Study investigates wear of different ceramics for primary tooth restoration

By DTI

YANGSAN, South Korea: While all-ceramic crowns are commonly used as aesthetic restorative materials for permanent teeth, little research has been conducted on its use and wear in primary teeth. Based on considerations of occlusal force in paediatric patients, a Korean study has now investigated the applicability of different ceramic restorative materials for use in primary tooth restoration.

In the study, the researchers compared zirconia, lithium disilicate, leucite and stainless-steel crowns to establish their wear. Ten flat crown specimens—primary teeth lost naturally during transition to permanent teeth—were prepared for each of the four study groups and tested for antagonist wear using a CS-4.8 chewing simulator (SD Mechatronik). Tooth wear was simulated with 100,000 chewing cycles at a mastication force of 50 N. To measure the volume of wear, teeth were scanned using a 3-D scanner before and after testing.

The final analyses showed that the leucite group had the greatest amount of antagonist tooth wear, followed by the lithium, zirconia and stainless-steel groups. Mean volume losses in the leucite and lithium groups were significantly greater than in the stainless-steel group. However, no significant difference was observed between the stainless-steel group and the zirconia group.

In terms of weight loss of restorative materials after testing, the lithium group showed the most, followed by the leucite group and the stainless-steel and zirconia groups. Weight loss in the lithium group was significantly greater than in the stainless-steel and zirconia groups, but no significant difference was observed between the stainless-steel, leucite and zirconia groups.

According to the researchers, the wear of restorative materials and of antagonistic primary teeth tended to be positively related. Moreover, the flexural strength and fracture toughness of the ceramic materials seemed to be correlated with primary tooth wear.

Acknowledging the high abrasion levels associated with leucite and lithium crowns, the researchers suggested that both materials should be used with caution in paediatric dentistry; however, the results of their study should be corroborated in in vivo studies. The study, titled "Wear of primary teeth caused by opposed all-ceramic or stainless steel crowns", was published online on 23 February in the Journal of Advanced Prosthodontics.
Future of children’s free dental care scheme under review

By DTI

CANBERRA, Australia: Debate has begun over the future of Australia’s Child Dental Benefits Schedule after Health Minister Susan Ley expressed criticism about the outcomes of the scheme earlier this year. After Ley’s statement that the well-funded programme was not achieving its aim, the Australian Dental Association urged families to take their children to the dentist lest the programme be axed.

At a meeting of health and dental groups, Ley said that she did not think the dental programme was an effective use of funds and foreshadowed further changes. Lending support to Ley’s concerns was Australian Prime Minister Malcolm Turnbull, who said the dental programme was the A$2.7 billion Child Dental Benefits Schedule has provided one million Australian children from low- to middle-income families with free dental care. However, auditors discovered that only around 30 per cent of children have used the programme and this contributed to an underspend of around A$300 million in the first 18-month period, the Sydney Morning Herald reported.

In response to widespread concern regarding the future of the scheme, Dr Rick Olive, President of the Australian Dental Association, encouraged families to support the programme by utilising their children’s treatment quota. “What I have to say to people who are eligible, and if they haven’t been to the dentist, they better go and make an appointment with their dentist because likely from 1 July, the scheme won’t exist,” he said.

As part of the Child Dental Benefits Schedule, each eligible child aged 2 to 17 may receive up to A$1,000 worth of dental treatment from low- to middle-income families with free dental care. However, auditors discovered that only around 30 per cent of children have used the programme and this contributed to an underspend of around A$300 million in the first 18-month period, the Sydney Morning Herald reported.

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By DTI

SYDNEY, Australia: With a record number of dentists and allied oral health care professionals attending ADX16 Sydney, the dental exhibition reaffirmed its status as Australia’s premier dental event. Introducing the latest products from Australia and overseas, the show included over 140 exhibitors, more than 400 booths, and a seminar programme with leading international speakers.

Convened biennially by the Australian Dental Industry Association (ADIA), the event was held from 18 to 20 March in the Sydney Exhibition Centre @ Glebe Island. According to the organiser, factors contributing to the record attendance on the opening and closing days were initiatives such as free shuttle busses and ferries to the venue, free face painting and creche for children and the free ADX16 Sydney welcome reception which was sponsored by CMA Eco-cycle and held last Friday night.

“Feedback from exhibitors has been exceptional and reports concerning sales exceeding targets continue to roll into the ADIA office. It’s clear that, from the perspective of businesses supplying products and services to dental professionals, the ADX Sydney series of events is without equal,” ADIA CEO Troy Williams remarked on the all-time high.

In addition to the variety of dental exhibitors, more than a dozen associations representing dentists and allied oral health care professionals participated in the event, making it the largest gathering of dental community stakeholders in Australia, the organiser said.

Introducing two firsts

Aiming to give attendees an in-depth understanding of innovations that will enhance daily practice, this year’s event introduced the Product Showcase as a novel way to experience the latest dental products from Australia and overseas. In two purpose-built theatrettes, visitors were able to sit down and learn how novel technology is changing the instruments, equipment and materials that leading dentists use. During interactive 45-minute sessions, this innovative component of ADX16 gave dental professionals the unique opportunity to talk to suppliers to obtain comprehensive knowledge of their new products and insights into the field of dentistry.

