India approves new dental schools

HONG KONG/LEIPZIG, Germany: Official news at this year’s World Dental Congress in Singapore will be provided by Dental Tribune International. According to a contract signed between the FDI World Dental Federation and the Hong Kong-based publisher, DTI will produce an edition of the FDI’s Worldental Daily title for each day of the congress from Thursday to Saturday.

It will not be the first time that the FDI has partnered with Dental Tribune International. The first daily newspaper produced by DTI was presented in 2005 at the FDI World Dental Congress in Montreal. In Canada following this, DTI produced the daily newspaper for the annual congress in Shenzhen in China, Dubai in the UAE, and Stockholm in Sweden.

The paper will be distributed free to participants at the World Dental Congress in Singapore. It will also be available online at the FDI website.

Swine flu pandemic
An interview with Prof. Samaranayake, Hong Kong

Dental hypersensitivity
Prof. Ngo from Singapore about diagnosis & treatment

Hands-on Endo
The continuous wave obturation technique

India approves new dental schools

HONG KONG/LEIPZIG, Germany/NEW DELHI, India: The Minister of Health and Family Welfare in India, Shri Ghulam Nabi Azad, has approved 150 educational institutions, including a significant number of medical and dental colleges. He also directed the country’s Medical and Dental Councils to take up pending recommendations of colleges as soon as possible so that semesters could begin by 1 August, the newspaper Times of India reports.

In India, each institute offering medical or dental education needs annual clearance from the Ministry of Health and Family Welfare based on recommendations by the two councils.

Officials have justified the large number of approvals by the many applications that had been pending, approval for several years and numerous public complaints of undue delay in the processing of cases. However, the approvals come at a time when there is growing concern for the future employment of dental graduates. According to a Times of India report, many dental graduates in India are forced to quit dentistry and work in other, more lucrative jobs.

Education regulators have also been said to turn a blind eye to quality in their haste to recognise private professional institutions. Azad made clear that no intermediaries would be tolerated in his ministry for clearing any medical institute application. He asked for complaint boxes to be placed at his office and residents to receive complaints against any person seeking illegal endorsement, either in medical councils or in the Ministry.

“What is needed in India is a national workforce strategy that is carefully devised and implemented,” Prof. Raman Reddy, former Chief Dental Officer in the UK and founder of the new Indian dental community Dentalgur, told Dental Tribune Asia Pacific. “With higher demands for quality dentistry by local people, dental tourism, postgraduate training opportunities etc., many dentists will stay in India instead of going abroad.”

Dental education in India has grown in recent years and India now ranks first in the world in having the highest number of dental schools. The country has 280 dental institutions, which produce between 15,000 and 20,000 Bachelor of Dental Surgery graduates every year.

Dental education in India is carefully devised and implemented. A wealth of experience, great commitment and innovative ideas help us to cooperati

Fair commits to cooperation in education

Malaysia’s Deputy Minister in the Prime Minister’s Department Datuk S.K. Devamany has addressed the need for further cooperation in the field of higher education between his country and the Republic of India. Speaking at this year’s India Education Fair in Kuala Lumpur in June, he invited Indian colleges from different fields, including dentistry, to establish branch campuses in Malaysia. He also encouraged students from India to consider the educational opportunities that his country has to offer instead of travelling to Europe or the U.S.

The 2009 India Education Fair held in conjunction with the 17th Conference of Commonwealth Education Ministers showcased 25 colleges and schools from India. The Fair aims for better cooperation between educational institutions in both countries.

Oral health of Aussie kids declines

The latest report on children in Australia, released by the country’s Institute of Health and Welfare, indicates a slight increase in tooth decay. The Institute said that the increase is related to dietary patterns and recent changes in school dental programmes.

Mobile health care for Taiwan

More people in Taiwan will soon be able to receive government health care, following the Department of Health’s acquisition of 11 additional dental chairs and 6 vehicles equipped with medical equipment such as X-ray units to serve remote areas.
Asia News

New Zealanders brush dentists off

A nationwide survey has found that 55 per cent of women and 25 per cent of men in New Zealand postponed a visit to the dentist last year because of the recession. The poll undertaken by toothbrush manufacturer Oral-B revealed that the cutback was restricted to adults, as 5 per cent of parents admitted not postponing their child’s annual dental check-up.

The result is another setback for the country, which already has poor oral health. Despite efforts to improve access to dental services through National Health Targets, the utilisation of these services has declined in recent years to less than 60 per cent, according to the latest statistics from the Ministry of Health. The new findings show that dental visits are still of low priority for many people.

Commenting on the results, the President of the New Zealand Dental Association, Dr Mark Goodhew, urged New Zealanders to realise that by not having regular dental check-ups, they are putting their health at risk. He said that oral cancer, for example, could be detected early with regular dental check-ups. Gum disease is also possibly linked to heart disease, he said.

“Spending just NZ$900 to NZ$1200 once a year on a check-up could save you thousands in the long-term,” Dr Goodhew explained. “A simple check-up might even save your life if you have something serious that’s quickening and can be treated.”

Besides oral-health expenditures, the poll also investigated other spending habits of New Zealanders during the current economic downturn. Tobacco companies’ profits, for example, are being affected, as a third of male smokers and nearly a quarter (25 per cent) of female smokers surveyed said they had cut back because of money worries. Alcohol expenditure was also down, with a third of Kiwi drinkers surveyed saying they had cut back owing to financial concerns in the past year.

Standardised guidelines needed for ASEAN agreement, PDA president says

Claudia Salwiczek

HONG KONG/LEIPZIG, Germany: The president of the Philippine Dental Association, Dr Leo Gerald R. de Castro, has called for standardised guideline procedures on the delivery of health services following a recent agreement of the Association of Southeast Asian Nations (ASEAN) to allow dentists from the Philippines to work in other member states. De Castro said that currently not all countries in the ASEAN region have established standard guidelines on the matter of Continuing Professional Education (CPE) and these circumstances could lower the chances of employment for Filipino professionals in these countries.

Castro told Dental Tribune Asia Pacific that consultation with the various heads of professions involved in this agreement should have taken place prior to forging ties with the ASEAN neighbours which could have led to further ironing out kinks in the programme, thereby making it a better-laid out foreign reciprocity programme. He added that countries like Singapore, Taiwan, Japan and Korea have had guidelines in place long before the agreement was made, but in the Philippines, the system was skipped and the earning of CPE points became optional for almost ten years.

“Recently, owing to the passage of the new dental law in the Philip- pines, the acquisition of CPE credit units became mandatory again, but unfortunately, the almost ten year holl took away precious credit units earned by our dentists,” de Castro said. “As a member of the academic community, a part of me, views this as a noble programme but the other part disagrees in the sense that not all member countries are on equal footing.”

The new agreement was closed during an meeting of the ASEAN education ministers in April. It will be effective in August this year.
“I do not think we should panic”

An interview with Prof. Lakshman P. Samaranyake, Chair Professor of Oral Microbiology at the University of Hong Kong, about the Swine Flu (H1N1) pandemic

Dental Tribune: Prof. Samaranyake, the WHO recently classified the outbreak of H1N1 as a global pandemic. What infection-control procedures would you recommend?

