Memories of dental treatment haunt brains of anxious patients

DT Asia Pacific
TOKYO, Japan: The sound of a dental drill or suction system evokes a feeling of fear in almost every tenth dental patient. New findings presented by Japanese researchers at a recent Neuroscience meeting in the US have now revealed new insights into how the brain of anxious patients may react during treatment. Using functional magnetic resonance imaging, a neuroimaging procedure to measure brain activity, they found stronger activity in the left caudate nucleus in anxious patients when playing them sounds of various dental instruments. When neutral sounds, like a French horn or pure tone, were played, however, activity in this region was found to be significantly lower.

No significant neural activity was detected when the same sounds were played to a control group of non-anxious patients. Instead, these patients showed stronger activity in the right and left superior temporal gyr, a part of the brain usually associated with auditory processing and other neural functions.

“Recent studies have indicated that the basal ganglia, including the caudate nucleus, may play a role in learning and memory functions. The subjects in the dental-fear group therefore may have receiving feedback from memories of sounds of dental treatment,” researcher Hiroyuki Karibe from the Nippon Dental University’s Department of Pediatric Dentistry in Tokyo suggested.

He said that the findings, which have not been published yet, could be applied to assess the effectiveness of conventional interventions for dental fear, such as cognitive behaviour therapy. The study is the first to have measured how the sounds of dental instruments relate to brain activity. It confirms the assumption that dental anxiety is mainly due to reasons other than the fear of experiencing pain through surgery.

No amalgam for kids

Environmental organisations in the Philippines have called on the Philippine Dental Association House of Delegates to pass a resolution that will phase down the use of amalgam as a dental filling material for children. The ban is supposed to protect the most vulnerable segment of the population from a harmful substance, representatives of BAN Toxics and the International Association of Oral Medicine and Toxicology in the Philippines stated.

According to the two Filipino organisations, amalgam fillings add significantly to the already high exposure to mercury resulting from artisanal and small-scale gold mining in the country.

Widespread tooth decay

Owing to bad oral hygiene habits and high consumption of sugary beverages and snacks, dental caries is still highly prevalent among children in Taiwan. According to figures of the Health Promotion Administration in Taipei, eight out of ten children at the age of five currently suffer from severe tooth decay.

Indians to study oral cancer

Three dentists from India are among the first participants of the University of Dundee’s Master of Research in Oral Cancer Programme. The Scottish university inaugurated its 12-month course, which is also the world’s first postgraduate research degree to focus exclusively on oral cancer, in September.

The caudate nucleus has been associated with learning and memory functions. (DTI/Photo SFAM)

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DT Asia Pacific
Aussi study claims dentists are prone to visual illusion

**LISMORE, Australia:** Objects in a mirror appear to be farther away than they are in a common illusion encountered by car drivers around the world. Misleading visual perception of an object could also be the reason that dentists sometimes drill larger cavities than necessary to fill a tooth or prepare a root canal, a team of psychologists and dental researchers from Australia and New Zealand has suggested.

In clinical field tests involving eight practising endodontic specialists from New Zealand and conducted in 2002 and 2006, the researchers found that dental professionals tend to fall trap to the Delboeuf illusion, which makes enclosed areas appear smaller than they actually are when seen in a larger context. In their case, a cavity drilled into a tooth appeared to be smaller when the surrounding tissue was in range of the parameters of the illusion, leading to more healthy tissue being removed at the expense of patients.

The researchers said in the report that it remains unknown whether dentists are aware of this when drilling but recommended that their findings be incorporated into the early stages of clinical training to decrease the risk of caries or perforating the root end due to having removed too much healthy tissue. It should also be extended to other fields of health-care treatment that could be affected by visual illusions, they added.

“When operating, health-care providers try to see as much healthy tissue as possible. It is important to know that their eyes can deceive them into removing more healthy tissue than necessary,” lead author of the study and psychology expert from the University of Southern Cross in Australia Prof. Robert O’Shea commented.

Named after its creator, Joseph Remi Leopold Delboeuf, a Belgian scientist, the illusion was first documented in 1865. It has been reported to be used by restaurants to trick customers regarding the size of their dishes by using smaller plates, among other things.

For the latest study, more than 20 extracted and root-filled teeth were treated by each participant, who had not been informed about the parameters of the illusion. The participants were asked to remove as little tissue as possible when preparing the teeth and to use their usual hand instruments.

