

Dental Review™

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Issue 35 - 2012

In this issue:

- > *Titanium dentures*
- > *Impression stability*
- > *Space maintainers*
- > *NiTi endodontics*
- > *Gaps in adhesive restorations*
- > *Dogs and their owners*
- > *Mobile phones and parotid glands*
- > *Mandibular incisive canal*
- > *Reporting bruxism*
- > *Obesity and eruption*

Welcome. There is a paper here of interest to dog owners, which might make readers rush to buy Fido a toothbrush and other canine oral care products. Hopefully, there is something for everyone; there is nothing in the current journals about cat ownership.

I am now on the lookout for festive items for the next (Christmas) issue, so if you know of something, please contact me!

Best wishes,

Nick Chandler

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Titanium alloy removable partial denture framework in a patient with a metal allergy

Authors: Oluwajana F & Walmsley AD

Summary: The authors report seeing a patient allergic to nickel, cobalt chloride, palladium chloride and gold sodium thiosulphate. A new lower partial denture was required, and in the first instance an acrylic prosthesis was supplied but the thick acrylic connector proved to be uncomfortable. A patch test showed no allergy to titanium, so a denture of this material was constructed. This is difficult to cast, but offers good accuracy of fit, lightness, high strength and excellent biocompatibility.

Comment: Titanium melts at 1,700C. As the alloy is more flexible than cobalt-chrome, clasps must be carefully designed or they will permanently deform. Dentures made of it will also discolour if a strongly alkaline denture cleaner is used. Surprisingly, the authors state that the cost of titanium dentures may be similar to cobalt-chrome types.

Reference: *Br Dent J* 2012;213(3):123-4

<http://www.nature.com/bdj/journal/v213/n3/full/sj.bdj.2012.667.html>

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Influence of technique and pouring time on dimensional stability of polyvinyl siloxane and polyether impressions

Authors: Gómez-Polo M et al

Summary: Impression technique and pouring time can influence dimensional changes in dental models. This experiment used polyvinyl siloxane and polyether (Impregum) materials in a rigid custom tray to take impressions of a steel cylinder. Eighty impressions were made with each method and poured at 1 and 24 hours and 7 and 14 days. In order to demonstrate dimensional stability the polyether impressions needed to be poured within 7 days.

Comment: Both materials are very suitable for impression taking but the changes after 7 days were significant. After two weeks the polyvinyl siloxane impressions were still satisfactory.

Reference: *Int J Prosthodont* 2012;25(4):353-6

<http://www.ncbi.nlm.nih.gov/pubmed/22720285>

Evaluation of survival of 3 different fixed space maintainers

Authors: Tunc ES et al

Summary: This study involved thirty 4- to 10-year-olds. They were fitted with band and loop, direct bonded or fibre-reinforced composite space maintainers. The subjects were recalled every 3 months for a year or until failure of the devices, and Kaplan-Meier survival times calculated. Mean survival time was highest for the band and loop types (11.2 months) followed by direct bonding and fibre-reinforced designs.

Comment: Space maintainers can prevent mesial drift of erupting posterior teeth, crowding, and other problems if a primary tooth is congenitally absent or lost prematurely. Age, gender, arch and side of jaw were not significantly correlated to 'success' in the study. In the experiment the most commonly used device was the best, despite its disadvantages such as model making and laboratory manufacture and the second visit necessary for placement.

Reference: *Pediatr Dent* 2012;34(4):e97-102

<http://www.ncbi.nlm.nih.gov/pubmed/23014081>

Impact of nickel-titanium instrumentation of the root canal on clinical outcomes

Authors: Schäfer E et al

Summary: Does using modern nickel titanium rotary instruments for root canal preparation give your patients a better long-term result? The authors investigated 327 studies in the literature, finding one clinical trial suggesting better maintenance of original canal curvature leading to increased success. A further two studies showed that either hand or rotary NiTi use gave increased success compared to stainless steel hand instruments. Three studies found no significant difference.

Comment: Only a handful of studies from a total of 327! We all understand how NiTi instruments 'follow' canals better, but the influence on outcome of treatment seems something for the future. More evidence is required, and this has been talked about now for almost a decade.

Reference: *Odontology* 2012;100(2):130-6

<http://tinyurl.com/9xcpz3>

Dental Review

Independent commentary by Associate Professor Nick Chandler

of the Department of Oral Rehabilitation, University of Otago.

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Influence of gaps in adhesive restorations in the development of secondary caries lesions

Authors: Barata JS et al

Summary: Ten volunteers wore intra-oral appliances housing three dentine/enamel blocks mimicking two restored and one sound (control) tooth surfaces. One 'restoration' involved composite in a total etch and the other composite and no etching. The appliances were worn 24 hours a day for 28 days, and the blocks exposed to 20% sucrose 8 times a day. At the end of the experiment 29/30 of the blocks showed non-cavitated lesions on the enamel. Lesion development next to the restoration was determined by cariogenic challenge, rather than the quality of the simulated restoration. The wall lesion was influenced by the orientation of enamel prisms, regardless of gaps.

