

# Dental Review™

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Issue 37 - 2013

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**Welcome** to the first issue of *Dental Review* for 2013. The theme of the first three papers is ectopic canines – something seen (not seen?) quite often, and the mysteries of which can now be revealed in greater clarity by techniques such as cone beam CT imaging. A new set of national clinical guidelines for treatment is presented and two research papers discuss new research findings on the complications and management of these teeth.

Kind regards,

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## National clinical guidelines for management of the palatally ectopic maxillary canine

**Authors:** Husain J et al

**Summary:** These very recent guidelines from the Royal College of Surgeons of England alert the clinician to suspect a malpositioned upper canine if the patient is 10 to 11 years old and there is no tooth palpable in the buccal sulcus. Management strategies are suggested, involving such things as observing, extracting the deciduous canine, surgically exposing the tooth and orthodontically aligning it, surgically removing the tooth or auto-transplantation. The evidence for each option is evaluated and assigned a grade.

**Comment:** A useful article with discussion on appropriate radiographs and very well illustrated with radiographs and photographs. This is a very nice review of a condition we see quite often, with clinical photographs that could be shown to patients.

**Reference:** *Br Dental J* 2012;213(4):171-6

<http://www.nature.com/bdj/journal/v213/n4/full/sj.bdj.2012.726.html>

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### No difference in surgical outcomes between open and closed exposure of palatally displaced maxillary canines

**Authors:** Parkin NA et al

**Summary:** Two surgical techniques enable a palatally placed canine to be aligned orthodontically. 'Open' exposure involves removal of the overlying mucosa and bone and placing a surgical pack. The alternative 'closed' procedure features limited bone removal and bonding an attachment and chain to the crown, rather than excising the palatal mucosa. This study was a randomised controlled trial of two parallel groups and involved 71 patients seen in a dental school and two hospital units. The patients had one palatally placed canine and were aged under 20. The severity of the impaction was assessed by a blinded assessor from the panoramic radiographs. The time spent in the operating theatre and a patient questionnaire 10 days after surgery were also studied. There was no significant difference between the groups for any of the patient assessed outcomes, and the operating times were not significantly different.

**Comment:** Usually emerging in the mouth at age 11 or 12, in 1–3% of the population one or both canines fail to arrive. In about half the patients the tooth is positioned palatally. In this report, there was no difference in patient discomfort reported between the groups. A Cochrane Review in 2008 found no evidence to support one of these surgical techniques over the other. The overall failure rate was 6%, which is favourable compared to other studies. Only one of the gold chains debonded after the surgery.

**Reference:** *J Oral Maxillofac Surg* 2012;70(9):2026-34

[http://www.joms.org/article/S0278-2391\(12\)00273-X/abstract](http://www.joms.org/article/S0278-2391(12)00273-X/abstract)

### Maxillary canine impaction increases root resorption risk of adjacent teeth: a problem of physical proximity

**Authors:** Yan B et al

**Summary:** Chinese patients have predominantly buccal maxillary canine impactions, and this study investigated impacted canine-associated root resorption (ICARR) in 170 subjects aged 12–30 years using cone-beam tomography. There were 101 buccal and 69 palatal impactions and an age- and sex-matched control group with no impactions. Resorption was more common in the canine impaction subjects, with prevalence rates of 27%, 18% and 10% at the lateral incisor, central incisor and first premolar, respectively.

**Comment:** The resorptive effect mainly involved the apices of the adjacent teeth, but if present it sometimes extended to the pulp space of one of the incisors. The most important predictor of problems was proximity of the buried tooth to the adjacent root (<1 mm), and this was similar in white people and Chinese patients.

**Reference:** *Am J Orthod Dentofacial Orthop* 2012;142(6):750-7

[http://www.ajodo.org/article/S0889-5406\(12\)00873-6/abstract](http://www.ajodo.org/article/S0889-5406(12)00873-6/abstract)

### Sealing ability of mineral trioxide aggregate (MTA) combined with distilled water, chlorhexidine, and doxycycline

**Authors:** Arruda RAA et al

**Summary:** Considered by many as the best material for root-end filling, could the antibacterial effect of MTA be enhanced by mixing it with something other than water? This experiment involved 42 extracted teeth, and after root filling and ultrasonic cavity preparation, MTA was mixed with either distilled water, 2% chlorhexidine solution or 10% doxycycline solution and used as root-end fillings. The teeth were then dyed with silver nitrate solution and split longitudinally. Staining representing leakage was measured with a microscope. Replacing water as the MTA mixing agent did not significantly influence the root end seal.

**Comment:** It is easy to criticise leakage tests, especially where one plane only can be measured, so there is no measure of 'total' leakage. Mixing MTA with chlorhexidine has already been shown to improve its antimicrobial properties and doxycycline has been used in endodontic irrigants. So there is potential here for more experiments, looking at other factors such as setting times and effects on handling quality and mechanical properties.

**Reference:** *J Oral Sci* 2012;54(3):233-9

[https://www.jstage.jst.go.jp/article/josnurd/54/3/54\\_233/article](https://www.jstage.jst.go.jp/article/josnurd/54/3/54_233/article)

### Is there association between severe multispace infections of the oral maxillofacial region and diabetes mellitus?

**Authors:** Zheng L et al

**Summary:** This retrospective study looked at how uncontrolled diabetes influenced the hospital stay and complications of 117 patients with multispace infections of the head and neck. The diabetic patients had infections involving more spaces, stayed in hospital longer and suffered more complications. Blood glucose on admission was the only factor to influence the complications.