Complementing this novel hands-on approach was the ADIA–OHPA Dental Laboratory Pavilion. Designed to maximise participation by dental technicians, the free pavilion offered information on the commercial framework and changes to regulations, as well as working demonstrations of the latest CAD/CAM technology from Australia and overseas.

As a collaborative effort between ADIA and the Oral Health Professionals Association (OHPA), the initiative recognised the unique challenges that the country’s laboratories face from international competition and technological changes and reflected both organisations’ advocacy efforts to secure a future for Australia’s dental laboratories.

The next instalment of ADX Sydney will take place from 23 to 25 March 2018 in the new International Convention Centre Sydney.

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WORLD NEWS

ADX16 Sydney breaks attendance records

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It is interesting to note the trends in cosmetic dentistry training these days. Cosmetic dentists are spending time and money learning various smile design techniques and protocols. In recent years, the use of computer-guided digital devices (hardware and software) in smile design has become quite popular and many clinicians are already trained in different kinds of digital smile design protocols.

If we carefully analyse digital smile design techniques or protocols, it can be established that they generally follow three steps: photography, digital analysis (calculation) and digital wax-up (drawing, cut and paste). After these clinical steps, dentists have two choices for achieving the final trial smile.

The first and most popular one is a laboratory-fabricated acrylic or composite restoration and the other one is CAD/CAM fabricated. For the manual approach, the laboratory technician has to manually wax up the digital design. Even though digital smile design uses computer-guided techniques and protocols, the entire design process is not that as fast as many clinicians may think. This is because the dentist needs to develop specific computer graphic skills, be involved in digital communication with the laboratory, as well as pursue emotional counselling and marketing tactics.

Several months ago, I asked some of my close Asian, American and European friends who have completed various digital smile design courses about the use of digital smile design protocols in their daily practice. It was surprising to learn that none of these popular cosmetic dentists regularly use digital smile design in their practices. They frankly informed me that such techniques are time-consuming and computer design is not as easy as the day-to-day restorations that they do. I was also told that they use digital smile design protocols only when they need to present clinical cases for conferences or seminars.

I was quite pleased with their candid comments, as I rarely use digital smile design myself, because I do not want to give stock smiles to my patients. I respect my patients’ personal desires and needs and guide them in achieving natural and realistic smiles with low biological cost. I have never sold cosmetic dentistry using the emotional counselling tactics of digital smile design, because I firmly believe that exploiting emotions to sell cosmetic dentistry actually constitutes emotional blackmailing of patients.

Keeping all of the above in mind, I have recently developed a simple "Quick Smile Design" concept, which is not new but a logical modification of the age-old direct composite mock-up technique.

The beauty of this simple technique is that it is fast, realistic and predictable. You do not need to open your computer and spend time using Photoshop. Your patients will instantly be able to give their comments about the aesthetics and level of comfort of your smile design. You do not need to acquire computer graphic skills. Moreover, this technique indirectly enhances the dentist’s direct cosmetic restoration skills. I hope you will have the opportunity to learn about it in the upcoming issue of the cosmetic dentistry magazine.

Dr Sushil Koirala is Chairman of the Vedic Institute of Smile Aesthetics. He is also Editor-in-Chief of Dental Tribune’s sister publication cosmetic dentistry. Dr Koirala can be contacted at drsushilkoirala@gmail.com.
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Periodontitis linked to faster cognitive decline in people with Alzheimer’s

By DTI

LONDON & SOUTHAMPTON, UK:
A number of studies have demonstrated that poor oral hygiene, a common problem among elderly patients, is a risk factor for developing Alzheimer’s disease. Now, a joint research project led by scientists at the University of Southampton and King’s College London has provided further evidence that periodontitis could be associated with increased dementia severity and a more rapid cognitive decline in Alzheimer’s patients.

Fifty-nine non-smoking patients with an average age of 77.7, mild to moderate dementia and a minimum of ten teeth who had not received treatment for periodontitis in the past six months participated in the study. The patients underwent dental examinations by a dental hygienist at baseline and at the six-month follow-up. In addition, blood samples were taken to measure inflammatory markers in their blood.

The presence of periodontal disease at baseline was associated with a sixfold increase in the rate of cognitive decline in participants over the study period. Periodontitis at baseline was also associated with a relative increase in the pro-inflammatory state over the follow-up period. The researchers concluded that periodontal disease is associated with an increase in cognitive decline in Alzheimer’s disease, possibly via mechanisms linked to the body’s inflammatory response.

As the study only included a limited number of participants, the authors stated that the findings should be validated in a larger-cohort study. In addition, they highlighted that the precise mechanisms by which periodontitis may be linked to cognitive decline are not fully understood and other factors might also play a part in the decline seen in participants’ cognition alongside their oral health. However, the current evidence is sufficient to explore whether periodontal treatment might benefit the treatment of dementia and Alzheimer’s disease, they said.

