What's New in Dentistry

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Dental implants can be placed into infected alveolar sockets. A common approach for treating patients with hopeless maxillary anterior teeth is to extract the tooth and place an immediate implant into the socket. This approach helps to maintain the gingival form and papillae around the restored implant. However, many of these hopeless teeth have periodontal disease, periapical pathology with infected lesions, or periodontal or periapical cysts. Can implants be placed directly into infected sites and still be successful in the long term? That question was answered in a study that appeared in the Journal of Oral and Maxillofacial Surgery (2007;645:384–392). In this investigation, the researchers immediately placed a total of 30 implants into previously infected tooth sockets after extracting the hopeless tooth. The protocol involved placing the patient on antibiotics 4 days before and up to 10 days after the placement of the implant. After extraction, the tooth socket was completely debrided of any cystlike material or granulation tissue. Then, implants were placed directly into the sockets after the appropriate preparation of the site. A bovine bone was placed into the void areas to fill in the site, and a titanium-reinforced membrane was placed over the site to seal off the area. The success rate was assessed at 12 and 72 months. All but one implant were successful and functioning after 72 months. One implant that had been placed in the anterior maxilla was mobile after its immediate restoration and was removed. Therefore, the success rate in this sample was 96.7%. The authors conclude that successful immediate implantation of single implants into debrided infected alveolar sockets depends on the elimination of all contaminated tissues and the controlled regeneration of the alveolar defect.

Evidence-based treatment of temporomandibular joint (TMJ) closed lock. Annually, from 1% to 3% of Americans seek professional care for temporomandibular disorder (TMD) symptoms. An estimated 2% of people with TMD have jaw locking from a permanently displaced intra-articular disc, which is termed *disc displacement without reduction*, or TMJ closed lock. This advanced disorder can cause significant pain and interfere with jaw movement and function. Several different treatments have been proposed, including medical management with steroidal and nonsteroidal anti-inflammatory drugs, rehabilitation with splints and physical therapy, and various forms of surgical intervention. Which of these procedures is most predictable or successful in treating TMJ closed lock? That question was addressed in a single-blind, randomized, clinical trial that was published in the *Journal of Dental Research* (2007;86:58–63). The sample for this study consisted of 106 individuals with TMJ closed lock. Subjects ranged between the ages of 18 and 65 years, and they reported daily pain in affected joints. Confirmation of closed lock and displaced disc was accomplished by magnetic resonance imaging. The subjects were randomly assigned to one of four treatment groups: medical management with anti-inflammatory drugs, rehabilitative therapy with splints and physical therapy, arthroscopy with lavage of the superior joint space, and arthroplasty with open-joint surgery and an attempt at disc replacement. Then, these subjects were evaluated with subsequent clinical examination and questionnaires at 3, 6, 12, 18, 24, and 60 months following the initial treatment. Based on careful analysis of the data, the authors found that the four treatment strategies did not differ in magnitude or timing of improved function or pain relief. In fact, the study showed that on average, short-term improvement with regard to pain and function, as measured at 3 months, is similar for all four treatment strategies. Therefore, the authors conclude that the primary treatment for patients with closed lock should consist of medical management or rehabilitation and that within the context of their study, there was no benefit associated with surgery over that of medical management or rehabilitation at any follow-up period.

Estrogen deficiency leads to fragility in alveolar bone. Postmenopausal osteoporosis, caused by a drop in estrogen levels after menopause, is a worldwide common problem inducing low bone mass and microarchitectural deterioration of the bone scaffolding in vertebrae and long bones. This disease often leads to osteoporotic fractures. In the dental field, postmenopausal osteoporosis studies suggest that estrogen supplements influence tooth retention by preventing

resorption of the alveolar bone. To determine the effect of experimental estrogen deficiency on alveolar bone, a study published in the *Journal of Dental Research* (2007;86:52–57) evaluated the alveolar bone of a group of ovariectomized monkeys. The sample for this study consisted of 12 adult female monkeys. They were divided into two groups. In the test group, the ovaries were removed, and in the control group, only a sham surgical procedure was performed. After 76 weeks, the authors compared the mineral bone density of the two groups to determine the effect of lack of estrogen on bone metabolism. Although no significant differences were found in bone volume between the two groups, some micro computed tomography images showed greater bone volume in the sham than in the ovariectomized group. In addition, trabecular architectural morphometry results showed a significantly higher structural model index in the ovariectomized group. However, no significant differences were found with respect to loss of buccal alveolar crest height as a result of estrogen deficiency. The authors conclude that estrogen deficiency in monkeys merely leads to fragility of the trabecular structure of the alveolar bone.

Enamel matrix protein and guided tissue regeneration promote periodontal regeneration. In the past, use of either an enamel matrix protein derivative or guided tissue regeneration have been shown to promote periodontal regeneration in patients with attachment loss around teeth. However, only limited data have been available on the long-term clinical results of these regenerative techniques. A study published in the *Journal of Periodontology* (2006;77:1879–1886) reported the results of a prospective, controlled, split-mouth clinical evaluation of the treatment of intrabony defects with these two techniques after 8 years. The sample for this study consisted of 10 patients, each of whom had one pair of intrabony defects located contralaterally in the same jaw. These subjects were randomly treated with either the placement of enamel matrix protein derivative or with guided tissue regeneration using bioabsorbable membranes. At 1 and 8 years following the procedures, the authors evaluated the plaque index, gingival index, bleeding upon probing, pocket depth, gingival recession, and clinical attachment level. The results showed that both the enamel matrix protein derivative group and the guided tissue regeneration group showed significant gains in clinical attachment level at 1 and 8 years. No statistically significant differences were found between the 1- and 8-year results. In addition, there were no statistically significant differences in any of the parameters between the treatment groups. The authors conclude that either enamel matrix protein derivatives or guided tissue regeneration with bioabsorbable membranes can be used to improve intrabony defects in periodontal patients up to 8 years.

Senior adults have a high incidence of caries in third molars. Some orthodontic patients do not have enough space for third molars, and it is common to have them extracted after orthodontic treatment. However, in some individuals, there is enough room for the third molars to erupt. But if they do erupt successfully and are aligned and in occlusion with the opposing teeth, will they create periodontal or caries-related problems for a patient during the later years of life. That question was addressed in a study that was published in the *Journal of Oral and Maxillofacial Surgery* (2007;65:103–108). The sample for this study consisted of 818 subjects who were older than 65 years. At the time of examination, 342 subjects had at least one visible third molar that could be examined for caries experience and periodontal health. At a 3-year follow-up, the caries risk was again assessed, as well as the pocket depth around the third molars. Based on careful analyses of the data, the authors found that by the eighth decade of life, 79% of subjects had clinical evidence of either third molar caries experience or periodontal pathology. Only 17% had clinical evidence of both caries and periodontal pathology involving third molars. In conclusion, since the authors found that only 21% of subjects in their eighth decade of life had third molars that were free of caries or periodontal disease, they believe that this information should assist both dentists and patients in determining the merits of either retaining or removing third molars with no evidence of pathology at an earlier age.