

Dental Review™

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Issue 23 - 2010

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Welcome. I hope there is something here for just about all of us, with the items ranging from bleaching and crowns to how to mount models. There is even some cariology and periodontology. All that's left is for me to find some material with festive content for the Christmas issue. Wish me luck!

Best wishes,

Nick Chandler
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A competing risk survival analysis model to assess the efficacy of filling carious primary teeth

Authors: Stephenson J et al

Summary: Some 5,168 carious primary molars in 2,654 British children (aged 4–5 years at baseline) were studied to assess the effect of restorative treatment on progression to exfoliation or extraction. Treatment was found to be significantly associated with survival with respect to extraction, with double the survival rate of unrestored teeth. Teeth in which caries occurred later had higher survival rates.

Comment: The value of restoring primary teeth might be questioned on economic grounds. Some practice-based studies suggest restoration of symptomless carious primary teeth does not confer significant benefits, and there has been debate as to whether a policy of the same level of care being provided to all children is appropriate. The design of this study meant that diet and toothbrushing habits were not recorded. Seeing the patient to restore the teeth allows discussion of diet, oral hygiene and other health factors as well as potentially avoiding pain and infection.

Reference: *Caries Res.* 2010;44(3):285-93.

<http://tinyurl.com/23l6foz>



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Orthodontic treatment with tooth transplantation for patients with cleft lip and palate

Authors: Tanimoto K et al

Summary: There are three main methods for treating an edentulous space; orthodontic space closure, prosthodontic treatment or tooth transplantation. Teeth extracted for orthodontic reasons can be the donor teeth, and this paper features two cleft palate patients who had iliac crest bone grafts and transplants to replace missing teeth. In one, a mandibular premolar became a maxillary lateral incisor, and in the other a maxillary premolar was moved to the mandible. Root canal treatment was carried out 2 weeks after transplanting, and the teeth were then moved and stabilised.

Comment: It would be an interesting exercise to track the number of publications on tooth transplantation across the last 30 years. It is a subject which seems to ebb and flow. Implants seemed likely to be their death knell, and then a major international conference in 1996 devoted considerable time to the topic and they were 'on' again. Papers as recent as 2008 report success rates of over 95%.

Reference: *Cleft Palate Craniofac J.* 2010;47(5):499-506.

<http://www.cpcjournal.org/doi/abs/10.1597/08-134>

Comparison of titanium and biodegradable miniplates for fixation of mandibular fractures

Authors: Lee H-B et al

Summary: Biodegradable plates and screws and the better-known titanium miniplates were used to treat the mandibular fractures of 91 patients. The patients were reviewed clinically and radiographically three-monthly for a year. Complication rates were similar (infection and one fractured plate).

Comment: Metal plates have disadvantages in growing patients and a second surgery may be required to remove them. This has led to the introduction of bioabsorbable plates which are weaker and have the potential to cause adverse effects as they are absorbed. Their development started in 1966. The requirements are demanding; they should retain their strength for 3 or 4 months but be absorbed in 6 to 12 months to avoid growth problems in paediatric patients. Interestingly, smoking has been suggested as having a major role in complications arising with biodegradable devices of this type.

Reference: *J Oral Maxillofac Surg.* 2010;68(9):2065-9.

<http://www.joms.org/article/S0278-2391%2809%2901573-0/abstract>

A comparative study of wound healing following incision with a scalpel, diode laser or Er,Cr:YSGG laser in guinea pig oral mucosa: A histological and immunohistochemical analysis

Authors: Jin J-Y

Summary: Scalpels are easy to use, cheap and cause minimal tissue damage but they do not provide haemostasis. This paper assessed the wound healing of 15 mm-long incisions made in the oral mucosa of guinea pigs with a scalpel and diode or Er,Cr:YSGG lasers. Wounds were examined using light microscopy and by an immunohistochemical method. The diode laser was a good cutting instrument but caused the most damage.

Comment: The diode laser has beneficial coagulation properties in vascular lesions and is popular for this and other reasons. The authors caution that larger studies are needed on this subject.

