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Dental diseases plague Indonesia

Malay kids lack ortho treatment

Oral disease to be classified as NCD

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NEW DELHI, India: A new report released by the Associated Chambers of Commerce and Industry of India (ASSOCHAM) proposes the establishment of interdisciplinary health centres in major cities to meet the increasing influx of medical tourists. According to the paper, the total number of foreigners seeking medical or dental treatment in the country is expected to reach 5.2 million by 2015.

The estimates are a sharp increase from the current 850,000 tourists that contribute approximately US$990 million in revenues to India’s booming booming health-care industry, which competes with Thailand, Malaysia and Singapore for the lucrative medical tourism market in South-East Asia. Competition has also recently emerged from countries like the Philippines which have launched campaigns to attract more patients from regions like the Middle East, North America and Europe.

“High quality medical care at a fraction of the price people would traditionally pay in developed countries is the basic reason behind this surge of patients flocking to India for treatment purposes,” said D.S. Rawat, Secretary General of the ASSOCHAM. “High costs of medical treatments in these countries have compelled patients to seek alternative, cost-effective and lucrative destinations.”

In order to meet demand, the country needs to set up multi-speciality hospitals in public-private partnerships that offer quality medical and dental treatment by highly trained English-speaking professionals, Rawat stated. He called on government to offer financial concessions for the health-care industry that could help to create more jobs in the industry and lure back Indian doctors who currently work abroad.

According to the Ministry of Overseas Indian Affairs estimates, there are over 1 million health professionals worldwide with Indian origins.

Healthcare business consultant Vivek Shukla, New Delhi, said that the government would have to revise visa norms and offer better legal support for international patients. Infrastructure in the recommended cities will also have to be reviewed as some do have very little or no international flights, he said. 

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Australia renews oral health services in Indigenous Heartland

From news reports:

CANBERRA, Australia: A mobile service providing dental care for thousands of Aboriginal people in Australia’s remote South has received government funding of more than US$400,000 (approx. AU$440,000), the Labor Minister for Indigenous Health, Warren Snowdon, has announced. Indigenous representatives have welcomed the new cash injection which will help to bring needed help to almost 5,000 residents in the Anangu-Pitjantjatjara Yankuntjatjara (APY) area in the province of South Australia.

Snowdon said that the government will provide funds from the National Rural and Remote Health Infrastructure Program, amongst other sources, for a new dental van and equipment that can be transported in and operated from within the vehicle. The service, which is operated by the Nganampa Health Council, an Aboriginal-controlled health organisation that has nine health centres in the area, has been running since 1993.

According to the latest statistics, the oral health of Australia’s indigenous population is significantly worse than that of the general population, owing to poor oral hygiene habits and a lack of access to dental care. A recent study by the Australian Research Centre for Population Oral Health at the University of Adelaide found that the prevalence of caries in young Aboriginal people in North Australia was eight times higher than that of their non-indigenous contemporaries, a result that is in line with the national pattern.

Primate with a ‘toxic bite’

Daniel Zimmermann

HONG KONG: For the first time, researchers in Sabah on the island of Borneo have begun studying the life habits of the Bornean slow loris, a rare primate known for its ability to release toxins through its teeth. It is hoped that the long-term study will reveal new insights into the animal, which is being threatened by illegal pet and ornamental trade in South-East Asia.

Discovered and classified first in 1785, the Bornean slow loris has recently become a rare sight in the jungles of Borneo. Figures of the total population do not exist but wildlife experts expect the density today to be around five animals per square kilometre, a dramatic decline from up to 80 per square kilometre in the 1980s.

The study, which receives funding from the Cleveland Metroparks and Columbus Zoos in the US, aims to find out where the animal sleeps or regularly hunts for prey like insects or lizards. To date, the scientists have only been able to tag one specimen with a collar that has to be replaced every two to three months, Director of the Danau Girang Field Centre in Sabah, Benoit Goossens, said.

“It is very difficult to catch a slow loris as they move high in the canopy,” he told Dental Tribune Asia Pacific. “But we hope to collar more animals as we need a larger sample size to publish our data. It is a poorly-studied species.”

Besides the shrewmouse and the Australian male platypus, the slow loris is one of the few mammal species known to be venomous. The toxin, which is used as a self-defence mechanism against predators, is produced by licking a gland on the animal’s arm and mixing it with saliva in its mouth, where it is activated.

Apart from allergic reactions, the secretion is not hazardous to humans.

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Dear reader,

With stock markets jumping up and down at random and governments bailing out almost regularly, one might wonder if these are signs of another global crisis ahead. One thing that this situation clearly shows is that politicians and economists alike have become clueless about how to tackle the many problems that their economies are faced with.

What is often missing in this discussion is that these problems are not merely of economical but, and foremost, financial nature. Especially in the United States, the old politics of “hurry now, pay later” seems to have finally caught up with budgetary reality. Things are still looking better in Europe but the struggles of the South will pose a serious obstacle for the survival of the Union in the years to come.

The only way to straighten out the troubles of the West and the model of capitalism in the long run is for governments to finally sort out their messy finances. Unfortunately, dental professionals could be one of the many losers as this could mean increased tax ation and less governmental spending on things like health care.

Yours sincerely,
Daniel Zimmermann
Group Editor
Dental Tribune International

“See? Another happy medical tourist”

Health tourism issues in India

Vivek Shukla
India

The latest report by the Associated Chambers of Commerce and Industry of India has made some good points regarding the prospects of health tourism in India. While the flow of foreign patients has indeed increased over recent years, some issues remain (such as distance) that could act as a deterrent and have to be addressed in order to maintain the growth curve.

For example, India seldom gets patients from the EU, as regulations there have made it easier for people to travel within their own region. People in the US prefer to go to Mexico and other nearby countries rather than take a 16-hour flight to India, especially when in a poor medical condition.

Clinical quality in private hospitals, though largely good, is mostly self-regulated and so there is no regulation in clinical outcome other than some laws on medical negligence. Here, too, compensation of the aggrieved party is not very high compared with many other countries. There are no specific laws that safeguard the interests of international patients, and legal processes are long and may require multiple visits.

Unless the government actively participates in promoting India as a destination, success will be elusive. Visa requirements, for example, are currently not very tourist-friendly. It can take several days for an American patient to secure a visa to India, while he could have travelled to and entered a country like Thailand without a visa in the same time.

