

What's New in Dentistry

Vincent Kokich, DDS, MSD

Ability to cope with stress influences periodontal therapy. An increasing number of studies have shown that psychological stress can lead to immunological changes, which may have direct effects on the immune system of the body. This same principal may be true for several forms of periodontal disease. A recent prospective clinical trial published in the *Journal of Periodontology* (2005;76:90–98), investigated the influence of individual coping behaviors for stress on periodontal therapy and on the subsequent course of the disease. The sample for this study consisted of 89 patients (53 women and 36 men) with chronic periodontal disease. The age range of the subjects was between 27 and 68 years. All subjects required non-surgical periodontal therapy for their chronic periodontitis, and they could be evaluated over a 2-year period during which they had received regular maintenance treatment. In order to obtain psychological data on stress coping for the sample, a standard version of a stress coping questionnaire was used at the beginning of treatment and also at the 2-year reassessment. Periodontal parameters were recorded at the start of treatment and also about two years later for all intact teeth in this sample. Over the 2-year observation period, there was a marked improvement in the clinical attachment level as well as probing depth compared to baseline values for the general sample. However, the authors found that after two years, patients with a defensive, suppressive coping style for stress showed significantly greater clinical attachment loss. In other words, patients with a defensive, suppressive coping style had significantly poorer attachment values and less improvement in their periodontal conditions than patients with other types of stress coping behavior. The authors concluded that passive coping strategies for stress were more pronounced in advanced disease, while patients with active coping modes for stress had milder disease and a more favorable course of periodontal therapy.

Biannual application of fluoride significantly reduces caries in primary teeth. Acidulated phosphate fluoride (APF) is an effective cariostatic agent that has been widely studied in the last half-century. Clinical studies have shown that the overall caries-inhibiting effect of an APF gel is about 21%. However, almost

all of the clinical trials have evaluated the preventive effect of fluoride gel on dental caries in permanent teeth in 6 to 15-year old children. Excessive ingestion of fluoride during gel application in children under five is likely to result in toxicity, and therefore the use of APF gel in young children is not recommended. An APF foam has been developed recently with the same fluoride concentration, but the APF foam requires only about one-fifth as much material to cover the primary teeth. A study published in the *Journal of Dental Research* (2005;84:265–268), evaluated the effect of a bi-annual professional application of APF foam on the caries increment in the primary dentition in kindergarten children over a two-year period. This was a double-blind, randomized, placebo-controlled trial. Children were randomly allocated to two study groups of about 150 subjects each. Either APF foam or a placebo was professionally applied to the teeth in these subjects at six-month intervals over the 2-year period. The maximum number of applications for each child was four. An oral examination at baseline and after two years was carried out to determine the numbers of cariously involved teeth. The results of the study showed that the experimental group had a 37.6% caries reduction on the approximal surfaces compared with the placebo control group. No significant difference in the mean caries increment was observed on occlusal surfaces between the two groups. The authors concluded that biannual professional application of APF foam was an effective method of reducing the increment of dental caries in the primary teeth of kindergarten children.

Implant loading affects collagen fiber orientation in bone. The long-term success of osseointegrated implants in function requires a peri-implant bone tissue of good quality. During function, the bone around implants is stimulated and subjected to continuous cycles of resorption and formation. Few studies have quantified the collagen fiber orientation in bone and its relationship to the mechanical loading of human bone. A study published in the *Journal of Periodontology* (2005;76:83–89), evaluated the effect of loading or nonloading of dental implants on the collagen fiber orientation in the bone around the implants. The sample consisted of 10 implants placed in humans. Five of the

implants were immediately loaded, and the other five were unloaded. The authors used circularly polarized light and scanning electron microscopy to assess the impact of loading or nonloading on the collagen fiber orientation around the implants. The results showed that in the bone around loaded implants, the transverse collagen fiber area was significantly higher than the longitudinal collagen fibers. In the unloaded implants, however, the transverse collagen fiber area was significantly smaller than the longitudinal collagen fiber area. The authors concluded that in the bone around loaded dental implants, transverse collagen fibers were more abundant, while in the unloaded implants, collagen fibers run more longitudinally. The loading of the implants seemed to determine the collagen fiber orientation.

Retained third molars associated with periodontal pathology in older Americans. Orthodontists often have to make decisions on whether to extract or leave third molars after orthodontic therapy. If these teeth will erupt into occlusion, the tendency is to leave the third molars in the mouth. However, what happens to these teeth long-term, and does their presence have any negative periodontal effect on the adjacent second molar? A study published in the *Journal of Oral and Maxillofacial Surgery* (2005;63:179–184), assessed the association between the presence of visible third molars and periodontal pathology in a sample of middle-aged and older adults. The sample consisted of nearly 6800 persons aged 52 to 74 years. The probing pocket depth and gingival recession were assessed on six sites per tooth on all remaining teeth, including third molars in this sample of individuals. The two main variables of interest to these researchers were presence or absence of at least a 5-mm probing depth and the presence or absence of gingival bleeding on probing of a second molar in each quadrant. The results of this study showed that among this older population,

70% had no third molars, while the other 30% had one or more third molars. Presence of a visible third molar was associated with a 1.3 times odds of having gingival bleeding on the adjacent second molar compared with quadrants with the absence of a visible third molar. In addition, the presence of a visible third molar was associated with 50% excess odds of a periodontal pocket of greater than five millimeters on the adjacent second molar. In conclusion, these authors found that if a third molar is visible, clinical indicators of periodontal disease were more likely to be detected on the adjacent second molar.

Implants placed in regenerated bone have high success rates. Guided bone regeneration has become a common method of gaining sufficient bone in which to place dental implants, when the alveolar ridge is deficient buccolingually. However, while the short-term success of implants placed in regenerated bone has now become well documented, the long-term stability of implants in regenerated bone under function has not been extensively reported. However, a study published in the *International Journal of Oral and Maxillofacial Implants* (2005;20:77–83), examined a large group of implants that had been placed in regenerated bone over 10 years after placement. The sample consisted of 607 implants placed in 319 patients. All had been placed in regenerated bone in the maxilla or mandible. The results of this retrospective analysis showed that the cumulative success rates were 97.2% for the maxilla and 97.4% for the mandible, which yielded an overall cumulative success rate of 97.4% for up to 133 months in function. The author concluded that titanium plasma-sprayed osseointegrated implants of various diameters, lengths and designs utilized in a variety of clinical scenarios, demonstrated functional cumulative success rates comparable to those of implants placed in nonregenerated host bone for extended periods of time.