ISSN 1178-6108

Dental Review™

Making Education Easy

Issue 17 – 2009

In this issue:

Welcome to the latest edition of Dental Review.

If Portland cement is like MTA, why don't dentists use Portland cement? Early this decade some rats were sacrificed exploring this question, and a small abstract appeared with favourable results (except for the rodents). One of the papers in this issue of Dental Review looks at a comparison of this type in humans.

In another investigation, microwave irradiation proved to be a simple, quick and effective method for sterilising dentures – something of potential benefit for dental and laboratory staff.

As usual, the studies cover an assortment of dentistry aspects and I hope they are all of interest.

Kind regards,

Nick Chandler
Associate Professor
Department of Oral Rehabilitation, University of Otago
nickchandler@researchreview.co.nz

Validity and reliability of laser-induced fluorescence measurements on carious root surfaces in vitro

Authors: Karlsson L et al

Summary: This study of 93 extracted teeth involved calibrated examiners assessing surface colour and texture of root caries lesions and measuring them with laser fluorescence (LF) devices at one-week intervals. Some of the teeth had sound root surfaces (controls). Then, 300 µm sections of 64 of the teeth were made and examined under a microscope by three examiners. Large differences were found between consecutive measurements and high measurement errors were noted. There was a low correlation between LF readings and the histological assessments. The (DIAGNOdent) LF devices were not considered suitable as a tool to diagnose root caries.

Comment: Correct diagnosis of root surface caries assumes special importance as some techniques and materials used to treat coronal caries are less than ideal for treating carious lesions in these regions. It is also more difficult to assess the activity of lesions in roots. The potential role of LF for root caries diagnosis has received little attention, and an alternative objective method for detecting these lesions is required.

Reference: Caries Res. 2009;43(5):379-404.

http://content.karger.com/produktedb/produkte.asp?doi=239754

Detection of disease outbreaks by the use of oral manifestations

Authors: Torres-Urquidy MH et al

Summary: Can disease outbreaks from the use of bioterrorist agents be tracked by examining the mouth? These workers devised a software application to detect oral manifestations in free text and used it to collect three years of data. Oral signs and symptoms of anthrax, tularaemia (rabbit fever or deer fly fever), botulism and smallpox were obtained from literature searches. The authors then used very sophisticated statistics to simulate attacks by these agents and to see the value of an algorithm to detect peak activity, in order to detect the attacks above background 'noise'. The model worked best for smallpox and botulism because their oral manifestations (mucous membrane eruptions, dry mouth) are less frequent than the oral ulceration caused by other pathogens.

Comment: At first this sounds a little like something from a miniseries which might be on TV3, but the authors have shown mathematically that changes seen in the mouth could be valuable for biosurveillance. However, they caution us because their assumptions about bioterrorist diseases come from literature review, since there is a (fortunate) lack of data from real outbreaks. Systematic studies by oral health researchers are needed to prove their theories.

Reference: J Dent Res. 2009;88(1):89-94.

http://tinyurl.com/ygk9442

New Zealand Dental Therapists' Association (Incorporated)

Dental Review is also made available to Dental Therapists through the kind support of the New Zealand Dental Therapists' Association

Stimulated saliva flow rate patterns in children: A six-year longitudinal study

Authors: Leonor S-P et al

Summary: This study aimed to find out how stimulated saliva flow rate (SSFR) might vary as healthy children grow up. Seven-year-olds provided paraffin-stimulated saliva once a year for six years. As they aged, three SSFR patterns emerged, with high or low flows a constant individual trait.

Comment: Saliva dilutes organic acids and provides a calcium and phosphate reservoir for remineralisation. It also has an increasing role as a fluid for the diagnosis of oral and systemic problems. To reduce possible seasonal and other variations, samples were taken at the same time of day and in the same months. In this study, caries indices were not significantly related to high or low SSFR patterns; SSFR has been given low prognostic value in caries risk assessments.

Reference: Arch Oral Biol. 2009;54(10):970-5.

http://www.aobjournal.com/article/S0003-9969%2809%2900195-2/abstract

Management of surgical patients receiving anticoagulation and antiplatelet agents

Authors: Thachil J et al

Summary: This paper is an extensive literature review on a very complicated subject. Confusion sometimes results in cancelled surgery because of poor communication between surgeons, anaesthetists and others involved in patient care.

Comment: This article has been recommended by several journals. There is advice here on reducing the problems of thrombosis and bleeding in this group of patients, with lists which stratify risks and recommend management based on risk assessments.

Reference: Br J Surg. 2008;95(12):1437-48.

http://www3.interscience.wiley.com/journal/121503474/abstract

University of Otago — Te Whare Wānanga o Otāgo

Independent commentary by Associate Professor Nick Chandler of the Department of Oral Rehabilitation, University of Otago

Privacy Policy: *Research Review will record your email details on a secure database and will not release it to anyone without your prior approval. Research Review and you have the right to inspect, update or delete your details at any time.*

Disclaimer: *This publication is not intended as a replacement for regular medical education but to assist in the process. The reviews are a summarised interpretation of the published study and reflect the opinion of the writer rather than those of the research group or scientific journal. It is suggested readers review the full trial data before forming a final conclusion on its merits.*

Denture disinfection by microwave irradiation: A randomized clinical study

Authors: Ribeiro DG et al

Summary: Samples of biofilms were collected from the maxillary dentures of 30 subjects before and after microwaving the prostheses at 650 W in 200 mL of sterile water. Fifteen dentures were exposed for 2 minutes and the other 15 for three minutes. Three minutes of microwave irradiation sterilised the dentures, and may have the potential to prevent cross-contamination.