Infrastructure like roads, trains, airports and even the Internet has improved a lot, but more needs to be done on this front by the government. For example, some of the cities suggested for health campuses offer very few or no international flights. Currently, it is not easy for an international traveller to fly to New Delhi and then take a connecting flight or a train to Jaipur. This could be a major hurdle for the growth of international health tourism in these places.

Contact Info
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To the Editor

Re: “European Commission reviews environmental aspects of mercury in dental fillings”
(Dental Tribune Asia Pacific Vol. 9, No. 6, page 7)

The thing we must remember when thinking about why we should ban mercur y in dentistry is the eternal environmental impact once it is released. Unfortunately, so much of the dental mercury is being illegally diverted to small scale gold miners throughout the developing countries and those places will be lost forever owing to the massive contamination. After watching and lis tening to a survivor of Minamata disease (the first internationally recognised mercury-contaminated site in Minamata, Japan), I say shame on us for allowing mercury to be used ever again in any application. How much longer do we have to wait before doing the right thing? The time is now! I am hoping that some of my colleagues who have been fighting this fight for 50 years or more will see the end in their lifetime.

Anta Thaou, 22 Jun. 2011

Dental Tribune welcomes comments, suggestions and complaints at feedback@dental-tribune.com

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Contact Info
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Scientists unlock secrets of enamel formation

From news reports.

PITTSBURGH/ANN HARBOR/CAMBRIDGE, USA: Enamel is known to be one of the hardest tissues in the human body. Researchers from the Forsyth Institute, as well as the universities of Pittsburgh and Michigan in the US have reported that they have documented the process through which the highly resistant dental tissue is created. According to the scientists, their observations could help in the development of new materials for medical and dental applications.

Using a cryoelectron microscope, they found that amelogenin, a regulatory extracellular matrix protein that makes up between 20 and 30 per cent of early enamel, is able to arrange itself stepwise in higher clusters. These clusters then stabilise and organise calcium phosphate crystals in parallel arrays and fuse them together. The result is an arrangement of needle-shaped mineral particles that resembles a complex ceramic microfabric, the researchers said.

They added that more research is needed to fully understand how the process works but the findings could make it possible to arrange molecules in a similar fashion in laboratories to build novel biomedical materials for restorative dentistry, amongst others applications.

The special properties of macromolecules like biopolymers are already used by other industries for producing biodegradable packaging and new kinds of building materials.

A group of molars. Researchers have re-created the teeth's outer layer.

US debt deal spares Medicaid

Daniel Zimmermann

NEW YORK, USA: Health and dental care benefits for the poor will not see a reduction, as US President Obama and members of Congress agreed to keep their hands off Medicaid in a deal agreed to by both parties to raise the country’s increasing debt limit. The agreement, which also includes the formation of a bipartisan congressional committee to recommend further cuts in federal spending, however, could target social benefit programmes later this year.

The last minute deal, ending six months of negotiations, aims to cut more than US$2 trillion from federal spending to raise the current US debt limit from US$14.5 trillion. While Democrats pushed for tax hikes and defense cuts, Republicans proposed rolling back spending on a number of social security programmes, including Medicaid.

“We will need to review the details of the debt agreement, but are encouraged by initial reports that Medicaid is not one of the major targets of spending cuts,” a speaker of the American Academy of Pediatric Dentistry told Dental Tribune Asia Pacific.

Currently, over 50 million people or one sixth of the total US population is enrolled in some form of Medicaid, the latest figures from the Kaiser Family Foundation’s Commission suggest. Twenty-five million children are receiving healthcare through the Early Periodic Screening, Diagnosis, and Treatment Program that also includes preventative and restorative dental treatment. Demand for the scheme has increased significantly since 2007 owing to the recession and rise in unemployment.

Experts said that more cuts in the joint federal-state systems could mean another setback for the programme that has seen a lack of investment and interest from healthcare providers for years. Eligibility levels could also be tightened, as less government funding over the next few years would place greater financial burden on the US states.
Bioengineers ‘floss’ bad gas from animal waste

From news reports

COLLEGE STATION, USA: A material used in the production of dental floss has shown the potential to capture a large amount of hazardous gases before they are released in the environment.

An experiment conducted on liquid manure, engineers from Texas A&M University’s Department of Biological and Agricultural Engineering in the US were able to extract 50 per cent of ammonia emissions with the help of tubes based on expanded polytetrafluoroethylene (ePTFE), a highly versatile polymer used to manufacture filters for cleaning teeth.

In recent years, ammonia emissions from the raising of cattle and other livestock have been recognized by scientists as contributing significantly to environmental problems such as the contamination of groundwater and acidification of soil and vegetation. The largest two producers, the US and China, currently release over 15 million tons of the gas into the environment, according to US Environmental Protection Agency figures.

After nitrogen oxide and sulfur dioxide, the gas accounts for the third largest air pollutant emissions worldwide.

The new technology, developed by Drs. Saqib Mukhtar and M.D. Burhan, uses diffusion, the process through which gases move from regions of higher to lower concentration, such as in the ePTFE tubes. There they can be concentrated to form ammonium sulfate, a chemical compound used as a soil fertilizer, among other things. Although still in testing stage, the scientists have announced that the technology will be applied on a larger scale soon.

Common methods to reduce ammonia emissions include the use of biofilters and chemicals, as well as acid-solution spray scrubbers.

Bacteria attack children early

NEW YORK, USA: US researchers have found evidence of bacteria associated with early childhood caries in the saliva of infants with no teeth. These findings suggest that infection with bacteria like Streptococcus mutans in the oral cavity occurs earlier in the development of children than previously thought.

Lead researcher Kelly Swanson (left) observes a DNA extraction of salivary microbiota. (DTI/Photo courtesy of UIC-C-CEES-ITCS-David Riecks, USA)

In a comparative analysis using DNA sequencing methods, scientists from the University of Illinois at Urbana-Champaign and two research institutes in Lubbock in Texas identified hundreds of bacteria species in saliva taken from infants whose teeth were still erupting, including those that are involved in the formation of biofilm and KEC. The disease, which usually occurs in primary teeth between forth and six years of age, has turned out to be one of the most prevalent infectious diseases in US children in recent years. According to National Institutes of Health figures, 42 per cent of children between the ages of 2 and 11 have had decay in their primary teeth.

The results from the study, proving that infants are infected with oral pathogens even before they develop primary teeth, could mean new strategies for preventing caries in children, the researchers said.

“We want to characterize the microbiological evolution that occurs in the oral cavity between birth and tooth eruption, as teeth erupt, and as dietary changes occur such as breastfeeding vs. formula feeding, liquid to solid food, and changes in nutrient profile,” said Kelly Swanson, lead researcher and Associate Professor of Animal and Nutritional Sciences.

