Scientists link dental X-rays to cancer

Lisa Townshend
DTI UK

LONDON, UK/LEIPZIG, Germany: A joint research team from Kuwait and the UK has reported a link between dental X-rays and increased numbers of thyroid cancer. After factoring X-rays taken of 500 patients in a hospital in Kuwait, they found that men and women who had had up to four dental X-rays were more than twice as likely to have developed the disease than those who had never had any dental X-rays. For those patients who had had between five and nine X-rays, their risk rose more than four-fold.

Although thyroid cancer is one of the least deadly cancers, incident rates have almost doubled in countries like Australia in recent years.

The findings are consistent with previous reports of increased risk of thyroid cancer in dentists, dental assistants, technicians and X-ray workers, suggesting that sensitivity of the thyroid to radiation is not necessarily related to direct irradiation of that organ but to any exposure to ionizing radiation. Besides thyroid cancer, significant risks have been also observed for leukaemia and cancers of the breast.

The researchers warned that the results of their study “should be treated with caution” because the data was based on self-reporting by the participants and the fact that other factors could be contributing to the increase in thyroid cancer cases. Further research is required to confirm the exact effect of dental X-rays, they added.

“It is important that our study is repeated with information from dental records, including frequency of X-rays, age and dose at exposure,” Dr Anjum Memon, Senior Lecturer and consultant in Public Health Medicine at Brighton and Sussex Medical School, who led the study, said. “If the results are confirmed, then the use of X-rays as a necessary part of evaluation for new patients, and routine periodic dental radiography, particularly for children and adolescents, will need to be reconsidered, as will a greater use of lead collar protection.”

(DTII/Photo Dmitriy Shironosov)

Significant growth in lab market

According to a new report, the world market for dental laboratories is projected to exceed US$14.5 billion by the year 2015.

The study released by Global Industry Analysts, Inc., a US-based publisher of market research, states that dental laboratories are witnessing significant growth, owing to the rise in the ageing population and the subsequent demand for dental prosthetics and other restoratives. The report also cites the increasing purchasing power of the baby-boom generation as another factor driving the market.

Amongst others, the study analysed market data and statistics in terms of sales for Japan and other markets in the Asia-Pacific region.

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Asia News

Philippines include dental fees in senior tax exemption

Daniel Zimmermann

HONG KONG/LEIPZIG, Germany: Philippine citizens above 60 years of age will soon have access to cheaper dental and medical services. A new law recently passed by Congress entitles seniors to exemption from the value-added tax of 20 per cent on goods and services, including dental fees. The law, known as the Expanded Senior Citizens Act of 2010, will also provide seniors with free medical and dental services in all government hospitals, medical facilities and out-patient clinics.

According to the latest government statistics, there are approx. 6 million people over the age of 60 living in the Philippines. Numerous organisations for the elderly have rallied heavily in the past few months in press President Gloria Macapagal-Arroyo to promulgate the law.

However, the Act could mean a significant reduction in income for dental health-care workers, as more than 85 per cent of dentists are currently in private practice. Finance officials said that enforcing the Act could lead to annual revenue losses of between US$88.5 million and US$222 million in all private sectors in years to come.

Dental fees in the Philippines range from US$50 for a tooth coloured filling to more than US$400 for crowns and bridges.

Beijing dentists raise alarm over poor oral hygiene practices

Daniel Zimmermann

HONG KONG/LEIPZIG, Germany: Dentists from the Beijing Stomatology Hospital have released new figures that indicate poor oral hygiene practices in more than 50 per cent of adults. According to the survey by the Hospital’s Oral Disease Prevention Department, less than half of middle-aged residents in the Chinese capital clean their teeth even twice a week and no more than 1 per cent of people use dental floss.

The figures apply to the rest of the country, in which even more people are often reluctant to maintain an oral hygiene practice. A 2007 study by the World Health Organization has shown that in some parts of the country, only one in four adults brush their teeth or pay regular visits to their dentist. “People do know the importance of oral health, but less than 15 per cent went to the Department of Stomatology last year. Less than 1 per cent have had regular oral examinations,” Han Yongcheng, Director of the Oral Disease Prevention Department told the newspaper China Daily.

“Most people only went to the clinics for toothaches.” He added that according to the survey, more than 60 per cent of the patients observed have dental caries and 80 per cent suffer from gingivitis.

The Beijing municipal government has already invested US$2 million in caries prevention programmes but admitted they need to do more to improve the oral health status of the city’s citizens. An oral disease prevention programme was set up last year that aims to popularise health information, such as correct tooth-brushing, and advocate healthy food, tobacco control and exercise. They aim for more than 90 per cent of residents to brush their teeth twice a day by 2014.

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**Human bite holds up to primates**

Clara Salzwśczek

HONG KONG/LEIPZIG, Germany: Modern humans are able to achieve higher bite forces than previously thought, a study from Australia has revealed. In the first comparison of its kind, researchers from the University of New South Wales' School of Biological, Earth and Environmental Sciences in Sydney found that the slenderly built human skull has a far more efficient bite than that of other chimps, gorillas or orangutans, or that of two prehistoric members of the hominid family, *Australopithecus africanus* and *Paranthropus boisei*.