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CANBERRA, Australia: The Australian Ministry of Health has refused claims by the Australian Dental Association to delay the introduction of the Child Dental Benefits Scheme in January 2014. They agreed, however, to conduct a timely review of the programme, which is intended to subsidise dental care for over three million children.

In the organisation’s letter, ADA president Dr Karin Alexander said that dentists feel largely unprepared for the introduction of the programme and firstly need to be fully briefed about its details. She said that there is still a grey area around the administrative requirements of the scheme which, she said could force dentists into making mistakes once it is introduced next month.

According to ministry officials, information leaflets are currently in preparation and will be sent to dentists this month in order to provide further details of the programme. Furthermore, an e-learning module and telephone hotline for dental provider inquiries will be available on the ministry’s website soon. They said that there will also be a national campaign to inform parents of the eligibility requirements.

A part of the former government’s National Dental Health Reform, the scheme entitles children between ages 2 and 17, who are on income support or whose parents receive certain tax benefits, to treatment costs of AUS$1,000 for basic dental procedures like examinations or extractions over a period of two calendar years. It will replace the current Medicare Teen Dental Plan which was launched under the Labour government back in 2008. An estimated AUS$3 billion will be provided this way to children in need for dental care over the next two years.

According to recently published figures of the Australian Bureau of Statistics in Canberra, access to dental care services remains limited in the country, particularly for children from low income households.

**Advanced digital diagnostics**

SINGAPORE: With the introduction of its diagnostic digital sensor Gendex GXDP-700, dental equipment manufacturer KaVo offers dentists a more economic entry into the world of 2-D and 3-D diagnostics.

According to the dental equipment manufacturer, various diagnostic problems can be competently solved through the large selection of 12 panoramic and five remote X-ray modes. With the optional volume extension to 60 x 80 mm, it is also possible to cover the whole mandibular arch with just one image. Both radiation dose and the time taken to effect diagnosis are reduced owing to indication-related volume selection, the company said. KaVo also highlighted the benefit of the Intelligent SmartLogic technology, whereby the most frequently used mode and preselect are automatically saved for use with the next image.

The Gendex GXDP-700 comes with a 10 inch wide touch panel and a system for fast, easy and effective patient-positioning. The software solutions InVivo 5D and VixWin 2D allow not only integration into almost any practice management software, but can also be used for diagnostic purposes, processing and further use of images.
HAPPY NEW YEAR!

MEZGER '13
The holiday season—A time for dental emergencies

Dr. Ansgar Cheng
Singapore

The holiday season is a time for celebration and gatherings of family, friends and colleagues. How can we forget staying up a bit late, eating tons of good food and having a couple of drinks too? For dentists, however, it is not uncommon to receive a frantic call or e-mail on Christmas Eve, for example, from a person who is in unbearable pain and needs urgent treatment.

In these cases, the issue is usually either a root canal flare up, or an infected and impacted wisdom tooth. One incident that is still fresh in my memory is of a young lady who was in Germany for the holidays several years ago. She had a root canal infection but all the dental clinics there were closed from Christmas Eve to Boxing Day. She was popping painkillers every three hours and even chewed on her baby daughter’s pacifier to relieve the pain.

As she was a family friend, she sent me an e-mail and asked if we at Specialist Dental Group could assist. My staff explored the possibility of couriering medication over to her but it would have taken too long. In the end, she cut short her trip and flew to Singapore to have root canal treatment. Owing to the treatment, she was finally pain-free and ready to party well before New Year’s Eve.

Over the last few years, our team has encountered a few interesting emergency situations as a result of the holiday season celebrations. For example, we were called in to attend to dental emergencies as a result of people walking into glass doors after a night of drinking. I remember once seeing this elegant young couple in the middle of the night because the woman was a little drunk and she hit the glass door after losing her balance on her stiletto shoes.

In cases like that, the net outcome is usually as follows—the reinforced glass door stays intact and the teeth, lips, and, sometimes even the nose, get the brunt of the damage. We have certainly stitched up enough lips and fixed many teeth as a result of that.

On more than one occasion, we have had people showing up because they had their teeth chipped down to biting hard nuts, nutshells, and hidden pieces of bone in a big chunk of turkey. Veneers and braces have also been known to be dislodged due to the food being consumed.

After the holiday season, we also have a lot of people presenting with gum problems. Overworked teeth and gums combined with less time for tooth-brushing is an almost perfect formula for acute periodontal abscesses.