Prof. Lakshman P. Samaranyake: It is unlikely that many patients with acute respiratory illnesses will visit the dentist for elective procedures. However, should such a patient visit the dentist, the following precautions should be taken. The primary goal of infection control is to prevent transmission of disease. Early detection of a suspected or confirmed case of swine influenza and prompt isolation from susceptible persons will reduce the risk of transmission. To prevent such transmission of respiratory infections, respiratory hygiene infection-control measures—so-called “cough etiquette”—should be implemented at the first point of contact with a potentially infected person.

During the outbreak of SARS in 2003, patient enrolment in Hong Kong was at a record low. Is Hong Kong experiencing similar developments owing to the outbreak of H1N1?

Prof. Samaranyake: It is unlikely that we will see a dramatic drop in patient enrolment as in the SARS epidemic period, mainly because the Swine Influenza A, though highly infectious, is much less severe in terms of the morbidity and mortality. In Hong Kong, none of the patients with swine flu have developed complications of normal flu, such as pneumonia. But, as you know, during the SARS outbreak, the death rate in some regions of the world, including Hong Kong, reached 20 to 40 per cent.

Also, at the Prince Philip Dental Hospital during the SARS period, the patient attendance rate dropped by about 50 per cent. Yet, we have not seen a significant decline in patient enrolment numbers during the recent weeks, even after WHO declared swine flu a pandemic. This perhaps is an indication that there may not be a drop in patient enrolment rates at private practitioners' surgeries.

Experts have warned that the H1N1 virus could combine with avian flu and mutate to a more virulent form. Do you consider this a realistic scenario?

Prof. Samaranyake: That is a very difficult question to answer. Historical data indicates that different flu strains can combine and jump from birds to pigs, pigs to humans and humans to pigs. Given this scenario and the rapid rate at which flu viruses mutate, it is not unlikely that we will see a more virulent combination form of the H1N1 virus.

The best strategy under these circumstances is to be aware of the possibility of a virulent strain emerging and be prepared, but I do not think we should panic.

Keeping an adequate stock of antiviral medicines, as done by most health authorities in the developed world is always useful, although we do not know whether the newly emergent variant strain would be susceptible to the standard anti-flu drugs such as Tamiflu. Lastly, proper environmental hygiene measures, including cough etiquette and hand hygiene, should be practised by all, and this should be a community effort starting from now on.

Do you think that the dental community in Asia is adequately prepared for a pandemic?

I am unable to respond to this question, but I am heartened by the fact that publications such as the Dental Tribune help publicise the pandemic and provide timely information to its readers. There are many informative web sites that provide up-to-date coverage of the pandemic. For example, the Centers for Disease Control and Prevention (CDC) in the US provide important and concise information on H1N1 to dental health-care providers. Interim guidance for clinicians regarding case identification, infection control for care of patients with confirmed or suspected virus infection in a health-care setting, mask and respirator use, and other topics pertinent to dentistry can be found at the main CDC swine flu web site at www.cdc.gov/swineflu in the section titled Guidance for Professionals. As this information is updated regularly, colleagues are urged to visit these and related web sites frequently.

Thank you very much for the interview.
Dear reader,

When I started writing this editorial, news broke of Michael Jackson's death. Although I have never been a fan of the 'King of Pop', his passing plunged me deeply. How could a man that was supposed to perform 50 concerts in London over the next six months suddenly die from cardiac arrest?

According to news reports, the possible cause of his death was incorrect administering or use of medications such as with Propofol, a strong anesthetic used in medical contexts such as intensive care units or surgeries. If a doctor facilitated such a medication for Jackson and it is found to have caused his death, he or she could be prosecuted for manslaughter.

Whatever the outcome of the ongoing investigation may be, this is a clear example of increasing unethical health care practices in the United States. Jackson, who despite having in severe debt, was still wealthy enough to afford any medical service, surgery or medications he desired. Over 50 million Americans still do not have access to health insurance. Therefore, the world should mourn the 800,000 people that die of cardiovascular disease every year in the US; deaths which could often be prevented by the provision of adequate health care such as heart screenings and other preventative measures.

Recently, as a parent and a businessperson, I was surprised to learn that in the United States there are more general practitioners (GPs) 'trained' to perform orthodontic procedures with aligners than total orthodontists. Align Technology reported that it has trained more than 51,000 GPs and has nearly 25,000 GPs now submitting cases, according to the its 2008 investor reports. It now appears GPs have been seeing dramatic increases in their share of all orthodontic cases for most of this past decade. For example, an analyst report published in January 2008 by Piper Jaffrey estimated that in 2005 there were more aligner procedures performed by GPs than by orthodontists. That same report estimated that GPs continue to perform more and more new orthodontic cases each year and are estimated to have performed about 5 per cent of total orthodontic case starts in 2009.

I'm among the tens of thousands of parents who sent their children to receive orthodontic treatment from a dentist. My two oldest children went to their pediatric dentist to receive treatment. It wasn't until I started working with orthodontists that I learned the difference between a dentist who has ‘orthodontics’ on their door and a specialist who is a practicing orthodontist. Now that I know, my two youngest children are being treated by an orthodontic specialist.

As a parent and a businessperson, I was surprised to learn general dentists actually perform more orthodontic cases than do specialists. Are orthodontists aware that in the United States there are more general practitioners (GPs) “trained” to perform orthodontic procedures with aligners than total orthodontists? Align Technology reported that it has trained more than 51,000 GPs and has nearly 25,000 GPs now submitting cases, according to its 2008 investor reports.

It may be of interest to readers to note that the ban on amalgam is not a recent issue. The Swedish politician Gustav Thordén was the first Minister for the Environment in the world to suggest a ban in 1978. Her suggestion was accepted by the Swedish parliament but she had to wait for 12 years before it passed EU administration.

As a journalist specialised in politics and the environment, I have followed the amalgam debate for more than 10 years. Now, the use of amalgam has been prohibited in dental care in Sweden. As from 1 June 2009, its use in children and teenagers has been so strictly banned, but amalgam can still be used in adults patients within hospital dental care. According to the Swedish National Board of Health and Welfare not to be used for dental care, but it has been used in Sweden, the US and other countries and a Swedish ban is a powerful example to other countries and a Swedish contribution to EU and UN aims to reduce mercury use and emissions. “Sweden is now leading the way in removing mercury and protecting the environment against mercury, which is non-degradable,” he said.

We need to understand that minimizing the use of amalgam that is necessary to protect the environment and our health. Unfortunately, there are still more than 70 tons of mercury within the EU brought into the ecosphere through dentistry each year. With the Swedish example, we finally know that dentistry without mercury is possible.