The result calls into question previous suggestions that the evolution of a less robust skull in modern humans involved a trade-off for a weaker bite or was necessarily a response to behavioural changes, such as switching to softer foods or increased processing of foods through tools and cooking. It has also been suggested that human jaw muscles were reduced to make way for a larger brain.

According to the researchers, who used sophisticated 3D finite element analysis to compare digital models of actual skulls, the results might also explain the apparent inconsistency of very thick tooth enamel in modern humans, a feature typically associated with high bite forces in other species.

**India quarrels over dental schools**

Daniel Zimmermann

HONG KONG/LEIPZIG, Germany: A technical committee has been set up by the Indian Ministry of Health to investigate the decision by the Dental Council of India (DCI) to refuse giving new dental colleges permission to start undergraduate courses this year. The application of over 40 new dental colleges, most of them private, were rejected by the DCI last month, according to a report in the newspaper *Times of India*. In addition, the registration of 42 already existing schools has not been renewed.

Dental education in India has grown significantly in recent years and the country now ranks first in the world in having the highest number of dental schools. Last year, the Ministry of Health gave approval to a record number of new colleges which has raised concern for the future employment of dental graduates. Currently, the country has at least 280 dental institutions, that produce between 15,000 and 20,000 Bachelor of Dental Surgery graduates every year.

The DCI, which was set up to observe and maintain educational standards in dentistry, has justified its decision to disapprove applications due to claims for most colleges lacking enough faculty or clinical matters to teach students on. They also said that India does not require new dental schools. "There is hardly any employment opportunity for dentists in India," DCI chief Dr Anul Kohli told the *Times of India*. "We must not open new dental colleges anymore but accreditate the old ones under three categories — doing well, can improve and bad. Colleges under the last category should be shut down."

Dr Kohli added that the last date for considering an application for approval was 15 July which would give colleges time to implement changes and get a clearance.

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[Image: Tetric® N-Collection - A complete nano-optimized restorative system]
**Studies in the field of dentistry are no longer restricted to the oral cavity**

An interview with Dr Maria Fidelia de Lima Navarro, new President of the International Association of Dental Research (IADR)

I believe we first have to thank the incumbent President Prof. David Williams, who urged all IADR members to face the challenges of the global financial crisis and actively participate in IADR meetings. Another reason is the great programme compiled by IADR’s Scientific Group and Network Officers, and by the organizing committee, which certainly motivated members to submit abstracts.

The 88th General Session of the IADR and the 5th General Session of the Pan European Region of the IADR will be preceded by a full-day symposium on Global Oral Health Inequalities: The Research Agenda on 15 July. Therefore, from 14 to 17 July, the following programme will be presented: 32 symposia

**My goal is to reduce inequities and improve the quality of dental research worldwide.**

I’ll be the 87th president and the first from a developing country. I am very happy with this distinction, but also aware of the enormous responsibility of presiding over this international association and representing all of its members.

What are your priorities as President of IADR?

My goal is to reduce inequities and improve the quality of dental research worldwide. Collaboration amongst different research groups is one way to achieve this, but in order to effect significant changes we need to involve government leaders. I also intend to visit the various regions of the IADR, participate in local meetings, make myself available to members, and help as much as I can.

A record number of abstracts were submitted for this year’s IADR congress in Barcelona. Why is that?

Over 5,500 abstracts were submitted, covering all areas of dentistry, from basic to applied research. They were reviewed and selected by the IADR’s Scientific Group and Network Officers, which conduct thorough and important work for our association.

The selected papers will present recent advances in basic studies of molecular biology, tissue engineering, bioactive materials, restorative materials with suitable properties for use in the oral cavity, clinical events, randomised controlled studies on various diseases, the performance of various restorative techniques, and the influence of social determinants on health disparities in the world’s population.

I am glad to see that studies in the field of dentistry are no longer restricted to the oral cavity, but are being extended to include the patient’s general health.

Thank you very much for the interview.

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Beyond endodontics: Roots Summit 2010

BARCELONA, Spain: What do Barcelona and endodontics have in common? For me, the answer was nothing, until last week’s Roots Summit. From now onwards, I will forever connect Gaudi, Paella and La Sagrada Familia with root canals.

It is certainly not an exaggeration to say that Roots Summit 2010 had all of those lucky enough to attend falling in love with endo all over again. Organised by Drs Noemí Pascual and Nuria Campo and their team, the meeting was a grand success. Long hours in the dark, yet always crowded lecture hall, despite the perfect weather, were followed by a wonderful social programme with a distinct Spanish touch.

Dr Fred Barnett, who lectured on Trauma injuries: Long-term treatment planning based on Dx and Pulpar regenerative technique, commented: “Congratulations to Nuria and Noemí for organising a fantastic Roots Summit. The venue was awesome and the lectures top notch. Roots should be proud of their efforts.”

The impressive list of international speakers included Dr Giuseppe Cantatore from Italy, Drs José María Malfaz and Enrique Martinez Merino from Spain, and Drs Hans-Willi Herrmann and Jörg Schröder from Germany, to name a few.