Pediatric dentistry experts currently recommend stopping bottle-feeding infants at 14 months and regularly cleaning gums with a cloth or special toothbrush.

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Dr Eduardo Mahn, DDS, DMD, graduated from the University of Chile School of Dentistry and pursued further studies in Germany and the US. He worked at Ivoclar Vivadent’s International Center for Dental Education for several years and is now a guest lecturer at the University Andres Bello, Santiago, Chile. Dr Mahn is currently working with the Samaya Group in Saudi Arabia, where he is specializing in implantology, restorative and aesthetic dentistry.

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INFORMATION LIVE WEBCAST

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Ultradent moves APAC operations to Malaysia

Daniel Zimmermann

KUALA LUMPUR, Malaysia: The US dental manufacturer Ultradent has opened a new regional headquarters for the Asia Pacific region in Kuala Lumpur in Malaysia. The office will centralise distribution in over ten Asian countries, Australia, New Zealand as well as South Africa and host training and service facilities.

Nicolas Sondaz, General Manager of Ultradent Asia-Pacific, said that owing to the favourable market conditions in Malaysia, the Kuala Lumpur office will be able to offer the company’s complete product portfolio to dentists and laboratories in the region.

“The Malaysian government does not only strongly supports oral healthcare initiatives, but also universal healthcare related business,” he commented. “As a result we could import almost our entire product portfolio from the United States freely, a significant advantage to other countries in the region.”

Sondaz added that the company intends to expand the Kuala Lumpur office with administration, marketing and technical support divisions in the medium-term. There are no plans for production facilities for the time being.

New dental injection system launched

From news reports

NEWCASTLE, UK: Researchers from Newcastle University have developed a dental injection system that could reduce patients’ pain when being injected. The system, a modification of a dental local anaesthetic cartridge that allows a buffer solution to be mixed with the anaesthetic, was recently recognised with a Medical Futures Innovation Award, a European showcase of early-stage innovation in health care.

One reason dental injections are painful is the acidic content of the anaesthetic, which is necessary to enable it to be made and stored. The new system allows a separate neutralising material to be mixed with the anaesthetic just before the injection. In this way, discomfort can be reduced and the time for the anaesthetic to take effect can be shortened.

The research team has developed a patent-protected, new double plunger for a syringe cartridge that separates the two substances within the syringe until use.

Millions of dental injections are given by dentists every year. The researchers would like to see their innovation become the standard method used in every dental surgery.

Also, with more than 16 billion injections administered annually around the world, the scope for this innovation in areas outside of dentistry is significant. “As with many of the best ideas, the simplicity of this innovation is what caught our attention,” judges of the Medical Futures Innovation Awards said.

“This forms a platform innovation that could have many potential uses outside of the dental market and we would like to see this being taken into clinical trials.”

The team has produced a pre-production prototype of the injection system and is now looking for a manufacturer to produce it commercially and make it available to dentists.

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Ultradent CEO David Fischer (middle, right) joins Nicolas Sondaz for the ribbon cutting. (DTI/Photo Ultradent Inc., USA)
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AWDC 2011: FDI programmes a session on NCDS

A special two-hour session on noncommunicable diseases (NCDs) will take place on the final day of this year’s FDI Annual World Dental Congress in Mexico, chaired by Denis Bourgeois, Chairman of the World Dental Development and Health Promotion Committee.

The NCD session, from 11:30 to 13:30 on 17 September and co-hosted by the Norwegian Dental Association, comprises three presentations. In the first, ‘The role of dental practitioners as advocates promoting health by integrating general and oral health promotion’, Harry-Sam Selikowitz (Norway) will provide an outline of strategies for dentists to play a significant role in promoting health by integrating oral and general health promotion using the common risk factor approach. Dr Selikowitz has consulted with United Nations agencies on oral health in several developing countries and was an advisor both to the WHO Executive Director of Non-Communicable Diseases and to the WHO Global Strategy on Diet, Physical Activity and Health.

In his presentation, ‘The role of oral health care professionals in overall health’, Dr Rodrigo Fernandez (Mexico), a medical doctor working at WHO will highlight the important role dentists may play in screening patients for medical conditions that they may not be aware of.

In his presentation ‘Risk management in collaborative practice’, Dr Ward van Dijk will outline emerging challenges for dental practice and present techniques and new tools that will enable dentists to effectively manage both their practice business and improve health of patients. Dr van Dijk is a practicing dentist in Holland and a member of FDI’s Dental Practice Committee.

On 15 September, NCDS will also be covered during the session ‘Knowledge exchange and oral health’, organized by the Joint World Dental Development & Health Promotion Committee—Public Health Section Forum. Saska Estupinan-Day (Ecuador) will deliver a presentation entitled ‘Incorporating Oral Health within the current International Non-Communicable Disease Agenda’. Dr Estupinan-Day, a public health dentist with worldwide research projects and budgets, will highlight the need to integrate oral health within NCD strategies.

FDI, oral health and the fight against NCDs

The AWDC sessions reinforce the crucial role that oral health will be called upon to play in the fight against NCDs and underscores FDI efforts to have oral diseases specifically referred to in the outcomes document (Declaration) upcoming United Nations Summit on NCDs to be held in New York on 19 and 20 September of this year. In July, it encouraged its members to write to their Ministers of Health in support of this position and followed up this request in August with a letter to UN General Assembly Head Joseph Deiss and Sir George Alleyne, Chairman of the Summit outcomes document (Declaration), containing specific recommendations on how oral diseases might be integrated into the final text.

FDI is also reinforcing its actions through the World Health Professions Alliance WHPA, fronting their NCD campaign during a Civil Society Hearing at NCDs on 16 June. It has also prepared on the Alliance’s behalf a Toolkit for NCD prevention with information for professionals, patients and public, and a scorecard to be used to make individual risk assessments.

How oral health, the most common NCD, will fit into post-summit strategies will also be a point of focus of the International Association of Periodontology Symposium, also on 15 September. During the symposium, ‘Fighting the non-communicable disease (NCD) epidemic: the link between diabetes and oral disease’, George Taylor and Pamela Alveiss (both USA) and Martin R. Gillis (Canada) will set the stage for meaningful discussion with the purpose of re-framing future action based on the context of oral health’s role in the broader scope of NCDs.