Periodontitis is a common disease in older people. The World Health Organization estimates that 15 to 20 per cent of adults aged 35 to 44 worldwide have severe periodontal disease. The condition may become more common in Alzheimer’s disease because of a reduced ability to take care of oral hygiene as the disease progresses. Higher levels of antibodies to periodontal bacteria are associated with an increase in levels of inflammatory molecules elsewhere in the body, which in turn has been linked to greater rates of cognitive decline in Alzheimer’s disease in previous studies.

Dr Mark Ide, from King’s College London Dental Institute and first author on the paper, said: “Gum disease is widespread in the UK and US, and in older age groups it is thought to be a major cause of tooth loss. In the UK in 2009, around 82 per cent of adults over 55 had evidence of periodontal disease, while 40 per cent of adults aged 65 to 74 and 60 per cent of those older than 75 had less than 21 of their original 32 teeth, with half of them reporting periodontitis before they lost teeth.”

The study, titled Periodontitis and cognitive decline in Alzheimer’s disease, was published online on 10 March in the journal PLOS ONE.
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Henry Schein has been supporting the Senior Dental Leadership Programme (SDL) since its launch in 2007. Last month, the company’s long-term Chairman and CEO Stanley M. Bergman delivered the keynote address for SDL’s tenth anniversary meeting in London in the UK. Dental Tribune had the opportunity to sit down with him during the event to discuss the motivation behind the initiative, as well as public-private partnerships in dentistry in general and their importance for the improvement of oral health worldwide.

Dental Tribune: Mr Bergman, in your keynote at this year’s SDL Meeting, you talked about some of the key aspects that have made your company one of the leaders in oral health care worldwide. Could you summarise these for our readers?

Stanley M. Bergman: Henry Schein has been a very successful company by focusing on doing well by doing good. This requires balancing the five constituents that comprise our mosaic of success—our customers, suppliers, investors, Team Schein, and society. One part of the mosaic is our commitment to society, which makes us different from others in the industry. With our public-private partnerships, we work with government as well as non-governmental organisations, customers and suppliers to make a difference in society. This enables trust, and with trust you can move things forward—like advancing oral health, for example, by bringing together academia, professionals, public health officials and business people from around the globe.

The SDL Programme tries to do exactly that. Is this why your company has supported this initiative for such a long time?

The SDL is clearly the epitome of a public–private partnership. So far, it has been pretty successful in bringing together all members of the dental community, including representatives of dental schools, like Harvard and King’s College here in London, as well as public health officials from around the world and the private sector.

There has been very good research in the last decade with regard to oral health. What we learnt from that is that we have to focus not just on the teeth but on the whole body. Good oral care results in good general health, which then results in a good quality of life. We use SDL to get that message out to all constituents of the dental community around the world.

With dental diseases still occurring in epidemic proportions around the world, according to reports, is there a general lack of leadership in the profession?

I would not exactly call it a lack of leadership. As you mentioned, however—and the latest statistics show this—it is a sad fact that there are over three million people in the world suffering from dental caries alone. Unfortunately, oral diseases—in addition to psychological diseases—are still not recognised as non-communicable diseases (NCD) by the World Health Organisation (WHO) and, as a consequence, their improvement is not considered to be beneficial for better health.

The science is very new. There have been a number of studies published only in the last seven years that show a direct correlation between oral health and other health areas, like cardiology. Dental schools like Harvard are advancing this research and many others will hopefully follow. However, there are other areas, such as cancer, where we have made good progress, but have not told people that around the globe about 150,000 people die of oral cancer each year. I do not think we are doing a good enough job to convince the world of the importance of oral health.

So, is that the motivation behind the initiative?

I believe that the only way to achieve better health is through more preventive care.

Where do you think the main impetus has to come from?

I think the FDI World Dental Federation is doing a good job in this regard and I am quite optimistic that it will lead us in this area. We need to make the changes. This way, we would end up with not only significantly lower health care spending but also a healthier world in general.

With all the work that the SDL Programme and other oral health initiatives have done and are doing, how far do you think we have come in achieving this goal?

The science is very new. There have been a number of studies published only in the last seven years that show a direct correlation between oral health and other health areas, like cardiology. Dental schools like Harvard are advancing this research and many others will hopefully follow. However, there are other areas, such as cancer, where we have made good progress, but have not told people that around the globe about 150,000 people die of oral cancer each year. I do not think we are doing a good enough job to convince the world of the importance of oral health.

There should be more.

Also, dental schools are not taking a strong enough position on health care. It is part of their history that they would not necessarily be part of the medical school system. I remember the big fight over the New York University dental school a decade ago. There are also other dental schools that are connected to medical departments or institutions. We need more and more of that. Dentistry has to be part of total care.

In your home country, the upcoming presidential election has put health care and its delivery in the forefront of the debate. Which system do you generally consider to be better for achieving improved health?

Generally, I do not think that one system is better than the other. I am a free-enterprise person and therefore I think you have to allow those who wish to have a private system to have it. For those who cannot afford private insurance, the government has to provide some amount of care. I believe that the only way to achieve better health is through more preventive care. It is not about building more hospitals, but preventing people from getting sick. That is what health care reform is all about.

Thank you very much for the interview.