ISSN 1178-6108

Dental Review™

Making Education Easy

Issue 22 – 2010

In this issue:

Welcome.

In this issue the ultimate research project for many readers has at last been revealed. It leaves the investigators with the best part of a bottle of good quality whisky to dispose of afterwards! This should bring a smile to their faces, and might make them live longer, according to another item in this issue of Dental Review.

Best wishes,

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The effect of horizontal X-ray beam angulation on the detection of furcation defects of mandibular first molars in intraoral radiography

Authors: Hishikawa T et al

Summary: Molar furcations may present major periodontal treatment problems. This experiment used three dried mandibles to determine whether horizontal X-ray beam angulation influences their detection. Simulated furcation defects were made by extracting five molars and the artificial defects were cut stage by stage with burs. Conventional films at angles from +30 to –30 degrees were taken after removal of each 1 mm of bone. The highest detectability was with mesial angulations from –10 to 20 degrees. The anatomical nature of the furcation was studied using CT examinations of a further 30 mandibles.

Comment: The oldies are the goodies, as it seems the angles used taking bitewings when looking for caries are suitable for furcation diagnosis. Reassuring too that some researchers haven't gone completely digital just yet.

Reference: Dentomaxillofacial Radiology 2010;39:85-90

http://dmfr.birjournals.org/cgi/content/abstract/39/2/85

Three cases of subpontic osseous hyperplasia of the mandible: A report

Authors: Islam MN et al

Summary: This benign condition is a submucosal mass of normal bone which develops under a bridge pontic. It was first described in 1971. The cause is largely unknown; it may be related to stress distribution or gingival inflammation, but rather oddly it is usually unilateral if the patient has bilateral pontics. Three cases are presented in patients aged 65, 78 and 80 years. One had an alveolar ridge osteoplasty and the histopathology report revealed dense lamellar normal bone.

Comment: The pictures in this article are interesting, with the subpontic spaces completely filled, making flossing difficult. There is at least one case known to staff at the School of Dentistry in Dunedin and the patient is apparently a dentist. Awareness of the condition could avoid an unnecessary biopsy for the patient.

Reference: Quintessence International 2010;41:299-302

http://tinyurl.com/2fenx9r

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

Bifid mandibular canals: cone beam computed tomography evaluation

Authors: Kuribayashi A et al

Summary: A bifid mandibular canal is one which separates posteriorly into two large branches. Surveys using panoramic images give a wide incidence; from 0.08 to 8.3%. Cone beam CT now offers sectional imaging. This study involved 252 patients attending for extraction of impacted third molars (301 mandibular sides). Over 15% of the sides had a bifid canal.

Comment: A panoramic study of cadavers from 1989 failed to show the mandibular canal at all in over a third of cases, highlighting the value of CT images and how panoramic images can lead to underestimation of bifid canals. In this study, the CT images detected canals as small as 0.88 mm in diameter, and bucco-lingual direction changes could be seen that would not be visible on panoramic images.

Reference: Dentomaxillofacial Radiology 2010;39:235-239

http://dmfr.birjournals.org/cgi/content/abstract/39/4/235

Comparison of the effect of ER,Cr-YSGG laser and ultrasonic retrograde root-end cavity preparation on the integrity of root apices

Authors: Rahimi S et al

Summary: Ultrasonic tips are usually used to cut the cavities made in the root ends of apicected teeth. This study compared the effect of the Waterlase laser and ultrasonic root-end cavity preparation on the integrity of the root ends of 60 extracted teeth. Teeth were root filled, resected and then the cavities prepared. One crack was found in the ultrasonic group and none in the lased teeth. Seven ultrasonically prepared specimens were chipped.

Comment: Cracks and chipping may influence marginal seal and the success of treatment, and there has been considerable research on this topic. It is complicated by the fact that some cracks may be artifacts due to storage of extracted teeth or processing them for microscopy. A cavity prepared with a laser may have other advantages – work in Dunedin has shown that lasing cavity walls may reduce leakage around some filling materials and that laser light in these cavities has an antibacterial effect.