Contact Info

Elisabet Carlsson  
Swedendental-tribune.com
Over 60 per cent of Americans consider dental coverage part of an overall health care reform by the Obama legislation, a new public opinion survey has shown. The poll released at the launch of National Smile Month in June and commissioned by Oral Health America revealed that four in five adults agree that dental benefits are as important as general medical benefits in an overall health care benefit package.

Many poor and lower-middle class families in the US currently do not receive enough dental care, in part because dentists prefer patients who have private insurance or can pay in cash. The lack of dental care is also not restricted to the poor, recent data shows. Experts on oral health say that about 100 million Americans have no access to adequate care.

In a recent letter to US president Barack Obama, the American Dental Association (ADA), which represents over 157,000 dentists in the US, recently urged the government to pay more attention to dental health care in the ongoing health-policy debate. “Acknowledging that the majority of Americans have access to excellent and relatively affordable dental care [...], we are compelled to point out that too many low-income Americans still suffer needlessly from dental disease,” the letter states. “More must be done to ensure that all Americans have access to quality oral-health services.”

The ADA recommends increasing funding to the nationwide Medicaid health programme, rebuilding the public dental-health infrastructure and supporting community-based prevention measures, such as fluoridation or school-based education programmes.

Obama’s health care reform initiative aims to extend health coverage to 45 million uninsured people in the US, as well as to preserve consumer choice and lower rising health care costs, by cutting more than US$200 billion in reimbursements to hospitals over the next decade. He has also announced his support of the introduction of a public health insurance plan, a concept similar to the failed health care plan developed by his current Secretary of State and former First Lady Hillary Clinton back in 1994.

The government’s health care reform proposals are opposed by the US Congress and other organisations like the American Medical Association, who say that the realisation would cost a total of US$1 trillion over the next decade and still leave millions of people in the US uninsured.
FDI pushes caries initiative with Rio conference

Daniel Zimmermann, HONG KONG/LEIPZIG, Germany/ FERNEY-VOLTAIRE, France: In order to address the global burden of dental caries, the FDI World Dental Federation has announced its first Global Caries Initiative Conference, which is to be held in July in Rio de Janeiro in Brazil. The event, organised in collaboration with the International Association for Dental Research and the Brazilian Dental Association, will mark the start of the organisation’s ten-year campaign to eliminate tooth decay by the year 2020, officials said.

According to the FDI, caries remains the most common dental disease worldwide. Although there has been a decline of dental decay in industrialised countries in recent years through fluoridated toothpaste and improved dental hygiene, in most low-income countries, up to 90 per cent of all people suffer from the condition, which often remains untreated.

The Rio conference is intended to address these inequalities amongst other topics. It will be for dental educators and scientists, as well as presidents of dental associations and government dental officers. Speakers from North America and Europe have been invited to address the need for changing the current paradigm of diagnosis, prevention and restoration of dental caries, and to present the implications of these for its future prevention and management.

The conference is currently open for registration. Fees are €80 for delegates from Latin America and €180 for those from other countries.

**Swine flu could spread through teeth**

Penny Palmer, DT United Kingdom

LONDON, UK: Bad dental hygiene could increase the risk of swine flu, according to the British Dental Health Foundation. The organisation’s recent National Dental Survey has found that dreadful dental habits are helping spread germs, as 40 per cent of the UK population admit to picking their teeth with their fingernails. It has also revealed that people pick their teeth with everyday items such as earrings, credit cards, paper clips, paper and even screwdrivers.

Foundation Chief Executive Dr Nigel Carter said: “Hygiene warnings have been made clear ever since the swine flu outbreak, and it is worrying that these habits have been revealed as the numbers affected by flu steadily rises. Personal hygiene should be a top priority for all.”

The Department of Health (DH) in the UK recently issued guidance to dental practices on procedures should the swine flu outbreak become a pandemic. It also warned dentists that fewer patients are likely to attend dental practices for treatment during a pandemic, as illness and fear of infection will encourage patients to cancel or reschedule appointments.

All patients should be screened by telephone for symptoms of flu before attending the practice and again on arrival at the practice, said the DH. Treatment of infected patients should be limited to pain relief and should avoid aerosol-generating procedures where possible. Also, infected patients should be segregated from healthy patients.

There are currently 1,752 confirmed cases of swine flu in the UK, the country’s Health Protection Agency reports.

(Edited by Daniel Zimmermann)
GLASGOW, UK: A new global network that aims to unite dentists of Indian origin from around the world was recently launched at the British Dental Association conference in Glasgow in the UK. Created by former Chief Dental Officer of England, Prof. Raman Bedi, whose parents migrated from India in the 1950s, Dentalghar is expected to link thousands of dentists who share common values. Health care education market leader Smile-on and Henry Schein Minerva are supporting the project which went online in June.

Members of Dentalghar, which means the ‘home of dentistry’, will be able to contribute to a number of polls, surveys and articles, a spokeswoman for Smile-on told Dental Tribune.

Professionals looking to study abroad will also find information on work permits, visas and qualifications on the platform. She added that there will also be an opportunity to win bursaries and to contribute to volunteering in the UK and globally.

Prof. Bedi, who hopes that Dentalghar will become a ‘major force in the industry’, said: “The focus is on the subcontinent (Pakistan, India, Nepal, Bangladesh and Sri Lanka) and the diverse ‘Asian’ dental communities that have sprung up in regions as far apart as the US, Canada, the UK, South Africa, Singapore, Australia and the Middle East. We have more worldwide dentists of BIPS (Bangladeshi, Indian, Pakistani, Sri Lankan) origin than our medical colleagues.” This factor, among others, gave rise to the momentum for starting Dentalghar, Bedi added.

“With an increasing number of dentists of Indian origin and a growing economy in India, Dentalghar will help us to work collectively,” Bedi said.

(DTAP0609_06-07_News  02.07.2009  13:03 Uhr  Seite 2)
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SHOFU names Negoro president and partners with Mitsu

**NEW YORK CITY, NY, and SAN MARCOS, CA, USA/KYOTO, Japan:** SHOFU is celebrating this year with a strategic alliance with Mitsu Chemicals and the introduction of a new president, Noriyuki Negoro, who became president of SHOFU in 2007, has seen growth rates of almost 10 per cent in 2008. The report is available over a period of five years. It aims to indicate trends in the European dental market. According to the European Dental Industry. The 2009 dental market report released by the Association of Dental Dealers in Europe (ADDE) has indicated a slight increase of 0.6 per cent of total sales in the European dental market. According to the new statistics, sundries sales in the EU increased by 1.5 per cent, while complete equipment sales declined by 2 per cent. Metal implants saw the biggest increase with 7 per cent.

The results are on par with national statistics, Germany, for example, which has the biggest dental market in Europe with a volume of €3.8 billion, reported a slight increase in figures in 2007 but with declining trends in the domestic market. The Italian market, which was worth €1.1 billion in 2007, has seen growth rates drop from almost 10 per cent to 5 per cent despite an overall increase in production.

