

# What's New in Dentistry

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**Electric current does not stimulate healing at osteotomy sites.** In an effort to reduce the healing time after orthognathic surgery and to stimulate the rate of bone deposition at osteotomy sites, researchers have been experimenting with the application of an electrical current directly to the osteotomy site in experimental animals. In a study published in *Clinical Orthodontic Research* (2000;3:123–131), researchers at St Louis University assembled a sample of 45 Sprague-Dawley rats. The sample was divided into 3 surgical groups of 15 animals each. An osteotomy was performed on the mandible of each animal. Then, in 1 group, an electrical current of 20- $\mu$ A was applied to the osteotomy site. In a second group, the electrodes were placed in the surgical site, but no current was delivered. In the third and final group, the osteotomy was performed, but no electrodes or current were applied, and this group served as the sham-operated control group. Then the animals were allowed to heal for 6 weeks. At that time, all of the osteotomy sites were evaluated histologically. The results were equivocal. In other words, the direct electric current did not increase the rate of healing of the osteotomy site compared with the control groups. On the basis of this study, application of an electrical current to the osteotomy site after orthognathic surgery in humans will not stimulate the rate of bone deposition and healing.

**Low dietary vitamin C increases risk of periodontal disease.** Specific pathogenic bacteria that produce inflammation and bone loss in susceptible individuals cause periodontal disease. Although researchers have identified most of the periodontal pathogens, the reasons why some individuals are susceptible to periodontal disease are not well understood. One of the factors thought to affect susceptibility is vitamin C. However, is there a relationship between low intake of vitamin C and a greater incidence of periodontal disease? That question was addressed in a study that was published in the *Journal of Periodontology* (2000; 71:1215–1223). The sample for this study consisted of 12,419 adults between the ages of 20 and 90 years that were a part of the Third National Health and Nutrition Examination Survey. This sample of individuals is representative of the US civilian, noninstitutionalized population. A 24-hour dietary record estimated the dietary intake of vitamin C of these individuals. In addition, a thorough periodontal screening was performed to identify individuals with periodontal disease. Then, the incidence of attachment loss was correlated with the dietary levels of vitamin C. The results of this study showed a statistically significant relationship between reduced dietary vitamin C and increased risk for

periodontal disease for the overall population. Current and former tobacco users who also had lower levels of dietary vitamin C were at even greater risk. On the basis of this study, those individuals taking the lowest levels of vitamin C and who also smoke are likely to show the greatest clinical effect on the periodontal tissues.

**Long-term low-dose use of antimicrobials for periodontal therapy does not produce drug resistance.** The guidelines for prescribing antibiotics in dentistry have changed significantly in recent years. Today, the American Dental Association has drastically reduced the number and types of patients who require prophylactic antibiotics before dental procedures to avoid producing oral bacteria with drug resistance. However, periodontists are currently prescribing long-term low doses of doxycycline for many of their recalcitrant periodontal patients. Does long-term doxycycline create resistant strains of bacteria? This issue was evaluated in the *Journal of Periodontology* (2000;71:1472–1483). This article compared 4 previous studies by these authors in which subantimicrobial doses of doxycycline were given to adult periodontitis patients. In all studies, up to 20 mg of doxycycline were given 4 times a day to these patients. Then the resistance of oral microbes was evaluated with a variety of tests. The results of this study show that there were no statistically significant differences in the proportion of doxycycline-resistant bacteria among the treatment groups and no evidence of multiantibiotic resistance. In conclusion, long-term subantimicrobial doses of doxycycline do not alter or contribute to alterations in the antibiotic susceptibility of the subgingival microflora compared with a placebo.

**Three-year clinical evaluation of posterior composites is promising.** Today, composite restorations are gradually replacing traditional amalgam restorations for restoring small to moderate carious lesions in posterior permanent teeth in most patients. Some dental patients demand these types of restorations because they are less obvious and more esthetic. However, posterior composite restorations had actually not been tested widely before they were applied to human patients. Are they as durable as amalgam? Will they stand the test of time? Currently, studies are being published that report the relative long-term success rates of posterior composite restorations. In a recent article published in the *Journal of Prosthetic Dentistry* (2000;84:289–296), the authors assessed a sample of 88 posterior composite restorations (43 direct and 45 indirect inlays) that were placed by 9 dental students under the supervision of an experienced clinician. The restorations were analyzed by

using criteria from the USPHS on an annual basis up to 3 years. The results showed that 93% of the indirect restorations and 87% of the direct restorations were graded as excellent or acceptable after 3 years. Indirect restorations consistently had better marginal integrity. Restorations in molars showed a much higher failure rate compared with premolars. In conclusion, the 3-year success rate for posterior composite restorations is satisfactory. It will be interesting to see how successful these restorations will be in another 10 or 15 years.

**How to cure morning breath odor.** Fortunately, most orthodontic patients are children and adolescents who typically do not have significant halitosis or breath odor. However, some adult orthodontic patients do have bad breath, and they are certainly unappealing to the orthodontist and the auxiliary staff. Is it possible to help these patients with the most repugnant breath? A study published in the *Journal of Dental Research* (2000;79:1773–1777) evaluated 5

different methods for eliminating morning breath odor. The sample consisted of 8 healthy adults ranging in age from 27 to 51 years. All subjects were free of dental caries and periodontal disease. None of the subjects was aware of a problem with halitosis. Each morning the subjects collected 2 oral gas samples. Then 6 different interventions were used, and mouth gas samples were collected hourly for the next 8 hours. The treatments were (1) no treatment (control), (2) brushing the teeth, (3) brushing only the tongue, (4) rinsing the mouth with 5 mL of 3% hydrogen peroxide for 1 minute, (5) consumption of the subject's standard breakfast, and (6) ingestion of 2 BreathAsure capsules. The results of the analysis of the sulfur gases after each technique showed that brushing the teeth or ingestion of BreathAsure had no influence on sulfur gases. Ingestion of breakfast and tongue brushing resulted in strong trends to reduce sulfur gases. Finally, hydrogen peroxide significantly reduced the sulfur gas concentrations for 8 hours.