Dental hospitals in Pakistan are significantly polluted with mercury

New tests confirm lax attitude towards amalgam use and management

Daniel Zimmermann

ISLAMABAD and RAWALPINDI, Pakistan: The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.

Dental hospitals in the twin cities of Islamabad and Rawalpindi, where the highest levels of mercury were found, are among the largest in the country. Treatment in them is provided by both private and public hospitals, where amalgam is still in common use.

The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.

Dental hospitals in the twin cities of Islamabad and Rawalpindi, where the highest levels of mercury were found, are among the largest in the country. Treatment in them is provided by both private and public hospitals, where amalgam is still in common use.

The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.

Dental hospitals in the twin cities of Islamabad and Rawalpindi, where the highest levels of mercury were found, are among the largest in the country. Treatment in them is provided by both private and public hospitals, where amalgam is still in common use.

The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.

Dental hospitals in the twin cities of Islamabad and Rawalpindi, where the highest levels of mercury were found, are among the largest in the country. Treatment in them is provided by both private and public hospitals, where amalgam is still in common use.

The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.

Dental hospitals in the twin cities of Islamabad and Rawalpindi, where the highest levels of mercury were found, are among the largest in the country. Treatment in them is provided by both private and public hospitals, where amalgam is still in common use.

The results of nationwide tests conducted throughout Pakistan have raised the alarm over the high levels of mercury pollution in dental hospitals. In some of the tested sites in the twin cities of Islamabad and Rawalpindi, the amount of the toxic metal detected in the air was found to be up to 20 times higher than acceptable levels.

According to the monitoring team from the Sustainable Development Policy Institute, an independent development and policy analysis organisation in Islamabad, dental personal working in the affected facilities were recently informed about the results and given recommendations about a number of safety measures. They were also advised on how to reduce the use of mercury in dental practice in general.

Despite the availability of alternative filling materials such as composite resins, amalgam remains the most widely used dental restorative in Pakistan. Waste management of the material, however, has traditionally been poor. According to the results of a study conducted in 2007 by researchers from the Bihab International University’s dentistry college, over 90 per cent of dentists in the country still dispose of used amalgam through regular waste or the waste-water system. Only 10 per cent operate through proper recycling channels.
Japan begins standardisation of dental records with trial

TOKYO, Japan: The Japanese Ministry of Health, Labour and Welfare is reported to have released funding for a pilot project that aims to standardise the format of electronic records in dental practices nationwide. If successful, the measure is supposed to improve the identification of victims of crime or mass disasters such as the March 2011 earthquake.

According to reports by the Tokyo newspaper The Mainichi Shimbun, the ministry has allocated ¥21 million (approximately US$160,000) from its budget for the project over the next fiscal year. The new format will be introduced in several dental clinics by the beginning of 2014, it said.

A review panel will be also set up in June to discuss the further standardisation of record formats for body identification.

Dental records in Japan have been primarily stored on paper or film thus far. This made victim identification difficult for forensic scientists when archives were swept away or made unusable by the tsunami following the March 11 earthquake. In the coastal town of Minamisanriku north of Fukushima, for example, all dental clinics, along with their patient files, were destroyed (as reported by Dental Tribune in September 2011). Electronic records existed before the disaster but they were often stored in different formats, which made accessing the data in the aftermath laborious because it first had to be converted.

Overall, dentists were still able to identify 14 per cent of the 8,719 bodies through forensic examination, which according to the President of the Japan Dental Association, Dr Mitsuo Okubo, proved significantly more effective than DNA or fingerprint matching. In a recent interview, he told Dental Tribune Asia Pacific that a new system could expedite the identification process dramatically through automated dental matching tests. A full-fledged system is most likely to be implemented within three to five years, he predicted.

Owing to its close proximity to the boundary of two tectonic plates, Japan experiences between 1,500 and 2,000 earthquakes of different magnitudes per year.

With over 140,000 casualties, the most deadly occurred in the Kantō region in the early 1920s. The March 11 earthquake is currently estimated to have killed almost 16,000 people and destroyed or damaged one million homes.

According to recent probability predictions by geological experts, another magnitude 7.0 earthquake could strike the southern part of the country as early as next year.
Singapore to extend subsidised dental health care

Daniel Zimmermann

SINGAPORE: Singapore’s health minister Gan Kim Yong has recently announced incentives to encourage more dental clinics and practices to sign up for the Community Health Assist Scheme (CHAS), which provides subsidies for the treatment of medical and dental conditions. In response to questions from members of parliament last month, Yong revealed that another 50 dental health care facilities are expected to join the scheme this year.

Since the introduction of the programme in January last year, the number of dental clinics participating in the scheme has risen to 295, according to Yong, an increase of over 20 per cent compared with last year.

He added that the ministry aims to focus on underserved areas in the context of the expansion but will continue to maintain an equal geographical spread of clinics participating in the scheme nationwide to make sure that the maximum of people are able to claim benefits.

According to the ministry’s latest figures, over 200,000 people were eligible for subsidy under CHAS by the end of 2012. A replacement of the Primary Care Partnership Scheme, it allows Singaporeans over the age of 40 with low income and disabled people to seek medical and dental treatment in private clinics or practices.

A SDPI monitoring team testing mercury levels with a Lumex Mercury Analyser in a dental clinic. (DTI/Photo courtesy of SDPI, Pakistan)

1 in 20 dentists is reported to have an amalgam separator installed in their practice, mainly owing to financial constraints or a lack of knowledge regarding such measures.

Although studies in Europe have indicated that regular use of amalgam and its disposal do not pose significant health risks to dental personal, exposure to high levels of mercury has been proven to damage kidneys, the nervous system and the gastrointestinal tract.

“The health of staff working under these conditions will be impaired in the same way as that of dental nurses in Norway and New Zealand, for example, who were using copper amalgam a few decades ago,” commented amalgam expert Lars Hylander from Sweden. “Also, a recent EU study indicated substantial loss of IQ in European dentists due to mercury exposure.”

Final results from the project are expected to be published later this year after the testing in several cities has been completed. A first in Pakistan, the project seeks to provide reliable data on indoor and outdoor mercury pollution throughout the Western Asian country. The project is being conducted in collaboration with the European Environmental Bureau and the Zero Mercury Working Group, a coalition of non-governmental organisations aimed at the reduction of mercury worldwide. In addition to dental offices, the project has been targeting light manufacturing facilities, among others.