The ADDE market report has also revealed the number of practising dentists in Europe has remained at 288,000, while the number of dental labs is declining. Furthermore, the usage of computers in practices continues to grow for both administrative and in-surgery activities, the report states. The number of new dental chairs installed in 2008 increased by 2.7 per cent.

The ADDE market report is published annually in collaboration with the Federation of the European Dental Industry. It aims to indicate trends in the European dental market over a period of five years. The 2009 report, which was presented at IDS Cologne in March, included figures from 15 countries, covering 2004 to 2008. The report is available at the ADDE main office in Switzerland.

**Mectron expands in India**

Bangalore facility to host new showroom for dental products

Mectron has been active in India since 2004. It has also branches in Delhi and Mumbai. Mectron has a strong core competency in materials development and is engaged in dental materials manufacture through its subsidiary, Sun Medical Co., Ltd.

SHOFU and Mitsu hope that their alliance will contribute to the efficient use of business resources in their respective specialised fields and the enhancement of their market presence. With a joint task force, both companies plan to promote the development of new products in the dental field, optimise manufacturing technology, explore advancements in materials technology and enhance chemical products currently in development.

“Our goals remain unchanged, which include speeding up the development of new products and expanding our business globally,” Katsuya Ohita said. (Edited by Daniel Zimmermann, DTI)

**European market shows minor growth**

**NEW YORK CITY, NY, and LEIPZIG, Germany/DTI**

HONG KONG/LEIPZIG, Germany/GÜMLIGEN-BERNE, Switzerland: The 2009 dental market report released by the Association of Dental Dealers in Europe (ADDE) has indicated a slight increase of 0.6 per cent of total sales in the European dental market. According to the new statistics, sundries sales in the EU increased by 1.5 per cent, while complete equipment sales declined by 2 per cent. Metal implants saw the biggest increase with 7 per cent.

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Successful amalgam waste disposal: A report from Germany

Anke Schiemann

LEIPZIG, Germany: Liquids slowly simmer in a small chamber of the factory. It is a company secret which liquids are at work in the never-ending distillation process, but the final product on the surface of three water basins shimmers like silver. Perhaps, the inspiration for the novel by the German author Karl May 
Treasure of Silver Lake may not have been the precious metal but rather pure mercury. At the factory site of the Society for Metal Recycling (GMR) based in an formerly industrial section of the Eastern German town of Leipzig, mercury is distilled from amalgam and other industrial waste in a vacuum therm process and then refined and bottled to put it back on the market. All in all, 20 to 25 tons of amal-gamate sludge are re-cycled by the GMB each year.

The sludge is delivered daily by companies like enretec from the town of Velten near Berlin, an enterprise that has long specialised in the recycling of residues originating from dental practices, including developer and fixation dissolution, syringes and amalgam waste. Two and a half years ago, the company along with the NWD Group, one of the largest dental dealers in Germany, conceptualised a pilot project. The idea behind the project was to make recycling for dental practices more effective, so that all waste products can be cumulated with a flexible container system and collected within only 24 hours. According to enretec CEO Martin Dietrich, this procedure is not only more consumer-oriented, but also contributes to legal and safe transportation, as well as to professional waste disposal. “We take care of the recycling process by conforming to the law and reduce the danger of the environmentally harmful disposal of amalgam waste,” he says.

According to figures of the Institute for Environmental Medicine and Hospital Hygiene at the University Medical Center in Freiburg/Breisgau, Germany, the company has more than 70 tons of mercury used for making new fillings recently recycled, a substance that is categorised as very poisonous, according to the German Storage Regulations for Hazardous Substances. Worrying figures show how important it is to separate amalgam waste from the water cycle through separators because only one gram of mercury has the potential to intoxicate one million litres of water. Through fish and seafood, these residues can enter the human organism.

Experts say that 80 to 90 per cent of mercury in the German sewage system originates from dental practices. A law introduced in 1990 made amalgam separators for each treatment unit mandatory, which resulted in higher costs for the dentist and raised questions regarding the emptying and recycling of collecting containers. Most amalgam producers in Germany now offer dentists the option to return amalgam waste via disposal contractors, but these do not fulfill existing requirements for hygiene and safety. Often, the transport from the dentist to the producer is through regular mail packages.

“With our system, we have found a safer means of transport and improved legally-binding alternatives to transport waste,” says Dietrich. “The dentist is excluded from liability during transport through means of the existing collection system from most of the dealers, which is also exempt from charges. Fitted packaging has also resulted in higher security.”

Enretec, however, only provides the first step in the amalgam recycling cycle. “We open the containers, extract the contents, collect, dehumidify and dry the mud, and forward it to specialised recycling companies like GMR,” says Dietrich. Then at GMR, the mud is finally separated into its single components. The former public enterprise in Leipzig has decades-long experience in the recycling of mercury-containing waste. After the German reunification in 1990, the company recycled, amongst other things, the majority of the ammunition left by the Soviet troops stationed in the former German Democratic Republic.

According to company founder Dr Wolfgang Mothes, the recycling of amalgam contributes to legal and safe transportation, as well as to organic substances, vapour. The organic components are oxidised, if required, in a combustion chamber at 800 to 1,000°C with the addition of air and oxygen, while the raw mercury is refined to pure mercury. The duration of the procedure varies from 48 to 60 hours, depending on the volume and humidity of the base material.

Concerning amalgam, the number of amalgam fillings, which means that the issues concerning amalgam will lose significance in the future, not only in German dentistry, but also worldwide. The amount of amalgam that is recycled is declining by 5 to 7 per cent each year. Of course, science will also have to play its part. As long as amalgam is considered harmless and recognised as the most durable material for dental fillings, it will be subsidised by any health-care provider,” he says.

At GMR, the turning point has not yet been reached. For the last six years, the flow of amalgam that reaches the factory premises has remained constant. Approximately 50 to 55 tons of recycled mercury is used again for producing new amalgam fillings.

“Perceptively speaking, the amount of mercury will definitely decrease,” Dr Mothes explains. “And the recent ban of mercury exports from countries of the EU will not have a major impact on this development. But what will happen if mercury is not brought back into the cycle? How can we ensure a secure disposal of the waste? For these scenarios, answers have to be found that the EU does not offer yet.”

This article first appeared in Dental Tribune Germany No. 20, Vol. 5, 2008. Translation was provided by Anne-Marie Fischer.
Dentine hypersensitivity From diagnosis to treatment

Prof. Hiro Nao
Singapore

Dentine hypersensitivity is defined as pain arising from an exposed dentine in response to thermal, chemical, tactile or osmotic stimuli, which cannot be explained as arising from any other form of dental defect or pathology (Addy & Urrat 1995). Such hypersensitivity is common: in a 1987 survey of a group of patients in the UK, Orchardson found that 74 percent suffered from some form of hypersensitivity. He also noted a very early peak of prevalence between 20 and 25 years. However, Addy (1992) reported a peak between 20 and 40 years, and Fisher (1992) reported a peak between 40 and 49. The teeth most commonly affected were the canines and upper premolars, followed by the upper molars. It was also reported that in patients with periodontal disease, molars were more frequently affected.