Dr Sashi Nallapati from Jamaica held two very interesting lectures on rare and challenging cases: Dens invaginatus: Treatment options and Three canal pre-molars: An endodontic challenge. Many in the audience had never encountered such cases and, thus, were absorbed in these presentations.

In fact, many of the lectures were very entertaining and of extremely high quality with regard to the content as well as presentation. “It was great to see presentations that staggered me with the quality of the material and the multimedia that were shown,” commented Dr Glen van Ass, who lectured on Microscope centered practice: Ergonomics and documentation. “Videos through the operating microscope and still photos from some of the experts was incredible. It is impressive to see the quality of the work that these teachers and talented clinicians can provide in a humble yet confident manner.”

The meeting was sponsored by major industry players, like VDW, Zeiss, Dentsply Maillefer, SybronEndo Europe and Kodak. Dr John Schoeffel from the US, who introduced EndoVac—an endodontic irrigation technology system—in his lecture, also presented the product to interested attendees at the Discus booth. EndoVac enables safe irrigation to apical termination with an abundant supply of fresh irrigant. Unlike positive pressure systems that use cannulas to deliver irrigants into the canal, the EndoVac is a true apical negative pressure system that draws fluid apically by way of evacuation.

“It’s not often that meetings inspire and rejuvenate people and make them look forward to future meetings,” commented Dr Nallapati. “To me, certainly, this Roots Summit has done all that. And that is a testimony to the wonderful effort of Nuria, Noemí and their team.” Attendee Dr Mahalakshmi Sekar agreed, saying that he joined all those who had missed this event in Barcelona.

A majority of the lectures, for which continuing education credits can be obtained, were recorded live and will be made available for review on www.dtstudyclub.com. For more information on how to register and how to obtain credits, please contact Ms Julia Wehkamp at julia.wehkamp@dtstudyclub.com.

The date and venue for next year’s meeting are yet to be decided. But one thing is for sure: this year’s attendees are counting down the days.

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From news reports

COPENHAGEN, Denmark: Eating food late at night contributes to tooth loss regardless of the type of food consumed, according to American and Danish researchers. A possible reason for this could be a change in saliva flow, which is important for removing debris in the mouth.

The researchers from Universities in Copenhagen and Kansas, USA, who examined data from 2,217 men and women enrolled in a World Health Organization medical study, also found that the nocturnal eaters had lost more teeth at the later point in the study than the non-nocturnal eaters, even after taking into account potential influencing factors like age, smoking status, and the amount of sugar or carbohydrates in their diet.

Nocturnal eaters are defined as consuming a quarter or more of their daily calories after their evening meal, and waking up to have a snack in the middle of the night at least twice a week.

While dentists may not be able to stop their patients feasting in the middle of the night, the researchers recommend making them aware of the associated risks.

Dental practitioners should be aware of the oral-health implications of nocturnal eating, increase screening and oral-health education efforts amongst nocturnal eaters, and make treatment referrals when appropriate, they said.

NEW YORK, USA/LEIPZIG, Germany: A portable dental suction device aimed at dentists in developing countries has been developed by a team of Bioengineering and Biology students at Rice University in Texas, USA. The small, battery-powered version of a commonly used dental vacuum system is claimed to be able to manage five hours of heavy-duty use without the need for re-charging, and costs less than US$200 to manufacture.

Vacuum suction units are standard in most dental practices nowadays but difficult to operate in rural environments or in developing countries, in which dentists are often left to operate with limited equipment and with little or no electricity sources. In addition, common vacuum suction devices can cost up to US$1,000 per unit.

According to team member and Bioengineering senior student Jaime Wirth, the idea of a inexpensive portable suction device came up after members of the University of Texas Dental Branch at Houston went on a dental mission to South America last summer where they found it difficult to remove waste like saline and blood from patients’ mouths during dental procedures.

“The clinicians were using gauze and would end up with huge amounts of hazardous waste,” she said. “Our system can run without direct electrical service and should protect patients from swallowing debris during procedures, save dentists time as they perform these procedures and greatly reduce the amount of waste the team needs to dispose of.”

While still under development, the system will undergo its first field test by dentists in rural parts of Texas over the summer, the students added. If successful, it will be considered a standard component of Rice University’s dental Lap-in-a-backpack developed by Beyond Traditional Borders, a University-based initiative to address the health needs of developing countries around the world.
For the third year in a row, the DTSC hosts its annual CE Symposia at the GNYDM, offering four days of focused lectures in various areas of dentistry.

Each day will feature a variety of presentations on topics, which will be led by experts in that field. Participants will earn ADA CERP CE credits for each lecture they attend. DTSC is the official online education partner of GNYDM.

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This program is made available through educational grants provided by Suni, American Academy of Facial Esthetics, PreXion 3D, Shofu, Voco, Ultradent, Pure Life Dental and Clinical House Europe.

For more information, please contact Julia E. Wehkamp, C.E. Director, Dental Tribune Study Club Phone: (416) 907-9836, Fax: (212) 244-7185, E-mail: J.wehkamp@DTStudyClub.com

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Earl Howe takes on role as UK’s new minister for dentistry
Ministerial portfolios finalised, New government releases coalition plans

Earl Howe has been appointed as the new UK dentistry minister by the coalition government of Conservatives and Liberal Democrats. As the new Parliamentary Under Secretary of State for Quality, he will also be responsible for National Health Service (NHS) Constitution, NHS Commissioning Reform, Primary Care, Medicines, Pharmacy & Industry, NICE, Research and Development, Innovation and Finance, and Review of Arm’s Length Bodies.