Pamela Alveiss is an Endocrinologist who works with the Centers for Disease Control Division of Diabetes Translation, on projects for the National Diabetes Education Program (NDEP), a joint programme of CDC and the National. George W. Taylor is a Professor at the University of California San Francisco School of Dentistry. His research focuses on relationships between oral and systemic health, particularly periodontitis and diabetes. Martin R. Gillis is an assistant professor at the Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia. He serves the International Diabetes Federation (IDF) as a member of the Consultative Section on Diabetes Education and leads IDF in advancing its oral health—diabetes agenda.

WHO patient safety curriculum: The impact on dental education globally

The World Health Organization (WHO) Patient Safety Curriculum will be the subject of a presentation by A. Enrique Acosta Gio (Mexico) on 14 September, the first day of the FDI Annual World Dental Congress.

WHO published the Patient Safety Curriculum Guide for Medical Students in 2009 to encourage and facilitate the teaching of patient safety topics to medical students. It has just followed this up with the WHO Patient Safety Curriculum Guide: Multi-professional Edition. This was developed by an Expert Working Group comprising experts from the six WHO regions as well as World Health Professions Alliance members FDI, the International Confederation of Midwives (ICM), International Council of Nurses (ICN), International Pharmaceutical Federation (FIP), International Pharmaceutical Students Federation (IPSF) and the World Medical Association (WMA).

The Multi-professional edition widens the scope of the 2009 Curriculum Guide to include all health professionals including dentistry.

FDI President Roberto Vianna provided the foreword. In it, he stresses that the concept of patient safety as a ‘core’ attitude to be introduced early on in dental training is one that FDI has long championed. He notes that it also usefully integrates dentistry into the other health professions, highlighting the common principles that govern their approach to patient safety.

Dr Acosta Gio is the principal investigator of a grant to improve education, compliance, and monitoring of infection control at the dental clinics of the Universidad Nacional Autonoma de Mexico, a faculty member of UNAMdent, member of the International Editorial Board of the Journal of the American Dental Association and former board member and current member of the Organization for Safety, Asepsis and Prevention, (OASP). In

Session: FDI programmes a session on NCDS
Date: 17 September
Time: 11:30–13:30
Room: Casa Montejo 3 & 4
Language: English, Spanish
Chairperson: Denis Bourgeois (France)
CEP: 2 cr.

Session: Knowledge exchange and oral health
Date: 15 September
Time: 11:30–13:30
Room: Palacio Iturbide 3 & 4
Language: English, Spanish
Chairperson: Agustín Zeron
CEP: 2 cr.

Session: Fighting the non-communicable diseases (NCD) epidemic: the link between diabetes and oral disease
Date: 15 September
Time: 11:30–13:30
Room: Casa Montejo 3 & 4
Language: English, Spanish
Chairperson: Thomas Van Dyke
CEP: 2 cr.

Session: Global trends in patient safety and infection control
Date: 14 September
Time: 09:00 – 11:00
Room: Palacio Iturbide 5
Language: English, Spanish
Chairperson: Sandra Alcantar
CEP: 2 cr.
FDI: “Contact your Minister of Health and Chief Dental Officer”

FDI has made a direct request to its members asking them to contact their Minister of Health and Chief Dental Officer. In a 5 July communiqué, President Dr Roberto Vianna, President Dr Orlando Monteiro da Silva and Executive Dr Jean-Luc Riehl jointly requested this exception move due to indications that oral health is unlikely to be specifically mentioned in the Declaration to the United Nations Summit on non-communicable diseases, due to be held in New York on 19 September.

FDI believes that oral health should be mentioned at various points in the Summit Declaration and we have carried out some advocacy activities within the UN and the World Health Organization (WHO) to support its view. In its communiqué to members, FDI noted that: “The NCD Summit has the potential to secure commitment from Heads of Government for a coordinated global response to the NCD epidemic and substantially increase the allocation of financial resources to NCDs. It further has the potential to fix measurable targets and commitments for actions by governments, with regular reporting to monitor and hold them accountable.”

We think the current focus on four NCDs—cancer, diabetes, cardiovascular and respiratory diseases—is too restrictive: oral diseases share common risk factors with the four NCS mentioned, in particular unhealthy diet (particularly high sugar consumption), tobacco, and harmful alcohol use. We therefore believe that oral health professionals should be an integral part of the solution for prevention, early diagnosis and treatment of NCDs.”

More at www.fdiworldental.org/content/write-your-minister

FDI president: Young dentists share FDI ideals

Young dentists “come to dentistry very much with the same ideals embodied in the FDI vision of leading the world to optimal oral health.” FDI President Roberto Vianna told participants at the 58th Annual World Congress 2011 of the International Association of Dental Students (IADS) and Young Dentists Worldwide (YWD).

Delivering a Congress keynote address in New Delhi on 28 July, Dr Vianna continued: “This vision acknowledges that oral health is a fundamental part of general health and well-being. It is enacted through worldwide activism to promote policies in favour of oral health and access to oral health; practical delivery of excellence in oral care; and continuing education for dentists to stay abreast of the latest thinking and developments.”

He thanked Dr. Chandresh Shukla, President of the Dental Student Association of India, for hosting the Congress for the first time in India, and congratulated the IADS on 60 years of activities and achievements” as well as YWD, now in its 20th year of existence.

FDI president praises growing reputation of SLDA

At a late July event in Sri Lanka, FDI President Dr Roberto Vianna highlighted the growing reputation of the Sri Lanka Dental Association (SLDA), mirroring, he said, “the growth of dentistry in the country. It is now one of the most important professional societies in Sri Lanka and highly esteemed at both national and international level for its immense contribution to the development of national dentistry and oral national health.”

Dr Vianna was speaking at the induction ceremony of Dr Eshani Fernando as the President of the SLDA. He also thanked Immediate Past President Dr J. M. W. Jayasundara Bandara “for his exceptional contribution to the national body and to the FDI”.

In his address, he highlighted the international role of FDI, notably the World Health Organization, and the just-published WHO Patient Safety Curriculum Guide, in which FDI had been a major contributing partner and for which he had written a foreword.

“The concept of patient safety as a ‘core’ attitude to be introduced early on in dental training is one that FDI has long championed,” said Dr Vianna.
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"Paradigms in implant treatment planning are beginning to shift"

An interview with Prof. Friedrich Wilhelm Neukam, Scientific Chairman for the annual congress of the European Association of Osseointegration

In a few weeks, thousands of dental professionals will be gathering in the capital of Greece for the annual congress of the (EAO). Dental Tribune Group Editor Daniel Zimmermann spoke with Scientific Chairman Prof. Friedrich Wilhelm Neukam from the University of Erlangen, Germany, about the event and what is on the cards for the world of dental implantology.

