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Dental Review™

Making Education Easy

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In this issue:

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Welcome to the latest edition of Dental Review.

We're a bit late this month, but hopefully it's worth waiting for! As usual I've tried to pick a broad selection of studies and a variety of helpful issues that we come across in everyday practice.

Let me know what you think and if you have any suggestions for future editions. I hope you enjoy this edition.

Kind regards,

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

Correlation between polymerization shrinkage and marginal fit of temporary crowns

Authors: Balkenhol et al

Summary: This experiment involved making temporary crowns on metal dies and examining marginal discrepancy and crown diameter. Six monomethacrylates and composite-type materials were tested. The shrinkage of the monomethacrylates (eg Trim) was greater than the composite types (eg Protemp), where the inorganic filler will have played a role. The shrinkage values recorded 10 minutes after mixing were between 3.25 and 4.10%. The clinical outcomes of shrinkage include poor marginal fit and occlusal interferences, as the crown will not seat correctly. The authors recommend at least 30 minutes should elapse between making and trimming the temporary crown.

Comment: In this experiment the researchers worked under ideal conditions (an incubator was used at one stage). The materials were also probably dispensed with more accuracy than is usual at the chairside; so the results in 'real life' might be less favourable. Previous work has shown marginal discrepancies in some experiments as large as 900 µm! This paper is the first to show the major differences in performance of the two material types. If the temporary crown is made before impression taking, it may be possible to have a suitable delay before adjusting the interior of the crown. This would certainly apply on some teaching clinics in dental schools, where teachers are observed helping students provide acceptable temporary crowns well into the 'lunch' hour!

Reference: Dental Materials 2008; 24:1575-1584

http://www.ncbi.nlm.nih.gov/pubmed/18718652

Factors affecting the timing of teething in healthy Turkish infants: a prospective cohort study

Authors: Sahin F et al

Summary: Genetic factors, gender, gestational age and nutrition are factors which may influence the eruption time of the primary teeth. Some 1200 infants were followed up at a well-child clinic. The time of eruption of the first tooth was noted. No gender effect was found on the timing of teething, but being fed cow's milk or formula in the first year had a negative effect on tooth eruption on the sixth and ninth month.

Comment: Little has been published on the time of teething in healthy infants. This is a large sample, with 86.6% being fed breast milk exclusively at 6 months, and with the eruption times being within the normal range irrespective of diet. The study needs to be confirmed in order to identify yet another advantage of breast milk.

Reference: International Journal of Paediatric Dentistry 2008; 18: 262-266.

http://www3.interscience.wiley.com/journal/120087622/abstract?CRETRY=1&SRETRY=0

Effects of halogen light irradiation variables (tip diameter, irradiance, irradiation protocol) on flexural strength properties of resin-based composites

Authors: Bhamra GS et al

Summary: In this experiment bar-shaped specimens of four types of composite from the same manufacturer were cured under a variety of conditions and then loaded to fracture in a universal testing machine. Custom made as well as manufactured fibre optic light guides were attached to the curing unit. There was no significant difference found between the tip diameters used or the use of the unit in standard or turbo mode.

Comment: The use of composites from the same manufacturer ensured that the same photo-activation system was employed. In the experiments the tip was in contact with an acetate strip positioned over the material. In clinical practice the tip is likely to be well over 1 mm from the composite surface. The maximum depth of the specimens was 2 mm; the authors point out that in class II restorations the proximal boxes may exceed 7 mm.