N-Cement Collection
Luting materials from Ivoclar Vivadent

A strong bond provides confidence and support

Variolink® N | Multilink® N | Multilink® Speed
• Powerful luting materials
• Tried-and-tested product combinations
• A wide collection for different demands:
  ESTHETICS | UNIVERSALITY | SIMPLICITY

www.ivoclarvivadent.com
Ivoclar Vivadent AG
Bendererstr. 2 | FL-9494 Schaan | Liechtenstein | Tel.: +423 / 235 35 35 | Fax: +423 / 235 33 60
Ivoclar Vivadent Marketing (Brasil) Ltd. Lote 194 tupi 01-01-001 | São Paulo | Brazil | Tel. +55 (11) 5069-5749 | Fax +55 (11) 5069-5746 | E-Mail: vivadent@inetbr.com.br
Ivoclar Vivadent Marketing (India) Pvt. Ltd. 171 San Jose Road, #02-01 San Centre | Singapore 169877 | Tel. +65 6535 6775 | Fax +65 6535 4991
Ivoclar Vivadent Pte. Ltd. 171 San Jose Road, #02-01 San Centre | Singapore 169877 | Tel. +65 6535 6775 | Fax +65 6535 4991
Dear reader,

Daniel Zimmermann

Early childhood caries is among the greatest challenges that dentistry has to face today. According to latest figures of the World Health Organisation, infection rates with the Streptococcus mutans bacterium exceed 70 per cent not only in poor countries but also in some parts of the developed world. New detection technologies like laser fluorescence have become available in recent years, but the condition remains a complex clinical problem boasting a multitude of factors.

In our first Paediatric Tribune, which is included in this edition of DT Asia Pacific, Dr. Man Wai Ng from the Boston Children’s Hospital in the US is discussing a new chronic disease management approach that has proven successful to address the process of the disease. Along with her article, you will also find more insights in other current issues in paediatric dentistry such as technologies like laser fluorescence have become available in recent years, but the condition remains a complex clinical problem boasting a multitude of factors.

Tooth regeneration: news and hurdles

Dr. Jeremy J. Mao, DMD

Recently, Prof. Cheng-Ming Chuong’s group at the University of Southern California demonstrated a specialised stem cell niche that appears to be a novel repetitive renewal of alligator teeth. In very few patients, a tooth germ cells and postnatal cells also led to regenerative tooth organs.

The remaining tasks for regenerating human teeth however are many: how to replace embryonic tooth germ cells and to manipulate cell and regulatory molecules that are pivotal to tooth development and regeneration. The field of tooth regeneration has diversified into two subfields: from a near-term goal to regenerate functional tooth roots that integrate with the alveolar bone via a periodontal ligament, that also integrates with the alveolar bone via a periodontal ligament. These two goals were delineated in a recent article in Cell Stem Cell.

Undoubtedly, new discoveries will advance experimental approaches step by step towards regeneration of tooth roots or entire teeth in patients. The question is not whether (for stem cells do form teeth during development), but when we will be able to understand and manipulate stem cells to form teeth in adult patients. The timeline depends on not only scientific progress but also regulatory approval processes.

Contact Info
Dr. Jeremy J. Mao is currently Ed. Min. S. Robinson Professor of Dentistry at Columbia University in New York City, USA, and expert on dental stem cells research. He can be contacted at jmao@columbia.edu.

Dr. Sushil Koirala maintains a private practice that focuses primarily on MICD in Kathmandu, Nepal. He can be contacted at skoirala@clinik.com.np.

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

A complex clinical situation

Dr. Sushil Koirala, Nepal

I have not noticed any practice that the demand for treatment of worn smiles has increased dramatically over the past decade. Redesign of worn smiles is one of the most complex clinical situations in dentistry and requires detailed examination and evaluation of several factors.

There are various clinical techniques in oral rehabilitation. In my practice, I use resin composites in the majority of worn smile redesign cases and I follow the MICO full-mouth rehabilitation protocol. Once I have restored the smile aesthetics and built up the posterior teeth supports, I customise case finishing. First, I perform the necessary aesthetic finishing, as it is visible to others and can be most appreciated by the patient, then in order to harmonise the occlusal force component I perform digital occlusal analysis and the force finishing of the case. The final step entails rechecking for the absence or presence of para-functional habits (buxism and clenching) by asking the patient to wear a BruxChecker for three to four nights. After this period, if grinding patterns are visible on the BruxChecker, I always suggest wearing a thin night guard to the patient. I think the reader will find these simple clinical steps for redesigning worn smiles with minimal biological cost useful.

Contact Info
Dr. Sushil Koirala maintains a private practice that focuses primarily on MICD in Kathmandu, Nepal. He can be contacted at skoirala@clinik.com.np.

Dental Tribune Asia Pacific Edition
Researchers investigate regenerative potential of alligator teeth

LOS ANGELES, USA: Regrowing a tooth might be a concept years away from realization, but scientists in the US and Asia have reported the discovery of a new source of cells that could help to stimulate the renewal of dental cells in humans in the future: alligators.

Similar to most mammals, these cold-blooded animals have the ability to replace lost teeth by simply regrowing new ones. What made them particularly interesting for the researchers was the fact that unlike sharks, whose regenerating teeth are just an extension of their skin, the structure of an alligator’s dentition is very similar to humans’ dentition, with teeth implanted in the sockets of the jawbone.

Both humans and alligators also possess a band of epithelial tissue, which, after having investigated it using microscopy imaging techniques, the researchers believe to contain cells that trigger the permanent replacement of teeth in the animals.

While alligators can replace their teeth throughout their lives through this dental lamina, tooth development in humans usually stops with the adult teeth, except for the condition of hyperdontia or supernumerary teeth, which has been related to congenital disorders, among other causes. The research team, which consisted of researchers and clinicians from the Keck School of Medicine of the University of Southern California (USC) and other institutes in the US, Taiwan and China, is now planning to isolate those cells and investigate their potential for use in regenerative medicine. They aim to gather more information about the molecular networks that are behind the renewal process.

“Ultimately, we want to identify stem cells that can be used as a resource to stimulate tooth renewal in adult humans who have lost teeth. But, to do that, we must first understand how they are renewed in other animals,” said Cheng-Ming Choung, head author and USC pathology professor.

Alligators are estimated to be able to replace their teeth up to 50 times during their lifetime. Although specimens of 100 years and older have been reported by zoologists, the reptile lives an average of between 40 and 50 years. The species, whose origins can be traced back to over 65 million years ago, inhabits only parts of China and the US.

Prior research in tooth regeneration has focused on using or reprogramming nondental cells, as stem cells derived from human dental tissue have not proven to be a substantial source for tooth bioengineering yet. In recent experiments, however, scientists from the Dental Institute at King’s College London reported the successful combination of isolated adult human gingival tissue from dental patients with tooth-forming cells from mice.

**Giomer restorative and adhesive system** with more than 8 years of proven clinical success lead to the development of its 2nd generation BEAUTIFUL, light-cure fluoride releasing Direct Aesthetic Restorative material and FL-ROX!™, 2-step, self-etching Adhesive System to provide even better restorations with predictable aesthetics and function.