It has been suggested that the incidence of hypersensitivity will increase as humans’ longevity increases and they retain their teeth until even more advanced ages; however, this is not supported by epidemiological studies. It is true that gingival recession and loss of cementum is common in older individuals, but aged dentine is also less permeable, owing to the deposition of sclerotic and secondary dentine. Hypersensitivities, while not a serious dental problem, are also not a serious dental problem, can be an uncomfortable and unpleasant experience for the patients and can lead to modification of behaviour, such as avoiding brushing of the affected areas, which in turn has a negative impact on oral health.

Dentine is a very permeable tissue, it contains a dense network of dentinal tubules, which are essentially highways connecting the external environment to the pulp. In a young person, odontoblasts send processes deep into tubules (Fig. 1), with the remaining space filled with extracellular fluid. This condition of dentine hypersensitivity is the exposure of dentinal tubules, with their patent orifices (Fig. 2), to the oral environment. Dentine is normally covered by enamel or cementum, which can be removed by attrition, abrasion or erosion. It can also be removed by aggressive tooth brushing or root planning. One can explain the high permeability filled with organic materials. In the case of hypersensitivity caused by vital bleaching, the organic plugs are removed by the hydrogen peroxide, exposing the underlying dentine to external stimuli. Thus far, three theories for dentine hypersensitivity have been proposed:

1. Odontoblast transduction theory
When odontoblast processes are stimulated by chemical and mechanical means neurotransmitters are released, which transmit these signals to nerve endings residing in the pulp. These neurotransmitters have not been identified; thus, the validity of this theory is in doubt.

2. Neural theory
Nerve endings are present in the dentinal tubules, so mechanical and chemical stimuli trigger the pulp/dentinal nerve fibres directly.

3. Hydrodynamic theory
This theory was proposed by Tratromin and co-workers and is the most supported theory. The dentinal tubules are fluid filled and when the fluid is disturbed by thermal, physical and osmotic changes on the surface of dentine, the baroreceptors are stimulated, which leads to discharge of nerve endings. Accordingly, dentine hypersensitivity tends to stand out is poor oral hygiene and subsequent plaque accumulation on root surfaces. It could be possible that stagnant plaque leads to demineralisation with a smear layer and opening of dentinal tubules. These early demineralised areas tend to be softer and more discoloured than the surrounding areas (Fig. 4).

Treatment options
The treatment options for dentine hypersensitivity can be broadly grouped into the desensitisation of nerve endings and the plugging or covering of the dentinal tubules. These options with their relevant active ingredients are listed in Table 1. The high prevalence of dental hypersensitivity led to the development of a surprisingly large number of products designed to alleviate this clinical problem. All available treatments appear to work; however, in recommending a treatment to patients, dental professionals should consider the needs of the individual, in order to maximise compliance.

Nerve desensitisation
There is much evidence to indicate that products containing potassium nitrate are effective in controlling dentine hypersensitivity. Tarbet et al. (1980; 1981; 1982) demonstrated in well-conducted clinical trials that, with daily use, a toothpaste containing 5 per cent potassium nitrate is effective in desensitising for up to four weeks and that potassium nitrate does not induce changes in the pulp. It was suggested that the potassium (K+) ions block nerve impulses by interfering with the sodium (Na+) pump and depolarisation of nerve cell walls.

In the case of potassium oxalate, it is postulated that in addition to the effect of K+ there is also some plugging of the dentine tubules with...
calcium oxalate salt, which decreases dentine’s permeability.

Nerve desensitisation works best in patients with generalised, mild to severe dentine hypersensitivity. An active ingredient is built into a toothpaste, compliance is normally high because no extra step is added to the daily oral-care routine.

Dentine surface cover
When dentine hypersensitivity is severe and localised, patients may not be able to brush the affected areas well. It is important to protect these areas temporarily with a physical barrier, such as a varnish or thin glass ionomer, in order to desensitise and allow better cleaning. This method should also be combined with the use of a product containing potassium nitrate.

The use of a dentine bonding agent has been advocated, as it can provide short-term relief, but the seal provided by a dentine bonding agent, especially the single-bottle version, does not last long. Dentine bonding agents are not designed to be exposed to the oral environment and should not be utilised in an off-label fashion.

CPP-ACP-containing products, such as Tooth Mousse or MI Paste, are also good desensitisers. These products work instantly after direct application to the affected areas. The mechanism of action has not been elucidated, but it has been suggested that the protein component of CPP-ACP, casein phosphopeptide, forms a protective physical barrier over exposed dentine.

Plugging of dentinal tubules
There is evidence to support the use of the various active ingredients listed under the minerals/salts sub-heading. Most of the products containing these ingredients are for daily home use, and compliance is thus an issue that clinicians will need to manage.

The application of formaldehyde or glutaraldehyde should be done with caution, as these are strong tissue fixatives and much safer alternatives for the treatment of dentine hypersensitivity are available.

Conclusion
Dentine hypersensitivity is a common dental problem that can be managed successfully, using a wide range of in-office procedures and at-home products. When it is mild and generalised, the condition can be treated using toothpaste containing potassium nitrate or potassium oxalate as the active ingredient. Potassium nitrate, stannous fluoride and strontium chloride are active ingredients specifically designed for dentine hypersensitivity. Only in severe and localised cases should in-office procedures be used in complement at home treatment.

Editorial note: This article is supported by an educational grant from GlaxoSmithKline.

Contact Info
Prof. Hien Chi Ngo is an Associate Professor in the Department of Restorative Dentistry in the Faculty of Dentistry at the National University of Singapore. He can be contacted at rsdhcn@nus.edu.sg.
“Most people are worried it is often something worse.”
Dr Nick Rote. East Finchley, UK

1 in 3 people suffer from dentine hypersensitivity and over 50% of sufferers don’t mention it to their dental professional.¹ Research shows that this may be because they fear it requires major dental work, the pain may be variable so they don’t report it or because they may be using techniques to try and avoid the pain.²

These findings highlight the important role that dental professionals play in actively diagnosing dentine hypersensitivity.

Recommendating daily brushing with Sensodyne is a simple, effective solution which is clinically proven to reduce the symptoms of dentine hypersensitivity.

“When they come back to see me next time, they’re very pleased that the solution was given to them so easily.”

² Canadian Advisory Board on Dentine Hypersensitivity, Consensus-Based Recommendations for the Diagnosis and Management of Dentine Hypersensitivity. J Can Dent Assoc 2003; 69(4): 221 - 226

*Sensodyne is a registered trade mark of the GlaxoSmithKline group of companies. Further information is available on request.
Aesthetic posterior restoration with IPS e.max Press

Horst Polderle
A Dr Gerhard Müller
Germany

Today's dental manufacturers produce a substantial range of materials and, consequently, offer virtually limitless possibilities to use individual and case-specific working techniques. All-ceramic systems enable users to create restorations that closely resemble their natural counterparts and impart impeccable aesthetic properties. In this report, Horst Polderle, MDT, describes the procedure of fabricating a posterior restoration with IPS e.max Press.