Reference: *Acta Odontol Scand.* 2010;68(4):232-8.

<http://informahealthcare.com/doi/abs/10.3109/00016357.2010.492356>

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

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Relationship between obesity and physical fitness and periodontitis

Authors: Shimazaki Y et al

Summary: Obesity receives a lot of attention as a risk factor for 'lifestyle diseases'. This paper studied 1,160 Japanese subjects aged 20–77 years from a group of 7,023 involved in a health promotion programme. The Community Periodontal Index was recorded and obesity indicated by body mass index and percentage body fat. Maximal oxygen consumption during exercise was also considered. The results suggested that obesity and physical fitness might have some interactive effect on periodontal condition.

Comment: Regular exercise may improve fitness and contribute to the prevention of several lifestyle diseases. Periodontal disease is related to lifestyle habits such as poor oral hygiene, smoking and drinking, so the authors recommend more research to better understand these relationships.

Reference: *J Periodontol.* 2010;81(8):1124-31.

<http://www.joonline.org/doi/abs/10.1902/jop.2010.100017>

The ceramic crown dilemma

Authors: Christensen GJ

Summary: As this well-known author concludes in his summary, "Patients want white teeth". Here is a review of how to do this with fixed prostheses, with and without metals involved and with interesting data on the number of crowns and prostheses manufactured by a large dental laboratory in California.

Comment: There are many more restoration types to offer than the popular PFM (now with a 50-year history), and if you are a bit lost then this review is very helpful. Advantages, disadvantages and predications for future use are clearly laid out. These could be used in discussions and correspondence with patients and might be included in practice information sheets.

Reference: *J Am Dent Assoc.* 2010;141(8):1019-22.

<http://jada.ada.org/cgi/content/full/141/8/1019>

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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.

Comparison of digital systems and conventional dental film for the detection of approximal caries

Authors: Pontual AA et al

Summary: This study compared the accuracy for detecting approximal enamel caries with three intraoral phosphor plate digital systems and conventional film (Kodak Insight). It involved 160 surfaces of extracted premolars and molars which had no cavitation but varying brown or chalky white demineralisation. Seventeen observers assessed the images and the conventional films were viewed with the help of a 2x magnifier. The teeth were then cut into 700 µm sections and viewed by two observers at up to 20x magnification. The performance of the digital systems was similar to the conventional film. The increase in histological depth of enamel caries did not correlate significantly with the radiographic measurements.

Comment: While a study of enamel lesions, the histology here revealed that 8 lesions extended into dentine. Digital imaging moves on at a relentless pace, with one of the digital devices in the study no longer on the market.

Reference: *Dentomaxillofac Radiol.* 2010;39(7):431-6.

<http://dmfr.birjournals.org/cgi/content/abstract/39/7/431>

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Associations of masticatory performance with body and dental variables in children

Authors: Tureli MC

Summary: Chewing problems can contribute to poor nutrition, and so poor oral health may influence dietary intake. In this study, 97 8–12-year-olds chewed 17 cubes of test material (20 chewing cycles per piece) and the remains were sieved to determine masticatory performance. The number and status of the teeth were assessed and body mass index calculated. Nearly a third of the subjects were overweight or obese, and the normal weight children had better masticatory performance than them. The underweight children were twice as likely to have poor masticatory performance.

Comment: Overweight children eat more snacks which are high in fat and are easier to chew. They may not exercise their masticatory muscles enough to cope with more appropriate foods and materials like the test cubes chewed in the study. These were made of silicone impression material, toothpaste, vaseline, plaster and alginate powder. Yuck.

Reference: *Pediatr Dent.* 2010;32(4):283-8.

<http://tinyurl.com/2cteeku>

Peroxide penetration from the pulp chamber to the external root surface after internal bleaching

Authors: Palo RM et al

Summary: Bleaching agents and trauma are factors in external cervical resorption, and many traumatised teeth discolour and are bleached. A 'walking bleach' experiment was set up with 72 extracted bovine lateral incisors and a variety of bleaching agents. The cement-enamel junctions were examined using scanning electron microscopy and no defects or discontinuities were found. Despite this, all of the materials penetrated from the pulp chamber to the external root surface. There was a correlation between the presence of oxidative agents and penetration.

