

# What's New in Dentistry

Vincent Kokich, DDS, MSD

**Home physical therapy valuable for treating myofascial pain.** A variety of specific therapies are available for treating patients with temporomandibular disorders (TMDs). One type of TMD is myofascial pain, which usually is caused by overactivity of the muscles of mastication. Although dentists attempt to educate patients about the etiology of myofascial pain, knowledge alone, without home therapy, may be inadequate to gain relief of pain. A study published in the *Journal of Orofacial Pain* (2004;18:114–125) evaluated the additional benefit of home physical therapy to relieve myofascial pain. The sample consisted of 70 consecutive patients who appeared for therapy at a teaching clinic that specialized in treating patients for TMD. Each of these individuals had myofascial pain that had been recurrent or constant for the previous three months, and the spontaneous pain in the last week was greater than 30 on a 100-mm visual analog scale. These patients were randomly assigned to either one of two treatment groups. In one group, the patients were reassured by the dentist, who explained the problem, the suspected etiology, and the good prognosis of this benign disorder. The patients were told to avoid excess mandibular movement, to keep their teeth apart at times of more severe pain, and to keep a soft diet. In the second group, the same education was provided, but the patients were also asked to follow a routine protocol, which included self-relaxation exercises with diaphragmatic breathing, self-massage of the masticatory muscles, application of moist heat pads on the painful muscles, stretching, and coordination exercises. When the samples were compared after three months, the success rate of significant relief of pain was 57% for the education only group, and 77% for the group that received both education and home physical therapy. Based upon the data from this study, the authors conclude that the combination of education and home physical therapy is slightly more clinically effective than education alone for the treatment of myofascial pain of the jaw muscles.

**Condyles positioned differently in subjects with ADD.** A common diagnosis for patients with popping of the temporomandibular joint is anterior displacement of the cartilaginous disc (ADD). When the mandible opens, the condyle slides onto the disc, and when the jaw closes, the condyle slips off the disc as it approaches the glenoid fossa. A recent study published in the *Journal of Oral and Maxillofacial Surgery* (2004;62:39–43) evaluated whether the

position of the mandibular condyle in patients with ADD is different from that of a control group with normal joints. The sample consisted of 26 joints with a confirmed diagnosis of ADD based upon careful evaluation of magnetic resonance images (MRIs). These were compared to 14 normal temporomandibular joints. Two different MRI views of each joint were analyzed and traced to determine the precise location of the condyle relative to the glenoid fossa. Using specially designed software, the geometric center of the glenoid fossa and the geometric center of the condylar head were calculated for each joint. Then the relative location both anteroposteriorly and superoinferiorly was calculated and compared between the disc displacement and control joints. This study found that in patients with ADD, the position of the condylar head was significantly different than in patients with normal joints. In the joints with ADD, the condylar head was positioned significantly more posterior and superior in the glenoid fossa than in the normal joints. In addition, the posterior condylar displacement in the disc displacement group was 2.4 times greater than the superior condylar displacement.

**Xylitol chewing gum improves oral health at day care centers.** Xylitol chewing gum has been used for many years in Scandinavian countries as a means of reducing dental decay. Not only is xylitol not fermented by decay-producing bacteria, but the xylitol also has a bacteriostatic effect on the plaque. A recent study published in *Acta Odontologica Scandinavica* (2003;61:367–370), compared the effect of a toothbrushing program in a day care center to a xylitol chewing gum program to determine which is more effective at reducing dental decay. A total of 921 children were involved in this study, which lasted for about three years. Day care centers in a Finnish community were randomly assigned to xylitol chewing gum or supervised toothbrushing groups. An additional sample of 270 children who had not been in day care centers was evaluated to provide control data. Each year over the experimental period, the children had an oral examination to determine their decay status. All children in the toothbrushing groups brushed their teeth after lunch. The xylitol groups did not brush their teeth in the day care center. Chewing gum containing 65% xylitol was regularly distributed to the children three times per day: after the morning meal, after lunch, and after their afternoon snack. The daily dose of xylitol was 2.5 g. The gum was chewed for between five and 10

minutes and was supervised by the personnel. The two samples of children were compared at the end of the experiment and also at the age of nine years, or about three years after the experiment. The main result of this study was that children in the xylitol group were statistically significantly more often totally caries-free than the children in the brushing group. In addition, the children with one xylitol period were statistically significantly more often totally caries-free at the age of nine years than the children in the brushing group.

**Vertical position of implants affects amount of bone loss.** Most long-term studies of dental implants have shown that alveolar crestal bone remodeling occurs around the head of an implant during the process of osseointegration. If the amount of bone loss or remodeling is significant, it could affect the level of the gingival margin around the eventual implant crown. If the implant is located in the posterior region of the mouth, changes in the vertical position of the gingival collar may not be clinically apparent. However, for single-tooth implants placed in the maxillary anterior region, apical migration of bone and tissue around single-tooth implants could be esthetically disastrous. A study published in the *Journal of Periodontology* (2004;75:572–577) evaluated the amount of bone remodeling that occurred around a one-piece implant with time, and related the changes to the position of the rough-smooth border relative to the bone level. The sample consisted of 27 patients who received implants in the maxilla and 15 patients who received implants in the mandible. All implants were placed with the rough-smooth border at varying locations relative to the alveolar crest. After six months of integration, crowns were placed on the implants, and they were radiographed annually up to five years after placement. The level of the bone relative to the rough-smooth border was compared with time. The results showed that a significant amount of bone remodeling occurred for all implants at the six-month follow-up visit (1.10 mm), with the remaining time points showing virtually no change (0.1 mm). The

authors discovered a relationship between the amount of bone remodeling and the location of the rough-smooth border relative to the alveolar crest. Those implants with the rough-smooth border surgically placed below the crest had, on average, a greater amount of remodeling at six months than implants with the rough-smooth border placed at or near the crest. However, in both situations, the remodeling occurred early within the first six months and remained virtually unchanged up through 60 months.

**Periodontal disease and the risk of coronary heart disease.** Associations between periodontal disease and coronary heart disease have been investigated in many recent studies. It has been estimated that 35% of adults over 30 years of age in the United States have periodontitis. In 1995, cardiovascular diseases were responsible for 50% of deaths in developed countries. These two diseases appear to have several characteristics in common. They are more likely to occur in older persons, males, smokers, hypertensive patients, people with lower educational status, and stressed subjects. In order to determine if there is a relationship between these two diseases, a meta-analysis was conducted between periodontal disease and coronary heart disease. By pooling information from individual studies, better statistical estimates of the effect of periodontal disease on the risk of coronary heart disease can be obtained. This study was published in the *Journal of Periodontology* (2004;75:1046–1053). The authors identified over 290 references comparing these two diseases. However, only 11 of these studies met the rigid inclusion criteria set by these researchers. The authors pooled the data from these 11 studies and applied specially designed statistical tests to determine associations between the two diseases. The results showed that subjects with periodontitis had an overall adjusted risk of coronary heart disease that was 1.15 times the risk for healthy subjects. The findings of this study indicated that periodontal infection increases the risk of coronary heart disease; however, this meta-analysis provided no evidence for the existence of a strong association between periodontitis and coronary heart disease.