



Dental Review™

Making Education Easy

Issue 20 - 2010

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Welcome to Dental Review as a small milestone is reached – 20 issues.

This month includes some reassuring items. Our root canal work can have very high success rates, and modern composite techniques can give great results. But there is also some sobering stuff on how many young patients seem intent on destroying their dentitions with piercing, and how even a simple implant case can go catastrophically wrong due to bad planning. I suppose it is all down to education?

With best wishes,

Nick Chandler

Associate Professor

Department of Oral Rehabilitation, University of Otago

nickchandler@researchreview.co.nz

Fracture incidence in mandibular overdentures retained by one or two implants

Authors: Gonda T et al

Summary: In the mandible, 2 or 4 implants are often chosen to stabilise and retain an overdenture, but there is now considerable research on how effective just one implant can be. In this study, 85 subjects (42 with one implant and 43 with two, fitted with ball abutments) were followed-up for a mean of over three years and visible cracks or separation of parts of the dentures recorded. There were 17 fractures and no significant difference in survival between the denture types. Fractures in the prostheses usually happened adjacent to the implant.

Comment: Mandibular dentures often fracture precisely in the midline, so perhaps it is natural to think that if there is an implant there, then this will be a 'weak spot', where stress is concentrated. This is a more complex subject than it seems; denture base reinforcement will play a role, but the authors point out that the variety of forces on a denture are complex and cannot be replicated in a laboratory bench study.

Reference: *J Prosthet Dent* 2010;103(3):178-81.

<http://www.prosdent.org/article/S0022-3913%2810%2960026-1/abstract>



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Effect of gamma irradiation on ultimate tensile strength of enamel and dentin

Authors: Soares CJ et al

Summary: Head and neck cancers can be treated with radiotherapy, with little known about how this might damage enamel and dentine. This study investigated the ultimate tensile strength of enamel and dentine of 40 extracted third molars after 60 Gy of gamma irradiation (2 Gy 5 days a week). The strength of both hard tissues was reduced, with more harm being caused to the organic components.

Comment: The effect of radiation therapy is two-fold, first the effect on the teeth themselves and secondly through xerostomia. This complex paper helps to explain why the teeth of these patients sometimes seems to 'dissolve', and gives some ideas on methods of treating the destruction in the future.

Reference: *J Dent Res* 2010;89(2):159-64.

<http://tinyurl.com/y4rcx4f>



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

Initial management of paediatric dento-alveolar trauma in the permanent dentition: a multi-centre evaluation

Authors: Zaitoun H et al

Summary: This paper investigated the time lapse before receiving emergency treatment for dental trauma and the adequacy of the care provided. The subjects were 150 paediatric patients (mean age 11 years) with permanent incisor injuries. They attended dental hospitals or children's hospitals in three centres in northern England, with 47% referred by a general dentist. There were twice as many male as female patients, most having one injured tooth. The mean time to initial presentation was over 22 hours. In 39% treatment was considered inappropriate, with failure to protect exposed dentine in 71% of complicated crown fractures and 40% of uncomplicated crown fractures.

Comment: Several studies have shown that in patients requiring treatment for dental trauma about half do not receive emergency care. There are various barriers to the provision of care, with time and lack of confidence key factors. Transit times, unavailability of a general dentist, parental influence and delays in Accident and Emergency explained the long delays in this report. The inappropriateness of treatment and its consequences make depressing reading.

Reference: *Br Dent J* 2010;208(6):E11.

<http://www.nature.com/bdj/journal/v208/n6/abs/sj.bdj.2010.254.html>

Influence of white and gray endodontic posts on color changes of tooth roots, composite cores, and all-ceramic crowns

Authors: Sailer I et al

Summary: Do post materials affect the colour of roots, composite cores and all-ceramic crowns? In this study, 40 extracted human incisors were fitted with white posts (zirconia or glass fibre) or grey posts (titanium or carbon fibre). Composite cores or crowns (Cerec) were made to fit. The colours of the roots, cores and crowns were recorded using a reflectance spectrophotometer. The white and grey posts had little effect on root colour, but the grey posts discoloured the cores, giving a grey discolouration to the lower thirds of the crowns.

Comment: While a lot is known about the mechanical properties of posts, their effect on colour of roots and what goes on top does not seem to have been studied before. Grey posts did not give a grey discolouration to the roots, so sadly one of the conclusions is that any greyish gingival shadowing will not be reduced by placing a white post. Nevertheless, when combined with a glass-ceramic crown, white posts and cores had some aesthetic benefit.

Reference: *Quintessence Int* 2010;41(2):135-44.

<http://tinyurl.com/y5oe5qk>

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Effect of glass-ionomer cement lining on postoperative sensitivity in occlusal caries restored with resin composite – a randomized clinical trial

Authors: Burrow MF et al

Summary: This investigation considered the ability of a glass ionomer cement (GIC) to reduce postoperative sensitivity in occlusal cavities restored with composite. Some 103 restorations were placed in the molars of 70 patients of average age 23 years. Moderate to deep caries was removed and 4 restorative procedures used, involving self-etch and total-etch and two involving GIC liners, and then the cavities were incrementally filled with composite. Teeth receiving the GIC lining had it placed 0.5 to 1 mm thick over the entire dentine surface. Postoperative sensitivity was rare and was evaluated at one week and one month; there were no significant differences between the four groups.

