

Dental Review

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Issue 2 - 2007

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Welcome to the second edition of **Dental Review**, a unique New Zealand publication bringing you some of the most important scientific research from around the world every month. We summarise the best we can find to save you time doing the same thing, and I hope my comments on the results helps make your job easier.

We have been absolutely delighted with the response to issue 1, and the enrolments and comments have been flooding in. Thanks to everyone who took the time to provide feedback to the first edition and to our sponsors for their ongoing commitment.

We hope you find this issue stimulating and look forward to your comments and opinions.

Kind regards,

Associate Professor Nick Chandler

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Chlorhexidine and preservation of sound tooth structure in older adults – a placebo-controlled trial

Authors: Wyatt C et al

Summary: This study involved 1,101 low income people aged 60-75 years in Seattle and Vancouver. It examined the effectiveness of a 0.12% chlorhexidine solution for controlling caries, and used a tooth surface survival analysis. Sound surfaces were followed-up annually for up to 5 years, while the subjects alternated between daily rinsing for one month followed by weekly rinsing for 5 months. Regular chlorhexidine rinsing by these older adults did not have a substantial effect on preservation of sound tooth structure.

Comment: Chlorhexidine rinsing may represent a low cost and effective aid for older adults to assist in retaining some natural teeth. The analysis used involved root surfaces as well as coronal caries, with surfaces carious, restored or extracted scored as carious. The subjects were given no special oral hygiene instruction, and a placebo rinse containing alcohol and colour additives was used. No adverse effects were reported by the participants. The study group featured people with irregular access to dental care and a history of poor home care. Slightly more than 1% became edentulous during the study and a further 5% died during it.

Reference: *Caries Research* 2007;41:93-101

PMID: 17284909



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Orthodontic root resorption of endodontically treated teeth

Authors: Esteves T et al

Summary: The study evaluated with radiographs whether there was a similarity in apical root resorption between root treated and untreated teeth when they were moved orthodontically. From 2,500 records 16 patients were selected with maxillary central incisors with the two conditions. Periapical radiographs were measured before and after orthodontic treatment, and no significant differences found.

Comment: Concerns about moving root filled teeth are quite common, so this experiment is reassuring. The numbers involved show just how difficult it is to design an experiment of this type. Only two of the 32 teeth measured did not show apical resorption. One of these was vital, and the other root treated.

Reference: *Journal of Endodontics* 2007;33:119-122
PMID: 17258627



*Independent commentary
 by Associate Professor
 Nick Chandler,
 Oral Rehabilitation Dept,
 University of Otago.*

Xerostomia and medications among 32-year-olds

Authors: Thomson W et al

Summary: This study from New Zealand followed the 1,037 people born in Dunedin in 1972-73 and examined at age 32 years 972 of the 1,015 subjects still living. Data concerning dry mouth and medication were available for 950 individuals. Of 308 taking two or more medications, 15% reported xerostomia. It was reported by 11% of 302 taking one medication, and in 5% of 340 on no medication. Just over 11% reported a chronic medical condition. Antidepressants were a significant factor at ages 26 and 32, with 22 times the odds of reporting the condition. Some medical conditions were also implicated.

Comment: Most research on xerostomia concerns older people, but in this work on younger people about 10% reported the symptom. The authors note that the associations may be because of the conditions treated, rather than the medications involved.

Reference: *Acta Odontologica Scandinavica* 2006;64:249-254
PMID: 16829502

A prospective clinical study of mineral trioxide aggregate for partial pulpotomy in cariously exposed permanent teeth

Authors: Barrieshi-Nusair K et al

Summary: Thirty one permanent molars of patients with an average age of 10 years (range 7.2-13.1 yrs) with a carious exposure were treated using a partial pulpotomy technique. Clinically and radiographically the teeth were normal before the treatment. Superficial layers of exposed pulp were removed with a flame-shaped diamond bur in a high speed hand piece to a depth of 2 to 4 mm. The wound was flushed with saline, bleeding controlled and MTA placed. The cavity floor was then covered with Vitrebond and the final restoration was with amalgam or a stainless steel crown. Teeth were reviewed at 3, 6, 12 and 24 months, with the radiographs viewed by two investigators looking at apical condition and root maturity.

Comment: Partial pulpotomy (the removal of 2-3 mm of inflamed coronal pulp) has been reported to have high success rates. Calcium hydroxide may dissolve with time and does not adhere to dentine. The authors suggest that this treatment using MTA is reliable in young cariously exposed permanent teeth. MTA has already shown promise as a direct pulp cap. This is a small study and the writer is aware of other workers who do not intend publishing their pulpotomy data until they have 5 year results for over 100 teeth. Their success to date is also very high. The treatment described in this paper was by specialists, and the authors recommend it to all practitioners.

Reference: *Journal of Endodontics* 2006;32:731-735
PMID: 16861071

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Traumatic injuries to the primary dentition and effects on the permanent successors- a clinical follow-up study

Authors: Sennhenn-Kirchner S et al

Summary: One hundred and six children treated in a German hospital for dental trauma to their primary dentition were followed-up for 5 years. Two hundred teeth were involved, 71% of them maxillary central incisors. For 39 of the children 20 permanent teeth were affected. Ten had enamel hypoplasia, 5 deformed roots or crowns and 5 had eruption abnormalities. Intrusion seemed to cause most of the deformities, and involved other developing teeth, while subluxation, avulsion or root fracture of the primary teeth caused hypoplasia and eruption problems.