Daniel Zimmermann: How are preparations for the EAO Congress in Athens coming on?

Prof. Friedrich Wilhelm Neukam: Preparations for the 20th Annual Scientific Congress of the European Association for Osseointegration (EAO) have been completed and, as has been the case in previous years, we can look forward to an outstanding scientific programme in Athens in October. The four-day conference will focus primarily on transferring the latest scientific findings into dental practice. The central theme of this year’s EAO event is “Treatment Planning in Implant Dentistry”, a topic that a number of renowned international experts will be presenting on.

According to the latest figures from the EAO, a record number of abstracts has been submitted for this year’s conference. How do you explain this huge interest?

Indeed, our latest figures show that more than 500 abstracts on the surgical and prosthetic aspects of long-term results following implantations and augmentative procedures have been submitted for the congress. This continuous rise in submissions could be due to the fact that the EAO conference has become the scientific and clinical annual event for many of our colleagues in the dental and implant community in Europe. In addition, more participants from other parts of the world, notably Asia and the Middle East, have attended our congress in the last few years. We expect the same level of participation for the conference in Athens.

Based on these submissions, is it possible to predict where the specialty is heading?

Upcoming developments in the field will definitely be influenced by a significantly higher degree of precision in imaging technologies that are the basis for computer-simulated implantations and “flapless surgery”. Of course, these rather complex procedures will not be necessary for simple implantations, but with regard to augmentative procedures or complex individual solutions, dentists will be increasingly applying these techniques in the future.

Last year’s congress was all about clinical controversies in dental implantology. What topics will be the focus this time?

Besides treatment planning in implant dentistry, our main topic, the prevention and management of complications and risk factors will be discussed. Furthermore, speakers are expected to shed light on other important aspects such as treatment planning nowadays?

Generally, we have to take some degree of error into account when transferring the results from the analysis of X-rays, CBCT or CT images to the final treatment protocol. Another important matter is the complexity of treatment planning with regard to the treatment protocol selected. Things are in flux here as well we actually start a treatment, so that we are able to achieve a more precise and safer implantation for our patients.

EAO congresses are considered to be exceptionally well-organised events. How has cooperation been with local organisers in Greece?

As usual, the EAO Congress is organised in cooperation with local scientific organisations. The four-day conference will give congress participants the opportunity to thank all colleagues from these associations for their support.

What are your personal and professional expectations of the congress?

For someone like me having been personally involved in the preparations, one hopes that the congress will be a success. It is my sincere belief that all involved in our field will be able to learn a lot from the scientific studies that are being conducted, as well as from colleagues around the world who will be presenting their latest scientific data.

Personally, I am also looking forward to the exhibition. The EAO Congress will present the largest showcase of implantology-related products and technologies in Europe, and I am eager to see which novelties the industry will pull out of the hat. Not forgetting the numerous talks and exchanges with friends and colleagues, whom, unfortunately, I only have the pleasure to meet during our congress.

Last but not least, I am looking forward to seeing Athens, which has been the cultural, economic and scientific centre of Greece for over 7,000 years.

Thank you very much for this interview.

(Translated provided by Annemarie Fischer, Germany)
The role of biology in the orthodontic practice (Part 2)

Young Guk Park & Ze’ev Davidovitch
Koret & USA

The goal of this article is to enhance the biological awareness of the orthodontic practitioner in order to minimise or avoid tissue damage during orthodontic treatment. In this second part, the aetiology of orthodontic root resorption will be examined, as well as the identification of high-risk subjects and treatment of this condition.

Ketcham first reported on severe root resorption associated with orthodontic treatment in 1927. Subsequent reports attributed orthodontic root resorption to hormonal imbalance, nutritional, genetic predisposition, dental root morphology, and treatment-related factors, such as force magnitude, duration and direction. A comparison of the rates of tooth movement and the degree of root resorption between human premolars that had been moved surgically for 12 weeks by either a stainless-steel wire or a super-elastic wire that applied constant forces, revealed that the latter wires had moved the teeth faster, but at a cost of significantly greater amounts of root resorption (Weiland 2003).

The most susceptible teeth for orthodontic root resorption are the maxillary incisors, probably because these teeth are usually moved the longest distances during the course of treatment. In a number of current orthodontic techniques, much of this incisor root movement is redundant. As discussed in more detail below, maxillary incisor root resorption is frequently associated with uncontrolled tipping of the incisors, where the crown moves palatally, while the root apex moves labially, into contact with and even through the palatal plate of compact alveolar bone. This movement is then followed by torquing of the incisor roots, in order to return them to proper angulation and position. In many such cases, about 90% of the root movement is unwarranted.

Although root resorption can occur on any surface of the root, it is most frequently observed radiographically in the apical region, where both cementum and dentine are removed irreversibly. Severe root resorption, which accounts for the loss of at least 25% of the root length, occurs in 1 to 7% of the orthodontic patient population. Despite this excessive loss, the affected teeth’s longevity is usually not jeopardised, provided the regenerative process is halted when orthodontic treatment ceases, and when periodontal health is good, with maintenance of the height of the alveolar crest.

Cells participating in the remodelling of dental and periodontal tissues during tooth movement are derived from the native cell population of these tissues, from the circulation (platelets and leukocytes), and from alveolar bone marrow cavities. These cavities are connected with the periodontal ligament (PDL) by intra-bony channels that provide passages for marrow cells with osteogenic potential (McCulloch et al. 1987). In human patients, peri-apical radiographs have revealed that the largest marrow cavities are situated around the apical region of the root, thus potentially providing a plethora of marrow-derived cells to the PDL, in turn increasing the probability of root resorption, in comparison with the coronal section of the root.

Since incisors, particularly maxillary, are the teeth most susceptible to root resorption, obtaining peri-apical radiographs of these teeth every six months is recommended at least once a year. This routine may assist the clinician in identifying individuals who display early signs of resorption, and in modifying their treatment plan to minimise the risk of severe resorption. On rare occasions, treatment must be stopped altogether, at least for a few months, to give the tissues time to rest.

A comparison between patients with a Class II Division 1 malocclusion, with an overjet smaller than 7 mm, who had been subjected to either a one- or a two-phase orthodontic treatment with fixed appliances revealed that the proportion of maxillary incisors with moderate to severe resorption was slightly higher in the one-phase treatment group (Bryan et al. 2005). There was only a slight increase in frequency of root resorption in teeth with irregular root morphology. However, significant associations were found to exist between root resorption, the magnitude of overjet reduction, and the duration of treatment.