Reference: Journal of Dentistry 2008; 36: 643-650.

http://www.jodjournal.com/article/S0300-5712(08)00138-3/abstract

Aspirin use and post-operative bleeding from dental extractions

Authors: Brennan MT et al

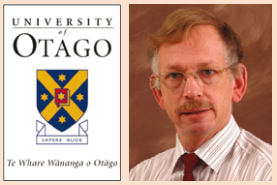
Summary: Blood platelets live for about 10 days and aspirin irreversibly interferes with their function and may delay clotting. Practitioners may recommend that patients stop taking aspirin prior to invasive dental procedures, but there are no clear guidelines for dose alteration. This study involved 36 healthy persons who received 325 mg aspirin for 2 days before and 2 days after an extraction; the control group took an identical-looking placebo. Blood tests were performed and intra-oral bleeding times observed by blotting the extraction wound periodically for up to 20 minutes. The participants were also telephoned later for their comments on how much they had bled.

Comment: Recommendations exist to avoid aspirin for at least 3 days before invasive procedures to allow new functional platelets to return to a sufficient level. This seems unnecessary for a single tooth extraction. The effect of aspirin when multiple extractions are carried out or when the patient is on other platelet-reducing medications is not clear.

Reference: Journal of Dental Research 2008; 87: 740-744.

http://jdr.iadrjournals.org/cgi/content/abstract/87/8/740

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



Dental status and oral function in an adult group of subjects with thalidomide embryopathy - a clinical and questionnaire study

Authors: Ekfeldt A et al

Summary: The drug thalidomide was withdrawn in 1960-61 when severe malformations in children were associated with the mother's intake during pregnancy. The most common defects were in the arms, legs and eyes. This work invited the 108 members of the Swedish association of subjects with thalidomide embyopathy to attend a dental examination. Thirty-one took part. It was thought that they would have a high rate of tooth wear as they use their teeth as tools because of their deformities. One subject needed help with toothbrushing, and three reported using their teeth extensively as tools. Others used their teeth to open packages. Most had complete dentitions with some degree of tooth wear; the prevalence of anterior tooth trauma was increased.

Comment: The authors write that a computer search for items on dental conditions arising from thalidomide revealed no articles over four decades. There seem to be a whole generation of New Zealand dentists who have never heard of the thalidomide story. The drug was introduced almost worldwide in the 1950s as a sedative used to treat nausea and insomnia in pregnancy; the USA was spared as the drug had not received regulatory approval. Some new cases have arisen, probably due to sharing of medications. In New Zealand today thalidomide has been considered the standard of care for the treatment of relapsed and refractory multiple myeloma. It is also being investigated in many countries as a treatment for a variety of dermatological conditions.

Reference: Acta Odontologica Scandinavica 2008; 66:300-306.

http://www.informaworld.com/smpp/content~content=a901464714~db=all~order=page

Canal preparation using only one Ni-Ti rotary instrument: preliminary observations

Authors: Yared G

Summary: The author describes a novel root canal preparation technique; the canal is first negotiated with a size 8 stainless steel hand file and then prepared with an F2 ProTaper rotary NiTi driven by a 16:1 reduction handpiece in a reciprocating manner. Speed is set at 400 rpm and the instrument is 'pecked' and cleaned on its way to the apex.

Comment: The search for a quick an easy method of root canal preparation using a minimum number of instruments has gone on for years. In an era where single use of instruments is encouraged because of cross infection concerns this is important. The F2 instrument cuts in both directions, but motors which have the reciprocating action are a rarity. If every dentist undertakes difficult cases using one rotary instrument, will the supply company make more money than if just a few dentists do the work using three or four rotary instruments? The article is supported by some convincing radiographs of clinical cases and bears a disclaimer stating that while the article has been subjected to Editorial review, the views expressed 'do not necessarily represent best practice'.

Reference: International Endodontic Journal 2008; 41:339-344.

http://www.ingentaconnect.com/content/bsc/iej/2008/00000041/00000004/art00010

The effects of orthodontic therapy on periodontal health. A systematic review of controlled evidence

Authors: Bollen A-M et al

Summary: The authors searched 8 electronic databases and hand searched journals from 1980 to 2006 to gather data on periodontal outcomes after orthodontic treatment. They found only weak evidence from one randomized study and 11 nonrandomized studies after examining 3552 citations. This suggested orthodontic treatment was associated with 0.03 mm of gingival recession and 0.13 mm of alveolar bone loss. Results concerning attachment loss and gingivitis were inconsistent in the few papers identified.