Comment: The strong take-home message is that about one quarter of the permanent successors were affected in some way. A second point is the author's inability to predict permanent tooth damage at the time of injury to the primary dentition, and the recommendation for regular follow-up.

Reference: *Dental Traumatology* 2006;22:237-241

PMID: 16942552

Dose-related effects of epinephrine on human gingival blood flow and crevicular fluid production used as a soaking solution for chemo-mechanical tissue retraction

Authors: Csillag M et al

Summary: Epinephrine (adrenaline) is used to impregnate retraction cord, one reason being that cord removal provokes a hyperaemic response. Epinephrine, however, may provoke local or systemic effects. In this study 17 subjects had their crevicular fluid volume measured using a Periotron and gingival blood flow assessed using a laser Doppler flowmeter. Measurements were made around a maxillary central incisor before and after cord removal, with the other incisor acting as control.

Cords were soaked in saline (control) and various concentrations of epinephrine. Blood pressures and heart rates were also monitored. In the saline group cord removal resulted in elevated blood flow; blood flow remained low with 0.01 and 0.1% epinephrine. No systemic effects were found.

Comment: This work suggests low concentrations of epinephrine on retraction cords are valuable to maintain the gingival sulcus in a relatively dry condition for impression taking. Future studies could investigate how these materials influence impression quality, and also look at the effect of astringents.

Reference: *Journal of Prosthetic Dentistry* 2007;97:6-11

PMID: 17280855

Factors that affect individual tooth prognosis and choices in contemporary treatment planning

Authors: Mordohai N et al

Summary: Dentists evaluate teeth for their quality of health, and make judgements concerning survival. This paper is a very comprehensive review of compromised teeth, with the focus on single teeth and potential implant restoration.

Comment: This interesting paper comes from the University of Southern California and parts of it were originally published there. It provides an excellent overview of what to do with a 'dodgy' tooth. Is it really of poor prognosis? Should it be restored, or should it be replaced with an implant? Wisely, the first sentence in the Discussion is "there are no rules or formulae in dentistry that provide straightforward answers." There is much useful information here, most of which could be used when talking to patients about treatment options. There is a strong focus on success rates which could influence treatment costs and future plans.

Reference: *British Dental Journal* 2007;202:63-72

PMID: 17255985

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The effect of the distance between post and residual gutta-percha on the clinical outcome of endodontic treatment

Authors: Moshonov J et al

Summary: The clinical outcome of 94 root filled teeth with post and core restorations were evaluated radiographically. Teeth were divided into 3 groups, those with no gap between the gutta-percha root filling and the post, those with a >0 to 2 mm gap, and others with a gap over 2 mm. A gap between the root filling and post was related to an increased rate of emerged disease, with 83% of teeth in the first group normal and only 29 normal if the gap was over 2 mm.

Comment: A gap between the post and the root filling is a common finding, but is it cement-filled or an actual void? In this dental school study the periapical tissues were considered normal before treatment. The figures for disease are surprisingly high, explained by the authors as the result of treatment by undergraduate students. Included in the study were 53 molar teeth; in New Zealand while students are taught how to place posts in molars, it is stressed that this is a treatment of last resort. Posts should be placed without delay, and if possible the post hole preparation and cementing be done using a rubber dam as isolation. If space allows, a barrier material should be placed over the root filling, especially if a delay in restoration is anticipated.

Reference: *Journal of Endodontics* 2005;31:177-179
PMID: 15735463

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Spurious associations in oral epidemiological research: the case of dental flossing and obesity

Authors: Hujoel P et al

Summary: This paper reports a cross-sectional study in which 1,479 individuals underwent a periodontal examination by a specialist. Their self-reported flossing activities and body mass index (BMI) were also recorded and related using a logistic regression model. The authors found that the higher the BMI, the less likely the individual was to floss.

Comment: Flossing has been used as an indicator of medical health protective behaviour for some years, with one paper suggesting that it may extend your life by over 6.4 years! Periodontitis has been related to many systemic diseases. In this study it was related to age, gender, smoking and the BMI. Morbid obesity was strongly associated with a lack of flossing. Should we floss more to lose weight? This paper alerts us to the complexity of oral epidemiological research, and the great difficulty with confounding factors and determining what is really causally related.

Reference: *Journal of Clinical Periodontology* 2006;33:520-523
PMID: 16899093

Forced eruption and implant treatment in the posterior maxilla: a clinical report

Authors: Erkut S et al

Summary: Bone resorption and pneumatization of the maxillary sinus complicate implant placement in the posterior maxilla. Orthodontic treatment (forced eruption) may improve hard and soft tissue dimensions around periodontally compromised teeth. The patient in this report underwent extrusion of teeth with poor prognosis following scaling and root planing. Regular occlusal reduction was carried out, followed by extraction of the teeth and the immediate placement of two implants.

Comment: The authors clearly spent considerable time explaining options and gaining a signed informed consent statement before treatment began. The treatment involves orthodontic treatment and increased treatment time compared to some alternatives. The pulps of the teeth moved were also extirpated and calcium hydroxide dressings placed, adding to time and costs.

Reference: *Journal of Prosthetic Dentistry* 2007;97:70-74
PMID: 17341373

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