**For further information, contact your Shofu dealer TODAY!**
Concepts in implant therapy discussed
Osteology Foundation celebrates anniversary meeting in Monaco

MONACO: Immediate implantation in combination with biomaterials can effectively prevent bone resorption after tooth extraction. This was one of the key findings presented at the tenth International Osteology Symposium in the principality of Monaco last month.

Well-known periodontologist Prof. Jan Lindhe from Sweden told event participants in a keynote lecture that although bone resorption in the mesiodistal dimension can be prevented through immediate implant placement preclinical studies have shown that ridge preservation procedures with biomaterials are usually required to preserve the bucco-palatal dimension too, a discovery also confirmed by fellow presenter Dr Dietmar Weng from Germany.

Presentations on other important aspects of dental implant therapy included soft-tissue management and peri-implantitis, the frequency of which, according to presenter Björn Klinge from the Department of Dental Medicine at the Karolinska Institutet in Stockholm, Sweden, remains difficult to assess owing to contradictory scientific data and differences regarding its definition. While the prevalence of the condition itself remains a matter of debate, there was general agreement that primary contributing factors include inadequate bone volume, as well as the distance between and the position of the implants.

In addition, new clinical evidence was presented that supports the assumption that sufficiently keratinised mucosa around implants can prevent peri-implantitis. Biomaterials offer significant advantages over connective tissue grafts or free gingival grafts in this regard because their use has demonstrated greater patient satisfaction owing to the reduction in operating time and post-operative pain, according to US periodontist Todd Schevler.

This year was the second time the Osteology Foundation held its scientific symposium in Monaco. Established through a partnership between Dr Peter Geistlich, founder and former CEO of the company with the same name, Dr Philip Boyne from the Loma Linda University and Harvard professor Myron Spector a decade ago, the foundation based in Switzerland has become a leading platform for research on regenerative therapies for oral tissue.

Since 2003, it has spent CHF0.5 million annually for funding scientific studies on the topics of regenerative dentistry and dental-tissue engineering, according to its figures, among them a recent paper by a clinical team from the Faculty of Dentalistry at the Complutense University of Madrid that evaluated a novel flapless technique for cleft-palate repair by injection of a BMP-2-containing hydrogel.

Overall, more than 40 studies conducted by researchers around the world have been financially supported this way over the last ten years, the foundation said. This year’s Osteology Research Prize was awarded to clinicians from Spain and Italy.

It also holds regular scientific symposia to educate practitioners on the subject of regenerative dentistry. This year’s edition drew 2,700 participants to Monaco. Besides 60 scientific presentations, the event offered pre-congress hands-on workshops, a research forum, a poster exhibition and an industry showcase. The next edition is to be held in 2016.
Replacing toothbrush after sore throat may be unnecessary

WASHINGTON, USA: Researchers from the US have found that it may not be necessary to discard children’s toothbrushes upon diagnosis of streptococcal pharyngitis, as is commonly advised. Their study showed no evidence of increased bacterial growth on the toothbrushes of infected children.

In a preliminary experiment, the researchers grew group A streptococcus (GAS), the bacterium that causes strep throat, on toothbrushes of infected children. In the subsequent human study, 14 patients diagnosed with strep throat, 15 patients with sore throat, and 27 healthy individuals aged 2 to 20 were instructed to brush their teeth for more than one minute using a new toothbrush. When testing for bacterial growth, the researchers found GAS only on one toothbrush, which had been used for bacterial growth, the researchers said.

“The study supports that it is probably unnecessary to throw away your toothbrush after diagnosis of strep throat,” said Dr Judith L. Bowen, co-author of the study and associate professor at the University of Texas Medical Branch’s Department of Pediatrics, which conducted the research. As the current study only involved a small sample size, larger studies are needed to confirm that GAS does not grow on toothbrushes used at home by children with an infection, she added.

The findings were presented at the annual meeting of the Pediatric Academic Societies in Washington, DC, in May.

Hemostasis and Retraction? No Problem.

Traxodent® from Premier® provides predictable hemostasis and soft tissue management in minutes.

Easy, effective hemostasis and retraction.

The sleek syringe with bendable tip permits easy application of Traxodent directly into the sulcus. After two minutes it is room, leaving an open, retracted sulcus.

Traxodent is gentle, absorbent and fast.

The soft paste produces gentle pressure on the sulcus while it absorbs excess crevicular fluid. The aluminum chloride creates an astringent effect without irritating or dissolving surrounding tissue. Traxodent provides predictable hemostasis and retraction in less time and with greater comfort.

Try a starter and value packs are available through your authorized dealer.

Go to www.premusa.com to view online tutorial!
6 Months Clinical Masters Program in Implant Dentistry

2 May 2013 to 10 November 2013, a total of 12 days in Heidelberg (DE), Como (IT), Maspalomas (ES)

Live surgery and hands-on with the masters in their own institutes plus online mentoring and on-demand learning at your own pace and location.

Learn from the Masters of Implant Dentistry:

Dr. Tiziano Testori
Dr. Hon-Lay Wong
Dr. Scott D. Ganz
Dr. Jose Navarro
Dr. Phillippe Russe
Dr. Stavros Pelokanos
Dr. Marius Steigmann

Registration information:

2 May 2013 to 10 November 2013, a total of 12 days in Heidelberg (DE), Como (IT), Maspalomas (ES)

Curriculum fee: €11,900

Find out more on www.TribuneCME.com
can contact us at: tel. +49 341-48474-302 / email: info@tribunecme.com

Collaborate on your cases
University of the Pacific
Latest iPad with courses

100 ADA CERP C.E. CREDITS

Continuing Education Recognition Program

Tribune Group GmbH is the ADA CERP provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.
**Dental Tribune Asia Pacific Edition**

**Bupa takeover of Dental Corporation is close to completion**

**Melbourne, Australia/London, U.K.** The Supervem of Victoria in Melbourne, Australia, last month approved Bupa’s acquisition of Dental Corporation (DC) from Fortis Healthcare International in Singapore. The British company is expected to become sole owner of Australia and New Zealand’s largest dental chain by the end of May.

In a press release, Managing Director of Bupa Australia and New Zealand Dean Holden said that his company will be focusing on aligning both businesses seamlessly over the next few months. To this end, it will consult closely with DC’s senior management and staff.

Representatives of DC confirmed that the majority of its shareholders had agreed to the owner change.

The acquisition is Bupa’s first venture into the dental health care business. In addition to insurance, the company offers a number of other health-related services to 15 million customers in Europe, Asia, Latin America and the Middle East.

Fortis’s Singapore subsidiary divested its 64 per cent majority stake in DC at the end of last year, saying that it needed to cut debt in its global business. According to Bupa, it will pay more than A$570 million (US$585 million) for the transaction, of which the Indian health care giant will receive 72 per cent or A$270 million (US$281 million). The remaining A$100 million (US$107 million) will be paid to DC employees directly over the course of the next three years, according to the company.

