



Dental Review™

HONG KONG

Making Education Easy

Issue 2 - 2012

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Welcome to the second edition of Dental Research Review.

This has been created in order to help you keep up to date with recent research quickly, by providing a 10 study/4 page summary. We selected papers which we think are of most interest and relevance, and added our comments on implications for practice in Hong Kong.

Some highlights in this issue include the use of NiTi instruments for root canal preparation, the association between childhood obesity and tooth eruption, and the longevity of class V restorations.

We hope you find this second edition interesting and look forward to hearing your feedback and comments.

Kind Regards

Professor Lakshman Samaranayake

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Impact of nickel-titanium instrumentation of the root canal on clinical outcomes

Authors: Schäfer E et al

Summary: Does using modern nickel titanium rotary instruments for root canal preparation give your patients a better long-term result? The authors investigated 327 studies in the literature, finding one clinical trial suggesting better maintenance of original canal curvature leading to increased success. A further two studies showed that either hand or rotary NiTi use gave increased success compared to stainless steel hand instruments. Three studies found no significant difference.

Comment (Gary Cheung): There are many factors that can affect the outcome of root canal treatment and mask the effect of the use of NiTi instruments. That might explain the very few studies on this very topic. NiTi rotary instruments perform no worse than traditional techniques, and their use would help to raise the chance of success. This may be worth trying in view of the amount of clinical time that may be saved.

Reference: *Odontology* 2012;100(2):130-6

<http://tinyurl.com/9xcpzz3>

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Independent commentary by:



Professor Lakshman Samaranayake

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Professor Chow Tak Wah

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Professor Gary S.P. Cheung

Professor and Postgraduate Programme Director in Endodontics, and Associate Dean of Faculty of Dentistry of the University of Hong Kong.



Professor Lijian Jin

Associate Dean (Research, Innovation & Enterprise), Modern Dental Laboratory Professor in Clinical Dental Science and Professor of Periodontology at the Faculty of Dentistry, The University of Hong Kong.

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The presence of the mandibular incisive canal: a panoramic radiographic examination

Authors: Romanos GE et al

Summary: The mandibular incisive canal (MIC) is an extension of the mandibular canal anterior to the mental foramen. The authors looked at 1,045 panoramic dental radiographs chosen randomly from those taken during routine examinations. Minimum and maximum distance from the alveolar ridge, thickness and length of canals and distance (if bilateral) between canals were recorded. The MIC was found in 2.7% of the patients.

Comment (Lakshman Samaranayake): This study from US demonstrates the frequency of the mandibular incisive canal in a US population to be relatively small and suggests this anatomical structure should be considered to prevent injury during implant placement in the lower aesthetic zone. As such data are not available for Asian populations further research is warranted.

Reference: *Implant Dent* 2012;21(3):202-6

<http://tinyurl.com/9rf6tp6>

The association between childhood obesity and tooth eruption

Authors: Must A et al

Summary: Data were combined from three cycles of the United States National Health and Nutrition Examination Survey. The association between the number of erupted teeth and obesity status (BMI) in children aged 5–14 years was investigated. Data were controlled for gender, race and socioeconomic status. Teeth of obese children erupted earlier, with an average number of 1.44 more teeth erupted as compared to the nonobese children. This was a highly significant finding ($p < 0.0001$).

Comment (Jin Lijian): Emerging evidence shows that obesity increases the risk of various systemic and oral diseases. The findings of this survey strongly suggest that prevention and in-time control of obesity are crucial for promoting general well-being and oral health in children. Clinically, obese children should be strongly advised to accept regular dental care by dental professionals and effective prevent measures are undertaken accordingly to control caries, the occurrence and development of malocclusions, and other oral problems.

Reference: *Obesity (Silver Spring)* 2012;20(10):2070-4

<http://tinyurl.com/bwzt8pa>

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Advances in Clinical Dentistry and Related Sciences

Implant-therapy in periodontitis-susceptible patients –
The modern dilemma

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International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth

Authors: Andersson L et al

Summary: There are slow but significant changes in our management of avulsion and its treatment outcomes. This new set of recommendations suggests treatment options have not changed much, but differ in the cut-off point when the avulsed tooth has little chance of periodontal/cemental healing, and when periodontal ligament should be removed. There are few clinical trials to cite, and animal and in vitro studies play a key role in our understanding.

Comment (Gary Cheung): This is a set of recommendations that has evolved from clinical observations and later supported by animal and in vitro studies. Interestingly, the profession seemed to get the recommendations about right from the beginning. Those who work in a community with good chance of facing this condition should read this article.

Reference: *Dental Traumatology* 2012;28:88-96

<http://tinyurl.com/9j8b3xn>

Oral lesions associated with injected hydroxyapatite cosmetic filler

Authors: Daley T et al

Summary: Cosmetic fillers are usually considered safe, with most adverse reactions happening very soon after injection and lasting hours or a few days. This study investigated 'Radiesse', a filler made of 25-45 µm microspheres of hydroxyapatite in a water-based gel of methylcellulose and glycerin. Eight patients attended with granulomas. Specimens were stained with haematoxylin and eosin and examined under the microscope. Other biopsy material was subjected to energy dispersive X-ray microanalysis. In the stained sections there were intense granulomatous reactions with histiocytes and foreign body giant cells together with the microspheres. The elemental analysis confirmed hydroxyapatite.

Comment (Lakshman Samaranayake): The ideal dermal filler should offer long-lasting aesthetic improvement with minimal side-effects. It should be biocompatible and stable within the injection site, with the risk of only transient undesirable effects from injection alone. However, all dermal fillers can induce potentially long-lasting adverse effects. This report albeit in 8 patients illustrates the adverse effects of Radiesse, a calcium hydroxyapatite-based dermal filler. Dentists should be aware of oral lesions such as granulomas that may arise due to plastic surgical procedures.

