

# What's new in dentistry?

*It is not always possible to read the wide variety of dental journals available today. To help resolve this dilemma, The Angle Orthodontist has asked Dr. Vincent Kokich to review a number of excellent articles published elsewhere. The results of this review will be found in this section every quarter under the heading, "What's new in dentistry." I think you'll like it! —Editor*

**By Vincent G. Kokich, DDS, MSD**

**ARE MOUTHRINSES EFFECTIVE AT REDUCING BACTERIAL PLAQUE?** In recent years the mouthwash war has been raging. The manufacturers of every commercially available product claim that their mouthrinse significantly reduces the bacteria found in dental plaque. This is particularly true with the three most common products on the market: Listerine, Viadent and Peridex. But are these claims really true? Can these mouthrinses actually reduce the number of bacteria? Do they have any effect on gingivitis? These questions were recently answered in a paper by Grossman and his associates that appeared in the *Journal of Periodontology* (60:435-440, 1989). Their study compared the effects of Listerine, Viadent and Peridex on plaque and gingivitis over a six month period in 480 subjects. This was a double blind study, so neither the subjects or examiners knew which mouthrinse was being tested. The subjects were asked to use one of the mouthrinses as a part of their routine normal oral hygiene regimen. All patients were evaluated at three and six month intervals. The results showed that all three products significantly reduced plaque levels when compared to a placebo mouthrinse at three and six months. However, Peridex containing chlorhexidine was more effective than Listerine and Viadent at reducing plaque. In addition, reductions in gingival inflammation and bleeding were consistently observed only in the group of patients rinsing with chlorhexidine. At the six month examination, the gingivitis scores in the subjects using Viadent and Listerine were not significantly different than the placebo. Only those subjects rinsing with Peridex containing chlorhexidine continued to have significantly reduced levels of gingivitis relative to the placebo.

**A METHOD TO REMOVE WHITE SPOTS FROM ANTERIOR TEETH** — As orthodontists, we often see and treat patients that have varying degrees of stain on

their teeth. Staining of the maxillary incisors can be a compromise to our esthetic results. In many patients, these stains are not the result of poor oral hygiene, but are simply inherited and develop during enamel formation. In a recent article in *Quintessence International* (20:395-400, 1989), Cole describes a technique for removing stains from the labial surfaces of maxillary incisors. The process is called enamel microabrasion. It specifically involves the application of an 18 percent hydrochloric acid-pumic mixture to the labial surfaces of the maxillary incisors. With several applications and intermittent water rinsing, the mixture gradually abrades part of the enamel surface. If the stain is not deep, it can be successfully removed. According to the article, there is no postoperative thermal sensitivity in the teeth or any suggestion of pulpal injury. In addition, there is no increased risk to dental caries. When the procedure was performed on extracted human teeth, the enamel loss was approximately 200 microns.

**ROTARY ELECTRIC TOOTHBRUSHES ARE MORE EFFECTIVE THAN MANUAL BRUSHING** — Getting patients to clean their teeth adequately is a challenge for orthodontists and their auxiliaries. The appliances we use compound plaque retention and make it more difficult for patients to adequately clean their teeth. In the past, we have relied on manual brushing and dental flossing to remove plaque from the teeth. Recently, however, electric toothbrushes have come back into vogue. The Interplak brush has been advertised extensively as an effective adjunct for oral hygiene. But are these claims really true? The effectiveness of the Interplak brush was recently tested by Baab and Johnson in a very well designed and controlled study (*J. Perio.* — 60:336-341, 1989). Their sample consisted of 41 adult subjects with generalized moderate gingivitis. The sample was randomly divided into two groups. One group used an Interplak electric brush and the

other used a manual toothbrush as the only means of plaque control for a four week period. The use of dental floss was not allowed. The patients were evaluated at one, two and four week intervals. This was a blind study and the examining investigator did not know which patients were using the electric brush. The amount of plaque and the health of the gingiva were evaluated at each of the observation visits. This study shows that subjects using the Interplak electric brush had significantly lower plaque indices and gingival indices when all of the observations were computed. Although both groups improved their plaque scores, only subjects using the electric brush achieved a significantly lower level of plaque throughout the four week period. In addition, the Interplak group showed significantly greater reduction in gingival inflammation than the manual group.

**SORBITOL CHEWING GUM EFFECTIVE IN REMINERALIZING CARIOUS LESIONS** — Some orthodontic patients have poor oral hygiene and accumulate plaque during treatment. When the patients' appliances are removed, decalcification and caries are often apparent around and adjacent to the bands and brackets. In recent years researchers have shown that demineralized areas of enamel can actually remineralize with the application of fluoride. But are there other ways to reverse this process? Recent research has shown that alternative sweeteners in the diet can reverse the cariogenic process. This effect is produced by stimulating the flow of saliva which is the result of the sweet stimulus in the mouth. Increased saliva flow raises the salivary and plaque pH, raises the concentration and amount of calcium, and raises the concentration of phosphate. Is it possible that these effects could be used clinically to reverse the demineralization process in humans? This interesting question was tested in a recent study by Leach, et al. that was published in the *Journal of Dental Research* (68,6: 1064-1068, 1989). Sorbitol is a common artificial sweetener. It is found in some chewing gums. The purpose of this study was to examine the effect of chewing sorbitol gum on the remineralization of caries-like lesions in humans. Ten adult subjects participated in the study. Cast bands were cemented to the teeth in each of the subjects. Embedded in the outer surface of the band was a piece of enamel with a hole that simulated a carious lesion. The subjects wore the bands for two three-week periods. During one of the periods the patients underwent their normal oral hygiene and diet. During

the second interval, the patients chewed five sticks of sorbitol-containing gum each day. The results show that sorbitol chewing gum increased the remineralization potential of the enamel by twofold. The most likely explanation of the increased remineralizing effect is the increased quantity of saliva which raises the concentration of calcium and phosphate.

#### **COMMON HEADACHE MEDICATION NOW USED TO REDUCE ALVEOLAR BONE LOSS**

— The most important component of treating periodontal disease is to control the etiologic bacteria. However, the presence alone of bacteria on the tooth surface is not sufficient to explain the periodontal disease process. The reaction of an individual's immune system to the bacteria is also important in the progression of periodontal disease. In recent years there has been great interest determining how modulation of the immune factors can be used to prevent and treat periodontal disease. Since the early 1970s, researchers have recognized that prostaglandins, which are metabolites found in the periodontal tissues, actually contribute to alveolar bone resorption during periodontitis. In order to break the link in the bone resorption chain, researchers are now testing the effects of inhibitors of prostaglandin production to alter the course of bone loss in periodontal disease. These prostaglandin inhibitors are known as non-steroidal anti-inflammatory drugs. As lay persons, we know these drugs commonly as Advil and Nuprin. In a recent study published in the *Journal of Periodontology* (60:485-490, 1989), Williams and his associates reported the results of a two and one-half year study using these drugs in humans. Their sample consisted of 44 patients with moderate periodontal disease and pocket depths of five millimeters or more on many posterior teeth. The sample was divided into two groups. Over a two year period, one group took two 50 mg tablets of a non-steroidal anti-inflammatory drug daily. The other group took a placebo tablet. The alveolar bone levels were measured radiographically at six month intervals over the two year time of the experiment. The results showed that the anti-inflammatory drug significantly reduced the rate of alveolar bone loss compared with the placebo. The findings from this preliminary clinical study opens the door for further research in the area of host modulation of periodontal disease progression.