Comment: Straighter teeth should be easier to clean, and when ideally positioned might make for a healthy periodontium. But during treatment cleaning is more difficult and there may be defects around extraction sites after treatment. So the orthodontist comes out as both friend an enemy. This paper, published in the American dentist's national journal, sparked controversy and frustrated orthodontists. Letters to the editor point out the problems of differences between what is statistically significant and what is clinically significant. If there are problems with a treatment, is this due to a small overall worsening, or cases of isolated, severe worsening? The author's comments on 'weak evidence' seems to say it all.

Reference: Journal of the American Dental Association 2008; 139: 413-422.

http://jada.ada.org/cgi/content/abstract/139/4/413

Research Review publications are intended for New Zealand health professionals

Conservative treatment of oral ranula by excision of the sublingual gland: histological support for a traumatic etiology

Authors: McGurk M et al

Summary: Eight patients were referred for removal of ranulas and were treated under general anaesthesia. The lesions were decompressed 3-5 days before surgery, freed from local structures and found to be attached to part of the sublingual gland. A portion of the gland was excised. When histologically examined a communication between the lumen of the cyst and sublingual gland was seen in all cases. None of the lesions recurred.

Comment: Many readers will remember ranulas as they seemed to turn up in all the oral pathology and oral surgery exams. Successful removal requires identification of the secretory part supplying it during the operation, which is difficult if it ruptures. Decompression beforehand using a needle (without local anaesthesia) avoids this problem. The paper provides an excellent revision of the anatomy of the floor of the mouth.

Reference: Journal of Oral and Maxillofacial Surgery 2008; 66: 2050-2057.

http://www.joms.org/article/S0278-2391(08)00037-2/abstract

Calcium silicate coating derived from Portland cement as treatment for hypersensitive dentine

Authors: Giovanna GM et al

Summary: This in vitro research used dentine discs in a hydraulic conductance experiment to investigate permeability following treatment with a cement-like material. It was compared with a remineralizing treatment (Tooth Mousse), two desensitizing agents and a toothpaste. The Portland cement material brought about effective dentine permeability reduction and tubule occlusion when specimens were examined using a scanning electron microscope.

Comment: Judging by the frequency of television adverts for toothpastes from all the major manufacturers dentine hypersensitivity is a problem for many people in New Zealand. Materials derived from Portland cement may find a clinical role in the treatment of this common problem. The small size of the particles allows them to enter the dentinal tubules and potentially set into a stable and solid water-resistant plug which looks like a smear layer under the microscope.

Reference: Journal of Dentistry 2008; 36: 565-578.

http://www.ncbi.nlm.nih.gov/pubmed/18538913

Are all mouthguards the same or safe to use? Part 2. The influence of anterior occlusion against a direct impact on maxillary incisors.

Authors: Takeda T et al

Summary: Two different designs of ethylene vinyl acetate mouthguard were constructed to fit plastic teeth in a dental model. One featured an anterior complete overbite and the other lacked occlusion. A pendulum device was made to swing two impact objects onto the centre of one of the maxillary central incisors- these were a 172 g steel ball and a 147 g baseball. Strain gauges measured the impacts. The support of the mouthguard by the lower dentition reduced the impact force and tooth distortion.

Comment: Not surprisingly the shock absorbing ability of the mouthguard was proportional to its thickness. Most mouthguard designs pay relatively little attention to occlusion, and if the mouthguard is a stock design modified by the purchaser (or the individual has an anterior open bite) the protection given by the appliance may be less than optimal.

Reference: Dental Traumatology 2008; 24: 360-365.

http://www.ingentaconnect.com/content/mksg/edt/2008/00000024/00000003/art00018;jsessionid=7lln83mgif5u0.alexandra?format=print