Reference: Journal of Oral Science 2010;52:77-81

http://jos.dent.nihon-u.ac.jp/journal/52/77.pdf

University of Otago
Te Whare Wānanga o Otāgo

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

Research Review publications are intended for New Zealand health professionals

Cervical enamel projections in unusual locations: a case report and mini-review

Authors: Chan L-H et al

Summary: Local factors resulting in a build up of plaque may contribute to the progression of periodontal disease. Cervical enamel projections (CEP) are probably the most common anatomical factors involved in attachment loss in molar furcation areas. Studies report their prevalence as between 9–85%. The other ectopic enamel formation is the enamel pearl, which may be connected to the coronal enamel by a CEP and has a prevalence of around 2%. This paper presents tables summarising studies on these entities and also provides a case report.

Comment: Recent publications suggest a hereditary association between these anomalies. Surgery can allow resolution of inflammation, reduction in pocket depth and exposure of the defects.

Reference: Journal of Periodontology 2010;81:789-795

http://www.joponline.org/doi/abs/10.1902/jop.2009.090654?journalCode=jop

Effects of cigarette smoke and whiskey on the color stability of dental composites

Authors: Wasilewski MS et al

Summary: Composite resin materials are susceptible to discolouration from a variety of agents, including cigarette smoke and alcoholic drinks. Disc-shaped specimens (8 mm) of five composites in two shades were used in this laboratory study. Half of them were placed in a cigarette smoking machine. The other specimens were in whisky for 24 hours at 37C. Then the samples were subjected to the other agent. Colour readings were performed with a portable spectrophotometer. The whisky and then smoke process gave the most significant colour change, with translucent composites changing more than enamel shades.

Comment: The effects of alcoholic drinks and smoking on resin materials have been studied before, but not in combination. The important substrate here was Johnny Walker Red Label, and with only 250 mL used in the experiment there would be plenty left over to celebrate publication of the paper.

Reference: American Journal of Dentistry 2010;23:4-8

http://www.amjdent.com/Archive/Abstracts/2010/February%202010%20Abstracts.html

Relationship between mercury levels in blood and urine and complaints of chronic mercury toxicity from amalgam restorations

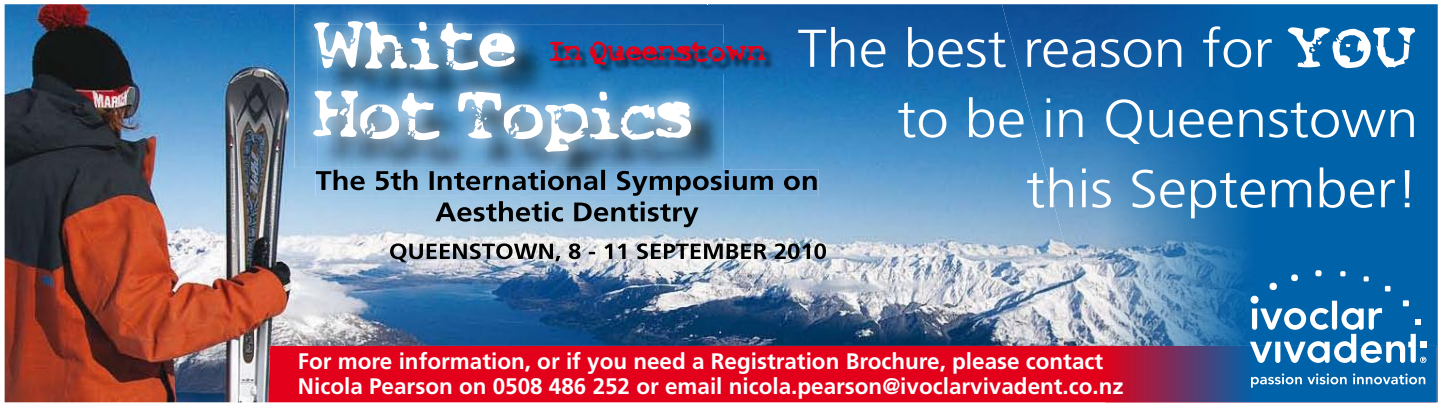
Authors: Eyeson J et al

Summary: Fifty-six patients who presented to an oral medicine unit believing their oral/medical conditions were caused by mercury toxicity from amalgam fillings were investigated. Their symptoms were charted and mercury levels in blood and urine tested by atomic absorbtion spectroscopy. None had mercury levels above normal threshold level. The number of amalgam restorations present was not significantly related to multiple sclerosis or previously diagnosed autoimmune disease.