DC currently employs more than 2,300 people, including 560 dentists in Australia and New Zealand. For the last fiscal year, the chain reported net revenue of A$575 million (US$528 million) from its dental businesses in both markets.

Dean Holden (DTI/Photo: Bupa, UK)

**Italian-Chinese collaboration agreement signed**

**Capital Medical University’s School of Stomatology partners with University of Genoa**

**Beijing, China/Genoa, Italy:** On 10 May, Dr Yuxing Bai, Vice Dean of the University of Genoa’s School of Stomatology, and Prof. Stefano Benedicenti, Dean of the University of Genoa’s laser dentistry department, signed an international collaboration agreement on higher education in Beijing to boost scientific exchange between both institutions.

The immediate result of this collaboration is the first International Fellowship in Laser Dentistry Postgraduate Diploma, which is being promoted in China. The course’s first module was offered to a selected number of doctors. However, a greater number of participants will be able to enrol for the July and August modules. In September, a Chinese delegation from Capital Medical University and all fellowship participants will travel to Italy, where the participants will sit the examination and receive the University of Genoa diploma.

This fellowship offers an important opportunity to obtain high-level medical training in laser dentistry, a growing field that requires in-depth knowledge, experience and proper equipment.

Dental laser manufacturers Beijing Tongxin Technology & Trading and doctor smile (LAMBDA SpA) coordinated the events when the agreement was signed.

**With growth in China, GlamSmile targets expansion**

**Beijing, China:** Cosmetic dentistry provider GlamSmile continues to grow in China. According to the Beijing company, it generated more than 4.5 million in revenue in local currency from its four veneer studios last month. It has also announced that it is currently in the process of hiring new staff for the three new studios it intends to open later this year in several cities in south central China.

Construction work for studios in Guangzhou, to be located in the city’s International Finance Centre, and Wuhan commenced recently. A studio in Shenzhen is currently in predevelopment, GlamSmile has reported.

According to the company, its current flagship studio in Beijing will be moved from its current location to the central business district of the capital and be expanded in order to accommodate up to 15 chairs.

This was the first studio run by GlamSmile in China when it opened in 2008.

“We are confident that our revenue will grow by leaps and bounds, since dental care expenses per person in China are still very low compared with other countries. There is a lot of room for growth in the near future,” commented CEO David Lok on the plans.

Dental veneers are part of China’s booming cosmetic surgery market, which is estimated to be worth more than US$2.4 billion. Lok told Dental Tribune Asia Pacific that his company aims to increase its current staff by more than 40 per cent for the expansion. Besides its studio in Beijing, it maintains three operations in Shanghai, Wenzhou and the Hong Kong Special Administrative Region.

GlamSmile studios have been put into operation in over 40 cities around the world since the concept was launched in Europe and the US in 2007. In Asia, franchise studios have been opened in Malaysia and Taiwan. The system developed and distributed by Remedent is based on one-at-a-time veneer placement method that, according to the Belgian company, involves a proprietary fabrication technique and a single-motion placement tray. It is supposed to allow dentists to seat veneers within an hour.

**Stay tuned with dental-tribune.com – covering the world in 25 languages!**

Dental Tribune's expanding and newly designed website features an app ready download for free now!
Premier’s Traxodent with Hemodent Paste Retraction System

PLYMOUTH MEETING, USA:
Premier Dental’s Traxodent is a retraction and haemostatic system for use prior to impression taking, cementation, bonding procedures and any procedures for which retraction and haemostasis are required. According to the US manufacturer, Traxodent provides predictable tissue management for accurately detailed impressions with less retakes.

The absorbent paste contains 15% aluminium chloride, a clinically proven and effective haemostatic agent. Owing to its astringent properties, it works synergistically and displaces soft tissue, the company said.

Traxodent can be dispensed directly from the ergonomic syringe into the sulcus or can be used in combination with a Premier Retraction Cap for maximum tissue deflection. The fluid is absorbed while Traxodent occupies the sulcus. After two minutes, Traxodent is rinsed away, leaving an open, retracted sulcus.

Each Traxodent kit comes with pre-filled syringes packaged in individual foil pouches for maximum freshness and applicator tips. It is available as a 7-syringe starter pack and 25-syringe value pack.

Product news from SHOFU

SINGAPORE: SHOFU’s universal direct aesthetic restorative, Zirconomer, has also a new class of restoratives in its portfolio that, owing to the inclusion of specially micronised zirconia fillers in the glass component, offers the strength and durability of amalgam as well as the protective benefits of glassionomer. At the 2nd Asia-Pacific Edition, SHOFU said that it will raise the bar for restorative glass ionomer by outperforming conventional solutions in stress bearing posterior restorations with notably high compressive strength (more than 540 MPa in 24 hours), very low creep and dimensional stability for long-lasting performance.

With Zirconomer, the company has also a new class of restoratives in its portfolio that, owing to the inclusion of specially micronised zirconia fillers in the glass component, offers the strength and durability of amalgam as well as the protective benefits of glassionomer. In one product, SHOFU said that it will raise the bar for restorative glass ionomer by outperforming conventional solutions in stress bearing posterior restorations with notably high compressive strength (more than 540 MPa in 24 hours). Very low creep and dimensional stability for long-lasting performance.

The combination of strength, durability and sustained fluoride protection makes it ideal for multiple applications, including the restoration of Class I and II cavities, repair of fractured amalgam or as a strong base under amalgam and composite restorations. It is also suitable for all classes of cavities where radiopacity is a prime requirement, the build-up of structural core, as well as on the root surfaces where overdentures are placed. According to SHOFU, clinicians can further use it as a long-term temporary replacement for cusps as well as for minimal intervention treatment and ART techniques.

Zirconomer is available in a complete set with 12 gm powder and 3 ml liquid.
The WaterLase iPlus system is simply amazing. It is our most advanced, most powerful and simplest WaterLase yet. But don’t take our word for it. See for yourself at AMAZEDBYWATERLASE.COM!

**BREAKS THE SPEED BARRIER**
- Up to 100/pulses per second
- Patented tech delivers 600 mJ/pulse
- As fast as a high-speed drill

**ILASE 940nm DIODE LASER DOCKING STATION**
- Adds dual wavelength convenience
- First totally wireless diode laser
- Battery operated with finger operation

**INTUITIVE USER INTERFACE**
- 52 illustrated procedure pre-sets
- Touch-screen controls
- Greatly simplifies the learning curve

** BIOLOGICALLY FRIENDLY DENTISTRY**
- No micro-fractures or thermal damage
- More precise, minimally invasive
- Relies on water and light to cut

CONTACT US TO LEARN MORE ABOUT WATERLASE iPLUS!
OR VISIT AMAZEDBYWATERLASE.COM TO VIEW INSTANT REACTIONS FROM DOCTORS AND PATIENTS!

