

Dental Review™

Making Education Easy

Issue 39 – 2013

In this issue:

- > *Jay sensitivity sensor probe*
- > *Light-curing training*
- > *Minocycline problems*
- > *Seeking help for TMD pain*
- > *Crown survival at 25 years*
- > *Piezosurgical autotransplantation*
- > *Metals in preformed crowns*
- > *Hypersensitivity practice-based study*
- > *Expanding root-filling points*
- > *Amelogenesis imperfecta*

Welcome to the 39th Dental Review. Practice-based research is a sort of theme in this issue, with studies on tooth sensitivity and crown survival featured. This is a type of research the Faculty in Dunedin intends to promote; work is underway setting up ARCH, Applied Research through Clinician's Hands. Maybe this is an activity that readers and their practices will be able to embrace in the near future? I certainly hope so. The email address to contact is sjwri.crp@otago.ac.nz.

Best wishes,

Nick Chandler
Associate Professor

Department of Oral Rehabilitation, University of Otago
nickchandler@researchreview.co.nz

Clinical evaluation of the Jay Sensitivity Sensor Probe: A new microprocessor-controlled instrument to evaluate dentin hypersensitivity

Authors: Sowinski JA et al

Summary: Dentine sensitivity can be assessed using a cold air blast, a tactile stimulus, an electronic probe or a visual analogue scale. The new Jay probe, made in India, is foot controlled and applies a force in preset increments, beeping and giving a digital readout as it works. Its repeatability was checked by two dentists, with their subjects using a control and two desensitising tooth pastes.

Comment: Some 112 patients were involved in two studies and there was low variability between the two examiners. The new device is reported to be easy to use and to generate reliable and reproducible data; its results correlated significantly with the other sensitivity measurements. And dentists love things that go beep.

Reference: *Am J Dentistry* 2013; 26 Sp Is B:5B-12B

<http://tinyurl.com/lf5kpao>



Fluor Protector S

The protective fluoride varnish provides superior protection against dental caries and erosion.

Fluor Protector S features a homogeneously dissolved fluoride source which ensures immediate availability of the fluoride – as a result, dental enamel is directly and effectively supplied with fluoride.

- 7700 ppm fluoride in a homogeneous solution; approximately four times higher concentration after setting
- Mild flavour, mild smell
- Multi-dose and single-dose units



Scan here for more information

CLICK here to order your free sample TODAY!

ivoclar vivadent
passion vision innovation

Improving light-curing instruction in dental school

Authors: Federlin M, Price R

Summary: This experiment measured the radiant exposure 63 students gave when light curing a simulated restoration to find out if immediate feedback on their performance would increase the light delivered. Two 10-second bursts were given with the curing light. The students delivered a mean of 9.8 J/cm² initially, which increased to 13.2 J/cm² after instructions on improving their technique. A common fault was not wearing orange (blue-blocking) eye protection and looking away from the 'patient'. Not stabilising the curing unit with a finger rest and drifting away from the tooth were also noted.

Comment: Something so easy to do needs care and thought; because it is not complicated it gets little attention. Nobody wants the soggy bottom which can be the outcome of poor curing. The authors found that 16% of the students did not deliver the minimum energy needed to adequately cure the test material. Students closer to graduating showed a greater improvement in their technique, but one training session helped them all. Extra sessions could be of benefit too.

Reference: *J Dent Educ* 2013;77(6):764-72

<http://www.jdentaled.org/content/77/6/764.abstract>

Feeling blue? Minocycline-induced staining of the teeth, oral mucosa, sclerae and ears – a case report

Author: Johnston S

Summary: Minocycline is a tetracycline family antibiotic often used to treat skin infections. It can stain the sclerae, ears, gingiva and teeth. The patient in this case report complained of discolouration that appeared over several years until she lost confidence at her workplace. She had taken minocycline for her acne and/or rosacea for 20 years; there was no history of tetracycline use in childhood. The incisors were the worst affected teeth, and the oral mucosal colouration was mostly on the labial side of the maxilla.

Comment: A good warning about the uncommon but Smurf-inducing effects of long-term minocycline use. No photograph of the eyes is shown as the patient would not consent to this. Sadly, the authors say that most of the discolouration is irreversible, with the possible exception of the teeth which although intrinsically stained may respond to vital bleaching. The mucosal colour is thought to come from the underlying discoloured bone.

