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Dental Review™

Making Education Easy

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In this issue:

Welcome to the latest edition of Dental Review.

There is a very eclectic mix in this issue, from anatomy to drugs and with mastication and tooth regeneration in the mix too. This reflects the wide variety of journals, dental and non-dental, which have some content about teeth and oral disease, and I hope there is something here for all our readers.

Kind regards,

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The mesioangular third molar – to extract or not to extract? Analysis of 776 consecutive third molars

Authors: Allen RT et al

Summary: Mesioangular third molars are often associated with distal caries in the second molars. This survey examined panoramic radiographs from 420 consecutive patients (776 third molars) seen at three maxillofacial centres. Thirty-four percent of the third molars were mesioangular, with 42% of the second molars having distal caries. There was no angulation of the third molar, which made caries more frequent.

Comment: While the authors consider that most third molars (when free of symptoms and pathology) can be left, the mesioangular tooth is a special case. Carious lesions in this position may be difficult to detect, and can lead to root canal treatment or extraction of the second molar. Regular bitewings are recommended to monitor teeth when these third molars are not removed; almost a quarter of the third molars in this study were carious too.

Reference: Br Dent J. 2009;206(11):E23.

http://www.nature.com/bdj/journal/v206/n11/abs/sj.bdj.2009.517.html

Topographical evaluation of the major apical foramen in permanent human teeth

Authors: Martos J et al

Summary: This study examined 926 teeth to determine the distance from the anatomical root apex to the major apical foramen. The apical regions were stained with blue ink and examined at 40x magnification with measurements made to an accuracy of 0.01 mm. When there was disagreement concerning multiple foraminae, a size 6 endodontic file was inserted to detect the major foramen. The mean distance from the major foramen to the anatomical apex was 0.69 mm. This was greater in posterior (0.82 mm) than anterior teeth (0.39 mm). There was no typical pattern of foramen shape, although most were round or ovoid.

Comment: This paper reinforces the findings of some much older studies that were outstanding in their day and are just as valid now as when they were published. This new paper involved a very large number of teeth which were not restored. It is assumed there was minimal apical resorption, as this and the constant laying down of cementum are common causes of deviation of the major foramen.

Reference: Int Endod J. 2009;42(4):329-34.

http://tinyurl.com/lsq6m4

Diagnosis and management of sialolithiasis with a semirigid endoscope

Authors: Liu DG et al

Summary: Obstructive duct disease, with or without stones, are common salivary gland problems. This paper evaluated a semirigid (nickel-titanium) endodocope to diagnose problems and remove stones from 90 patients (78 submandibular and 12 parotid ducts). Because of its flexibility and rigidity the instrument could be easily inserted into duct orifices and most stones under 4 mm were removed using a basket device.

Comment: The first endoscopes for this task could only be used to examine the ducts. The instrument in this study had an outside diameter of only 1.1 mm and a separate irrigation channel. The authors recommend sialendoscopy be used routinely for diagnosis and treatment of salivary stones.

Reference: Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108(1):9-14.

http://www.ooooe.net/article/S1079-2104(09)00018-3/abstract

The role of phenoxymethylpenicillin, metronidazole and clindamycin in the management of acute dentoalveolar abscess – a review

Authors: Ellison SJ

Summary: For most patients the only treatment required for a dentoalveolar abscess is drainage, unless the subject is immunocompromised or showing systemic illness. Historically, patients received antibiotics for 5 to 10 days and were instructed to complete the course. Times have changed; today, antibiotics are often discontinued after two or three days, and last year celebrated the first European Antibiotics Awareness Day.

Comment: In a 2005 survey in the UK 75% of dentists prescribed an antibiotic at least once a week and 15% every day, while national statistics reported 8–16 patients dying each year from dentoalveolar abscess. Much data suggests that phenoxymethylpenicillin should not be the dentist's first choice and that clindamycin may be more appropriate. This paper is a very useful review and presents guidelines for antibiotic use in a primary care setting.

Reference: Br Dent J. 2009;206:357-62

http://www.nature.com/bdj/journal/v206/n7/abs/sj.bdj.2009.257.html

New Zealand Dental Therapists' Association (Incorporated)

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University of Otago — Te Whare Wānanga o Otāgo

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

Role of pathogenic oral flora in postoperative pneumonia following brain surgery

Authors: Bágyi K et al

Summary: Patients awaiting removal of a brain tumour underwent a dental examination and had saliva samples taken. Those who developed pneumonia postoperatively had significantly greater periodontal disease and pathogenic bacteria in their saliva. Cefalozin (a cephalosporin) given prophylactically to some patients preoperatively did not reach detectable levels in the saliva and bronchial secretions in all the patients.

Comment: The elderly have a 20% risk of developing pneumonia after major surgery, particularly if a brain operation is involved. This reduces cough and gag reflexes, making inhalation of bacteria from the mouth and nose more likely. This study, though small, indicated that poor oral health may increase the risk of infection three-fold. Perhaps these patients should be dentally examined and treated prior to surgery?

