationship. This is an ideal situation for minimally invasive treatment with thin, non-prep veneers, especially if there is no major discoloration and after the teeth have been prepared and the temporary restorations have been placed. These adjustments are then communicated to the dental technician before the final restoration is fabricated.

In the case of non-prep veneers, a direct mock-up can be challenging to fabricate and the final outcome difficult to visualise owing to the minimal thickness of the final restorations and the differences between the resin (used for the mock-up) and the ceramic (used for the final veneers).

Presentation and imaging software programs (which are easily available and affordable for everyone) present a novel option for simulating the final outcome, as they allow digital mock-ups to be created on the computer screen. This method is extremely easy, accurate and reliable.
While a classical mock-up requires chair time of 15 to 20 minutes, the digital mock-up can be done in less than one minute by a dental assistant or clinician, if osable clinical and technical images are available. By superimposing an image of the wax up over the preoperative photograph, a digital image of the final result can be obtained. The only requirement is matching dimensions, inclination and perspective.

Closing multiple diastemas with non-prep veneers can be quite a challenging task. In most cases, the veneers will be extremely thin on the labial aspect but very thick mesially and distally. While high translucency is required to "capture" some colour from the underlying tooth structure and thus ensure a natural appearance, the material also requires reasonable opacity in order to mask the darkness of the oral cavity shining through in the area of the diastemas. For a standard case, occlusal forces can be problematical if wide diastemas (1.5 mm and wider) are involved.

In recent years, the aesthetic properties of IPS e.max translucency lithium disilicate ceramic (Ivoclar Vivadent) have been significantly improved thanks to the introduction of different gradations of translucency. Nowadays, lithium disilicate ceramics can be processed using either CAD/CAM or press techniques. These materials are available in up to five different levels of translucency and show flexural strengths ranging from 560 to 400 MPa. The IPS e.max Press HT (Ivoclar Vivadent), a highly translucent lithium disilicate ceramic, was selected.

Clinical case report

A 57-year-old female patient dissatisfied with her appearance presented to our office. She did not like the multiple diastemas that showed when she smiled (Fig. 1) and was hoping for durable and predictable treatment options that did not involve any tooth preparation and could be done at a reasonable price. The patient had undergone orthodontic treatment before and teeth #11 to #21 had been restored distally with composite fillings in another clinic. As a first step, we removed the old composite fillings.

In non-prep veneer cases, it is essential for the dental technician to have detailed knowledge of the sulcus depth. Therefore, two retraction cords were placed: #000 (Ultrapak Ultratran), which remained in place during impression taking, and #0, which retracted the gingiva and was removed before the impression was finalised.

A wax-up was fabricated (Figs. 2a & b), digitised and superimposed over the clinical image to create a digital mock-up, which was then discussed with the patient (Fig. 3). In the laboratory, thin veneers were pressed on the basis of the wax-ups using IPS e.max Press and then stained and glazed (Fig. 4). Their thickness was about that of a human nail.

In the mandible, we faced a different challenge, as diastemas between the lateral incisors and canines were present on both sides. While the patient did not expect a dramatic change in the shade of her teeth, her main concern were costs and the avoidance of any kind of tooth preparation. To meet her wish, we decided to restore her teeth with partial veneers (edge-ups; Fig. 5).

Conclusion

The photographs taken one week after placement of the veneers showed their seamless integration with the surrounding gingivae. Two of the aspects always considered disadvantages of non-prep veneers are their bulky appearance and the resulting cervical transition between the veneer and the tooth structure, which can lead to periodontal problems in the long term. As shown in Figure 12, both issues can be controlled if the thickness of the ceramic layer is minimal and proper finishing and polishing are performed. Figure 13 shows the final result after two months.
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Insights into the latest therapy options for periodontitis

As part of this year’s Europerio in Vienna, Heraeus held two symposia on the latest developments in the treatment of periodontitis. The question investigated by the first session on Friday morning was how local antibiotics can assist in the treatment of peri- odontitis. Following a brief introduction from Professor Nikolaus P. Lang from the University of Hong Kong, China, Professor Maurizio S. Tonetti, Executive Director of the European Research Group on Periodontology (ERGO-Perio), Italy, opened the first Heraeus symposium with his presentation on current understanding of periodontitis and how it changes treatment. He began by briefly explaining why periodontitis has become a serious health problem in Europe.

In addition to the role played by biofilm in triggering development, individual susceptibility to periodontal disease is also an increasingly important factor. It is influenced by genetic predisposition and environmental risk factors, and determines the intensity and clinical presentation of the periodontal inflammatory process.

Periodontitis is also proven to have various effects on the body as a whole. In addition to providing systemic peri-odontal therapy with regular follow-up for the rest of the patient’s life, it is therefore also important to limit additional risk factors. With professional preventive measures geared towards the patient’s individual symptoms, further progression of the condition can be prevented in the long-term.