GO TO BIORASE.COM TO FIND YOUR LOCAL DISTRIBUTOR.
The restoration of dentition with implants has become an established procedure throughout the world. Owing to ongoing research and development in this field, this treatment modality has become increasingly popular. Furthermore, the number of companies that manufacture dental implants and the corresponding prosthetic components has risen commensurate to the speed at which the advancements have been made.

However, the large number of commercially available systems has not helped much to improve aesthetics and function. Clinicians find themselves overwhelmed by the confusing variety of products and have trouble selecting the components that suit the treatment modality best.

Implant-supported crowns are not all the same: each patient has individual needs that have to be taken into consideration. Generally, abutments are divided into two categories: ready-made or customised (titanium, zirconium oxide, etc.). Ready-made abutments are machined components with standardised shapes and dimensions, while custom-made abutments are specially created for each patient.

Customised abutments are considered to be an efficient solution for placing a restoration on an implant. Moreover, this type of abutment offers more control over the aesthetic and functional aspects of the restoration than ready-made abutments do. The benefits of customised abutments include the improvement of aesthetics, excellent accuracy of fit, as well as the thorough and precise removal of excess cement in the luting of crowns.

In combination with a titanium base, lithium disilicate abutments such as the new IPS e.max Press abutment (Ivoclar Vivadent) offer an optimum solution for fabricating functional implant-supported restorations (strength of 400 MPa), as well as satisfying discerning aesthetic demands. In this way, implant-supported restorations can be tailored to the needs of the individual patient. The durable bond between the two components, that is, the titanium base and lithium disilicate, is created with the self-curing luting composite Multilink Implant (Ivoclar Vivadent) — which can also be light cured if desired. The following case report demonstrates the effective combination of an anterior dental implant with an individually created abutment (press technique) and an aesthetic crown produced in the same way.

Case report
A 42-year-old patient consulted the practice owing to a root fracture, which had caused discoloration of tooth 11 (Figs. 1 & 2). After a thorough diagnosis revealed that the tooth could not be preserved, a new restoration was planned. The tooth was extracted (Fig. 3) and a conical NanoTite Certain Implant (diameter 4.1 mm; BIOMET 3i) was inserted. During the healing period of about 90 days, the laboratory-fabricated provisional restoration was seated (Fig. 4).
appropriate tooth colour (LT A1). After casting glass-ceramic) in the appropriate way in the dental laboratory (Fig. 5a–e). Precision is also essential in this process. The models were subsequently placed in the articulator in accordance with the maxillo-mandibular relationship record.

A commercial titanium base that complies with the instructions for use for IPS e.max Press Abutment Solutions was selected for the fabrication of the customised abutment. According to the directions, only bases made of titanium or titanium alloys with a shoulder margin width of at least 0.6 mm and a height of at least 4.0 mm should be used. Since this procedure is not time-consuming or expensive, we consider it to be our treatment of choice. Ultimately, only the crown can be seen and it appears to emerge from the gingival tissue like a natural tooth. The underlying components, however, are very important and it is the dental team’s responsibility to select them properly in order to achieve natural-looking results (Figs. 14 & 15).

Since the ideal crown shape had already been determined during the wax-up stage, the subsequent working steps were carried out efficiently with the silicone matrix, which was based on the wax-up. The abutment was built up in wax, and its shape and size were checked against the parameters were in order, the fit of the abutment and the gingival emergence profile were checked in the patient’s mouth (Fig. 9). Since all the parameters were in order, the laboratory work could proceed.

The silicone matrix of the wax-up was also used in the fabrication of the permanent crown. The crown or coping was subsequently built up and then reproduced with IPS e.max Press. After the coping had been divested and its fit checked, the customised ceramic veneer was applied using the IPS e.max Ceram layering ceramic (Ivoclar Vivadent). A sophisticated layering scheme was produced to produce the natural-looking result. Special attention was given to finishing the surface of the restoration (Figs. 10a–d).

The ceramic crown was sent to the dental practice together with the hybrid abutment (Fig. 11). The dentist in charge of the case rechecked the fit of the abutment and cemented it to the crown using Multilink Cementation (Fig. 12). The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity.

The customised abutment and the completed ceramic crown are ready for permanent placement. – Fig. 13: The abutment and crown are seated without difficulty. – Fig. 14: An X-ray is taken to check the final situation. – Figs. 14 & 15: The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity. The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity.
Implant-prosthetic rehabilitation of the severely atrophic maxilla

Prof. Gregor-Georg Zafiropoulos
& Aiman Abdel Galil
Germany

Modern instrumentation and improvements in regenerative techniques have facilitated both the surgical treatment and the subsequent prosthetic restoration. Nevertheless, dentists and patients frequently are conflicted when deciding between fixed or removable full-arch restorations.

Many patients, especially those requiring extensive rehabilitation, clearly prefer fixed, implant-retained restorations. Under certain circumstances, the patient’s aesthetic demands, however, can be difficult to satisfy with this type of restoration. Aesthetic outcomes are most frequently hindered by bone loss resulting from advanced periodontal disease or by bone resorption following tooth loss. Although several methods can be used to augment hard and soft tissue to meet aesthetic demands, the patient can reject these options or the dentist might not be entirely familiar with the procedure selected.

Both scenarios may produce unsatisfactory results that become apparent only when treatment is complete. Removable restorations that use telescopic crowns as attachments are an alternative to full-arch rehabilitation with fixed bridges. Removable restorations can be used especially in cases with extensive jawbone atrophy (e.g. resorption), resulting in a large vertical dimension. This article presents the treatment of such a case.

Case
The 55-year-old patient (male, non-smoker, in good general health) presented for consultation and treatment in our clinic in August 2010. The patient had a three-year-old removable denture (with mid-palatal strap) in the maxilla, supported by four implants using telescopic crowns as attachments (Table 1; Figs. 1 & 2). It was shown that the premolars/molars of the maxillary denture were not in occlusion with the mandibular teeth when the patient was palpation were recorded soft periimplant tissue and pain by periodontal probing. Around the implants, soft periimplant tissue was observed and the socket was preserved/augmented as previously described.

The periodontal tissue showed an inflamed gingiva, pockets of a depth of 5 to 6 mm and a deep vertical bone defect at the mesial site of the tooth #47 (Fig. 2).

Treatment
Implants #13, 23, and 24 were explanted, the bone defects were cleaned and augmented by using non-resorbable DPTFE membranes (Cytoplast, Regentex GBR-200, Osteogenics Biomedical, Lubbock, USA) without additional use of any grafting materials, as previously described (Figs. 3 & 4). Flaps were repositioned with interpolated sutures. Membranes were left partially exposed (Fig. 4). The implant #14 (incl. abutment) was saved and used for supporting the maxillary denture. In the same clinical session, sinususes were augmented using a demineralised bovine xenograft (DBX, Compact Bone B, Dentegis, Duisburg, Germany).