Reference: *Br Dent J* 2013;215(2):71-3

<http://www.nature.com/bdj/journal/v215/n2/full/sj.bdj.2013.682.html>

CLICK HERE

to read previous issues of
Dental Review

Why seek treatment for temporomandibular disorder pain complaints? A study based on semi-structured interviews

Authors: Rollman A et al

Summary: Not all patients in pain seek help, with an estimated half of those with temporomandibular disorder (TMD) pain wanting some treatment. This research investigated 8 subjects who sought care and 8 non-care seekers, using recordings of semi-structured interviews lasting 30 minutes to one hour. Seven themes identified the two groups; catastrophising, pain management, assertiveness, critical attitude towards health care, confidence in medical care, recognition and adequate referral. These are mainly person-related characteristics.

Comment: The subjects were from a group of 203 with reports of TMD pain, with the care seekers having at least one visit to a health practitioner in the past about their discomfort. Eight seems a small group, but after 7 pairs of subjects had been investigated no new information was discovered. Interviews may give us an indication of the manner in which patients look for help with their TMD problems.

Reference: *J Orofac Pain* 2013;27(3):227-34

<http://tinyurl.com/klyl2e9>

The up to 25-year survival and clinical performance of 2,340 high gold-based metal-ceramic single crowns

Author: Walton TR

Summary: The author investigated all crowns provided for 670 of his patients between 1984 and 2008, recalling them in 2008 and 2009. The 10-year estimated survival of the 2,211 favourably rated crowns was 97% and at 25 years over 85%. There were no significant differences related to sex, tooth type or tooth position. Ten-year outcomes closely matched estimated 10-year survival. Biological factors accounted for the majority of failures.

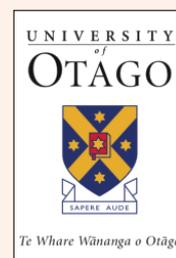
Comment: A phenomenal practice-based study, based on the work of one dentist and something I am sure we will cite for many years to come. The clinical performance of these crowns is excellent (porcelain fracture requiring replacement in only 4). Patient complaints about aesthetics meant that 22 crowns were replaced, but after a mean time in service of 14 years. The author emphasises the need to group all results of this type into work done in either the pre- or post-implant eras.

Reference: *Int J Prosthodont* 2013;26(2):151-60

<http://www.ncbi.nlm.nih.gov/pubmed/23476910?dopt=Abstract>

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

For full bio [CLICK HERE](#)



Use of the piezosurgery technique for cutting bones in the autotransplantation of unerupted third molars

Authors: Koszowski R et al

Summary: Autotransplantation if successful can be used to fill an edentulous space without the need for conventional prosthetic replacement or an implant. Damage to the periodontal fibres must be avoided or root resorption or ankylosis may result. The authors report the use of piezosurgery (ultrasound) using blades that cut only mineralised tissues, so do not damage the periosteum, periodontium and blood vessels. They removed a mandibular third molar and replaced a first molar. The roots of the doomed tooth were separated ultrasonically as part of the extraction, and the socket reshaped with implant drills to receive the donor tooth, which was inserted but not splinted.

Comment: Space was left in the periapical region of the socket to allow continued root development of the transplanted tooth. Pulp tests were positive at 4 months and root end closure complete after 3 years. A tooth with complete apical closure would require root canal treatment. Autotransplantation slips into and out of the literature on a fairly regular basis, so the relatively atraumatic way of doing it reported here may raise interest again.

Reference: *Int J Periodontics Restorative Dent* 2013;33(4):477-81

<http://www.ncbi.nlm.nih.gov/pubmed/23820707>

Release and systemic accumulation of heavy metals from preformed crowns used in restoration of primary teeth

Authors: Kodaira H et al

Summary: In this Japanese study the authors examined systemic accumulation of heavy metals in 37 patients (mean age 9.1 years) where stainless steel crowns were used to restore primary teeth. Twenty-two patients had a history of having the crowns and 15 were currently wearing them. Hair samples showed a significant difference in chromium levels but not of iron or nickel between the past and current crown wearers. These elements were within allowable ranges (parts per billion).

Comment: Hair sampling (trichoscopy) is a simple and minimally invasive method to assess systemic accumulation of heavy metals, so it was ideal in these young people. It reflects the level of elements present in the blood during hair growth, and involves collecting 0.2 g (about 3 cm) of hair from close to the scalp. The vanadium level in the participants was high, reflecting the high level of this element in tap water sourced from Mt. Fuji.

