

What's New in Dentistry

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High incidence of bacteremia after third molar extraction. Extraction of partially erupted third molars is a common dental procedure. When a third molar is partially erupted, there is a sulcus surrounding the crown of the tooth that could be difficult for the patient to clean, and therefore contain bacteria. A study published in the *Journal of Dental Research* (2004;83:170–174), evaluated the incidence and prevalence of bacteremia that occurs when partially erupted third molars are surgically extracted. The sample consisted of 16 young adults who had at least one mandibular third molar that was partially erupted and required surgical extraction. Prior to extraction, paper points were used to acquire bacterial samples from the pericoronal pockets around the third molar crown. After extraction, the socket was also sampled for bacteria. In addition, blood samples were drawn from each patient at intervals up to 30 minutes after the surgery. The results of the experiment showed that 88% of the subjects had a detectable bacteremia immediately after the extraction. This bacteremia lasted for 10 minutes in 44% of the subjects, 15 minutes in 25% of the sample, and 30 minutes in 13% of the patients. The most prevalent anaerobes were *Prevotella*, *Eubacterium*, and *Peptostreptococcus*. Furthermore, these researchers showed that any species found in the blood was also isolated from the mouth, either from the pericoronal pockets or the extraction socket. In conclusion, this study has shown that surgical extraction of partially erupted third molars causes bacteremia of high frequency in young adults.

Chlorine dioxide waterline cleaners are effective in decontaminating biofilms. Biofilms are a natural occurrence in all aquatic environments, which includes community drinking water systems. In the dental office, small diameter tubing at dental units used to transmit water for rinsing during dental procedures is also a site of biofilm formation. In the lumen of these tubes, the flow is minimal, and the water could become stagnant, which promotes the development and resistance of biofilm microorganisms. These lines can and should be cleaned regularly to reduce the potential for build-up of microorganisms. A study published in the *Journal of Periodontology* (2003;74:1595–1609), compared the effectiveness of three commercially available dental unit water line cleaners in 16 dental units in a teaching clinic. The three cleaning materials included an alkaline peroxide product, a freshly mixed chlorine dioxide product, and a buffer-stabilized chlorine dioxide

product. After use of the materials, the units were sampled daily for 10 days and the microorganisms were cultured and counted to compare the effectiveness of each of the dental unit water line cleaners. The results showed that the buffered chlorine dioxide treatment was better than the alkaline peroxide at all times during the experiment. There were no statistically significant differences between the two chlorine dioxide treatments. The authors conclude that chlorine dioxide waterline cleaners are effective in decontaminating dental unit water line biofilms.

Tetracycline and bisphosphonate reduce periodontal bone loss. Periodontal bone loss is initiated by bacteria and their metabolic products that increase local infiltration of inflammatory cells into the gingival tissue and disrupt the collagen fibers. Today, treatment of chronic periodontal disease includes not only removal of the bacteria through scaling and root planning, as well as surgery to eliminate the inflammatory tissue, but also the use of antimicrobial drugs. Tetracycline not only reduces bacterial levels, but it also participates in reducing degradation of the collagenous matrix. In addition, bisphosphonates are potent inhibitors of bone resorption and have been used effectively to reduce bone loss in osteoporosis. A study published in the *Journal of Periodontology* (2003;74:1038–1042), evaluated the effectiveness of the combination of these two drugs in reducing alveolar bone loss. The experiment was performed in rats. Five groups of animals were given various combinations of either tetracycline alone, bisphosphonate alone, or combinations of these drugs applied locally to the alveolar bone around posterior teeth. Then, these sites were evaluated over time to determine if bone loss was affected by the administration of these drugs. The results of this experiment showed that the combination of tetracycline and bisphosphonate had a synergistic effect and showed substantial reduction in alveolar bone loss in this animal model.

Some electric toothbrushes are more effective than others at removing interproximal plaque. Electric toothbrushes have been available in various forms for several years. Studies of the utility of these brushes at removing plaque from teeth have shown them to be consistently more effective than manual toothbrushes. But most of these studies have evaluated the removal of plaque on the buccal or lingual surfaces of the teeth. A study published in the *Journal of Periodontology* (2003;74:1017–1022), compared the effectiveness of two different electric toothbrushes (Soni-

care Plus and Braun Oral B), at removing interproximal plaque *in vitro*. A special machine was designed to simulate the brushing of interproximal plaque between mandibular molar teeth. An *in vitro* oral biofilm was grown on hydroxyapatite discs. The bristles of the toothbrush did not make contact with the biofilm at any time. An exposure of five seconds was used throughout the experiment. The efficacy of the brushing was determined by counting the numbers of viable bacteria removed from the hydroxyapatite discs. The results showed that the Sonicare removed 50% of the interproximal bacteria, while the Braun Oral B toothbrush only removed 16% of the bacteria. The authors suggest that their data imply that the Sonicare Plus would be more effective than the Braun Oral B at removing interproximal dental plaque *in vivo*.

Regeneration therapy successful for treating Class II furcations. A common periodontal defect in some adults is bone loss in the furcation of maxillary and mandibular molar roots. Furcation defects are classified as Class I, if the defect is small, Class II if the defect extends horizontally into the furcation, but does not communicate with the mesial, distal, or lingual areas of the tooth, and Class III if the

bony defect does communicate with other surfaces of the tooth. Regenerative therapy using membranes and bone grafting has been attempted in the past to fill-in or cover Class II furcations in order to prevent bacteria from colonizing the bony defect. A study published in the *Journal of Periodontology* (2003;74:1255–1268), evaluated the results of regenerative therapy for treating Class II furcation defects in a sample of 43 healthy individuals with chronic periodontitis. The sample was 36 to 70 years of age. Each individual had two or more mandibular facial Class II furcation defects with greater than 3 mm horizontal probings. Two defects were treated in each patient using a polytetrafluorethylene membrane in addition to a freeze-dried demineralized bone graft. Clinical measurements included gingival index, plaque index, mobility, probing depth, and probing attachment levels for each site after one year. The results showed that there was complete clinical closure achieved in 74% of the all sites. Of the residual furcation defects, 68% were reduced to Class I defects. No defects progressed to Class III in the sample. The authors conclude that successful clinical closure of Class II furcations was achievable at one year following combination therapy with a polytetrafluorethylene membrane and freeze-dried decalcified bone grafting.