Earl Howe has been opposition spokesman for Health and Social Services in the House of Lords since 1997. In 1995, he was appointed Parliamentary Under-Secretary of State at the Ministry of Defence, a post he relinquished at the 1997 General Election. Following the General Election of 1992, he was Parliamentary Secretary (Lords) at the Ministry of Agriculture, Fisheries, and Food.

The other members of the new ministerial health team are Paul Burstow (Liberal Democrats), as well as Simon Burns and Anne Milton (Conservatives). Ms Milton will have the responsibility for issues regarding fluoridation. Health Secretary, Andrew Lansley said, “We have a very strong ministerial team with a wealth of experience in the field of health. Simon Burns previously served as a Health Minister as well as, more recently, working on the shadow health team. Since 1999, Paul Burstow has worked on the older people’s brief and has a special interest in social care and disability issues.”

“Anne Milton, who worked for the NHS for 25 years, has a wide range of hands-on experience, including nursing in hospitals, as a district nurse, and supporting GPs and nurses working in palliative care. And Earl Howe was opposition spokesman for Health and Social Services in the House of Lords from 1997.” He added: “Together, we will build an National Health Service in which the patient shares in decision making, where quality standards are evidence-based and form the basis of the design of services and their management, and where the objective is consistent improvement in the outcomes we achieve, so that they are amongst the best in the world. We will create a more integrated public health service at the heart of healthcare policy and we will offer support, security and services to those in need of personal and social care.”

The Conservative and Liberal Democrat coalition government have revealed their full agreement in a document entitled The Coalition: Our Programme for Government. The 50-page document summarises government policy aims across all departments, including the NHS. It says The government believes that the NHS is an important expression of our national values. We are committed to an NHS that is free at the point of use and available to everyone based on need, not the ability to pay. We want to free NHS staff from political micromanagement, increase democratic participation in the NHS and make the NHS more accountable to the patients that it serves. That way we will drive up standards, support professional responsibility, deliver better value for money and create a healthier nation.

In terms of dentistry it states that We will introduce a new dentistry contract that will focus on achieving good dental health and increasing access to NHS dentistry, with additional focus on the oral health of schoolchildren.
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Antibacterial toothpastes

WHY do we need to use them?

Nowadays there is a wide range of medical and preventive toothpastes in the market. These toothpastes differ in their composition, mechanisms of action and, thus, have a definite application.

Fluoride-containing toothpastes are generally used for reducing dental enamel solubility and assists in straightening. They are primarily indicated as prophylaxis for caries.

Low abrasive toothpastes contain specific ingredients that prevent the pain impulse and are used for dental hypersensitivity.

Toothpastes preventing inflammation of the gums contain antibacterial ingredient to fight against the main source of gum diseases i.e. germs. Bacteria in the plaque is the key reason for both inflammations of the gums and caries, so antibacterial toothpastes have effective complex exposure providing protection of gums and teeth. A clear example is Colgate® Total toothpaste containing triclosan as an antibacterial ingredient and sodium fluoride for providing protection over caries.

Daily mechanical removal of plaque at home and the resulting effects on the growth of bacteria in the plaque are the significant components of a comprehensive treatment thereby preventing inflammations of the gums and periodontium. Antibacterial ingredients of the toothpastes used for therapy and prophylaxis of the given diseases have bacteriostatic and/or bactericidal effects, thus, reducing pathogen and opportunistic plaque bacteria counts. The numerical reduction is accompanied by the reduction of bacteria-derived inflammatory mediators causing dental and gum tissue lesions.

Toothpaste containing triclosan and copolymer has shown to be highly effective in treatment and prevention of inflammation of the gums. Its unique formulation was patented under the brand name Triclogard™ and is included in Colgate® Total toothpastes.

Triclosan has a wide range of antibacterial activity. It is effective at low concentrations and has anti-plaque effect. Moreover, triclosan has a direct influence on the inflammatory process by suppressing inflammatory mediators. Triclosan is safe, with low allergic capacity and no occurrence of pigmentation of the dental enamel. However, it was shown that triclosan in its pure form is washed out of oral cavity in 1.5-2 hours. The copolymer, included in Triclogard™ complex, retains triclosan on the dental surface and gums up to 12 hours and thus prolongs its antibacterial activity. Thus, Colgate® Total toothpaste may control plaque bacteria growth throughout the day and night, arresting the main source of the appearance and progression of the periodontal diseases. Moreover, long-term application of Colgate® Total toothpaste does not result in derangement of the natural balance in the oral cavity microflora, so it has shown to be safe and clinically proven for daily oral hygiene. Additionally, this toothpaste contains fluoride needed for dental enamel strengthening.