Comment: Roughness of acrylic promotes plaque formation, with the micro-organisms a potential risk to dental and laboratory staff. Dentures should be disinfected before being sent to the laboratory, but some of the solutions used can damage resins. It is thought that microwaving does not affect the mechanical properties of acrylic, and that this level of microwave exposure does not damage the fit of dentures. What is not known is how repeated 'cooking' may influence things.

Reference: J Dent. 2009;37(9):666-72.

http://www.jodjournal.com/article/S0300-5712%2809%2900095-5/abstract

Tuberculous submasseteric abscess: case report

Authors: Mascarenhas S et al

Summary: A 32-year old presented with a 10-week history of left facial swelling and trismus. After exhaustive tests a large submasseteric abscess was diagnosed and drained externally. After further facial swelling and drainage *Mycobacterium tuberculosis* was detected by real-time polymerase chain reaction. Treatment of this lesion, at its unusual site, took 6 months.

Comment: This may seem a little remote from daily dentistry in a developed country, but I have a northern hemisphere colleague who was treated for tuberculosis in 2005 and is now working part-time after treatment for a recurrence of the lesion early this year. Like the patient in this case report, my friend was immunised. Tuberculosis remains the most common fatal infectious disease worldwide.

Reference: Br J Oral Maxillofac Surg. 2009;47(7):566-8.

http://www.bjoms.com/article/S0266-4356%2808%2900518-4/abstract

Pulpotomy of human primary molars with MTA and Portland cement: a randomised controlled trial

Authors: Sakai VT et al

Summary: This study compared MTA and Portland cement as pulpotomy agents in primary mandibular molars. There were 15 teeth in each test group in children aged 5–9 years. Restorations were with resin modified glass ionomer with cases followed-up for 24 months. All the treatments were successful.

Comment: There can be no doubt about the effectiveness of MTA in a wide variety of clinical situations, but it is expensive. Last November I used the Mitre 10 Mega price and calculated that MTA was 388,888 times more expensive than Portland cement! There is some competition now in NZ with the availability of the Brazilian MTA Angelus product which was used in this study from Sao Paulo. The caution here is that further studies and longer follow-ups are needed, and the study had ethical approval from the Brazilian Health Ministry rather than from anyone in NZ.

Reference: Br Dent J. 2009;207(3):E5.

http://tinyurl.com/yzzw4rk

Effects of tooth whitening and orange juice on surface properties of dental enamel

Authors: Ren Y-F et al

Summary: In this experiment the effects of 6% hydrogen peroxide (pH 5.5) activated with an LED light on surface enamel was compared to orange juice (pH 3.8). Enamel discs were first incubated in saliva and then microhardness and surface topography evaluated before and after treatment cycles through the substrates. The specimens were stored in saliva between exposures. The effects of the hydrogen peroxide were insignificant compared to the orange juice, which decreased the hardness and increased the roughness of the enamel.

Comment: A pH lower than 5.5 is considered critical in the initiation of enamel demineralisation. Oxidation agents like hydrogen peroxide are common in aesthetic treatments. This paper helps to put into perspective the potential problems of a short period of tooth whitening compared to a daily activity such as drinking orange juice.

Reference: J Dent. 2009;37(6):424-31.

http://tinyurl.com/ygl8gag

Research Review publications are intended for New Zealand health professionals

Gingivitis as a risk factor in periodontal disease

Authors: Lang NP et al

Summary: A group of 565 male patients aged between 16 and 34 years who had received 'state-of-the art professional and personal dental care' were examined on 7 occasions between 1969 and 1995. Some 223 were present for the final assessment. The authors concluded that the results convincingly demonstrated that the development of periodontitis only occurs in areas of long-standing gingivitis.

Comment: One of the authors of this paper is Harald Löe who sadly died during its preparation. His name will be recognised by many readers from inside and outside the world of periodontology. This paper is a terrific review of the history of the subject and also provides an up-to-date summary of the pathogenesis of periodontal disease.

Reference: J Clin Periodontol. 2009;36 (Suppl. 10):3-8.

http://www.ingentaconnect.com/content/mksg/cpe/2009/00000036/a010s010/art00002

Influence of different suturing techniques on periodontal health of the adjacent second molars after extraction of impacted mandibular third molars

Authors: Cetinkaya BO et al

Summary: When mandibular third molars are removed there may be a risk of periodontal defects developing on the distal aspect of the second molar. In this experiment a split-mouth design was used on 15 patients with identical problems in each quadrant; one side was sutured with an anchor suture, and the other with a simple loop (around the second molar). The time taken to close the wounds was not significantly different, with the anchor suture group having the most favourable result.

Comment: This study examined the situation 6 months after surgery with two examiners blinded to the suture technique used. Primary closure of the flap improves wound healing, but periodontal problems later on may be symptomless and undetected in this region, which puts the second molar at risk. The authors comment that while their data revealed significant differences between the techniques, there is some doubt if they are clinically significant for patients.

Reference: Oral Surg, Oral Med, Oral Pathol, Oral Radiol Endod. 2009;108(2):156-61.

http://www.ooooe.net/article/S1079-2104%2809%2900173-5/abstract