In the mandible, the natural teeth were treated by scaling and root planing and the crown margins were finished and finished for allowing a better healing of the soft tissue. Tooth #37 was extracted and the socket was preserved augmented as above described.

Impression was taken in the maxilla for the fabrication of a new denture. An impression was taken from the mandible using an alginate material with the partial removable denture in situ, so that the dental laboratory could put new denture teeth in occlusion with the maxillary denture (Fig. 7). A duplicated of the new maxillary denture (DentDu) was fabricated using clear methacrylate (Pala- dur, Heraeus, Hanau, Germany) and kept for later use (Fig. 8). The customised gold abutment from implant #14 was replaced through a locator and locator’s matrices were embedded in the basis of both the denture and the DentDu (Fig. 9).

Four weeks after socket augmentation and preservation, membranes were removed (Figs. 10a & 10b). Four implants were placed in the mandible (#36, 37, 52, 42; Table 1) and the periodontal pocket #47 was regenerated using DBX and a resorbable collagen membrane (BoneProtect, Dentegis, Duisburg, Germany).

Additionally, FPDs #34, 35, 44-47 were removed and the natu"al teeth abutments were prepared. Impression of the mandibular teeth abutments was taken using a polysulfid material (Impregum Penta Soft, 3M ESPE) and a master cast.
DENTALTRIBUNE Asia Pacific Edition

Trends & Applications 15

was made. After that, chairside temporary FPDs for the natural teeth abutments in the mandible were fabricated, using a self-curing composite material (Structur 2; VOCO, Cuxhaven, Germany). The dental technician fabricated: a) metal-reinforced long term provisional FPDs and b) final metal-ceramic FPDs (which were kept for later).

On the next day, the metal-reinforced temporary FPDs were fixed using a provisional cement (Temp Bond, Kerr, Bioggio, Switzerland) and both maxillary denture and Dent Du were fitted and the occlusion was controlled (Fig. 11).

The analysis of the articulated casts showed large deviations between the occlusal plane and the maxillomandibular relationship: 1.4 cm in the right premolar/molar area, 0.7 cm in the left premolar/molar area, 1.4 cm in the right premolar/molar area, 1.5 cm in the anterior area (Fig. 12). Therefore, a removable restoration was suggested.

Six months after augmentation in the maxilla, the DentDu were used as planning templates for assigning the implant positions (Fig. 13). Six implants were placed and implant #14 was also kept (Table 1, Fig. 14).

Four months after implant placement, the implants were recovered and system-specific healing caps were mounted. An open-tray impression was taken using a polyether material (Impregum Penta Soft, 3M ESPE) and the working cast was fabricated.

DentDu supported by the locator was used for recording the maxillomandibular relationship. A bite registration was taken with a resin (pattern resin, GC, Alspir, USA) and DentDu were placed on the cast and mounted in the articulator (Fig. 15).

Implant abutments were fabricated using system specific customisable abutments (PTB, Dentegris, Duisburg, Germany) casted with CoCrMo alloy (Ankatit Laser, Ankatit-Anka Guss, Waldaschaff, Germany) and served as primary telescopes. Electroformed gold copings (0.25 mm thick; MGC Galvanogold, Au ≥ 99.9 %, Wieland Dental, Pforzheim, Germany) were also fabricated over the customised implant abutments. The DentDu, the customized abutments and the gold copings were used for scanning, creating and milling of a titan framework (Zentron T), Wieland Dental, Pforzheim, Germany. For veneering of the framework, a micro-ceramic composite was used (Ceramage, SIOP Dental, Ratingen, Germany).

After veneering, the abutments were mounted with 53 Ncm (Fig. 16). The electroformed copings were placed on the abutments (Fig. 17) and fixed in the superconstruction using a self-curing cement (AGC Cem, Wieland Dental, Pforzheim, Germany). At the same session, the final mandibular FPDs were fixed using an acrylic/arurane based temporary cement (Implant Provisional, Ablekore Inc., Snopauline, USA; Figs. 18–22).

Discussion

This case report details the treatment of a patient with insufficient maxillary alveolar ridge height caused by generalised advanced periodontal disease, as well as by subsequent implant treatment, insufficient implant prosthetic restoration, failure of maintenance, and development of perimplantitis. A considerable distance between the occlusal plane of the masticatory and alveolar ridge of the maxilla was caused by extensive bone resorption.

Telescopic crowns have been successfully used to connect dentures to natural teeth for several decades. Recent clinical data have indicated that the use of telescopic crowns with implant-supported overdentures can lead to predictable long-term treatment outcomes.1-4 The patient’s ability to remove the secondary structure also facilitates abutment hygiene; providing an additional periodontal advantage for the telescopic crown system.15 Furthermore, the high retention achieved through friction force leads to good maxillogna
tion and phonetics. Further advantages of treatment with telescopic crowns include: a) maximisation of prosthetic force transmission that are always axial to the abutments; b) facilitation of effective oral hygiene; c) ability to position teeth favourably; d) avoidance of several soft- and hard-tissue augmentative procedures; e) achievement of a versatile aesthetic, even with severe atrophy of the jawbone, which can be covered by the lip shield; f) the ability to renew veneering at any time, and g) stability of the restoration, even when an abutment implant is lost. The main disadvantages of this type of construction are cost and technical requirements, as well as possible psychological burdens experienced by the patient provided with a removable appliance.1,3,4

The initially delivered denture allowed for the correction of the interocclusal relationship, tooth shape, colour, and angulation throughout the treatment period. In this way, the patient could become acclimatised to the function and aesthetics of the denture. By using a duplicate of this denture to take the bite records and as a mounting guide, the maxillomandibular relationship was recorded and transferred accurately and the aesthetic outcome previously accepted by the patient was achieved. Thus, it was not necessary to repeat the usual clinical recordings (e.g., centre relation, occlusal vertical dimension, tooth position and aesthetics, wax try-in) at the time of final restoration fabrication.12

Additionally, the combined use of the DentDu and the silicone key allowed for the selection of implant abutments of optimal angulation and shape, and also facilitated the fabrication of an aesthetically pleasing implant-supported restoration.

In the case presented here, the customised abutments were not removed after mounting and torquing until the final restoration was fitted and placed. Thus, the position of the abutments remained unchanged, eliminating or minimising errors that might occur during repeated attachment of the abutments (for various test fittings of the restoration) to the implants and master cast. The fixation of the electroformed gold copings after and not before veneering eliminates additional errors which may occur due to the influence of the veneering composite during polymerisation. In the present report, the patient wished for a fixed restoration of the maxilla. Based on the planning model, he accepted a telescopic construction. In the case of a fixed implant-based denture, the crown-to-root ratio would have been unacceptable for natural teeth been used to support the restoration.