Comment: The paper discusses environmental mercury and the relationship between fish consumption and blood mercury concentration. Three individuals with high initial readings tested normal after a period on a fish-free diet. The study suggests biochemical assessments may provide evidence for patients to make rational decisions about the cause of their symptoms and their perceived need to have their amalgam fillings removed.

Reference: British Dental Journal 2010;208:E7

http://tinyurl.com/2e55y7o



For more information, please go to http://www.ivoclarvivadent.co.nz

Comparison of cutting efficiencies between electric and air-turbine dental handpieces

Authors: Choi C et al

Summary: Seven dental materials including amalgam, metal alloys and Macor (a machinable glass ceramic) were cut 220 times; 110 times with an electric handpiece (Ti-Max NL 400, Brasseler) and 110 times with an air-turbine (Kavo). Two diamond and two carbide bur types were used. The weight of cut material was recorded and efficiency determined by analysis of this and the duration of the cut. The electric handpiece cut more efficiently. It was especially effective at cutting the high noble metal alloy, amalgam and Macor.

Comment: Electric handpieces have been available since the 1960s and are now gaining in popularity. Enthusiasts say their constant torque and lack of 'stalling' are major benefits. In this experiment, the turbine ran at 340,000 rpm and the electric handpiece at 200,000 rpm; at the same rpm the electric handpieces may be even better. The authors make a very interesting comment – most research on the cutting efficiency of burs was done before the development of high-speed handpieces.

Reference: Journal of Prosthetic Dentistry 2010;103:101-107

http://tinyurl.com/24or9pv

Effect of chewing gum on tooth sensitivity following tooth whitening

Authors: Tang B et al

Summary: Patients undergoing whitening procedures often report transient sensitivity afterwards. This study assessed if a chewing gum containing Recaldent (CPP-ACP) reduced this sensitivity and 88 patients were involved. Teeth were whitened with the Britesmile system, which uses 15% hydrogen peroxide gel and a blue LED light. One group acted as controls and the other participants were given sugar-free gums with or without Recaldent. A piece of gum was chewed for 10 minutes every hour and 12 pieces were supplied. Most patients (85%) reported sensitivity after whitening and the mean duration was 4.9 hours. The results suggested that using a sugar-free gum (with or without CPP-ACP) could reduce the intensity of sensitivity, but failed to demonstrate conclusively any additional benefit from the CPP-ACP.

Comment: The precise aetiology of sensitivity after bleaching is not understood. The peroxide can penetrate towards the pulp, and stain removal may open dentinal tubules. The lack of benefit may have been because of the low CPP-ACP concentration (0.6%) in the gum. Pastes with 10% CPP-ACP could be tested in future studies.

Reference: British Dental Journal 2010;208:571-577

http://www.nature.com/bdj/journal/v208/n12/abs/sj.bdj.2010.500.html

Smile intensity in photographs predicts longevity

Authors: Abel EL et al

Summary: Two hundred and thirty photographs were collected from *The Baseball Register* for 1952 and enlarged to twice their original size. They were rated for smile intensity by five assessors and dates of death investigated. The *Register* allowed various factors influencing longevity to be controlled, including body mass index, career length (continued fitness and performance), marital status and education. Players giving the biggest grins in the photographs lived 5 years longer than those who kept a straight face.

Comment: This study is the first to link smile intensity to a biological outcome – longevity. Previous studies have revealed that smile intensity in childhood photographs and school yearbooks correlates with marriage stability and satisfaction. Perhaps even a forced smile stimulates the brain in a similar way to real happiness?

Reference: Psychological Science Published February 26, 2010 as doi:10.1177/0956797610363775

http://pss.sagepub.com/content/early/2010/02/26/0956797610363775.citation