In conclusion, Colgate® Total toothpaste due to its unique formulation has a complex effect on the main reasons for inflammations in the oral cavity - dental and gum diseases. It may also be used as preventive measures as well as for complex treatment of inflammatory diseases and is considered to be a justified choice for daily oral hygiene.
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Daily mechanical removal of plaque at home and the resulting effects on the growth of bacteria in the plaque are the significant components of a comprehensive treatment thereby preventing inflammations of the gums and periodontium. Antibacterial ingredients of the toothpastes used for therapy and prophylaxis of the given diseases have bacteriostatic and/or bactericidal effects, thus, reducing pathogen and opportunistic plaque bacteria counts. The numerical reduction is accompanied by the reduction of bacteria-derived inflammatory mediators causing dental and gum tissue lesions.

Toothpastes containing triclosan and copolymer has shown to be highly effective in treatment and prevention of inflammation of the gums. Its unique formulation was patented under the brand name Triclogard™ and is included in Colgate® Total toothpastes.

Triclosan has a wide range of antibacterial activity. It is effective at low concentrations and has anti-plaque effect. Moreover, triclosan has a direct influence on the inflammatory process by suppressing inflammatory mediators. Triclosan is safe, with low allergic capacity and no occurrence of pigmentation of the dental enamel. However, it was shown that triclosan in its pure form is washed out of oral cavity in 1.5-2 hours. The copolymer, included in Triclogard™ complex, retains triclosan on the dental surface and gums up to 12 hours and thus prolongs its antibacterial activity. Thus, Colgate® Total toothpaste may control plaque bacteria growth throughout the day and night, arresting the main source of the appearance and progression of the periodontal diseases. Moreover, long-term application of Colgate® Total toothpaste does not result in derangement of the natural balance in the oral cavity microflora, so it has shown to be safe and clinically proven for daily oral hygiene. Additionally, this toothpaste contains fluoride needed for dental enamel strengthening.

In conclusion, Colgate® Total toothpaste due to its unique formulation has a complex effect on the main reasons for inflammations in the oral cavity - dental and gum diseases. It may also be used as preventive measures as well as for complex treatment of inflammatory diseases and is considered to be a justified choice for daily oral hygiene.
Only Colgate Total® has a unique Triclosan plus Copolymer formula delivering 12-hour antibacterial protection.1

A powerful combination

- **Triclosan** is an effective broad-spectrum antibacterial that helps prevent and reduces plaque, a cause of periodontal inflammation.2,3
- The **Copolymer** helps ensure the delivery and retention of triclosan on the surface of teeth and gingiva for clinically proven 12-hour antibacterial protection.1,4
- **Extensively Researched**: Proven effective over a range of patient benefits in more than 60 well-controlled clinical studies with over 16,000 patients.5
- Brushing with **Colgate Total®** is more effective in reducing plaque and gingivitis than brushing with regular fluoride toothpaste.2,3

**Greater reduction in gingival bleeding vs regular fluoride toothpaste**

Despite the achievement of being the first African country to host the World Cup in football, South Africa is a nation with many challenges, such as high rates of crime and HIV/AIDS infections. In addition, the country has high levels of tooth decay, especially in young children. During his visit to South Africa, Dental Tribune International Group Editor Daniel Zimmermann was able to speak with Prof. Sudeshni Naidoo from the Department of Community Dentistry, Faculty of Dentistry, University of the Western Cape (UWC) in Cape Town about oral health challenges and the impact of the HIV/AIDS pandemic on dental professionals.

Daniel Zimmermann: Prof. Naidoo, very little is known about the current state of oral health in South Africa. Would you describe the current situation for our readers?

Prof. Sudeshni Naidoo: The last National Oral Health Survey was conducted a long time ago, back in 1989/1990. We conducted another survey approx. 10 years later but only on children up to 15 years of age. Therefore, it is really difficult to comment on the oral health situation in South Africa at the moment.

Other research have been documented, of course, for example through the South Africa Demographic and Health Survey in 2003, which interviewed respondents regarding oral health. What we found from these studies is that oral health varies a lot in South Africa, especially between populations in rural and urban areas, where we found significantly higher levels of tooth decay. One of the reasons for this is the migration of a large number of people moving from the rural areas to the big cities after the abolishment of Apartheid in 1994. These peri-urban populations have experienced rapid deterioration in oral health owing to changes in their diet.

I am sure that were we to conduct a survey now, chances are high that the level of decay would still be on the increase.

Early childhood caries (ECC) is one of the major oral health problems in developed and underdeveloped countries alike. Is this true in South Africa too?

ECC is a significant problem throughout the country, but especially here in the Western Cape Province, which has the highest rate of children with ECC, also known as ‘rampant caries’. Again, this is related to diet and poor habits. Mothers often feed their children on a diet high in sugars or put large amounts of sugar in feeding bottles. One of the common things we use here, for example, is condensed milk and that often leads to rapid decay.

I have to admit that we have not comprehensively sought for a manner in which to address the problem. One of the things we certainly have to do is integrate oral health messages into the general health messages that are formulated and propagated by the Department of Health.

As far as ECC is concerned, it is imperative for us to cooperate with antenatal clinics and seek to educate mothers and mothers-to-be regarding prevention and the way in which to look after their children’s teeth.

Is oral health awareness generally poor?