One pattern that I have observed over the years is that when it comes to dental emergencies during the holiday season, there is no pattern at all; anything and everything can happen. As a result, we try to ensure that at least one member of our dental team is available to stand by should a dental emergency occur during the festivities.

Dr. Ansgar C. Cheng is a Prosthodontist at Specialist Dental Group in Singapore. He can be contacted at drcheng@specialistdentalgroup.com.

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Brain drain to cause severe health-worker shortage in poor countries

LONDON, UK: Health Poverty Action, a UK-based international development organisation, has published a new report on the consequences of the migration of health workers. According to the researchers, poor countries will be affected worst by the severe shortage of health workers as the specialists they train migrate to wealthier countries.

Although recent data suggests that the influx of internationally trained health workers has stabilised or declined in some Organisation for Economic Co-operation and Development (OECD) countries, overall migration of health personnel to OECD countries is increasing, the investigators said.

The report showed that in Austria, Belgium, Denmark, Germany, the Netherlands and Poland nearly 50 per cent of doctors were trained in non-EU countries. In Italy and France, doctors educated in other countries account for 60 per cent of the medical personnel.

According to the report, the UK has long been a primary destination country for doctors and nurses trained elsewhere, particularly India, Pakistan, South Africa and Nigeria, among other countries, owing to previous colonial ties.

The latest statistics from the General Medical Council show that 50 per cent of all doctors and 10 per cent of all nurses in the UK were trained in other countries.

Owing to increased utilisation of health services by an ageing population and insufficient numbers of people trained to replace retiring health workers, many EU member states are relying increasingly on health workers trained in other countries.

The European Commission estimates that the EU will be faced with a shortage of one million health professionals (250,000 physicians, 150,000 dentists, pharmacists and physiotherapists, and 590,000 nurses) by 2020.

According to the World Health Organization, an estimated 25 per cent of all doctors and five percent of all nurses who were trained in sub-Saharan Africa were working in OECD countries in 2006.

Therefore, the authors of the current report suggested that Africa will be the most affected by the crisis.

They estimate that only three per cent of the world’s health workers are employed in Africa, although the continent has 23 per cent of the world’s global disease burden. The financial cost to Africa of losing trained health workers is estimated to be in the billions, and more than African countries receive in aid for health, they said.

The report also highlights the responsibilities of wealthy countries in recruiting international health workers and calls for internationally coordinated efforts to tackle the global health-worker shortage to prevent the widening of global health inequality.

The report, titled “The health worker crisis: An analysis of the issues and main international responses”, can be downloaded from Health Poverty Action’s website.

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“Kennedy’s wound was clearly incompatible with life”

An interview with Dr Don T. Curtis, USA

Few people are granted the opportunity to become an active part of historical events. Seventy-six-year-old Dr Don T. Curtis, a former dentist and oral surgeon from Amarillo in Texas, is one of them. As a resident in oral and maxillofacial surgery at Parkland Memorial Hospital in Dallas, he was one of the first doctors to have performed emergency treatment on US President John F. Kennedy after he was shot on 22 November 1963. At that time, I was half way through my first year of residency in oral and maxillofacial surgery. Before I took a residency there, I also completed an internship. I became interested in the field while working as a surgical technician in a general hospital during my time in dental school at the Texas A&M University Baylor College of Dentistry in Waco.

Were you aware of the president being in Dallas on 22 November 1963? I was not aware of that and was surprised when they brought him to the hospital. I had a surgery scheduled for later that day and was on my way to lunch. The way to the lunchroom however required me to leave the building and walk across the receiving area of the emergency room, where I noticed police cars and the presidential limousine, which had blood on it and roses that were given to the First Lady, Jacqueline Kennedy, when she arrived at the airport. When a policeman asked me whether I was a doctor, I said yes. He then replied that the president was hurt and escorted me to the trauma room where President Kennedy was.

In what condition was Kennedy when you arrived? At that time, I was half way through my first year of residency in oral and maxillofacial surgery. Before I took a residency there, I also completed an internship. I became interested in the field while working as a surgical technician in a general hospital during my time in dental school at the Texas A&M University Baylor College of Dentistry in Waco.

I have not seen it but I have heard criticism that it paints rather a sensationalised picture of the events. I remember the chief of neurosurgery, Dr James Carrico, a Parkland resident surgeon, had placed an endotracheal tube in an attempt to ventilate. However, that did not work because there was a blockage of the president’s airway, so he decided to do a tracheostomy.