Comment: The better the seal to dentine, the less sensitivity should occur. No participants had problems one month later. Careful operative procedures seem to work!

Reference: *Oper Dent* 2009;34(6):648-55.

<http://www.jopdentonline.org/doi/abs/10.2341/08-098-C>

Combined corticosteroid and antiviral treatment for Bell palsy: a systematic review and meta-analysis

Authors: de Almeida JR et al

Summary: This study asked if treatment with corticosteroids, antiviral agents or a combination improved the chance of a satisfactory recovery from Bell's palsy. The authors searched the literature finding 854 studies, 18 of which were considered further on the basis of strict criteria. These randomized controlled trials involved 2,786 patients. The drug combination seemed to have a synergistic effect that improved the patient's recovery.

Comment: The annual incidence of this condition is between 20 and 30 cases per 100,000 population, with the prognosis directly related to the initial severity. There are some interesting figures here on how likely recovery will be, but in the short time since publication there have been larger trials suggesting corticosteroids alone may be best.

Reference: *JAMA* 2009;302(9):985-93.

<http://jama.ama-assn.org/cgi/content/full/302/9/985>

Dental implant failure associated with a residual maxillary cyst

Authors: Galzignato P-F et al

Summary: This case report concerns a 53-year old patient who was seen 3 months after implant placement to replace a missing lateral incisor. The implant migrated apically during the second stage of surgery and it was thought to have moved into the maxillary sinus. Radiographs showed a 2 cm diameter lesion apical to the missing tooth with the implant inside the area. The implant and lesion were removed and a histological diagnosis of residual cyst made.

Comment: While implants in the maxillary sinus have been reported and large paranasal sinuses in the incisor region are possible, this case shows that even when they have gone, lateral incisors can be a cause of considerable grief. Dental implants may also dislocate into nasopalatine duct cysts.

Reference: *Br Dent J* 2010;208(4):153-4.

<http://tinyurl.com/y3h29t2>

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Wear of denture teeth and their human enamel antagonists

Authors: Ghazal M et al

Summary: Four types of denture tooth materials (feldspathic ceramic, nanofilled composite, an experimental acrylic and an interpenetrating network acrylic) were tested against human enamel cusps in a dual-axis chewing simulator over 300,000 chewing cycles. The cusps were obtained from extracted mandibular first premolars. Vertical substance and volume loss of the denture tooth materials were recorded, and the natural cusps examined with an optical microscope. The lowest vertical substance loss was the combination of composite resin teeth against the natural enamel.

Comment: Acrylic resins and ceramics are used for most prosthetic teeth, ceramics being considered the most wear resistant. Somewhat oddly, artificial teeth are often tested against other materials (such as ceramic balls) rather than natural teeth, making this study quite unusual. The 300,000 cycles used in this experiment is considered equal to a year of clinical service.

Reference: Quintessence Int 2010;41(2):157-63.

http://tinyurl.com/yypvmkr

Comparison of classic endodontic techniques versus contemporary techniques on endodontic treatment success

Authors: Fleming CH et al

Summary: This study compared classic techniques (hand files, NaOCl, mostly multiple visits) with contemporary techniques (rotary NiTi, apex locators, microscopes, warm vertical obturation, mostly single visit). The classic group comprised all patients of one endodontist who trained in the early 1970s, while the contemporary group comprised records from three practices where the endodontists trained in the past 15 years. 8000 charts were reviewed to select patients and determine tooth survival data from 984 teeth in 857 patients. The survival rate was classic 98% and contemporary 96%, which was not significantly different.

Comment: There is very little in the endodontic literature to say that any one preparation or filling technique is more successful in the long run than any other. There were subtle differences in the groups in this work; the classic patients mostly had a definitive restoration provided by the endodontist, while the contemporary patients received temporary restorations. There were no gross overfills in the classic group. This group also had a much longer time to recall, so it is possible that the failure rate in the contemporary group might have been higher if their recall period was longer.

Reference: J Endod 2010;36(3):414-8.

http://www.jendodon.com/article/S0099-2399%2809%2901013-9/abstract

Complications following oral piercing. A study among 201 young adults in Strasbourg, France

Authors: Hickey BM et al

Summary: This study aimed to identify complications to the oral environment following piercing. No dental examinations were performed; a questionnaire was given to people seen to have oral or perioral piercing attending a dental hospital, university canteen and attending a piercing conference. The majority reported problems immediately after piercing, including difficulty speaking, eating, swallowing and drinking. Over 5% had self-pierced, and these and many others had received little or no home care instructions. The results strongly support Teflon rather than metal jewelry, as reports of tooth fracture and gingival recession were lower in this group.

Comment: Most of the subjects were women and likely to have received their piercing when starting at university. Almost a quarter had suffered some form of complication, and the study did not include people whose piercing was removed due to a medical complication. This paper provides a useful review of a subject that may provide life threatening problems for the recipient. It seems scary stuff; tongue piercing involves a 14-gauge needle, seven times the diameter of the needles we usually use in dentistry.

Reference: Community Dental Health 2010;27:35-40.

http://www.cdjournal.org/view.php?journal_id=26



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