To give you an answer to this question, I have to return to the last South Africa Demographic and Health Survey. In this survey, we found that over 90 per cent of the respondents gave the response “yes” to questions like “Do you have a toothbrush?” or “Do you brush your teeth?” We were a little bit concerned with this high positive response because we knew from smaller studies that low-income households usually cannot afford toothbrushes or such.

"ECC is a significant problem throughout the country, but especially here in the Western Cape Province.”

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Whatever your patients need

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We really need to start thinking about bringing all these programmes back, particularly with a view to the fact that we have not seen any significant reduction of caries levels in our dental clinics. The experiences of other developing countries with regard to implementation of such programmes could be helpful in this respect.

What other measures should be implemented to improve the situation in South Africa? Besides poor oral health awareness, our main challenges are the huge disparities in various parts of the country and the gap between the public and private sectors. We have private clinics both in medical and dental care that rival some of the best in Europe and North America. In our public sector, however, we have a long way to go to reach anywhere near the kind of services that you might expect to get in Scandinavia, for example.

At the moment, almost 70 per cent of our population seeks treatment in the public sector and cannot afford the private medical care that is available in the country.

Personally, I do not see the number of oral health care workers drastically increasing in the next five to ten years. So what we need to do is to piggyback on other activities that will help us to enhance and improve the oral health status of people in South Africa, such as linking oral health messages into general health messages and being very actively involved in the general health preventive programmes that are currently being implemented. We also have to convince our medical colleagues that the mouth is the gateway to health and that oral health has an impact on his/her general health and consequently, quality of life.

We also need to revisit our water fluoridation legislation. Water fluoridation efforts have been stalled in recent years and even though it is legislated that we incorporate it into our public water supplies, several municipalities have blatantly refused or have been unable to implement water fluoridation measures.

What we certainly do have here at the UWC Faculty of Dentistry is to tell our students that while the risk is present, it is also miniscule. In addition, they receive a good grounding, not only on prevention measures but also on care and management of patients infected with HIV/AIDS, such as detection and management of the oral manifestations of HIV.

There has also been a great focus on the ethical issues related to the management of patients with HIV/AIDS within Continuing Professional Development programmes. Health care workers who want to register with the Health Professions Council, for example, have to prove that they have earned 50 CDP points per year. So I think our oral health care workers are going to have much to do on these issues.

Thank you very much for this interview.
Aesthetic and functional restorations with Panasil impression materials

De Lupi Torquati Gotti
& Giancarlo Riva

A 76-year-old female patient presented to our practice complaining of pain in the region of the upper canine. Clinical examination incidentally revealed a fracture of tooth 11 at the cemento-enamel junction with partial exposure of the pulp. The treatment plan submitted to the patient involved initial endodontic treatment, followed by aesthetic, functional restoration of the upper canine with an all-ceramic zirconia crown.

The patient was first referred to a specialist, who performed root canal treatment to eliminate the germs and their metabolites from the root canal. The tooth was restored using a quartz fibre post and a composite core material. The subsequent restoration had to fulfill certain requirements in terms of functional and aesthetic design, as well as gingival adaptation in order to integrate successfully into the intra-oral situation of the patient.

Preparation of the tooth is very important for achieving this outcome. It is particularly important to determine the preparation margin, which must be clearly defined with a regular contour. These basic requirements must be fulfilled to ensure optimal application of the impression materials. The type of preparation margin depends on the restoration material selected; in this case, the margin was prepared as a modified chamfer. Geometrically, this type of margin design is between an extended deep chamfer and a rounded shoulder.

The tooth was also prepared to a depth of 1 mm, which is essential for attaining a good result.

One of the most important requirements is the convergence angle between the two opposing axial walls. Some clinicians recommend an angle of 8°, which is sufficient to achieve in clinical practice. Others recommend an angle of between 10° and 22°.

The interim or temporary stage is very important with aesthetic dental restorations, as apart from the restoration of function—temporaries must provide a positive psychological effect on the patient and are also useful in correctly simulating and planning the permanent restoration at an early stage. A temporary restoration is, therefore, not an insignificant aid; it has a key role in interdisciplinary dental treatment.

During this stage of treatment, we used a laboratory-fabricated temporary restoration, which was fabricated before preparation. The original shape was adjusted and corrected by waxing up the affected tooth on the dental stone model, which had been fabricated using an alginic pre-liminary impression. Following placement of an unsaturated restoration cord in the sulcus to ensure optimal marginal fit, the temporary restoration was re-lined. Once the contour of the cervical region had been established, the margins and all other areas of the temporary restoration were finished. Cementation was then completed using eugenol-free temporary cement. An ideal papilla contour can only be guaranteed by a precisely fabricated temporary restoration, with contact points placed at the correct height.

The papilla will remain fully intact, provided there is a distance of 0.5 mm between the contact point and the crest of the bone. This demonstrates the importance of the temporary restoration for preservation and regeneration of the gingiva following tooth preparation. A new impression of the preparation must be taken with all the details once gingival growth is complete, which normally requires an average of three weeks (Fig. 1) to ensure stable, compact tissue. The preparation margin must first be exposed using a retraction cord before taking the impression.