Reference: *J Oral Sci* 2013;55:161-5

https://www.jstage.jst.go.jp/article/josnurd/55/2/55_161/article

A practice-based randomised controlled trial of the efficacy of three interventions to reduce dentinal hypersensitivity

Authors: Gibson M et al

Summary: Three groups of general practice patients with sensitive teeth were involved in this study. Twenty-five used normal toothpaste, 25 a desensitising paste and 25 received a single application of a topical desensitising agent. The patients used a visual analogue scale to record a response to a short air blast after 2 weeks, 3 months and 6 months. The application of the dentine bonding agent gave the best results, and the desensitising paste was more effective than the normal toothpaste.

Comment: The authors comment that including a no-treatment control would have improved their study design, but here is another nice piece of practice-based research. Randomised, controlled clinical trials in these settings are uncommon. Only three subjects did not complete the trial, two of them having moved away or emigrated.

Reference: *J Dent* 2013;41(8):668-74

[http://www.jodjournal.com/article/S0300-5712\(13\)00152-8/abstract](http://www.jodjournal.com/article/S0300-5712(13)00152-8/abstract)

Privacy Policy: Research Review will record your email details on a secure database and will not release them 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.

Research Review publications are intended for New Zealand health professionals.

NEW

Child Health Research Review

Child Health Research Review contains a selection of recently published papers with commentary on important research and how it can potentially impact current practise. The commentary is provided by paediatric medical specialists based at the Starship Children's Hospital and covers various specialist areas including Gastroenterology/Hepatology, Nephrology, Neurology, Developmental Paediatrics, Diabetes and Endocrinology, Infectious Diseases and Respiratory.

[CLICK HERE TO SUBSCRIBE](#)

Looking for healthcare jobs?

trade me
JOBS 

www.trademe.co.nz/jobs

Time-based lateral hygroscopic expansion of a water-expandable endodontic obturation point

Authors: Didato A et al

Summary: The search for an alternative core material to gutta-percha for root canal fillings continues. These new points are made of an inner core of two nylon polymers that is surrounded by a polymer coating. The study investigated the expansion of two sizes of the water-expandable points by photographing at 50x magnification and measuring changes for 24 hours after adding water. There was significant lateral expansion within 20 minutes. Comparably sized gutta-percha points showed no change.

Comment: The recommended sealer (not mentioned in the paper) is Hyseal-bio, a premixed hydrophilic material based on calcium silicate. So we can think of this as a contact lens plastic, expanding to compress a slow setting sealer into canal irregularities. Will this contribute to vertical root fractures? Contact with the canal wall is said to reduce the rate or extent of polymer expansion. Older readers will remember silver points, so it's nice to see new things on the horizon.

Reference: *J Dent* 2013;41(9):796-801

[http://www.jodjournal.com/article/S0300-5712\(13\)00161-9/abstract](http://www.jodjournal.com/article/S0300-5712(13)00161-9/abstract)



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

Assessment of restorative treatment of patients with amelogenesis imperfecta

Authors: Chen CF et al

Summary: Amelogenesis imperfecta (AI) affects enamel crystallite formation leading to changes in crystallite morphology. This paper reports the outcomes of restorative treatment in 8 patients in the mixed dentition. Photographs and bitewing radiographs were taken and periodontal status assessed. In the initial review 96 teeth were affected. Seventy-four restorations were placed in permanent incisors and molars, and the subjects completed a survey about aesthetics, function and sensitivity. Seven restorations were lost and 10 were rated unacceptable.

Comment: The authors conclude that in AI patients direct restorations should be considered 'interim' and multiple repairs expected. Stainless steel crowns (27) were placed with the operators selecting suboptimal sizes because of the altered crown morphology of AI molars; taking a radiograph before cementing is recommended. These patients are often concerned about the shape, size and colour of their teeth; most in the study had a hypoplastic type of the condition. After completing treatment the subjects reported a decrease in sensitivity and were satisfied with their appearance.

Reference: *Pediatr Dent* 2013;35(4):337-42

<http://www.ncbi.nlm.nih.gov/pubmed/23930633>

SUBSCRIBING TO

RESEARCH REVIEW

To subscribe or download previous editions of Research Review publications go to

www.researchreview.co.nz

ALSO
AVAILABLE

Oral Health Research Review

Another useful summary from Research Review takes a closer look at general oral health. This quarterly publication is ideal for those working as hygienists or dental therapists or for anyone with a keen interest in evidence-based oral health management. Expert commentary supplied by Dr Jonathan Leichter, DMD, Cert Perio (Harvard), University of Otago.

[CLICK HERE TO SUBSCRIBE](#)