Comment: Preventing new lesions in this experiment seemed to be linked to caries risk rather than the restoration 'quality'. The subjects should be congratulated for their fortitude in wearing the appliances for 4 weeks.

Reference: *Am J Dent* 2012;25:244-8

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Distribution of periodontopathic bacterial species in dogs and their owners

Authors: Yamasaki Y et al

Summary: Dental plaque was collected from 66 dogs and 81 human members of 64 families. Bacterial DNA was extracted and 11 periodontopathic species investigated. Among the results was that *Porphyromonas gulae* was found in 13 humans and all their dogs featured the organism. The results suggest that several species could be transmitted between humans and their companions.

Comment: Little is known about the bacterial species found in dog mouths, but they have a high prevalence of gingivitis and periodontitis and caries is uncommon. I have owned two dogs this year, so perhaps I have two additional sets of oral microorganisms? One dog is a Swedish vallhund, with grandparents from his native land, which makes this a matter of potentially global importance. It is comforting to know that both the dogs and the people in this experiment had to get ethical approval from their respective committees to take part!

Reference: *Arch Oral Biol* 2012;57(9):1183-8

[http://www.aobjournal.com/article/S0003-9969\(12\)00063-5/abstract](http://www.aobjournal.com/article/S0003-9969(12)00063-5/abstract)

Effect of handheld mobile phone use on parotid gland salivary flow rate and volume

Authors: Bhargava S et al

Summary: Some 142 people aged between 18 and 30 years were divided into two groups; 'heavy' phone users and controls. Unstimulated parotid salivary flow was measured. Gland volume was assessed using ultrasound for 38 of the volunteers. Heavy phone users featured larger parotid glands, increased salivary flow rate and increased blood flow on the affected side.

Comment: Collecting data on phone use may be challenging. Almost all of these subjects were on prepaid plans in India, so bills could not be retrieved and self-reporting of use was required. Mobile phones create heat and emit nonionising radiation. For many of the participants the average phone use was over 3 hours per day. While research suggests the highest powered phones only generate 0.1C of heat, 35 of the participants reported that they felt heat on or around their ear after long calls.

Reference: *Oral Surg Oral Med Oral Pathol Oral Radiol* 2012;114(2):200-6

[http://www.oooojournal.net/article/S2212-4403\(12\)00226-X/abstract](http://www.oooojournal.net/article/S2212-4403(12)00226-X/abstract)

The presence of the mandibular incisive canal: a panoramic radiographic examination

Authors: Romanos GE et al

Summary: The mandibular incisive canal (MIC) is an extension of the mandibular canal anterior to the mental foramen. The authors looked at 1,045 panoramic dental radiographs chosen randomly from those taken during routine examinations. Minimum and maximum distance from the alveolar ridge, thickness and length of canals and distance (if bilateral) between canals were recorded. The MIC was found in 2.7% of the patients.

Comment: Anatomical knowledge of this site is important during implant placement and when arranging fixation of some mandibular fractures. Other studies have involved CT scans of smaller groups of patients. In dissections, the MIC is clearly defined and seen in much greater numbers. A case report from 2009 describes the problems of MIC perforation during implant placement, so careful analysis of all radiographs and perhaps cone beam images are advisable.

Reference: *Implant Dent* 2012;21(3):202-6

<http://tinyurl.com/9rf6tp6>

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Occlusal factors are not related to self-reported bruxism

Authors: Manfredi D et al

Summary: Self-reported bruxers (67) were age- and sex-matched to a group of non-bruxers (75) and a large range of occlusal features were clinically assessed. The only variable in the final regression model was laterotrusive interferences. The authors conclude that the contribution of occlusion to the differentiation between bruxers and non-bruxers is negligible.

Comment: The debate on a causal relationship between occlusion and bruxism continues! All examinations were by one trained operator and the presence of bruxism investigated anamnestically (yes, I looked it up too!). It seems that the problem has a multifactorial aetiology, with occlusal problems no longer having such a central role. Even defining clenching and grinding causes difficulty, and there is a good discussion here on possible contributing factors.

Reference: J Orofac Pain 2012;26(3):163-7
<http://www.ncbi.nlm.nih.gov/pubmed/22838000>

The association between childhood obesity and tooth eruption

Authors: Must A et al

Summary: Data were combined from three cycles of the United States National Health and Nutrition Examination Survey and the number of erupted teeth and obesity status (BMI) in children aged 5–14 years investigated. Data were controlled for gender, race and socioeconomic status. Teeth of obese children erupted earlier, with these children having on average 1.44 more teeth erupted. This was a significant finding (p<0.0001).

Comment: Obesity is known to promote growth, as shown by its effect on puberty. This finding might influence caries risk and orthodontic treatment for this group of children.

Reference: Obesity (Silver Spring) 2012;20(10):2070-4
<http://www.nature.com/oby/journal/v20/n10/full/oby201223a.html>



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