Comment: The agent which was least oxidative was a mixture of sodium perborate and distilled water. This is today's recommended brew for walking bleaches. The fact that all the teeth in this well-controlled study were penetrated by the agents is a worry, and more evidence not to use 30% hydrogen peroxide (Superoxol) for these procedures.

Reference: *Am J Dent.* 2010;23(3):171-4.

<http://www.amjdent.com/Archive/Abstracts/2010/June%202010%20Abstracts.html>

Mounting partially edentulous casts

Authors: McGill ST et al

Summary: This brief technique item reports the use of baseplate wax and Exabite polyvinyl siloxane to accurately record bite registration for a patient with missing maxillary posterior teeth.

Comment: Here is something which often makes us scratch our heads in the clinic when we cannot locate models sensibly. I think many readers will follow a method like the one shown here almost intuitively, but a clear step by step guide with photographs is beneficial and the technique is said to be predictable and accurate.

Reference: *Oper Dent.* 2010;35(5):592-5.

<http://pubget.com/search?q=latest%3AOperative+Dentistry&from=17910219>



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Oral Health Research Review

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

Oral Health Research Review Making Education Easy Issue 1 - 2009

Welcome to the first edition of Oral Health Research Review, a unique New Zealand publication designed to make life easier for oral health practitioners. We aim to save you time by regularly summarising what we think are the most significant new papers from around the world and include local commentary on why they are important and how they can potentially affect practice. The selection and review of the papers is carried out independently, and links to the abstracts of fully published papers are provided wherever possible so you can form your own judgement. We hope you find our inaugural selection for Oral Health Research Review stimulating reading, and we welcome your feedback. Kind regards, Jonathan Leichter D.M.D. jleichter@otago.ac.nz

Salivary changes and dental erosion in bulimia nervosa

Authors: Tureli MC et al

Summary: The possibility that salivary gland function is altered in individuals with bulimia nervosa (BN), and that such changes are related to bruxism, was reported in 2009. However, with this condition and 23 matched controls, the BN group had a lower unstimulated whole saliva flow rate than controls, and this was attributed mainly to a reduction in stimulated whole saliva secretion rather than the BN and control groups.

Comment: Although the diagnosis of BN is complicated, dental complications due to the eating effects of acid and digestive juices of the BN with dental erosion the most defined and consistent oral finding. This research was carried out to see if BN has an impact on salivary gland function and if such changes we noted by dental erosion. It was noted that there was a higher degree of acidic erosion in the BN group, and that 8 persons in this group were recruited. The study found that the unstimulated whole saliva flow rate was significantly lower in the BN group, but the major changes in saliva composition were found. The mean pH value was significantly higher in the BN group. The conclusions drawn were that the reduced flow rate is primarily due to the altered mucous secretions and that the reduced whole saliva flow rate was not due to the decrease in the flow rate to detect a problem, but also because we are in a position to inspire and empower dentists to prevent and control the condition.

Comment: (DPA) BN can be challenging to treat for oral health professionals because often there is a social stigma attached to the disease and it is not well understood by health professionals. The authors note that oral health professionals, we must work together to raise public and professional awareness to gain the whole picture, as presented in the article, involving changes in eating habits, symptoms, signs of oral disease, damaged salivary glands, and self-medication with laxatives. For these signs can only greatly benefiting the treatment a patient has with bulimia BN. There needs to be a good preventative regimen for each patient depending on the duration and severity of the disease. Preventative strategies may involve smoking cessation, dietary advice, advice on related to other things, enamel protection and bleaching regimens, although it is more an early dealing with the effects of the disease. From a public and long-term treatment perspective, getting the advice to address the disease BN control is important in all the necessary areas. Continuing advice and the links are important resources to have available in working with this disease. **Reference:** Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009; 106(5): 699-707 <http://dx.doi.org/10.1016/j.oooo.2009.03.006>

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