What's New in Dentistry

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Immediate implants have high survival rates. Dental endosseous implants have revolutionized dentistry. They are routinely used to replace missing teeth in humans. In most situations, implants are inserted into edentulous ridges several months or years after tooth loss. However, in some situations, implants are placed immediately after tooth extraction. The stability of immediate implants has been questioned in the past. A study published in the *Journal of Periodontology* (2005;76:391–397) evaluated implants placed into contained extraction sites to determine the success rate after 2 to 3 years. The sample for this study consisted of 52 patients who had a total of 73 implants (57 in the maxilla and 16 in the mandible) placed after extraction of permanent teeth. After implant insertion, an electronic transducer was used to measure the implant stability. The average interval between implant insertion and placement of the final restoration was 5.6 months. The survival rate of the implants and their stability was tested at 2 and 3 years. This study showed that the cumulative survival rate was 97.2%. The authors conclude that implants placed at the time of extraction and inserted into native bone and not directly into extraction sockets have a high degree of initial stability, and that this stability is maintained with time.

Antimicrobial therapy ameliorates periodontal disease. Periodontitis is a chronic disease characterized by clinical attachment loss caused by intraoral biofilms harboring periodontal pathogenic microorganisms. Elimination of the bacteria in a susceptible patient will reduce the progression and severity of the disease. However, if the patient does not remove the bacteria daily, the bacteria recolonize the tooth surface, and the disease progresses. Adjunctive antimicrobial therapy is often suggested to help reduce the levels of bacteria. However, do these adjuncts prevent attachment loss? A study published in the *Journal of Periodontology* (2005;76:749–759) evaluated the supplemental effect of antimicrobial therapy performed in conjunction with root planning and scaling on a sample of patients with previously untreated chronic periodontitis. A sample of 35 patients with untreated periodontal disease due to either ubgingival *Actinobacillus actinomycetemcomitans* and/or *Porphyromonas gingivalis* were randomly assigned to two groups. In the control group, the patients received subgingival scaling without antimicrobial therapy. In the test group, the subjects received subgingival scaling and an 8-day regimen of systemic antibiotic therapy plus local irrigation with chlorhexidine immediately after the scaling. Relative attachment levels and subgingival plaque samples were taken at baseline and at varying intervals up to 2 years after initial therapy. The results of this study showed that over a 24-month period, a single course of the administered adjunctive antimicrobial therapy led to a relative risk reduction of 62% for attachment loss at deep sites. Therefore, the antimicrobial therapy may be considered as an adjunct to mechanical debridement in patients with moderate to severe chronic periodontitis.

Dental pulp cells enhance bone growth on implant surfaces. Dental implant success depends upon the deposition of bone on the surface of the implant in order to provide stability when the implant is placed into function. Enhancing the rate and/or amount of bone deposition on an implant surface would be desirable. Dental pulp tissue is a cellular source for bone tissue repair, and the bone-regenerative ability of pulp extracted from primary and permanent teeth has been demonstrated. Could dental pulp cells possess the potential to generate mineralized tissue on titanium and enhance the osseointegration of dental implants? This hypothesis was tested in a study that was published in the *Journal of Dental Research* (2005;84:515–520). This investigation explored the potential for osseointegration engineering using dental pulp cells to generate mineralized tissue on titanium. In this study, dental pulp cells were extracted from rat incisors, and they were cultured on polystyrene (control) or machined and etched titanium surfaces (test). The results of the study showed that tissues cultured on titanium were harder than those on polystyrene. The authors conclude that dental pulp cells can generate mineralized tissue on titanium and that the osteoblastic process is enhanced by titanium surface roughness.

Periodontal disease predicts tooth-loss in postmenopausal women. In the United States, it is estimated that about $1.5 billion is spent annually for the replacement of missing teeth. The distribution of tooth

loss is skewed and only a small percentage of the population is responsible for the majority of tooth loss. Periodontal disease causes attachment loss in many individuals, which could eventually produce tooth loss. Postmenopausal women have estrogen deficiency and consequent loss of bone mineral density, which have been shown to be associated with increased rate of tooth loss. Does periodontal disease in postmenopausal women increase the risk of tooth loss? A study published in the *Journal of Periodontology* (2005;76: 1123–1128) monitored a sample of women after the onset of menopause over a 10- to 13-year period to determine the association between baseline periodontal status and incident tooth loss. The sample consisted of 106 women. At baseline their periodontal status was determined clinically and radiographically. Assessment of tooth loss during follow-up was determined. In this study, 57% of the subjects lost at least one tooth during follow-up. The authors found that each millimeter of alveolar bone loss at baseline increased the risk of tooth loss threefold in postmenopausal women. In conclusion, this study has shown that periodontal disease, especially measured by alveolar bone loss, is a strong and independent predictor for incident tooth loss in postmenopausal women.

Mouthrinses reduce breath odor in periodontitis patients. Bad breath is often caused by periodontitis and/or tongue coating. The principal components of bad breath are volatile sulfide compounds, especially hydrogen sulfide. These compounds result from proteolytic degradation by predominantly anaerobic bacteria of various sulfur containing substrates in food debris, saliva, and epithelial cells. Bacterial removal helps to reduce the incidence of the mouth odor. Removal of bacteria can be accomplished by either adequate mechanical debridement by patient or professional or by the use of antimicrobial agents. A study published in the *Journal of Periodontology* (2005;76: 705–712) examined the impact of initial periodontal therapy with and without adjunctive antimicrobial therapy on breath parameters in a group of patients with moderate periodontitis. This was a double-blind, randomized, 6-month clinical trial. The sample consisted of 45 subjects who had been diagnosed with moderate periodontitis. At baseline all participants received scaling and root planing of all pockets. In addition, the subjects were instructed to rinse daily for 6 months with either an active mouth rinse containing chlorhexidine or a placebo solution. At baseline and 3 and 6 months, the concentration of volatile sulfide compounds indicating the severity of the breath odor was determined. The chlorhexidine groups showed significant reductions in the number of bacteria in the plaque. In addition, the results of this investigation indicate that in patients with moderate periodontitis, initial periodontal therapy did not have a significant effect on the volatile sulfide compound level, except when combined with a mouthrinse.