

In this issue:

- Bacteraemia due to dental flossing
- Bleaching agents activated by different light sources
- VRF detection by CBCT
- Splinting duration and periodontal outcomes
- Acid inhibition by fluoride in GIC
- Periodontitis and atherosclerosis risk
- Corticosteroids and NSAIDs after third molar surgery
- Amalgam vs. tooth-coloured restorations in young patients
- Managing patients receiving antithrombotic drugs
- Outcomes of third molar transplantation

Welcome to issue nine of the Dental Review.

We hope you enjoy reading this selection of papers on the latest dental research.

This edition includes a paper disclosing that there are few evidence-based guidelines for managing our surgical patients who are receiving antithrombotic medications, although our guidelines in Australia do measure up well. The use of nonsteroidal anti-inflammatory drugs (NSAIDs) and steroids following third molar surgery is reviewed, and another paper demonstrated that released fluoride, and its acid-inhibiting effects, may be the mechanism behind inhibition of bacterial growth around glass ionomer cement (GIC) fillings.

As always, your feedback is welcome.

Kind regards,

Dr Shilpi Ajwani

Clinical & Research Manager, Sydney South West Area Oral Health Service

shilpiajwani@researchreview.com.au

Bacteraemia due to dental flossing

Authors: Crasta K et al

Summary: The relationship between bacteraemia and dental flossing was explored in this study involving 30 patients with chronic periodontitis and 30 with periodontal health. Blood samples obtained 30 seconds after flossing revealed bacteraemia in 40% and 41% of participants with and without periodontitis, respectively, and the most commonly isolated organism was *Viridans streptococci* (19% of positive participants and 35% of microbial isolates). At 10 minutes after flossing, 20% of participants had bacteraemia. No clinical or patient factors associated with bacteraemia after flossing were identified.

Comment: The recent UK guidelines for prevention of infective endocarditis (IE) do not recommend antibiotic prophylaxis for dental procedures. They advocate that the risk of IE following dental procedures is no greater than everyday oral hygiene habits like brushing. This study reported a high incidence of bacteraemia after flossing in both healthy individuals and those with periodontitis. However, the incidence of *Viridans Streptococci* (principal pathogen in IE) postflossing was much lower than reported after dental procedures.

Reference: *J Clin Periodontol* 2009; 36(4): 323-32
<http://www3.interscience.wiley.com/journal/122252116/abstract>



Subscribe for Free to Dental Review at

www.researchreview.com.au

In vitro evaluation of the effectiveness of bleaching agents activated by different light sources

Authors: Lima DANL et al

Summary: The efficacy of tooth whitening and colour stability was investigated in human molars at different time periods after bleaching with 35% hydrogen peroxide ('Whiteness HP' and 'Opalescence Xtra') or 37% carbamide peroxide ('Whiteness Super'), activated with halogen lamp and plasma arc lamp, LED/diode laser, argon laser or no light source. Carbamide peroxide was associated with lower reflectance values on spectrophotometry than hydrogen peroxide. The mean reflectance of the hydrogen peroxide product 'Whiteness HP' activated by argon laser was lower than all other gels, among which the reflectances were similar. One month after treatment, the reflectance had decreased for the hydrogen peroxide-treated teeth, but not the carbamide peroxide-treated teeth.

Comment: In-office bleaching systems use high concentrations of hydrogen peroxide or carbamide peroxide in order to provide faster and effective treatment. Earlier systems recommended heat as the catalyst, but the recent systems use light to accelerate the chemical reaction. Interestingly, depending upon the temperature, pH, light and co-catalysts, hydrogen peroxide can form different types of free radicals and this is responsible for variability in final whitening outcomes among different individuals.

Reference: *J Prosthodont* 2009; 18(3): 249–54
<http://tinyurl.com/pf79ft>

Detection of vertical root fractures in endodontically treated teeth by a cone beam computed tomography scan

Authors: Hassan B et al

Summary: In this study, 80 teeth were divided into groups A–D, and teeth in groups A and B were fractured and the teeth in groups A and C were root filled. Cone beam computed tomography (CBCT) was compared with periapical radiography (PR) for detecting vertical root fractures (VRFs) in the teeth. The respective sensitivities and specificities for detection of VRFs were 79.4% and 92.5% for CBCT, and 37.1% and 95% for PR. The presence of a root canal filling decreased the specificity of CBCT, but not the overall accuracy, while both sensitivity and specificity were reduced for PR. Overall, the accuracy of VRF detection associated with CBCT was superior to PR (0.86 vs. 0.66).

Comment: The CBCT scan uses a cone shaped x-ray beam to acquire a 3 dimensional scan of the patient's head in a single 360° rotation. The ability to view images in different dimensions and in thin slices along with its inherent higher contrast makes CBCT scans far superior than the conventional 2-dimensional PRs in detecting VRF. The CBCT scans are also more accurate in detecting VRF in the mesial and distal regions where the 2-dimensional PRs completely fail because of superimposition.