It has been claimed that the dental market is short-lived. However, this is not true for all areas. For instance, when Ivoclar Vivadent introduced IPS Empress in 1989, nobody suspected that this glass ceramic, made of silicon dioxide, aluminium oxide and potassium oxide with leucite as the crystal phase, would be copied by numerous manufacturers over the years. With the trailblazer development of IPS Empress, Ivoclar Vivadent may be regarded as the progenitor of many a pressable glass-ceramic material currently available on the market for the fabrication of crowns, inlays and small bridges.

Almost 20 years have passed since the introduction of IPS Empress. Yet, this material continues to be in successful use. This example shows that a dental product may have a longer lifespan than expected if it stands the test of time. A renowned manufacturer who decided to launch another pressable glass-ceramic with such a successful ceramic system as IPS Empress must have absolute confidence in the new material’s viability to perform well. For this reason, the market launch of IPS e.max Press inevitably aroused curiosity.

A new press ceramic is expected to satisfy many different requirements. It has to meet the demands of modern technology and enable the fabrication of cost-efficient ceramic restorations. In addition, it has to combine high aesthetics with reliability. A health and good looks have become so strongly associated with each other that they are almost in- separable. Having impeccable teeth is vital for many people. Against this background, growing pressure is placed on dental technology to meet the exacting requirements of patients.

Material-oriented preparation

In the present case, teeth 45, 46 and 47 had to be restored with partial crowns and inlays. As it was the patient’s wish to receive aesthetic restorations, the dentist opted for treatment with all-ceramic partial crowns made of the IPS e.max Press lithium dicate ceramic.

Having a flexural strength of 400 MPa, these press ingots offer an optimum degree of strength. They are indicated if the preparation margin is located less than 0.5 mm from the cusp tips or if severely undermined enamel is present and if a minimum space requirement of 1.5 mm in the area of the cusps can be provided. A circular shoulder preparation with internal edges rounded out at an angle of 20° to 30° is necessary for this type of restoration. The width of the shoulder should approximately measure 1 mm. Hint: A material-oriented preparation and an accurate accuracy that they provide an excellent fit without requiring extensive adjustment by grinding. The spacer is applied in two coatings up to maximally 1 mm from the preparation margin. The thickness of the spacer should be 9 to 11 µm per coating and should be coordinated with the expansion of the investment material.

After the dies have been prepared, a wax-up is fabricated using organic wax, which burns out without leaving residue and fits into the range of materials used by this system. Pressed restorations made of IPS e.max Press can be either stained or layered with IPS e.max Ceram. As the staining technique was used in the present case, a fully anatomical and functional wax pattern was created. Care should be taken to ensure that the wax pattern is free of contamination and demonstrates the stipulated minimum thickness so that an impeccable press result can be attained (Fig. 2).

Exact contouring in the area of the preparation margins is particularly vital. The preparation margins should not be over-contoured, as this would entail time-consuming and risky finishing procedures after pressing. Hint: The subsequent application and firing of the stains and glaze materials results in a slight increase in vertical dimension. Hence, only light occlusal contacts should be created when contouring the restoration.

Investment as you like it: conventional or rapid

It is advisable to closely follow the manufacturer’s directions when springing the restorations. Deviations from directions may result in failure (Fig. 5). The sprues are attached at the thickest part of the wax-up, using a 5 to maximally 8 mm-long wax wire. The total height of the wax wire should not exceed 150 mm. The attachment points should be round and slightly tapered. A distance of at least 5 mm between the individual objects and 10 mm to the silicone ring should be observed.

It is a matter of personal preference whether a conventional or speed investment material is used. The highly translucent IPS e.max Press HT ingot is best used in conjunction with the staining technique (Fig. 4). Neither the ingot nor the Alox Plunger should be preheated before inserting them. Shortly before the preheating cycle of the investment ring has been completed, the cold IPS e.max Alox Plunger is coated with separator to prevent it from sticking to the press ingot (Fig. 5). Next, the cold ingot and the part of the cold IPS e.max Alox Plunger that has been coated with separator are inserted into the hot investment ring and the press programme is started. Preferably, an investment ring is broken into two at the predetermined breaking point (Fig. 8). If necessary, a plaster knife may be used to complete this step.

As a general rule, the press objects are always divested using polishing beads only; rough divestment is carried out at 4 bar pressure and fine divestment at 2 bar. The pressed objects demonstrate an exceptionally homogeneous surface immediately after having been divested. Next, the restorations are checked for accuracy of fit in the usual manner using Okkla Spray to render possible premature contacts visible. Attention: Pressed IPS e.max restorations should only be minimally adjusted. Furthermore, tungsten carbide burs are unsuitable for use with glass-ceramic materials.

The sprues are cut with fine diamond discs under cooling with water spray. Proximal contacts and premature contacts on the occlusal...
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surface are best adjusted using the ceramic polishers No. 9690/9691 from KOMET Brasseler according to Ivoclar Vivadent’s recommendations on the use of polishing instruments for glass-ceramic materials. The more homogeneous the surface is before glaze firing is performed, the better the result.

The press ceramic displays its dynamic optical characteristics when fitted on a model. A pressed sample carrier impressively shows the opalescent properties and dynamic shade behaviour of the material in transmitted light (Figs. 9 & 10). In addition, the material demonstrates excellent fluorescence (Figs. 11 & 12).

Accurately characterised restorations

The inlays are characterised with shades or stains. Several staining procedures and firing cycles can be conducted until the desired shade intensity and degree of lustre is achieved. However, the staining materials should always be applied in thin layers only.

After completion of glaze firing, the restorations are polished mechanically. Felt polishers and diamond-powder polishing pastes are particularly suitable for this purpose. Upon completion, the restoration is inspected on an untreated model (Fig. 15). If necessary, the contact points are adjusted. The true-to-nature effect of the material results in excellent restorations (Fig. 14).

The teeth onto which these fine pieces of craftsmanship are placed are isolated with a rubber dam (Fig. 15) to make sure that the patient does not ingest or choke on the restorations.

Conclusion

New innovative routes can only be followed if a team pursues the same objectives in terms of quality and aesthetics. Only if the dentist and dental technician work hand in glove at all stages of the restoration process, ensuring a flawless preparation design, accurate impression-taking and appropriate final finishing, is it possible to accomplish aesthetic restorations that meet the exacting requirements of discerning patients (Fig. 16).

We are impressed by the new IPS e.max Press HT ceramic from Ivoclar Vivadent. This ceramic system has all the components required by the dental ceramist to work efficiently. IPS e.max Press provides a fast and reliable route to creating highly aesthetic ceramic restorations that blend seamlessly into their natural surroundings.
Lights off. LEDs on!