**Comment:** Unsurprisingly perhaps, odontogenic infections were the most common cause of the multispace infections. The authors state that some of the results may seem obvious, but here is data showing diabetic patients spent about a week longer in hospital to recover and were mostly older people. Perhaps they received less regular dental care and had poorer dentitions? The cost implications are clearly huge. The authors make the point that a retrospective study like this one relies heavily on the accuracy of written records and sometimes also individual recollections of events.

**Reference:** *J Oral Maxillofac Surg* 2012;70(7):1565-72

[http://www.joms.org/article/S0278-2391\(11\)01255-9/abstract](http://www.joms.org/article/S0278-2391(11)01255-9/abstract)



Independent commentary by  
**Associate Professor Nick Chandler**  
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Rehabilitation, University of Otago.

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Research Review publications are intended for New Zealand health professionals.

### Altered light-touch sensation after bilateral sagittal-split osteotomy: a prospective study of 50 patients

**Authors:** Jokić D et al

**Summary:** These investigators researched the light-touch sensation in the area innervated by the inferior dental nerve in 50 patients (30 female, 20 male) following bilateral sagittal-split osteotomy for mandibular setback. They used a nylon monofilament suture to apply light pressure and tested one day before surgery and every 2 weeks for 2 months. Patients were then tested monthly to the end of the first year. If there was one negative response then all tests were considered negative (no recovery). All the patients had a disturbance to light-touch sensation immediately after surgery but all recovered within 4 to 9 months. Recovery was significantly faster among the women. The oldest female patients had the fastest recovery (4 months).

**Comment:** The main disadvantage of this surgical procedure is impaired nerve function. The test used here determines effects on large, myelinated, slow adaptive nerve fibres and was carried out by the orthodontist involved in the study; the surgery was by two surgeons. The authors are very cautious about the significant differences found between the sexes and the better recovery in the older patients.

**Reference:** *Angle Orthod* 2012;82(6):1029-32

<http://www.angle.org/doi/full/10.2319/020312-98.1>

### Influence of thread design on implant positioning in immediate implant placement

**Authors:** Koticha T et al

**Summary:** Implants placed directly into extraction sockets tend to shift in a facial direction during insertion. This work used 11 cadaver heads with maxillary incisors and canines present. Selected teeth were extracted and a surgical guide made by a prosthodontist. Two surgeons placed the implants, one type with "V" shape threads and the other a square thread design. Most of the implants tended to move facially, with greater (but not statistically significant) displacement in the square thread group.

**Comment:** Guidelines for implant placement often suggest a palatally directed force for site preparation and implant insertion, with this short study providing some evidence for the recommendation. This shows that socket shape influenced the implant osteotomy; perhaps the result of the drill working against the inclined palatal wall of the socket. Cutting thread design may also be important in the immediate placement of implants.

**Reference:** *J Periodontol* 2012;83(11):1420-4

<http://www.joponline.org/doi/abs/10.1902/jop.2012.110665>

### A novel diagnostic and prognostic classification for the clinical management of endodontically treated single anterior teeth

**Authors:** Murgueitio R, Avila-Ortiz G

**Summary:** A considerable array of treatments may be suitable to manage root-filled anterior teeth. These authors provide a method of analysing remaining coronal tissues and a classification to evaluate root-filled teeth. Multiple factors are involved and their illustrations are helpful. Canal depth, diameter and shape are also keys. Recommendations are made on the necessity for posts, and suggestions are made on the post designs and materials to use.

**Comment:** Anterior teeth with root fillings usually present with less remaining tooth structure than posterior teeth and they may behave less favourably from a biomechanical viewpoint. In this classification, a dentine wall thickness under 1 mm or less than 1.5 mm in height is considered 'non-existent'. A controversial factor is whether these measurements are made before or after getting to work with a bur.

**Reference:** *Int J Periodontics Restorative Dent* 2012;32(6):713-20

<http://lib.bioinfo.pl/pmid:23057060>

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### Antibiotic prophylaxis in third molar surgery: a review

Authors: Oomens MAE, Forouzanfar T

Summary: Is giving antibiotics effective in preventing complications after lower third molar extraction? From 117 potentially relevant studies, the authors identified 23 eligible studies; 15 were considered 'low' quality and 8 'high' quality. The writers point out that significant results are more likely to be published, which can distort the findings of a meta-analysis. No study showed that metronidazole was effective, but other antibiotics might be helpful; however, is their statistically significant effect of any clinical relevance? The conclusion is that it remains questionable if antibiotics should be recommended.

Comment: Antibiotics to prevent postoperative wound infections account for over 30% of antibiotic prescriptions in general hospitals. In third molar surgery, the worrying and frequent complication is often a dry socket. Most importantly, in this research 2 of the 8 high-quality papers were from New Zealand. We must go and read these!

Reference: Oral Surg Oral Med Oral Pathol Oral Radiol 2012;114(6):e5-12

http://www.oooojournal.net/article/S2212-4403(12)00129-0/abstract

### Influence of palatal morphology on strain in maxillary complete dentures: a preliminary report

Authors: Takahashi T et al

Summary: Why do the upper complete dentures of some patients break? This paper reports measurement of the palatal morphology of 8 edentulous subjects, which was followed by the manufacture of duplicate experimental dentures fitted with a strain gauge placed in the midline. The patients then wore the dentures and bit on a metal bar in the first molar region. There was a strong relationship between the palatal depth, radius of curvature and strain.

Comment: Patients with shallow but wide palates have greater deformation of their dentures, which is likely to lead to fracture. The changes were greatest at the midline. The presence of a torus could heighten the risk, but only one patient featured the problem in this preliminary report. A bigger study with more subjects would be useful, as indices might be developed to investigate things further.

Reference: Int J Prosthodont 2012;25(6):619-21

http://tinyurl.com/bfu24y8



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