Reference: *J Endod* 2009 35(5): 719–22
<http://tinyurl.com/o9dos2>

Splinting duration and periodontal outcomes for replanted avulsed teeth

Authors: Hinckfuss SW et al

Summary: This systematic review identified 138 replanted avulsed permanent teeth from four papers reporting both short-term (≤ 14 days) or long-term (> 14 days) splinting undertaken in accordance with current guidelines. There was inconclusive evidence linking short-term splinting with an increased likelihood of functional periodontal healing, acceptable healing or decreased development of replacement resorption. Moreover, no evidence was found to challenge the current guidelines, and available data indicate that splinting duration appears to have no effect on successful periodontal healing after replantation; however, the review was hampered by small sample sizes and methodological limitations in the reviewed studies. The authors advised that unless future research produces contradictory findings, dentists should continue adhering to current guidelines.

Comment: The duration of splinting as per the current International Association of Dental Traumatology guidelines is up to 2 weeks if the extra oral dry time is < 60 minutes and up to 4 weeks if > 60 minutes or the tooth is immature. The findings of the systematic review suggest that although the splinting time is not as crucial as the viability of periodontal ligament cells (strongly determined by extra oral time and storage conditions) for functional periodontal healing, the current guidelines for splinting are well supported by evidence.

Reference: *Dent Traumatol* 2009; 25(2): 150–7
<http://www3.interscience.wiley.com/journal/122241861/abstract>

Fluoride released from glass-ionomer cement is responsible to inhibit the acid production of caries-related oral streptococci

Authors: Nakajoa K et al

Summary: This study investigated the inhibitory effects of glass-ionomer cements (GICs) on caries-related oral *Streptococcus mutans* and *S. sanguinis* acid production using an eluate prepared by immersing set GIC in phosphate-buffered saline for 24 hours at 37°C. The eluate included silicon (1.24mM), fluoride (0.49mM) and aluminium (0.06mM), and it inhibited acid production of both caries-related oral *Streptococci* spp. at acidic pH. This effect was due to GIC-derived fluoride, and suggests that a cariostatic environment may develop around GIC fillings.

Comment: The rise in popularity of the GICs is because it is less cytotoxic to periodontal tissues than resin-based materials, has the ability to attract less plaque and inhibit bacterial acid production that results in a decreased risk of demineralisation and increased remineralisation of surrounding surfaces. The primary mechanism of action is its ability to release fluoride, as was demonstrated in this study, and to act as a reserve by absorbing fluoride.

Reference: *Dent Mater* 2009; 25(6): 703–8
[http://www.demajournal.com/article/S0109-5641\(08\)00290-X/abstract](http://www.demajournal.com/article/S0109-5641(08)00290-X/abstract)

Periodontitis and risk for atherosclerosis: an update on intervention trials

Authors: Tonetti MS

Summary: The nature of the association between periodontitis and cardiovascular (CV) events was explored by investigating whether or not the risk is attenuated by successful periodontal treatment. An evaluation of early systematic reviews and a definitive clinical trial suggested that systemic inflammation was decreased and endothelial dysfunction was improved in systemically healthy individuals who had undergone intensive periodontal treatment. One pilot trial indicated that it is feasible to evaluate the effect of periodontal treatment on carotid atherosclerosis in a primary cardiac prevention design.

Comment: The classic risk factors like high lipids, hypertension, diabetes and smoking have been unable to explain all the incidence of CV disease, leading researchers to look at other factors. Of late, chronic infections like periodontitis have been suggested as possible contributors for atherosclerosis. In order to determine if this link is causal or simply due to sharing of common risk factors interventional RCTs are essential. The findings presented in this article strongly suggest that the role of periodontitis as a risk factor for CV disease cannot be ruled out.

Reference: *J Clin Periodontol* 2009; 36 (Suppl 10): 15–9
<http://www3.interscience.wiley.com/journal/122380917/abstract>

The use of corticosteroids and nonsteroidal anti-inflammatory medication for the management of pain and inflammation after third molar surgery

Authors: Kim K et al

Summary: This paper reviewed the literature on the use of corticosteroids and NSAIDs following third molar surgery. The evidence from the literature indicated that: 1) NSAIDs are recommended for pain and corticosteroids for postoperative swelling and trismus in most studies; 2) the combination of another drug with an NSAID is usually more effective for reducing pain and inflammation than NSAID monotherapy; 3) corticosteroids are indicated only for complex dental surgeries that result in moderate-to-severe trauma (e.g. removal of ≥ 1 partial bony or fully bony impacted third molar); 4) steroids should be administered for 3–5 days to maintain their anti-inflammatory effect while minimising healing delays and adverse effects; and 5) steroids are best administered intravenously, although oral use is often more convenient, cost effective and safer.

