Predictable composite shrinkage may refine material selection

LEIPZIG: Researchers at the Fraunhofer Institute for Mechanics of Materials in Freiburg, 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 filling 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 thousands of small particles and calculated 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 Kopoln, a research assistant. Long-distance travel also poses health practitioners in the US a special safety issue as the safety of blood supplies and tissue for bone grafts in foreign countries is unclear. Researchers at the RMK Engineering College in Tamil Nadu, India, have developed an X-ray analysis technique that may automatically identify the different stages of caries progression. The technique reveals the pixel intensities in different X-ray wavelengths, making the histogram analysis of images by a high-sensitivity digital camera, and could be very useful in diagnosing and managing dental decay at its earliest stages.

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 and oral health, dietary habits, and spectrum are very different from the US law makers, suggesting them as model legislation. The guidelines would require that patients be advised of the medical and legal risks, and that provisions be made for follow-up care at home.

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 United States are offering people to seek medical or dental treatment abroad. In an effort to control costs, a handful of health care plans are 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.

Leeds fights fear factor

Dr Jennifer Kirkham, research director, said the laboratory was looking for safer ways to control plaque which do not rely on toothpaste.

“We see patients in the clinic who are not able to brush effectively. Dental treatment of the mouth may not allow sufficient access, the patient could be nervous 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 dynamically therapeutic (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 transform 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 has the potential to seal the teeth and avoid other treatments.”

Bad lifestyle drives bad breath

LONDON: Leeds Dental Institute ranked the top school in the UK for dentistry, is currently looking at better ways of managing dental decay at its earliest stages.

ToRONT0: New research from Israel suggests that a high body mass index and alcohol consumption 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 full medical check-up, and agreed to complete a questionnaire involving 38 queries about their oral health, dietary habits, as well as self-assessment of their own oral malodour levels.

18 other odour assessments included odour judge scores, volatile sulphide levels (via Halimeter evaluation) and salivary β-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 based on these nine responses yielded R = 0.601; when introduced together with Halimeter and β-galactosidase scores, the correlation increased to 0.8. The suggesting that alcohol intake and BMI may be factors that help predict oral malodour.

“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 foetid smelling breath. “This finding should hold for the general public,” he said, further adding that scientific evidence 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 hypothesizes that obese people may have a diet that promotes dry mouth. “We have certainly opened a window of questioning here,” Prof. Rosenberg said.

X-Ray analysis identifies caries progression

KAVARAIPETTAL, 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, making the histogram analysis of images by a high-sensitivity digital camera, and could be very useful in diagnosing and managing dental decay at its earliest stages.

R. Siva Kumar, head researcher at the BMK Department of Electronics and Communication Engineering, explained that the software reveals that the X-ray histogram and spectrum are very different from the X-ray histograms from individuals of tooth loss and invasive surgery at later stages.