Gingival retraction is of crucial importance when taking an impression of the preparation margin, as a fluid-free sulcus is essential for producing a good impression. Various gingival retraction techniques are used in clinical practice. The technique used in this case consisted of mechanical-chemical retraction with a double cord. The retraction cords were placed with the aid of an applicator, whereby the first retraction cord (thickness 0.00 mm), which was impregnated with an astringent 25% aluminium chloride solution, was placed below the preparation margin. The second, unsaturated retraction cord (thickness 0.01 mm) was then placed stress-free on the first cord (Fig. 2).

The gingival retraction technique has a significant impact on the influx of fluid into the sulcus during impression-taking. Pure-cotton-wool retraction cords without a styptic agent are ineffective in preventing the influx of fluid into the sulcus. Successful isolation of the sulcus can only be achieved using chemical agents, while purely mechanical techniques using only cotton-wool retraction cords lead to increased formation of sulcus fluid.

The clinical success of a fixed restoration depends on a precise impression of all the details of the prepared tooth (Fig. 5). In summary, it can be stated that accurate fit of crowns and fixed partial dentures depends on the impression. Inaccuracies during impression-taking can only be corrected with difficulty or not at all during the subsequent fabrication stages, which has an effect on the marginal adaptation of the restoration we fabricated.

The one-step putty-wash technique was used in this case.
for fabricating the restoration. It has been proven in vitro studies that impressions fabricated using this technique exhibit a higher detail definition than two-step putty-wash impressions.11,12 As the initial contact of the impression material with the oral mucosa is the critical moment clinically, we focused on a material that becomes hydrophilic with increased relative humidity and maintains its hydrophilicity throughout the entire working time. We therefore selected the impression materials Panasil tray soft and Panasil initial contact light (Kerr®). Panasil initial contact light was applied to the sulcus using a dispensing gun fitted with an application tip (Figs. 4 & 5), while a non-perforated metal impression tray with a reinforced edge was coated thinly with Panasil adhesive beforehand using a brush (Fig. 6), prior to being loaded with Panasil tray soft (Fig. 7).

The flowability of the light material, viscosity of the tray soft and the pressure produced by the dispenser ensure that the impression material flows uniformly onto the tooth surface, including infra-gingivally. A problem when using polyether impression materials, the thixotropic properties (positional stability) of Panasil initial contact light prevent the material flowing into the oral cavity when the impression tray is inserted into the oral cavity. The intra-oral working time of 1 minute and intra-oral setting time of 2 minutes and 50 seconds are very practice friendly. The combination of Panasil tray soft and Panasil initial contact light is imperative: the products ensure perfect reproduction of all details of the tooth in the impression (Figs. 8, 9 & 10).

Technical procedure

The most commonly used material for fabricating models is Class IV dental stones, owing to their compatibility with all types of impression materials.10,11 The impression material should be applied with a setting agent before pouring. The low volumetric expansion of the model material ensures a excellent dimensional representation of the tooth impression.12 Fig. 11. Working modelsfabri cate the restoration, which is thendeo to the gingival margin. A follow-up examination was completed three weeks after cementation; note the gingival integration of the restoration emergence profile at the sulcus owing to the convergent angle between the two opposing axial walls. According to current thought, this angle should be between 10 and 22°.—Fig. 17. The gingival section was removed under a stereomicroscope to expose the preparation margin. In this case, no spacer was required with the selected prosthodontic restoration, a zirconia crown; the cement gap required was determined using CAD (Fig. 15).

Fig. 17: Finished zirconia crown, which was veneered using low-fusing porcelain. A follow-up examination was completed three weeks after cementation, note the gingival integration of the restoration emergence profile at the sulcus owing to the good marginal adaptation. —Fig. 17: The correct use of a temporary restoration and adequate morphological contour of the permanent restoration produce an optimally adapted incisal papilla.

Clinical finishing

Cementation is the final stage of prosthetic treatment. It should be noted that while the luting cement does not provide the dentist with the possibility of correcting inaccuracies in the restoration, it does contribute to clinical success. The cementing process is crucial for the functional performance of a prosthodontic restoration; should the wrong cement be selected or used incorrectly, it can have an adverse effect on the service life of the crown. A high mechanical compressive strength is one of the most important properties.

As luting material is distributed in very thin layers, it must be capable of withstanding compressive loading in order to prevent fractures. We used glass ionomer cement that has not only a high compressive strength, but also the advantage of fluoride release. A comparative study of various cement materials established that the glass ionomer cement we used in this case produced the lowest fluoride thickness of 20 µm. A follow-up examination was completed one week after permanent cementation to check the integration of the prosthodontic restoration into the tissue. The clinical procedure was completed with a further follow-up examination to check the occlusal relationship, which in most cases cannot be completed satisfactorily when fitting the restoration, owing to stress to the patient. The correct use of a temporary restoration and an adequate morphological design of the permanent restoration contributed to an adequate adaptation of the incisal tooth papilla, as was established at intervals of 30, 60 and 90 days (Fig. 17).
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The advantages of indirect composite resin restorations

Dr Lorin Berland
USA

"The trend in dentistry today is clearly toward more aesthetic and less invasive. Indirect resin and ceramic inlays and onlays are not only compatible with this trend, but fulfill very nicely the restorative void between fillings and crowns," Dr Ronald D. Jackson (Cosmetic Dental Tribune, December 2008).