Comment: Complex oral surgery procedures like extraction of at least one partially or fully impacted third molar often results in trauma that is considered moderate to severe. While careful surgical technique is essential, use of appropriate medication is equally important to prevent unnecessary postoperative pain, oedema and trismus. The findings suggest that a combination of corticosteroids and NSAIDs is more effective in managing postoperative pain and swelling than NSAIDs alone. Also, glucocorticoids are very effective in controlling the effects of inflammation, but only if given in adequate doses. A very informative article.

Reference: *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009; 107(5): 630–40
[http://www.ooooo.net/article/S1079-2104\(08\)00846-9/abstract](http://www.ooooo.net/article/S1079-2104(08)00846-9/abstract)

Factors influencing dentists' choice of amalgam and tooth-colored restorative materials for class II preparations in younger patients

Authors: Vidnes-Kopperud S et al

Summary: In this study investigating the factors that influenced 27 Norwegian dentists' choice of material in 4030 restorations among 1912 paediatric patients, resin composite was used in 81.5% of cases, compomer in 12.7%, amalgam in 4.6% and glass ionomer cement in 1.2%. Significantly more restorations used tooth-coloured materials than amalgam ($p=0.017$), and amalgam was used significantly less often for females than for males ($p=0.006$). The use of amalgam was more frequent in: 1) patients with a high number of previous caries; 2) restoration of deeper dentine caries than in caries near the dentino-enamel border; and 3) molars than premolars. A logistic regression analysis revealed that the factors significantly associated with the choice of material included gender, previous caries experience, caries severity and tooth type.

Comment: It is important to keep in mind that the study was conducted in Norway where amalgam use has been abandoned for almost 10 years due to environmental concerns. The trend to move away from amalgam is noticed in most private practices here in Australia, and although amalgam is commonly used for posterior restorations among adults in the public clinics, alternative restorative materials are preferred for deciduous and permanent teeth of younger patients.

Reference: *Acta Odontol Scand* 2009; 67(2): 74–9
<http://tinyurl.com/ActaOdontolScand-67-74>

Independent commentary by Dr Shilpi Ajwani, Clinical & Research Manger, SSW-OHS, Clinical Senior Lecturer, Faculty of Dentistry, University of Sydney. Research Review publications are intended for Australian dental professionals.

Contact Research Review

to advertise your medical conference or educational meeting in this publication...

Email us at

admin@researchreview.com.au

or call 1300 132 322

Dental Review
Back issues are available at



www.dentalreview.com.au

Dental management of patients using antithrombotic drugs: critical appraisal of existing guidelines

Authors: van Diermen DE et al

Summary: Of the 93 literature search results for guidelines on the management of invasive dental procedures in patients receiving antithrombotic pharmacotherapy, only four evidence-based practice guidelines were identified. Only two of these were judged to be consistent with the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument, and advised to not routinely interrupt anticoagulation or antiplatelet therapy prior to surgical dental procedures. However, the authors noted that the majority of the 58 recommendations included in these guidelines were not adequately linked to evidence levels.

Comment: As highlighted in this paper, there are no clear guidelines regarding dental management of patients receiving antithrombotic agents internationally, and the same is true for Australia. The recommendations followed in Australia are very similar to those listed in this paper, but, as suggested by the authors, are more practice based rather than evidence based. Another good article.

Reference: *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009; 107(5): 616–24
[http://www.ooooe.net/article/S1079-2104\(09\)00086-9/abstract](http://www.ooooe.net/article/S1079-2104(09)00086-9/abstract)

Evaluation of tooth position, occlusion, and interproximal contacts after transplantation of immature third molars

Authors: Bauss O et al

Summary: The position, occlusion and interproximal contacts of 139 transplanted third molars (136 patients) were investigated in this study; 92 teeth were placed in favourable positions and left to erupt spontaneously, and the remainder were transplanted into atrophied jaw sections and required postoperative adjustments. Findings after a mean observational period of 4.4 years included: 1) an absence of occlusal contacts in >30% of transplanted teeth; 2) an absence of both interproximal contact in >15%; 3) inadequate position in >40% of teeth where subsequent orthodontic treatment was not undertaken; and 4) the poorest outcomes occurred in maxillary teeth transplanted into the mandible.

Comment: Transplantation procedures usually involve placement of a tooth (usually third molars) at the site of a freshly extracted unretainable tooth in a young individual. Once positioned in a favourable buccolingual position and fixed in infra-occlusion for 7 days, the tooth is expected to erupt into the occlusal plane and occupy the space of the extracted tooth. The study concluded that these teeth very rarely become fully functional unless they undergo additional orthodontic adjustment.

Reference: *Eur J Orthod* 2009; 31(2): 121–8
<http://ejo.oxfordjournals.org/cgi/content/abstract/31/2/121>

RESEARCH REVIEW

Making Education Easy

www.researchreview.com.au

View the latest job listings at



Healthcare Jobs

www.researchreview.com.au/jobs.cfm

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.