Where you aware that the president had been the subject of an assassination attempt? I was unaware of the nature of the injury to the president because his head was on a pillow and I could not see a wound. I was not aware of that and was surprised when they brought him to the hospital. I had a surgery scheduled for later that day and was on my way to lunch. The way to the lunchroom however required me to leave the building and walk across the receiving area of the emergency room, where I noticed police cars and the presidential limousine, which had blood on it and roses that were given to the First Lady, Jacqueline Kennedy, when she arrived at the airport. When a policeman asked me whether I was a doctor, I said yes. He then replied that the president was hurt and escorted me to the trauma room where President Kennedy was.

What was the atmosphere in the room? Where you aware that the president had been the subject of an assassination attempt? I was unaware of the nature of the injury to the president because his head was on a pillow and I could not see a wound. I remember the chief of neurosurgery, Dr James Carrico, a Parkland resident surgeon, had placed an endotracheal tube in an attempt to ventilate. However, that did not work because there was a blockage of the president’s airway, so he decided to do a tracheostomy.

I helped the nurse to undo the president’s tie and remove his shirt to prepare him for the procedure. Then Dr Malcolm Perry, a senior surgeon, came into the room and it was decided that he should do the tracheostomy. Dr Carrico assisted Dr Perry, and I performed a cut-down on the left leg to provide for intravenous replacement of blood. When I looked up later, the room was filled with the senior chiefs of all surgical departments at Parkland. There were also some people I did not know.

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President Lyndon B. Johnson had made it safely back to Washing- 
ton and that the government was uninterrupted. Finally on Sunday, we learned that the suspect, Lee Harvey Oswald, had been shot, which indicated that there was something going on in addition to just a lone 

shooter.

The majority of Americans do not believe that Oswald acted alone, as concluded by the report of the Warren Commission appointed by the government to investigate the circumstances of the assassina-
tion. Did you observe any irregularities between this of-

ficial version and the events you witnessed?

The Warren Commission’s report reflected what the people wanted to hear, which was that Oswald acted alone and that there was no conspiracy. The doctors of Parkland however when wiping the blood from Kennedy’s neck for the tra-

cheostomy found a single bullet hole that was apparently an en-

trance wound, which meant that must have been a projectile that entered the president from the front. Because of its nature, the wound on the back of Kennedy’s head was an exit wound, so there must have been at least two bul-

lets that came through the front.

While all the doctors’ testimonies, including mine, were includ-
ed in the report, their knowledge of the wounds did not have much influence on the Commission’s overall conclusion. Why it was interpreted that way has remained a mystery for the past 50 years.

What do you believe actu-

ally happened that day?

My personal belief is that there were of course multiple 

shooters and that Oswald did not do it alone. This would indicate however that there was in fact a conspiracy.

After the events, you stayed 
at Parkland Memorial Hospi-
tal for another two years. Were the events still discussed by the staff in the aftermath?

We actually never talked about it. This was something we just did not want to discuss. However, I left Parkland in 1965 for an exchange 

residency in London and Zurich,

where I often discussed the events with my colleagues abroad. Part-

icularly in England, there was much interest in US politics and the 

assassination.

You recently went public with your knowledge after 38 years. What were your reasons for doing so?

Everything that I would say is already in the literature about the 

assassination but I think there needs to be general knowledge of 

what people who were actually involved knew.

More than six million pages of classified evidence on the 

Kennedy assassination are go-

ing to be released by 2017. Are you interested in this knowl-

dge, or do you consider that chapter of your life closed? 

There is a great deal of specula-
tion of what information these 
documents actually contain. I do not look forward to it but would be interested to know what could be learned from them.

Thank you very much for the interview.
SHANGHAI, China: During DenTech China, one of the largest events dedicated to the dental industry in Asia, Peter Malata, President of the W&H Group, officially opened the company’s new office in Shanghai at the end of October. According to W&H, the new office provides the potential for further expansion into the growing Chinese dental market.

The new office was opened on 24 October to improve both technical and sales support for the W&H product range. More than 20 local partners and distributors from the region were invited to the new office building with the aim of strengthening partnerships.

Overall, the company’s Chinese subsidiary currently has more than 25 partners and distributors throughout the country. W&H hopes to increase this number in the future and to introduce many of the new products presented at DenTech China to the market.

In addition to this increased representation, local seminars and lectures supported by national universities and local dental associations will be offered.