Reference: *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology* 2012;114:107-111

[http://www.oooojournal.net/article/S2212-4403\(12\)00290-8/abstract](http://www.oooojournal.net/article/S2212-4403(12)00290-8/abstract)

Congratulations
Vincent Leung,
specialist in Orthodontics,
who is the winner of the iPad from our recent subscriptions promotion.



Clinical performance of all-ceramic inlay and onlay restorations in posterior teeth

Authors: Beier US et al

Summary: Some 547 posterior teeth in 120 patients were restored with onlays and single-, two- and three-surface ceramic inlays between 1987 and 2009. All the work was by two dentists. Almost 2% of the teeth were non-vital and 33% of the patients diagnosed with bruxism. The non-vital teeth had a significantly higher risk of failure; this was not the case with the bruxism patients.

Comment (Gary Cheung): The endodontically treated teeth, again, proved a restorative nightmare. And then, to many people's and the authors' surprise, a higher failure rate was not seen with bruxers. The small print in the discussion stated that: "All patients were informed of the strengths and weaknesses of all-ceramic material ... many patients chose gold alternative. In patients receiving all-ceramic restorations, acrylic resin occlusal guards were provided to protect the definitive all-ceramic restorations during bruxing episodes. Additionally, in patients showing extreme bruxing activity, no adhesive ceramic restorations were performed; the teeth were restored with cast gold inlays and onlays." That helps.

Reference: *International Journal of Prosthodontics* 2012;25:395-402

<http://tinyurl.com/9ougyye>

The survival of Class V restorations in general dental practice: part 3, five-year survival

Authors: Stewardson D et al

Summary: With more people keeping their teeth for longer we may see more teeth requiring challenging Class V restorations. In this study over 60% lasted longer than 5 years. Analyses showed that the practitioner, age of the patient, cavity size, use of burs, moisture contamination and material influenced survival. The best results were with resin-modified glass ionomer cements (RMGI).

Comment (Lakshman Samaranayake): The obverse side of this report is that, after five years, almost a third of the 989 restorations failed due to the reasons given above. The moral of this study is that quality control of the procedure and selection of material is critical for the longevity of class V restorations.

Reference: *British Dental Journal* 210;212;1-9.

<http://www.nature.com/bdj/journal/v212/n9/full/sj.bdj.2012.367.html>

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Pain and pain behavior in burning mouth syndrome: a pain diary study

Authors: Forssell H et al

Summary: This syndrome features burning pain on the tongue or mucosa but without visible oral lesions. Fifty-two female sufferers completed a two-week diary noting pain intensity, distress, mood and amplifying and relieving factors three times each day. Almost all had pain in the tongue. Most of the patients reported that their pain was intermittent and its intensity increased through the day. Amplifying factors were pungent or hot food and drinks, stress and tiredness. Pain could be reduced by eating, cold drinks, sucking pastilles and relaxation. Pain medication was used by 58%. The results suggest that treatment should be individualized.

Comment (Lakshman Samaranayake): Burning mouth syndrome is frequently seen in elderly ladies, and its etiology is still a mystery. Over the last few decades many factors have been attributed as its causative agent, and it is now believed that there is a psychological component superimposed on the triggering factors (as mentioned above). Hence, a very thorough dental and a medical history of the patient and frequent recall visits supplemented by 'diary keeping' are essential to ascertain and manage the condition.

Reference: *Journal of Orofacial Pain* 2012;26:117-125.

<http://tinyurl.com/84nmuov>

Patient discomfort in bitewing examination with film and four digital receptors

Authors: Jørgensen PM, Wenzel A

Summary: Patients may complain of discomfort from the placement of intra-oral sensors used for digital radiography, with several studies finding more errors when a wired sensor was used compared to a storage phosphor plate or conventional film. Sensors may have square corners and stiff wires. Sixty patients were involved in a trial of five receptors, using a visual analogue scale to record their discomfort during positioning and placement for 10 seconds. A conventional film and an ergonomically shaped wired sensor with rounded corners were rated similarly.

Comment (Lakshman Samaranayake): Historically, the vast majority of the public loathes a visit to the dental clinic, due to the imaginary pain and discomfort they associate with dentistry. Hence, any measure which reduces discomfort during patient management should be welcome. This simple paper indicates that ergonomically shaped wired sensors are more comfortable than squared sensors. A noteworthy practical point to make life easy for our patients.

Reference: *Dentomaxillofacial Radiology* 2012;41:323-327.

<http://dmfr.birjournals.org/content/41/4/323.abstract>

Brushing skills and plaque reduction using single- and triple-headed brushes

Authors: Levin L et al

Summary: Two hundred young adults were randomly assigned to use a manual single-headed or manual triple-headed toothbrush. Initially they were given no guidance on brushing technique and their plaque index was measured on all first molars and two incisors after use of disclosing solution. They were then given instructions and their skills were evaluated. Performance and plaque index were reassessed during another appointment one week later. The three-headed brush may promote easier brushing and more effective removal of plaque.

Comment (Jin Lijian): Tooth brushing is the most common form of oral hygiene measure at home worldwide. It is evident that brushing teeth properly and effectively can help to control dental plaque biofilms, and thereby contributing to prevention of caries and periodontal disease as well as the general well-being. Over the years, various forms and sizes of toothbrushes have been designed and tested clinically. This interesting trial suggests that a three-headed brush is user friendly and fairly effective for plaque control. It may therefore be an alternative approach to promoting effective home dental care for oral health.

Reference: *Quintessence International* 2012;43:525-531.

<http://www.ncbi.nlm.nih.gov/pubmed/22532960>

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