The question arises of whether all orthodontic techniques are responsible for causing equal frequencies and extents of root resorption. The comparison of peri-apical radiographs by a number of research teams has revealed differences in this regard between certain methods of tooth movement. In one study, patients treated with...
a standard edgewise were compared with patients treated with a straight-wire edgewise technique (Mavragani et al., 2000). There was significantly more apical root resorption of maxillary central incisors in the standard than in the straight-wire edgewise group. No difference was found for the lateral incisors. In another study (Janson et al., 2000), the effects of treatment with these two techniques on 50 patients were compared with those achieved with Bioclear Therapy, a method based on the utilisation of heat-activated and super-elastic wires. It was found that the latter group showed less root resorption than the other. This effect was attributed to the super-elastic wires and the use of a smaller diameter rectangular wire, 0.018 x 0.025 inches, in a larger bracket slot, 0.022 x 0.028 inches, during incisor retraction and the finishing stages. There was no root resorption in only 2.25 % of all the examined teeth, slight resorption in 42.56 %, moderate in 53.37 %, and severe in 1.4 %, and extreme in 0.42 %. As discussed below, one might be interesting to know which teeth are more susceptible, those with fully formed roots or those with immature, short roots. Measurements of maxillary incisors’ root length before and after treatment for correction of a Class II/1 malocclusion (Marvagani et al., 2002) revealed that the immature teeth continued to grow and elongate during treatment, while the mature teeth were shortened by resorption.

A similar question to the one whether there is a specific gene or combination of genes whose activation will precipitate orthodontic root resorption was asked regarding the identity of genes responsible for the development of orofacial clefts (Perucchini 2002). Here, there is a complex mode of inheritance with the possible involvement of two to 20 genes. Transgenic mice lacking transforming growth factor (TGF) β3 are born with a cleft palate phenotype. An association between TGFβ3 and cleft lip was detected in an Iowa population, leading to a search for mutations in this gene in this population, as well as in families with cleft lip from the city of Columbia. No mutations were identified in the coding region of TGFβ3. However, a polymorphic variant was found in the upstream regulatory that may alter the gene’s function.

A similar search was performed in families whose members had orthodontic root resorption, with 15 % of maxillary incisor root resorption apparently dependent on this association. Furthermore, individuals homozygous for the IL-1β allele 1 were found to have a 5.6-fold increased risk of resorption of less than 2 mm compared with those not homozygous for this gene. It is concluded that orthodontic root resorption may be caused by a number of contributing elements acting synergically or in combination. Most prominent factors are faultless mechanics, systemic diseases or modifications in specific genes. The main tool at the disposal of the orthodontist to avoid causing root resorption is the exclusion of unwarranted tooth movements during the entire course of orthodontic treatment. Patients treated in this way will require relatively short treatment–completion times. The use of appliances that generate forces that do not injure the PDL also reduces the risk of root resorption. Hence, these conclusions imply that avoidance of root resorption is primarily in the hands of the orthodontist.

The biological nature of an optimal orthodontic force

How to move teeth without resorbing their roots

The discussion earlier in this article has revealed that tissue remodelling that facilitates orthodontic tooth movement is performed by various cell types. Some of these cells are local, such as fibroblasts and bone surface lining cells; other cells are migratory, like macrophages and lymphocytes, but evidently play a crucial role in modulating the effect of mechanical forces on para-dental cells. Thus, an optimal orthodontic force is capable of evoking an inflammatory response in para-dental tissues, leading to remodelling of these tissues and tooth movement in a desirable direction.

In an effort to provide a rationale for the use of magnets in orthodontics, in 1998 Blechman proposed that static magnets generate electromagnetic fields that stimulate bone formation in PDL tension sites, thereby reducing tooth mobility, pain and discomfort. He stated that in routine orthodontic treatment, bone formation lags behind resorption, causing widening of the periodontal space and increased tooth mobility. Re-examination of histological sections of cat jaws after seven and 14 days of combined orthodontic force/electric stimulation (Davidovich et al. 1980) supported Blechman’s proposition that exogenous electric signals increase the amount of new bone formation in PDL tension sites. These observations suggest that an optimal orthodontic force is one accompanied by an additional signal, such as electric tension, which accelerates the rate of alveolar bone formation.

Experiments with avian long bones in vivo, in search of the features of an optimal force for evoking osteogenic reactions, Lamyn and Rubin (1984) observed that the most efficient force was dynamic (intermittent) rather than static (continuous). A short duration of between five and ten minutes a day was adequate to stimulate potent periosteal and endosteal osteogenic reactions. The force magnitude was found to be of importance, defined as optimal being in the range of 2,000 to 4,000 microstrains. However, this magnitude could be much lower, provided the frequency of force application was increased. The target cells in these experiments were osteoblasts and osteocytes, the molecules responsible for bone’s “strain memory,” and for controlling the osteoclasts and the molecules responsible for bone’s “strain memory,” and for controlling the osteoclasts.
The most significant situation associated with root resorption in the maxillary arch was the approximation of incisor apices against the lingual or labial plates of bone. In such cases, the likelihood of severe root resorption increased by 20 times. Moreover, the degree of resorption correlated with the overall length of treatment time and the duration of full engagement of rectangular wires in the brackets. In a study of dental radiographs of 42 patients treated by the Begg technique (Goldson & Henrickson 1976), all subjects developed root resorption at the completion of treatment. Furthermore, a laminographic study of patients treated by this method revealed that the resorptive damage to the maxillary incisors is associated with uncontrolled tipping and subsequent round tripping of the teeth (Ten Hoeve & Mulie 1976).

A rare opportunity to examine historically the maxilla of a patient in the midst of treatment with a Straight Wire appliance was granted to three orthodontists (Whereton et al. 1991). The jaw was obtained from a 19-year-old patient who had been killed in a traffic accident. At the time of her death, she had completed 19 months of treatment, which included movement of molar roots into the vestibular and palatine cortical plates of bone. These authors report finding widespread dehiscences and fenestrations of the alveolar bone cortical plates, as well as extensive lateral, buccal and palatine root resorption. These destructive changes were particularly pronounced in teeth that had been subjected to uncontrolled tipping, and less severe in teeth moved by translation. These histological findings could not have been diagnosed by macroscopic inspection of the specimen.