To date, no long-term studies have documented the influence of the crown-to-root ratio on the success rate of implants fully. Researchers have postulated that an increase in crown-to-tooth and crown-to-implant-ratios will cause an increase in the magnitude of non-axial forces transmitted to the tooth or implant. This, in turn, could cause increased vulnerability of either teeth or implant abutments and lead to the loss of supporting bone around the implants (Gomez-Polo et al. 2003). The existing data does not allow any definitive conclusions to be drawn.

In the present case, the patient’s hard and soft tissues could have been augmented surgically to provide an aesthetically and functionally acceptable rehabilitation using fixed restorations. Cases such as this raise the question of whether it is preferable to exhaust all surgical possibilities or to pursue the path of least resistance by combining classic prosthetic experience with modern implant techniques. In many circumstances, the latter is a better and safer treatment alternative. For this reason, oral surgeons and periodontists should consider the prosthodontic treatment plan extremely carefully before selecting any course of action.15

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

Contact Info
Prof. Gregor-Georg Zafiropoulos is a periodontal specialist in Düsseldorf, Germany. He can be contacted at zafiropoulos@ prof-zafiropoulos.de.
Reliable

Creative innovation, thoughtful design, lasting integrity: A-dec 500 is based on decades of collaboration with dentists worldwide. Whether it’s the seamless integration of technology or the exceptional ergonomics of thoughtful design, you’re assured dependability with uninterrupted ease.

In a world that demands reliability, A-dec delivers a reliable solution without a single compromise.

Contact your local authorized A-dec dealer or visit a-dec.com to learn more.
While dental radiographs are common and it is argued that the radiation burden is negligible and consequently the risk of developing a fatal cancer from exposure to dental ionising radiation is non-existent, the effects of being exposed to ionising radiation are accumulative and young individuals run a higher risk.

Children younger than 10 years old run a risk twice as high as that of adults and children between 10 and 20 years old still run a risk twice as high as that of adults of developing a fatal cancer caused by ionising radiation. The non-threshold linear concept, derived from high-energy radiation exposure effects deriving from unfortunate events such as those in Nagasaki, Hiroshima and Chernobyl, on which the stochastic effects of ionising radiation are based, has not shown that there are no effects; neither has it shown that there are. Nevertheless, until it has been proven that dental radiographs do not cause fatal cancers, we should consider them potentially harmful and we should act accordingly.

The estimated risk in adults of developing a fatal cancer from two ideally taken periapical radiographs (70 kV, 4 mA, 0.12 seconds exposure time, rectangular collimation) is 1 in 20 million, whereas the risk from a panoramic radiograph is 1 in 1,000,000.

CBCT is a great hype these days and has caused a tsunami in abundant and often unjustified use because it is marketed as being the ideal radiographic technique that provides the clinician with the ultimate 3-D images and as having such a low radiation dose that the clinician should not be too concerned. Unfortunately, the comparison is made with medical CT and not with conventional 2-D intra-oral radiography. Moreover, the huge variety of CBCT devices on the market makes these assumptions even more inaccurate. A CT scan of the skull equals about 2,000 periapical radiographs in radiation dose. A CBCT scan varies between 10 and 800 periapical radiographs in radiation dose, depending on the exposure settings (kV, mA and exposure time), field of view and resolution. Considering CBCT a low radiation dose radiographic technique is relative because this is determined by the dose of the radiographic technique with which it is being compared.

Estimating the potential risk of developing a fatal cancer induced by a CBCT scan is therefore not an easy task, but a conservative estimate is a risk of between 1 in 500,000 and 1 in 1,000,000. These figures are far for adult patients and should be reassessed for children, as mentioned above. In order to put everything into perspective, the annual natural background radiation dose in Europe and the US equals about 2,500 and 3,600 peripheral radiographs, respectively. Every (medical and dental) radiographic exposure has to be added to this figure.

There are three basic principles in the internationally supported radiation protection principles and it is argued that CBCT should be justified (justification principle). If there are other ways of obtaining the same diagnostic information, or if a patient cannot cope with a procedure, one should refrain from taking that radiograph. Patients should never be exposed to ionising radiation for training purposes only.

Every radiograph should also be taken at the lowest radiation dose possible (ALARA limitation principle) and be of optimal diagnostic quality (optimisation principle). This may imply that the lowest radiation dose technique may not provide the best diagnostic image or that for a certain pathology the technique that will expose the patient to a higher radiation is really necessary. As long as the benefits outweigh the risks of exposing the patient to ionising radiation and the clinical examination indicated that a radiograph is necessary, the exposure is justifiable.

Translated into the dental practice, this means that CBCT is not justifiable for screening for dental decay. Bitewing radiographs are better suited for that purpose. However, if the patient is not able to tolerate intra-oral positioning of image receptors, alternatives such as oblique lateral radiographs or a panoramic radiograph may be a better solution.
There is often confusion about absorbed dose of radiation, equivalent dose and effective dose, and these terms are often used ambiguously. The absorbed dose is a measure of the amount of energy absorbed from the radiation beam per unit mass of tissue. The official unit is the gray and used to be expressed as the rad (radiation absorbed dose; 1 Gy = 100 rad).

The equivalent dose is a measure that allows the different radiobiological effectiveness of different types of radiation to be taken into account. A radiation weighting factor (Wt) represents the biological effects of each type of radiation. For X-rays, this weighting factor equals 1, while for alpha particles it equals 20, meaning that the impact of being exposed to alpha particles is 20 times higher than the impact of being exposed to X-rays. The official unit of equivalent dose is the sievert and used to be the rem (röntgen equivalent man; 1 Sv = 100 rem).

The effective dose allows doses from different investigations of different parts of the body to be compared. The tissue weighting factor (Wt) has been introduced for radiosensitive organs and tissues. For example, the Wt for the thyroid gland and for the oesophagus is 0.05, whereas for the salivary glands it is only 0.01. The sum of all tissue weighting factors is 1, the tissue weighting factor for the whole body. These factors were proposed by the International Commission on Radiological Protection.

What can dental care providers and clinicians practically speaking do to respect the rules of radiation protection? Besides justification assessment, one should try to keep the radiation as low as reasonably achievable. This can be accomplished with appropriate beam collimation and is supported by research and is mentioned in every textbook on oral and maxillofacial radiology. It has been shown to be the most effective measure one can take to achieve the lowest radiation burden for the patient, while still obtaining the best-quality images possible.

Collimation indicates that the surface being irradiated is at least as small as the image receptor being used and it should only cover the area of interest. Therefore, using rectangular collimation for intra-oral radiography makes logical sense. Why should one use a circular collimator to direct X-rays at a rectangular image receptor?

