Predictable composite shrinkage may refine material selection

LEIPZIG: Researchers at the Fraunhofer Institute for Mechanics of Materials, Leipzig, Germany, have successfully managed to simulate the process of shrinkage and consequent microleakage in dental composites. Their findings may eventually allow clinicians to select appropriate restorative material based on the shape of the cavity to be filled. Until now, tension in dental fillings could only be measured selectively. The precise course of tension development, however, has never been observed.

For their tests, the researchers reduced different dental fillings into the test material into small particles and measured how each element affects its first of curing elements. “We were using a standard geometry to find out how each material reacts to the stresses that occur when the volume shrinks, and how the flow capability of the material changes as it hardens,” said Dr Christof Kopl, a research assistant. “Tension occurring in the material varied widely by a factor of up to ten, particularly at the edges,” he added.

Medical tourism a new option for patients in the US

NEW YORK: According to reports by the Wall Street Journal, more and more insurers and employers in the US are offering people to seek medical or dental treatment abroad. In an effort to control costs, a handful of health care plans are beginning to cover treatment overseas for heart surgery, hip and knee replacements and other major surgical procedures, the newspaper states. Until recently, most Americans who travelled abroad for medical care were uninsured, or were seeking procedures not covered by insurance. But despite the travel costs, countries like Singapore or Costa Rica have become attractive destinations for medical tourism because doctors there often charge less than 10 per cent of the treatment costs in the United States.

As a reaction to these developments, the American Medical Association has recently unveiled its first set of medical-tourism guidelines to US state lawmakers, suggesting them as model legislation. The guidelines would require that travel be voluntary, and that financial incentives not limit patients’ alternatives. They also would require patients to be advised of the medical and legal risks, and that provisions be made for follow-up care at home.

Health practitioners in the US remain concerned about such issues as the safety of blood supplies for transfusions and tissue for bone grafts in foreign countries. Long-distance travel also poses special risks to patients, including blood clots from airplane flights and lack of legal recourse for negligence and malpractice, critics say.

Leeds fights fear factor

Pennie Palmer
DT United Kingdom

LONDON: Leeds Dental Institute, ranked the top school in the UK for dentistry, is currently looking at better ways to improve dental treatment and take the fear factor out of the patient experience at the dentist, Professor Jennifer Kirkham, research director, said the laboratory was looking for safer new ways to control plaque which do not rely on toothpaste.

“We see patients in the clinic who are not able to brush effectively, or who have the habit of swallowing or not a proficient brusher”, she explains. “One of the new treatments makes use of a readily available compound in an innovative way to control plaque formation, using photo dynamic therapy (PDT). The patient uses a mouth wash containing an anti-bacterial agent which is activated by bright light and results in plaque destruction. This is trialled in the clinic and patient feedback helps researchers identify where further modifications are needed.”

Another research project could turn the approach to filling teeth forever, Professor Kirkham explains. “We have developed a method for Filling without Drilling, which uses a low viscosity protein based fluid which is painted onto the teeth where it infiltrates into the pores. Once inside the pores, the fluid solidifies, to become a gel which is able to build up the tooth mineral, bringing about a natural repair, with no pain or discomfort usually associated with traditional drilling procedures.”

A recent US$1.9 million investment by the University of Leeds is set to bring the new Dental Clinic and Translational Research Unit to the forefront of global research and development in oral health, by linking the laboratory activity directly to the needs of patients treated in the clinic. The flagship centre for dental research and clinical practice, opened on 15th October 2008, is housed in the Henley Building and is open to the general public.

Bad lifestyle drives bad breath

Lynn Bradshaw
Dental Chronics, Canada

TORONTO: New research from Israel suggests that a high body mass index and alcohol consump tion are associated with bad breath or halitosis. The study, led by Prof. Mel Rosenberg from the department of human microbiology and the Maurice and Gabriela Goldschleger School of Dental Medicine, Sackler Faculty of Medicine at Tel Aviv University, included a sample of 88 adults of varying weights and heights. The study subjects underwent a clinical medical check-up, and agreed to complete a questionnaire involving 18 queries associated with general oral and health, dietary habits, as well as a self-assessment of their own oral malodor levels.

Other odour assessments included odour judge scores, volatile sulphide levels (via Halimeter evaluation) and salivary g-galactosidase. The results of the questionnaire produced nine responses that were significantly associated with odour judge scores including questions on alcohol intake and BMI. Predictions of odour judge scores based on these nine responses yielded R = 0.601; when introduced together with Halimeter and g-galactosidase scores, the correlation increased to 0.8. The suggesting that alcohol intake and BMI may be factors that help predict oral malodor.

“The finding on alcohol and bad breath was not surprising because the anecdotal evidence was already there,” says Prof. Rosenberg. “However, the finding that correlated obesity to bad breath was unanticipated.” Prof. Rosenberg concluded from the data that overweight patients were more likely to have foul-smelling breath. “This finding should hold for the general public,” he said, further adding that scientific evid ence as to why this is the case is unclear, and additional evidence is required. “We have no idea of the potential causes, and we really do not know how to interpret the results,” he added.

The connection between obesity and bad breath could be caused by several factors, Prof. Rosenberg said. He hypothesises that obesity could transform the oral cavity, which promotes dry mouth. “We have certainly opened a window of questioning here,” Prof. Rosenberg said.

Leeds in a row: UK researchers on the SGM team identified the X-ray image analysis technique that may automatically identify the different stages of dental caries. The technique reveals the presence of tooth decay and may be very useful in diagnosing and managing dental decay at its earliest stages.

R. Siva Kumar, head researcher at the SGM Depart ment of Electronics and Communication Engineering, explained that the software program reveals that the X-ray histogram and spectrum are very different depending on whether the teeth are normal or exhibiting the early stages of caries. The researchers found that in the X-ray histogram, the pixel intensities are concen trated in different ranges depending on the degree of decay.

Caries is the most common chronic childhood disease, being at least five times more common than asthma. It is the primary cause of tooth loss in children, while between a third and two thirds of people over 50 years depending on the country experience caries too. Detecting caries in the early stages of development is important for saving affected teeth and preventing the possibility of tooth loss and invasive surgery at later stages.

KAVARAPETTAI, India: Researchers at the BMK Engineering College in Tamil Nadu, India, have developed an X-ray image analysis technique that may automatically identify the different stages of dental caries. The technique reveals the pixel intensities at different X-ray wavelengths and may also be used to describe the histogram analysis of images by a high specification digital camera, and could be very useful in diagnosing and managing dental decay at its earliest stages.

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