Located in the Standard Chartered Bank Building, now called 8 Battery Road after its address in Singapore’s financial district, the company’s newest subsidiary is integrated into the company’s TENEO treatment centres, as well as dental instruments and materials. The recently launched APOLLO DI scanner for digital impressions, for example, is intended to make digital impressions more economical than ever before. A streamlined workflow can be achieved with the company’s TÉNÉO treatment centre, which was recently expanded with AxiolocV, a built-in endodontic treatment function. The company is also leading expert in imaging technology with its ORTHOPIX XG line and the new GALILEOS ComfortPac for the U.S., which provides high-definition image quality with a larger field of view.

Sirona is not new to the region. The company and its predecessor, Siemens, have been operating through a large network of dealers in both developed and developing markets in Asia for more than 40 years. In Japan, China, South Korea and Australia, the company has also been marketing and selling equipment through its own subsidiaries in recent years.

The main reason for establishing an office in Singapore, however, is the increasing significance of the ASEAN region as a core growth market with significant potential, Petersohn explained.

“We have had particular growth in the Asia Pacific region in recent years and see even more potential for growth,” he said. “Dentists in these countries have high standards, are open to new products and are willing to invest in quality that is made in Germany. With our new office, customers from the entire region can now easily con-
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Maintain aesthetics within simplified prosthetic treatment processes

Explaining the use of a bulk-fill composite in combination with a monolithic ceramic

In the past several years, the range of restorative materials available for dentists and dental technicians has increased remarkably. New technologies have made treatment processes more efficient and enabled dental professionals to fabricate reproducible and predictable restorations that blend into the natural oral environment harmoniously.

In direct restorative treatment with composite materials, the increment technique has so far been the gold standard. This technique requires applying the material in thin layers and curing these increments individually. Consequently, it is relatively time-consuming to place restorations. Quality issues also often arise, such as air bubbles between the layers, for example. The increased risk of contamination of the materials can also compromise the quality of the restorations.

Some manufacturers, however, offer composites that can be placed in the cavity in large (bulk) increments. Tetric N-Ceram Bulk Fill (Ivoclar Vivadent), for example, can be cured in layers of up to 4 mm thick. Similar significant and practical developments in the ceramic restorative materials sector have also contributed to the advancements in restorative dentistry. Thanks to the CAM/CAM processing technology, subtractive methods are increasingly replacing conventional additive procedures, such as the layering technique. The fabricated restorations are able to withstand strong masticatory forces owing to their very high stability. At the same time, they fulfil the aestheticic requirements of different clinical situations.

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posite was light cured, finished and polished as usual (Fig. 8).

Tooth 14 was finally prosthetically restored. Two weeks after the exposure of the implant, an impression of the dental situation was taken (Fig. 9) and an individualised hybrid abutment was planned to provide the basis of the restoration. For this purpose, an abutment was modelled, pressed (IPS e.max Press, Ivoclar Vivadent, HO) and then adhesively cemented to a titanium base (Multilink Implant, Ivoclar Vivadent). During the try-in of the abutment, the cervical margin and the emergence profile were examined (Fig. 10). Since no additional adjustments were required, the crown was fabricated (IPS e.max CAD, Ivoclar Vivadent, LT A2) and characterised with stains (Fig. 11). In the permanent cementation of the crown to the abutment, retraction cords were used to minimise the occurrence of excess luting material in the gingival area, as well as to allow the easy and safe removal of excess material after curing if required (Figs. 12 & 13).

Conclusion

The ongoing development of dental materials and processing techniques has greatly affected and changed restorative dentistry. Tetric N-Ceram Bulk Fill, which is light cured in 4 mm layers, simplifies direct restorative filling therapy with chairside composites. IPS e.max CAD, which is processed using CAD/CAM technology, renders the fabrication of restorations efficient. Furthermore, individualised ceramic layering is no longer required for certain indications.

In this case, the implant in the position of tooth 14 was restored with an all-ceramic restoration. Tooth 15 was restored with a composite filling (Fig. 14). Although this indication does not seem to be as demanding as anterior restorations, patients expect natural-looking results nevertheless (Fig. 11). Therefore, both dentists and patients desire a simple and efficient procedure that will produce aesthetic results.

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Fig. 12 & 13: After placement of the abutment, the all-ceramic crown was permanently luted in the oral cavity.—Fig. 14: Occlusal view after the insertion of the crown.—Fig. 15: Labial view. The implant crown blends smoothly into the natural dentition. Similarly, the composite restoration is barely visible to the naked eye.

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