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For more information please ask your local dental dealer.
Miniscrews—a focal point in practice

Six-part series by Dr Björn Ludwig, Dr Bettina Glasl, Dr Thomas Lietz & Prof Jörg A. Lisson—Part V

Therapeutic auxiliary elements

Down in the jungle

The number of dental suppliers worldwide that offer miniscrews has expanded over an estimated 45 and this number is still growing. Two trends are apparent from the range of products that are currently available. There are companies that supply miniscrews only in combination with the required insertion instruments. However, miniscrews are only a means to an end where bone anchorage is concerned—an aspect that is far too often overlooked. This is because if the desired therapeutic outcome is to be achieved, appropriate auxiliary devices must also be used (eg springs, elastic chains, wires). For the purpose of a treatment, this means that a range of suppliers must be approached in order to obtain all the elements required for the actual procedure. A potential problem under these circumstances is that the miniscrews and the auxiliary elements may be incompatible. Very few suppliers of miniscrews also offer a complete system. Such a system consists of diagnostic and therapeutic auxiliary products, in addition to miniscrews (Table 1). In the case of a complete system, it can be assumed that the head of the miniscrew will be compatible with the auxiliary elements. The building-block principle can be used to construct an individually tailored appliance from the various elements. The greater the range of auxiliary elements that is available, the more freedom and flexibility these elements afford in a range of applications.

Fig. 3b: Spider Pin

Fig. 3a

Fig. 3c

Fig. 3d

Fig. 3e

Fig. 3f

Fig. 3g

Fig. 3h

Figs. 4a & b: Uprighting and space closure of a tipped molar by using Lingual Springs.

Auxiliary elements for direct chairside use

Basic elements

These consist solely of orthodontic wires (particularly wires with square profiles but also those with round profiles) of various grades and materials. The wires are used to fashion individual auxiliary elements. These elements can be used for traction purposes (eg springs, elastic chains, wires). For the purpose of a treatment, this means that a range of suppliers must be approached in order to obtain all the elements required for the actual procedure. A potential problem under these circumstances is that the miniscrews and the auxiliary elements may be incompatible. Very few suppliers of miniscrews also offer a complete system. Such a system consists of diagnostic and therapeutic auxiliary products, in addition to miniscrews (Table 1). In the case of a complete system, it can be assumed that the head of the miniscrew will be compatible with the auxiliary elements. The building-block principle can be used to construct an individually tailored appliance from the various elements. The greater the range of auxiliary elements that is available, the more freedom and flexibility these elements afford in a range of applications.

Fig. 1: The wire ligature is appropriately activated (Photo: Dr Böhm, Germany)

Fig. 2: The use of a square profile wire makes it possible to achieve very rigid (indirectly) attachment (Photo: Dr Böhm, Germany)

Fig. 3c: When a wire is to be bent at right angles in the screw slot (a), the edges at the point of crossover must be removed. This convenient detail is currently only found in the FORESTADENT OrthoEasy (b) and the tomas-pin from DENTAL BLM (c).

Fig. 3d: Uprighting and space closure of a tipped molar by using Lingual Springs.

Fig. 3e: Situation after 13 months of uprighting and space closure, clinical situation (a) and X-ray (b).

Companies supplying auxiliaries

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<tr>
<th>Companies supplying auxiliaries</th>
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Table 1: There are at least 45 companies that manufacture or supply miniscrews. However, only 15 of these offer auxiliary elements for use in orthodontic treatments that are compatible with their own screws.
Nature knows best.

 Millions of years of evolution went into refining the protein systems that stabilise and transport calcium and phosphate essential for the growth and health of our teeth and bones. Whether it is the protein carrier systems for bone growth or enamel formation, or statherin in saliva or casein in milk, they all share a common ancestry**: evolution and natural selection have refined and perfected these systems. Cows’ milk remains the most efficient carrier of calcium and phosphate, and the specific peptide which so elegantly and efficiently transports these essential minerals is called RECALDENT™ CPP-ACP (casein phosphopeptide amorphous calcium phosphate).

No other system comes close to matching what nature has developed.

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ReCALDENT® and RECALDENT® Shiraz are trade marks used under licence.
20 Trends & Applications

Semi-finished elements which need to be individually adjusted

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<thead>
<tr>
<th>Element</th>
<th>Device</th>
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Finished elements which can be directly used

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Semi-finished elements

These auxiliary elements are generally components that are supplied in a functional form but must be adapted to the individual case (Table 2). Depending on the type and material of the product, prices are in the moderate range and the time required for preparation is minimal. One example is the up-righting spring (Fig. 4a), which can be used after only a few adjustments. Depending on how the spring is set, lower molars can be straightened and concomitantly intruded or extruded. This auxiliary product is particularly useful in pre-prosthetic procedures in which teeth need to be moved to provide an optimal base-line (Fig. 4b). Crimpable tubes to which square profile wire has been welded (Figs. 5a and 5b) can be used to attach miniscrews to a pre-existing MB (multi-bracket) appliance. If a fixed-angle bow is necessary during treatment, this can be easily implemented using these wire elements without needing to remove the appliance or parts of it. During Emn Masse Retraction, crimpable tubes with attached wire can be used to fashion individual hooks (Fig. 6). This can thus be used to ensure that the traction force (provided by spring or elastic chain) is applied near the centre of resistance.

There are three companies that offer pre-prepared wire elements, such as the L and U wires (FORESTADENT) and the tomas T wire (DENTAM). These elements facilitate the attachment of bands and brackets (Fig. 7a). The tomas T wire (Fig. 7b) with its three arms provides for a wide range of possible application combinations. For the purpose of mesialisation, for example, one arm can be bent to form a hook. Another can be attached to the main arch by means of a cross tube. Another variant devised by Dr. S. Baumgartel is the fixation of the anterior teeth to a paramedian miniscrew (Fig. 7c).

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Elastic chains are widely used traction elements. In contrast with NiTi springs, however, these rapidly lose their effectiveness. For this reason, a chain is only placed around the head of a miniscrew so that it can be more easily removed later. Depending on head design and the direction of the force applied, it is possible for the chain to become accidentally dislodged from the screw head. This problem can be avoided by the use of ready-made hooks (Table 5) that can be attached to the head of the screw.

**Sliding hooks**

Sliding hooks with a welded arm for attaching springs (Table 5) are an equally familiar piece of equipment. They are experiencing something of a renaissance in connection with the use of miniscrews. They are used for En Masse Retraction, mésialisation and distalisation. The effect of a sliding hook is determined by many different factors, which is why the value of attaching sliding hooks to the arch is disputed.

**Auxiliary elements for laboratory use**

All the elements discussed above can be prepared and inserted, with varying amounts of time expenditure, directly at the chairside. In recent years, the range of applications for miniscrews has also been extended to skeletal adjustment treatments, such as palatal suture expansion (see Dental Tribune Asia Pacific 5(2009):24). The preparation of appliances requires very careful preparation, and for this reason, the related tasks have been transferred to the laboratory. The principal procedure involves the insertion of the miniscrew(s) and the subsequent reshaping process. Once a working model has been prepared, the appliance is constructed and adjusted appropriately. For connection to a miniscrew, a suitable abutment must be employed. In hybrid PSE, for example, two arms of the expansion screw are welded to the abutment. The laboratory abutments available from FORESTADENT fit the head of the OrthoEasy screw. An adhesive is used for fixture after insertion.