Radiographic cephalometry and computed tomography were utilized in studying the maxillary and mandibular alveolar bone labial and lingual plates following incisor retraction by controlled tipping in patients with bi-maxillary protrusion (Sari-kaya et al. 2002). A comparison of pre- and post-retraction records revealed that in both jaws there had been significant reductions in the width of the lingual bone as a result of treatment, with some patients demonstrating dehiscences that were not visible macroscopically or cephalometrically. It was concluded that forcing dental roots against cortical bone may cause adverse sequelae.

Concerned about the extent of tissue damage encountered by his patients who had been treated with the Edgewise and Begg appliances, De Angelis (2005) concluded that this damage, particularly root resorption, is associated with the overall length of treatment time and treatment with rectangular wires that fully engage the Edgewise bracket slot, amongst other factors. The jiggling of teeth in the sagittal, vertical and transversal planes, as well as the round tripping or uncontrolled tipping of teeth was also identified as contributing to this condition. In addition, root resorption can be caused by bringing dental roots into contact with the cortical plates of alveolar bone.

Conclusion
It may be concluded that an optimal orthodontic force is one that is applied with full attention to the anatomical constraints and peculiarities of every individual patient. Therefore, orthodontic treatment plans must focus on the desired changes in dental root position, rather than on adherence to some “universal” system of mechanotherapy as a solve-all approach. Issues such as force magnitude, duration and direction must be considered individually for each patient, with the clear understanding that anatomical constraints should not be violated or ignored during the correction of a malocclusion. When potentially damaging movements of dental roots are avoided, orthodontic forces may be considered biologically and clinically optimal.

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“Many errors are related to violation of the biological width”

An interview with Dr Eduardo Mahn, Chile, on all-ceramic restorations

Restoration using dental ceramics is commonly associated with aggressive preparation and short survival rates, says dentist Eduardo Mahn from Chile. In a live webcast to be presented by the Dental Tribune Study Club in October (2 Oct. 2011, 1 p.m. Indian Standard Time), the implantology and aesthetic dentistry expert will discuss the aesthetic potential and indications for modern ceramics. Dental Tribune Asia Pacific spoke to him in advance about these conceptions, biological aspects and the reason that all-ceramic restorations should be taught at dental schools.

Dr Eduardo Mahn

Dental Tribune Asia Pacific: Your DT Study Club live webcast will be on dental ceramics. In what aspects have these materials improved in recent years?

Dr Eduardo Mahn: That’s a tricky question as dental ceramics have seen quite a development in recent years. Probably the most significant improvement is the strength of more than 1,000 MPa, for example with zirconium oxide, which made the fabrication of multi-unit bridges possible. Evenly significant and even more relevant is the improvement in aspects like aesthetics, versatility and simplicity. Lithium disilicate based ceramics have become available for CAD/CAM and press technology which means that we are now able to make monolithic crowns or veneers without any layering step. This is great news for dental technicians, as these materials help to make the fabrication process much easier and faster. In addition, dentists benefit from lower costs and more predictable clinical results.

Many clinicians however seem to ignore the potential that ceramics have to offer. What are the reasons for this?

I guess the problem starts with education. In the past five years, I have had the opportunity to visit more than 100 dental schools and in most of them all-ceramic restorations are not part of their undergraduate programmes. For this reason, many young dentists are not familiar with working with modern ceramics when they start their careers, and thus keep exploring porcelain-fused-to-metal (PFM) crowns owing to lack of experience and information.

Where do all-ceramics fit in with regard to the minimally invasive concept?

All-ceramic restorations are a pillar of the minimally invasive treatment selection, precise and maximum preservation concepts. However, we need to differentiate between different ceramics: zirconium oxide restorations are more aesthetic than PFM crowns, but are opaque and need more preparation and thus are not minimally invasive. Adhesive cementation is also problematic. Glass ceramics are truly minimally invasive because one can make extremely thin restorations and cement them adhesively.

Apart from the choice of materials, what other factors influence the success of all-ceramic restorations?

It is important that clinicians always consider the biological aspects of treatment. Many errors are related to violation of the biological width, for example. Other commonly underestimated aspects are the effort and precision needed for oral rehabilitation. The clinical success of crowns or veneers depends largely on an accurate diagnosis, proper treatment selection, precise preparation and impression, lab work and clean cementation.

There are plenty of resin cements available on the market. What should clinicians consider when choosing and applying these materials?

There are many new cement types from companies who will little experience in the production of dental materials and, therefore, clinicians have to put trust in established products. It is also important to understand how their chemistry works in order to decide which material is best suited for specific indications.

My webcast is going to offer some guidelines on how to choose the right product, but the main principle here is that light does not penetrate thick or opaque ceramics. Therefore, we have to use dual-curing cements such as Multilink N (Ivoclar Vivadent) for crowns, bridges, endo-crowns and onlays, as well as thick inlays and onlays. Light-curing cements are recommended for thin restorations such as all kinds of dental veneers.
Inlays and onlays with a light-curing single-component material

A clinical case using Telio CS Inlay and Onlay from Ivoclar Vivadent

Treatment with ceramic inlays and onlays is becoming more popular in dentistry. Depending on whether the restorations are created chairside or labside, the prepared teeth may require temporisation. Telio CS Inlay and Onlay from Ivoclar Vivadent are two light-curing, single-component materials that allow the quick, straightforward and aesthetic temporisation of inlay and onlay preparations directly in the dental practice.

This report (Figs. 1–6) describes the fabrication method for a temporary Telio CS Inlay, including the desensitisation of the dentine surface with Telio CS Desensitizer and removal of the temporary before the try-in and insertion of the final restoration. Cervitec Liquid or Cervitec Gel (Ivoclar Vivadent) may be applied during the temporisation stage to ensure that the gingiva is inflammation free at the time of inserting the final restoration. This is particularly important if gingival tissue has been removed to expose the preparation margin prior to impression taking.

Generally, temporary restorations are fabricated either directly in the dental practice or indirectly in the laboratory. When direct temporary restorations are fabricated, a light-curing, single-component material, such as the well-established Ferrit (Ivoclar Vivadent), is applied into the preparation and then the temporary restoration is shaped directly in the oral cavity. By contrast, indirect techniques use a pick-up impression to fabricate the temporary restoration with a self-curing composite (e.g. Telio CS G.R.). CAM/CAM materials (e.g. Telio CAM) are also used for indirect temporisation. Fabrication methods aside, all temporary restorations fulfill the same clinical function: their purpose is to shield the dentine, preserve occlusal stability and proximal support, provide protection against cusp fractures, and establish dental integrity, aesthetics and phonetics.