Reference: BMC Infect Dis. 2009;9:104.

http://www.biomedcentral.com/1471-2334/9/104

The effect of three composite fiber insertion techniques on fracture resistance of root-filled teeth

Authors: Oskoee PA et al

Summary: This laboratory experiment investigated the use of fibre insertion on the fracture resistance of root-treated maxillary premolars with MOD cavities. In the no-fibre group the cavities were restored with composite. The other groups had composite impregnated glass fibres placed at the occlusal, middle or gingival third of the cavities. The teeth were then thermocycled and exposed to compressive forces. The occlusal fibre group had a significantly higher fracture resistance and the lowest cusp detachment rate.

Comment: Maxillary premolars require good aesthetics and resistance to compression and shear forces. This study aimed to preserve structure without cuspal overlay. Despite major advances in composites they remain brittle and so are usually recommended for fairly small restorations. Moving the fibres from gingival to occlusal to be nearer to force exertion points in this experiment helped to keep the cusps together. The forces involved were static, and more studies on different tooth types and fibre types and shapes seem warranted.

Reference: J Endod. 2009;35(3):413-6.

http://www.jendodon.com/article/S0099-2399(08)01108-4/abstract

Aspergillosis of the maxillary sinus secondary to a foreign body (amalgam) in the maxillary antrum

Authors: Burnham R and Bridle C

Summary: Aspergillosis is a fungal infection from inhalation of aspergillus spores and the maxillary antrum is a fairly common site if a foreign body is present. This case report involved two years of pain and paraesthesia after the extraction of a heavily restored maxillary second molar. A CT scan revealed mucosal thickening of the antral floor and a hyperdense material. Functional endoscopy found a Black's class II-shaped amalgam filling, and its removal led to an uneventful recovery.

Comment: Aspergillomas may be treated with a traditional Caldwell-Luc operation or newer endoscopy techniques. There is rarely a need for systemic antifungal medications. Dental materials containing zinc are often implicated, mostly extruded zinc oxide root canal sealers and amalgam. The case demonstrates the importance of careful postoperative inspection of teeth and sockets during extractions.

Reference: Br J Oral Maxillofac Surg. 2009;47(4):313-5.

http://tinyurl.com/l8we4s

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Can orthodontic treatment improve mastication?

Authors: Henrikson T et al

Summary: Three groups of adolescent girls were involved in this study. Sixty-five Class 2 subjects received fixed appliance orthodontic treatment, 58 Class 2 girls were untreated and 60 had normal occlusions. Their self-perceived masticatory ability was assessed on a visual analogue scale and masticatory efficiency by chewing round-shaped silicone tablets. Recordings were repeated for all subjects when the orthodontic group had completed treatment. This group considered their masticatory ability had increased. The masticatory efficiency of all three groups increased over the two years. The normal group had significantly better masticatory efficiency throughout the experiment.

Comment: Orthodontic treatment is provided for a number of reasons and for some an improvement in ability to chew is important. The chewing test involved 25 strokes on five separate tablets of impression material that were then sieved and weighed. It is good to know that in this group orthodontic treatment was beneficial for self-perceived masticatory ability.

Reference: Swed Dent J. 2009;33:59-65.

Effect of salivary flow rate on masticatory efficiency

Authors: Gomes SGF et al

Summary: Does salivary flow rate influence masticatory efficiency? This was investigated in 60 dentate subjects; a control group with normal flow and hypo- and hyper- salivation groups. The hyposalivation group was taking isotretinoin for acne, and the hypersalivation subjects had citric acid dripped on their tongues. Flow rates were measured. Subjects chewed cubes of impression silicone for 20 strokes and the filtered particles were sieved. No significant difference was found among the groups.

Comment: There are many functions of saliva beyond chewing, and while this paper suggests patients with dry mouths do not suffer from masticatory inefficiency more studies are needed on how this may affect their quality of life. As the geriatric population increases and many drugs have xerostomic effects, studies like this take on a new importance.

Reference: Int J Prosthodont. 2009;22(2):168-72.

Antagonistic actions on Msx1 and Osr2 pattern mammalian teeth in a single row

Authors: Zhang Z et al

Summary: Mammals have a single row of teeth while many other vertebrates such as sharks have multiple rows. In this experiment turning off a single mouse gene resulted in extra teeth lingual to the molars. Previous work indicates the biochemical elements are active in humans too, but why mammals have teeth restricted to one row is unknown.

Comment: Most understandings of the mechanisms controlling tooth development are from studies of mice. Discovering how these extra teeth come about may eventually have clinical application in tooth regeneration.

Reference: Science. 2009;323(5918):1232-4.

http://www.sciencemag.org/cgi/content/abstract/323/5918/1232