An innovative approach is the BENEFIT-System (Mondeal). Analogous to prosthetic implants, an implant is placed in the bone. Instead of the widely known system where the head is firmly bonded to the thread, there are different abutments (Table 5) available. These will then be threaded to the bone screws. The laboratory abutments available from FORESTADENT fit the head of the OrthoEasy screw. An adhesive is used for fixture after insertion.

**Conclusion**

Depending on the task at hand, it may be necessary to use various auxiliary elements. Most of the connection elements discussed are now new and have already been used successfully in orthodontic treatment for some time. For this reason, most of them will already be available in every practice, but often not where they should be. In order to be effective and not waste time searching for tools, it is advisable to have the most important auxiliary elements to hand in a tray. You can either create a DIY version of the tray or order one of the ready-made trays available on the market.
The continuous wave obturation technique for enhanced precision

**Step 1: Down pack**

Once the cone fit has been accomplished and radiographically confirmed, the Continuous Wave (CW) plugger that matches the gutta-percha cone is fitted in the canal. The tip should be fitted within 5 mm from the canal terminus and never closer than 2 mm. The canal is dried and measured one last time with feather-tipped GT Series X paper points. The cone is trimmed to be 5 mm short, coated with sealer, and cemented in the canal (Fig. 1).

The cone can then be seated at the orifice with the tip of the preheated CW plugger at an angle to the cone, and the butt end can then be removed. The larger stainless-steel end of a CW hand plugger is used to compact the softened gutta-percha at the canal orifice (Fig. 2).

The cold CW electric heat plugger is pushed against the gutta-percha, then the heated plugger is driven smoothly through the gutta-percha, to within 5 mm of the binding point. This single down-pack stroke should take 5.5 to 5.5 seconds, but never more than 4 seconds for safety. The CW plugger will slow its apical movement and stop about 1 mm short of the binding point. At this point, any previously cleaned lateral and accessory canals will be filled. Firm apical pressure should be maintained for a full 5-second sustained push to take up any shrinkage that might occur upon cooling of the apical mass of gutta-percha. The System-B/Elements unit will sound a click signal 5 seconds after the switch is released (Figs. 3 & 4).

**Step 2: Separation burst**

Still maintaining apical pressure, the button should again be activated for a full 1 second in order to heat the plugger fully (Fig. 5). When the button is released, the clinician should pause for another full second and then slowly withdraw the plugger (Fig. 6).

After removal of the CW plugger, the small, flexible NiTi end of the CW hand plugger can be teased out with apical pressure, and the still-hot material can be reheat after being cooled by contact with the dentine. After the 5-second pause, the needle lightly held in place, one of the handpiece toggle switches (back button for medium speed, forward button for faster speed) should be activated in order to extrude the gutta-percha (Fig. 8).

After the extruded material fills the backfill space ahead of the needle, the back pressure of the extruded gutta-percha will move the needle back out of the canal. At this point, it is important that the clinician resist the temptation to pull the needle out of the canal. The extruded gutta-percha should be allowed to back the needle out. Care should be taken to allow approximately 5 to 10 seconds for the needle to reach the orifice level (Fig. 9).

Using the rigid stainless-steel end of the appropriate CW hand plugger, a very firm condensation push should be given to the warm gutta-percha. A void of 4 mm can be eliminated if enough pressure is applied (Figs. 10 & 11).

**Step 3a: Syringe-backfill option**

The speed of extrusion is set on the control panel of the System-B/Elements unit. After pre-heating is completed (45 seconds), the forward toggle switch on the handpiece is pressed until material extrudes out of the needle tip to prime the needle. The heated needle can then be placed into the canal for 5 seconds, allowing the needle to reheat after being cooled by contact with the dentine. After the 5-second pause, the needle lightly held in place, one of the handpiece toggle switches (back button for medium speed, forward button for faster speed) should be activated in order to extrude the gutta-percha (Fig. 8).

When the button is released, the clinician should pause for another full second and then slowly withdraw the plugger (Fig. 6).

The heated plugger can then be placed into the canal for 5 seconds, allowing the needle to reheat after being cooled by contact with the dentine. After the 5-second pause, the needle lightly held in place, one of the handpiece toggle switches (back button for medium speed, forward button for faster speed) should be activated in order to extrude the gutta-percha (Fig. 8).

After the extruded material fills the backfill space ahead of the needle, the back pressure of the extruded gutta-percha will move the needle back out of the canal. At this point, it is important that the clinician resist the temptation to pull the needle out of the canal. The extruded gutta-percha should be allowed to back the needle out. Care should be taken to allow approximately 5 to 10 seconds for the needle to reach the orifice level (Fig. 9).

Using the rigid stainless-steel end of the appropriate CW hand plugger, a very firm condensation push should be given to the warm gutta-percha. A void of 4 mm can be eliminated if enough pressure is applied (Figs. 10 & 11).

**Step 3b: Single-cone backfill option (ideal for medium and large canals)**

While the filler material should be down-packed through the master cone as usual, the 1-second separation burst is not necessary. Instead, the plugger should be allowed to cool in the canal for approximately 10 seconds (two clicks from the unit). The plugger can be removed by rotating it back and forth with apical pressure, and the still-cold plugger can be teased out during rotation. An AutoFit BackFill cone (the same size as the plugger used for the down pack) can be coated with sealer and moved in and out of the empty backfilling space three to four times to ensure that the sealer material coats the backfill space. The area left by the plugger will exactly match the shape of the backfill cone (Fig. 12).

The cone can then be scarfed off at the orifice level with the System-B/Elements unit electric heat plugger (Fig. 15).

The rigid stainless-steel end of the hand plugger can then be placed against the gutta-percha and with a firm sustained pressure, the coronal mass can be condensed at the orifice level. This technique is also ideal for removing voids created during an extruder backfill. The stop on the CW electric heat plugger should simply be adjusted so that it will reach beyond the existing void. The heated plugger can then be thrust through the void, rosetted for 10 seconds, then removed so the backfill can be completed using the steps outlined above (Fig. 14).

The opposing canal was filled with a GT Series X carrier-based obturation technique.

**Contact Info**

A leading expert in the field of endodontics, Dr Buchanan is renowned for his multi-media presentations, anatomical research, writings on procedural techniques and revolutionary instrument designs. He can be contacted atinfo@endobuchanan.com and through his website www.endobuchanan.com
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<tbody>
<tr>
<td>Sacramento, CA, USA</td>
<td>Oct 23-26, 2009</td>
<td>Dr. Joseph Viviano, DDS</td>
</tr>
<tr>
<td>Dubai, UAE</td>
<td>March 23-26, 2010</td>
<td>Dr. Bernard Lee, DDS</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>June 4-7, 2010</td>
<td>Dr. Bernard Lee, DDS</td>
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