Professor Tonetti concluded with an outlook on possible future therapies. In a dug (bragal) model of replacement therapy, ‘friend- ly’ bacteria such as streptococcus sanguinis, streptococcus mitis appear to have a positive impact on inflam- matory processes and improve sub-gingivally in addition to scaling & root planning (SRP). This is demonstrated in x-ray images by increased bone density and bone level (Nackaerts et al, 2008). Another challenge towards looks at the effect of microorganisms as a food supplement. Here, daily intake includes a reduction in probing pocket depths (Chapple ILC et al., 2012) investigated the therapeutic effect of once-off, topical, adjunctive administration of a slow-release doxycycline gel (SRD) in patients with persistent/recurrent periodontitis during supportive periodontal therapy (SPT). Following supra gingival debridement and sub-gingival treatment using ultrasonic/sonic instrumentation, the SRD was applied in all the residual pockets 4 mm in the test group.

The result of this study supports the concept of additional local antibiotic administration, particularly SRD. In the treatment of persisting/recurrent periodontitis in SPT, this has been shown to have a positive therapeutic effect on inflammatory response as well as in the case of deep pockets (∼5 mm). Local antibiotics also seem to be the most effective approach for treating peri-implantitis due to the high concentration of active ingredients. The microbiological flora is far more complex with periodontitis, although implant union is also affected by staphylococcus aureus (typical pyogenic organism). The discharge of pus when probing a pocket is a clinical indication of infection in the diagnosis of peri-implantitis.

The greatest challenge here is the removal of biofilm, a procedure that is considerably more difficult in the case of implant surfaces than in the case of natural dentition. Currently there is no standard, evidence-based approach to therapy: local antibiotics may provide an answer for the future, however, this must first be borne out by a study. Nevertheless, Professor Lang summarises as follows: “Nothing excuses the patient from cleaning his teeth every day.”

Dr Walder S.W. Shahalay, Chief Science Officer at Polymed Inc., USA, continued in the same vein as Professor Lang, and presented the latest biomaterials for oral and periodontal applications. He presented scientific evidence for the additional benefits of 14% SRD gel. In combination with SRP in the case of previously untreated periodontitis, this has been proven to lead to improved status. Prof. Lang as well as greater pocket reduction that is clinically more relevant than achieved by SRP alone (Eickholz et al, 2002). A comparison of sub-gingival, topical ad- ministration of antibiotics and me- chanical debridement has shown comparable clinical efficiency (Eickholz et al, 2005).

The primary benefits in the case of any residual deep pockets during SPT (Tonetti et al., 2012) had already been discussed in Professor Lang’s presentation. In his conclusion, Professor Eickholz emphasised the importance of doxycycline: not only does it have an antibacterial effect, it is also anti-inflammatory. Clinical studies have also shown that once-off application of a 14% SRD gel in patients with periodontal disease reduces the presence of certain periodontal pathogenic bacteria in the sub-gingival plaque.

Risk-based follow-up ensures long-term therapy success

The second event on Friday evening focussed on current ther- apy options in periodontal treat- ment. In his presentation, Pro- fessor Petra Ratka-Krüger from the University of Freiburg, Germany, looked at supportive periodontal therapy in daily practice, under- lining the importance of SPT in long-term therapy success (Gilley et al, 2008). She based her conclusions on a va- riety of studies, all of which provide scientific evidence for the positive impact when patients with perio- dontal disease are treated regularly and consistently using SPT tech- niques. Based on a risk assessment at various levels (Lang & Tonetti, 2005), an individual risk analy- sis can be performed, helping to prevent insufficient or excessive treatment.

Professor Ratka-Krüger concluded with a description of the timeframe for a follow-up check- up, providing detailed information on the benefits and what they entail. She referred back to the positive effect discussed in the first symposium, specifi- cally that of additional topical ad- ministration of SRD gel in the case of previously untreated cases of periodontitis (Eickholz et al., 2002), and once again emphasised the advantages of local antibiotics: reliable, simple and fast application. The additional benefits of this approach com- bined with SRP during SPT are also scientifically proven (Tonetti et al., 2012). In this regard, she also referred to a study (Dannemun et al, 2009) in which the effect of the application of SRD admin- istration in addition to SRP during SPT was assessed, with findings indicating that defects were not only reduced in correction sites combined with SRP alone.

In her conclusion, Professor Ratka-Krüger described such short-term periodontal therapy as the key to long-term therapy success. Regu- lar participation in risk- based follow-up allows recur- rences to be recognised and treated at an early stage, thus pre- venting tooth loss. Local antibi- otics can boost the effect of mechanical therapy, contributing to the success of therapy.

In the second presentation “Telomere Length, Oxidative Stress and Chronic Periodontal Inflam- mation: Implications for Supportive Therapy”, Juliette Reeves, Clin- ical Director at Perio-Nutrition, Great Britain, looked at previously little-known links with periodontitis. Telomeres are regions at each end of a chromosome that shorten each time cell divides. This process is accelerated by oxidative stress. The length of telomeres is related to aging, chronic infection, oxy- dative stress and systemic illness (Zeligk et al, 2005). Over the last ten years, the effects of periodonti- tis on telomere length have been clearly established. Masl et al. (2011) found that shorter telom- eres are linked to cardiovascular disease and that their size correlates with oxidative stress and the gravity of the condition. The study proved that telomere degrada- tion, the extent of chronic infection and oxidative stress can be re- duced through changes in life- style (smoking, nutrition, obesity, stress).

In her presentation, Ms. Reeves once again demonstrated the evidence-based links between periodontology and general health, and defined the control of inflamma- tory conditions as a primary goal of treatment.
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