Direct temporary techniques appear to be particularly advantageous in conjunction with delicate inlay and onlay preparations. Applying a light-curing single-component material is significantly easier and less time-consuming than using an indirect technique. Indirect methods are mainly applied for the fabrication of large temporary restorations. Furthermore, the direct method offers the essential advantage that the material adheres to the dental surfaces by itself, eliminating the need for an additional temporary cement.

Telio CS Inlay and Onlay offer excellent properties tailored to their specific field of application. Telio CS Inlay is suitable for the temporisation of parallel-walled inlay preparations, refinishing prefabricated temporary crowns and the sealing of implant screw access holes. Telio CS Onlay features a less elastic consistency than Telio CS Inlay and is particularly indicated for the temporisation of large preparations. Both materials demonstrate low stickiness to modelling instruments whilst ensuring excellent adhesion to the prepared tooth structure.

Telio CS Inlay and Onlay are easy to shape and process in the oral cavity. They offer a sufficiently long working time and the completed direct temporary can be light-cured with a short polymerisation time of 10 seconds. In the process, a high curing depth is achieved. An antimicrobial substance is added to the materials to prevent the risk of unpleasant odour formation.

Temporary restorations made of Telio CS Inlay and Onlay can be removed in a single piece. As an additional advantage, Telio CS Inlay and Onlay do not adversely affect the adhesive bond of the final restoration. Moreover, they allow the application of a desensitiser, Telio CS Desensitizer, to prevent hypersensitivities during the temporisation stage. Telio CS Inlay and Onlay are available in two shades (transparent and universal) and two delivery forms: syringes and Cavifils for improved intra-oral application.
Latest Study shows 100% success with Straumann Bone Level implants

Survival rates at 36 months and minimal crestal bone resorption

<table>
<thead>
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<th>6 mos.</th>
<th>12 mos.</th>
<th>36 mos.</th>
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<tr>
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<td>0.08</td>
<td>0.08</td>
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<td></td>
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<td>mSBI</td>
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<td>± 0.29</td>
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<tr>
<td>PD</td>
<td>3.69</td>
<td>3.75</td>
<td>4.43</td>
</tr>
<tr>
<td></td>
<td>± 0.62</td>
<td>± 0.46</td>
<td>± 0.57</td>
</tr>
<tr>
<td>KM</td>
<td>4.06</td>
<td>4.10</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>± 1.43</td>
<td>± 1.41</td>
<td>± 1.54</td>
</tr>
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Table 1: Mean and standard deviation values of the standard soft tissue parameters over 3-year follow-up period. The displayed values of KM and PD are in mm.

Results

All 20 implants achieved and maintained successful tissue integration at the 36-month visit fulfilling strict success criteria.

Standard soft tissue parameters

- Modified plaque index (mPlI)
- Modified sulcus bleeding index (mSBI)
- Probing depth (PD)
- Width of keratinized mucosa (KM)

Figures

Figure 1: Crestal bone change displayed by the mean DIB values (in mm) showing a remodeling pattern the first 12 months and stable bone for the following months.

Table 2: The esthetic parameters remained stable at high values between 12 and 36 months.

<table>
<thead>
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<th>12 mos.</th>
<th>36 mos.</th>
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<tr>
<td>Mean PES</td>
<td>8.1</td>
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<tr>
<td>Mean WES</td>
<td>8.65</td>
</tr>
<tr>
<td>Total</td>
<td>16.75</td>
</tr>
</tbody>
</table>

Table 2: The esthetic parameters remained stable at high values between 12 and 36 months.

Conclusions

- The maximum for both pink and white aesthetic scores is 10, and the threshold for clinical acceptability is 6/10 for each index. Mean PES and WES scores remained stable between 12 and 36 months with values of 8.10 and 8.65, respectively, indicating a favourable aesthetic outcome (see Table 2).

Aesthetic parameters

- Mean PD value increased from 5.69 mm at the 3-month visit to 4.80 mm at the 56-month visit.
“Horrible Bosses”—Good Guys Gone Bad

Annemarie Fischer
DTI

LEIPZIG, Germany: Director Seth Gordon (“Freakonomics”, “Four Christmases”) brings another example to Hollywood’s long line of freaky dentists, with Jennifer Aniston playing a sex manic who harasses her male assistant and takes advantage of her unconscious patients. “Horrible Bosses” by New Line Cinema also challenges common film narratives.

“Greed, for lack of a better word, is good. Greed is right. Greed works”—epitomized Gordon Gekko, the “American Dream” of the 1980s in the legendary line of “Wall Street.” In postcrisis Hollywood cinema, this dream has been replaced by widespread economic instability, while the driving hunger for “more” has been reduced to the bare struggle for food and recognition.

Aniston’s character, who is barely on-screen, is not the only obnoxious boss in this movie. There is company owner Bob by Pellit (Colin Farrell), for example, who is having cocaine-powdered sex parties, and Dave Harken (Kevin Spacey), allmighty president of a brokerage firm, who controls his employees with the dangling carrot of promotion.

“Horrible Bosses” has a twisted plot of three white-collar workers—Nick Hendricks (Jason Bateman), Kurt Buckingham (Jason Sudeikis) and Dale Arbus (Charlie Day)—who are hindered in their pursuit of happiness by this troika of sexist, sadist, and soulless superiors. In a system where they enjoy no protection, the only solution for these workers is to physically liberate themselves from their oppressors for the greater, righteous, and sustainable good. Their liberation struggle then turns to drastic measures. This is when a ‘murder consultant’ (played by the fabulous Jamie Foxx) appears on the scene.

The movie touches a nerve here, and tries to challenge boundaries there—most notably through its strong language—but it does not pursue this at its critical moments. While the beginning is somewhat predictable, it is the twists and turns that, in the later part of the film, dominate the events.

At times, the portrayal of the characters as black and white makes it difficult to identify with them. However, Gordon and writer Michael Markowitz have gathered a first-class cast, which makes the movie work for the audience most of the time.

Inspired by some employees’ real-life experiences, akin to “The Devil wears Prada” and “The Nanny Diaries,” “Horrible Bosses” follows a recent Hollywood trend of portraying bosses as the enemy. It also seeks to challenge the system. Notably, its anti-Darwinist ending, mocking Gekko’s visions leaves one wanting more.

“Horrible Bosses” is out in the aires throughout the Asia-Pacific region.

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