Using rectangular collimation, one can reduce the radiation burden to the patient by 50 per cent. The use of a proper image receptor holding device to enable aim of the X-rays perpendicular to the image receptor and the use of a rectangular collimator will also improve the image quality. The latter is because the radiation scatter, which will cause deterioration of the image, is proportionate to the size of the area that has been exposed.

Lead shielding is meant to protect the patient’s tissue from accidental exposure to the primary radiation beam. The radiation that is scattered in the patient’s tissue cannot be trapped by a lead apron.

In paediatric patients, it is, however, important to shield the thyroid gland, as this organ appears to be very sensitive to ionising radiation. The proper use of a lead thyroid collar or shield is also promoted in every radiology handbook and numerous scientific papers.

It is our duty as clinicians to stand guard over the safety of our patients and as long as research has not shown that dental radiographic exposure is without any risk, we should act as if it is.

Editorial note: On Friday, 14 June, 2013, Dr Aps will be presenting a paper on absorbed radiation dose from dental and maxillofacial exposures in paediatric patients at the IAPD congress in Seoul, South Korea.
Special needs patients: Rolling the dice

Prof. Leda Mugayar

According to a 2005 definition by the Joint Council for Special Care Dentistry in the UK, “individuals who have a physical, sensory, intellectual, mental, medical, emotional or social impairment or disability or, more often, a combination of those factors” are considered special needs or special care patients. It is evident from this that special care dentistry addresses the needs of a broad range of patients.

Many people with disabilities or certain medical conditions have difficulty accessing oral health services, and, consequently, achieving good oral health. The number of people with special needs living in the community and requiring oral health care has been significantly on the rise owing to improvements in medical care, the decreased need for institutional care, and changes in societal values.

Many of these individuals require additional assistance that extends beyond local anaesthesia in order to undergo dental treatment. The decision-making process regarding the selection of a method of treatment or a combination of methods that facilitate dental treatment for these individuals must be considered. The aim of such efforts is to assist oral health professionals and other parties in planning and administering oral health care to patients with special needs. Consideration must be given to planning treatment and alternative treatment modalities, as well as the implications of combinations, regarding the repeated or frequent use of these approaches.

The dental profession has developed and currently employs a number of methods to help individuals with special needs undergo dental treatment. These include general anaesthesia, sedation (ranging from minimal to deep sedation), and behavioural and physical support. The choice of one or more of these treatment modalities should only be made after careful consideration of the associated risks and benefits. It is important to consider the longevity of the treatment as part of a long-term plan for achieving and maintaining the oral health of the individual concerned. Also, improvement in terms of helping individuals receive dental care with less pharmacological, behavioural or physical support, and maintaining oral health immediately after the procedures must be addressed.

An intensive preventive programme should be introduced in order to maintain the patient’s oral health after dental procedures and to reduce the patient’s risk of developing new or recurring oral diseases in the future. In order to manage patients with special needs, preventive strategies combined with behavioural, psychological and, when possible, social support or interventions that lessen the need for pharmacological interventions or physical support.

Preventive interventions can therefore reduce the incidence of oral disease and consequently decrease the necessity of dental procedures. More importantly, prevention programmes do not have side-effects, unlike treatments that require the use of medication.

Finally, the pursuit of and advocacy for adequate education and early intervention and prevention should be paramount for patients with special needs.

Disease management of ECC: Results of a quality improvement collaborative project

Dr Man Wai Ng

At Boston Children’s Hospital in the US, where I am Dentist-in-Chief, at one time, we experienced long waiting times for children awaiting dental treatment in the operating room. Furthermore, the relapse rate post-treatment was unacceptable high, and the costs of general anaesthesia were significant.

Until recently, standards of care for early childhood caries (ECC) called for restorative and surgical treatment, along with general recommendations to change dietary and oral hygiene practices. Young children who are not co-operative and children with special health care needs who require restorative treatment are commonly sedated under general anaesthesia. It is now known that restorative treatment alone cannot address the disease process. Unless disease aetiology is addressed, new and recurrent caries is likely to occur.

At Boston Children’s Hospital, we sought a better way to care for the dental needs of our patients with ECC. With support from the DentaQuest Institute, we conducted a quality improvement demonstration project to test the feasibility of implementing a chronic disease management approach to ECC (ECC Phase I) at Boston Children’s Hospital in Massachusetts and St Joseph’s Hospital in Rhode Island. Chronic disease management differs from the traditional approach of telling the patient what to do. Instead, it involves the care provider working with the patient to understand the causative factors of the disease and to aid in selecting self-management goals to address the aetiological factors of the disease.

The ECC I results after 30 months demonstrated that children in the ECC disease management group experienced lower rates of new cavitated lesions, pain and referrals for restorative treatment under general anaesthesia in the operating room compared with baseline historical controls. An economic evaluation of the disease management model for ECC management conducted at one of the sites found that the additional costs of the ECC intervention were offset by the reduction in restorative and operating room care.

In 2011, the ECC Collaborative Phase II, also funded by the DentaQuest Institute, expanded the project to five other sites in the US over an 18-month period. The clinical outcomes were similar to those described for Phase I. At Boston Children’s Hospital, the disease management approach is now the standard of care. We have shorter waits for patients awaiting treatment in the operating room and greater flexibility in scheduling operating room care for those patients who need it.

We conclude that a chronic disease management approach to addressing ECC utilising quality improvement strategies can be implemented in dental practices and has the potential to deliver better care, improve clinical outcomes and reduce costs. Further testing of the chronic disease management approach is needed in diverse settings. For a successful paradigm shift to risk-based disease prevention and management to occur, reimbursement is needed for paediatric Cardiorespiratory Arrest, non-surgical management of caries, more frequent risk based disease management visits, education, and counselling for some suitable patients. These activities are not presently reimbursable by insurance in the current US fee-for-service system.

At the International Association of Paediatric Dentistry congress in Seoul, South Korea, I will be presenting a paper on sedation and special needs patients at the International Association of Paediatric Dentistry congress in Seoul, South Korea.
eXperience
Genial Universal Flo
injectable • strength • polish

EASILY REACH THE
HARD-TO-REACH

Injects like a flowable, with the
strength of a hybrid composite that
polishes effortlessly.

Frank J. Milnar South East Asia Tour with GC
Creating Natural Esthetic Composite Restorations
‘Awaken the Artist within You’

Frank J. Milnar DDS, AADCO

A graduate of the University of Minnesota, School of Dentistry, he is an accredited member of the American Academy of Cosmetic Dentistry and a Board 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 internationally on the subject of direct composite restorations, shade selection and porcelain materials. He has been voted “Top Dentist” 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.

GC ASIA DENTAL PTE LTD