In terms of durability, aesthetic inlays and onlays are no longer new; they have a track record—a good one. With today’s materials, longevity is mainly a matter of replacing old amalgams with tooth-colored composites inlays that lasted and, in addition, tend to be inconsistent and unpredictable.

But the warranty on these 30-, 40-, 50-year-old silver fillings is running out. We have to remember that amalgam technology is over 150 years old. At that time, people lost their teeth much earlier and died a lot earlier, too. Nowadays, however, we have a large and growing segment of the population that is over 50 years old—and they want to keep their teeth functioning well and looking good. Let’s think the same way our patients do. They want to replace these old amalgams, but they want to do it conservatively, consistently, efficiently, predictably and economically. They also want us to do it in one visit. So, what are the advantages of indirect, laboratory-processed, composite resin, posterior restorations?

Restorations fabricated in this manner look better, undergo less shrinkage, help restore the strength of the tooth, have minimal porosity and excellent marginal integrity. They are also very durable and have smoother surfaces that are kinder to the gums and result in less plaque accumulation. Patients appreciate avoiding the inconvenient, uncomfortable and expensive second appointment because no second appointment means no temporary, no emergency visits, and best of all, the preservation of healthy tooth structure.

By contrast, replacing amalgam restorations with direct posterior composites, especially ones involving an interproximal surface, are difficult for the patient as well as the dentist. For many reasons, these direct composite replacements frequently prove to be inadequate, especially over time. The inherent problems of isolation, the large bulk of composite required, the layered curing of the composite and the effects of shrinkage all affect contacts, occlusion, margins and post-operative tooth sensitivity. Gold will avoid the inconvenient, uncomfortable and unpredictable.

The preparation

The patient in this clinical case came in with a dental emergency. The filling had fallen out of his broken, lower right molar the day before he was doing everything for three weeks of business. He wanted a quick and permanent solution (Fig. 1). The tooth was anesthetised. Next, a Fender Wedge (Directa Dental) was used to further isolate the tooth involved, protect the adjacent interproximal surface and pre-wedge the teeth for optimal contacts (Fig. 2). The Isolte (Isolte Systems) was placed to obtain a dry, illuminated field. We used a caries detector to ensure complete decay removal (Fig. 3). The tooth was then microetched, etched and desensitised with HemaSeal and Cide (Advantage Dental Products, Inc.). Two layers of a self-curing bonding agent (OptiBond All-In-One Unidose, Kerr Dental) were applied to provide reduced post-operative sensitivity and high dentine bond strength. This was then air-dried and light-cured. Flowable composite (Premise Flowable, Kerr Dental) was added to the internal walls and floor, creating an even floor and filling in undercuts that were originally prepared for caries removal and amalgam retention (Fig. 4). After the tooth had been isolated, the preparation was refined with a flat-end cylinder, fine-grit, short-shank diamond. Two Identic Hydrocolloid Impressions (DUX Dental) were taken to make the onlay in the laboratory (Fig. 5).

After disinfecting the impressions, the assistant immediately poured molds using MAI-SLO (Parkell, Inc.) and based them using a rigid, fast-setting bite registration material (e.g., Blu Mousse, Parkell, Inc.; Fig. 6). Within two minutes, we had a silicone working model on which to build the onlay (Fig. 7). Undercuts were blocked out with a wax, carefully avoiding the margins (Fig. 8). Starting with the Premise Indirect (Kerr Dental) slurry and finalising with incised shades, the onlay was carrier.
mentally fabricated in layers and then placed in the Premise curing oven (Kerr Dental). In approximately 10 minutes, it was ready to be finished with various finishing burs (Fig. 9). It was polished to a high shine and then checked on the model to verify accurate interproximal contacts and margins (Fig. 10).

**Seating the onlay**

When seating the onlay, the isolated premade restoration (Iso-lite) was re-applied for isolation, ease of placement and patient comfort during cementation of the onlay. To prevent any risk of sulcal seepage and contamination, the FenderMate (Directa Dental) was inserted to slightly separate and isolate the adjacent teeth and to help facilitate seating the onlay (Fig. 12). The remaining Expasyl paste was rinsed off thoroughly and the FenderMate was adapted to the adjacent interproximal surface with a condenser (Fig. 15). The enamel and composite core were then etched for 15 to 30 seconds.

A single component fifth-generation adhesive (OptiBond Solo Plus Unidose, Kerr Dental) was applied in two coats and air-thinned until there was no more movement. Flowable composite (Premise Flowable) was dispensed into the prepared tooth prior to inserting the onlay. The FenderMate was removed and the onlay was further seated using a condenser with gentle pressure. Complete seating was facilitated using the contra-angle packer/condenser (Fig. 14). An explorer is helpful in removing excess flowable before curing.

The restoration was cured from all angles, starting at the interproximal gingival floor where leakage is most likely to occur. Occlusal flash and excess flowable composite was buffed with a short flame carbide, while the interproximal margins were adjusted with bullet or needle carbides. A Bard-Parker #12 scalpel was used to remove interproximal cement. Once the proper occlusion had been established, a diamond-impregnated point and cup were used to polish the restoration (Fig. 15).

**Contact Info**

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