What’s New in Dentistry

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Ideal management of incipient caries. Although restoration of carious lesions has been the traditional approach in the past, the recent trend in the management of noncavitated lesions has been a shift from the operative to a more conservative approach to inhibiting and reversing lesion progression. Sealants, fluoride varnish, and glass-ionomer cements have all been used to promote remineralization. But which of these works most efficiently? An extensive in vitro study published in the *Journal of Dental Research* (2008;87:228–232) evaluated four different materials to find the most effective choice for stabilizing or reversing incipient carious lesions. For this investigation, 32 extracted premolars and third molars were used as the sample. Carious lesions were created on the proximal surfaces of the teeth using a precise technique to develop specific-sized areas of decalcification. Then one of four different materials was placed into these incipient lesions: a resin-based sealant, a fluoride-containing sealant, a fluoride varnish, and glass-ionomer cement. An equal number of lesions had no material applied and served as the control group. The specimens were thermocycled and pH cycled to simulate the oral environment. Then cross sections of the areas were studied to determine which material had the greatest effect on stabilization and remineralization of the existing incipient caries as well as inhibiting new caries in the areas adjacent to the lesions. Based on the results of this study, the authors conclude that the most effective material in reducing the carious areas was glass-ionomer cement, followed by the fluoride varnish, the fluoride-containing sealant, and the sealant. Glass-ionomer cement followed by fluoride varnish was most efficient in inhibiting new carious lesions in the areas adjacent to the materials.

Immediate restoration of anterior single-tooth implants has little effect on adjacent bone levels. The trend in implant dentistry is to restore single-tooth implants at the time of initial placement. The success rates of this approach seem to be comparable with those following delayed restoration. But what about the esthetic success of the implant crowns? Esthetic success is measured by the papillae and gingival margins surrounding the implant crown, which are directly related to the bone levels that support these soft tissues. A study published in the *Journal of Periodontology* (2008;79:2229–2237) evaluated the bone and soft tissue levels of immediately restored single implants positioned in the esthetic anterior region. The sample consisted of 45 patients requiring 52 single-implant crowns in the anterior region, which were restored immediately. Periapical radiographs and digital images of the interproximal sites were taken during regular follow-up appointments from 2 years up to 6 years after surgery. The interproximal papilla was assessed and compared to the distances between the bone crest and the contact point between the natural teeth and the restoration crown. No significant correlation was found between bone loss and papilla presence. The interproximal papilla decreased when the distance between the bone crest and the contact point between the tooth and the restoration crown was greater than 7 mm. The authors found that in the interproximal area between the implant and the natural tooth, the papilla does not seem to be affected by the peri-implant bone loss. The authors conclude that immediate restoration did not seem to cause a greater average amount of bone loss compared to that reported previously for one- and two-stage surgical procedures after the first year of function.

Osseointegrated implants can be successful long term in patients with generalized aggressive periodontitis. Implants are a common method of replacing periodontally hopeless teeth in patients with aggressive periodontal disease. If the periodontal disease continues, will the patient experience bone loss around the implants? Will it be greater or less than the bone that is lost around teeth? These questions were addressed in a long-term retrospective analysis that appeared in the *Journal of Periodontology* (2007;78:2229–2237). This investigation compared the clinical, microbiologic, and radiographic situation around teeth and osseointegrated implants in subjects treated for generalized aggressive periodontitis. The sample consisted of five subjects treated for generalized aggressive periodontitis and five periodontally healthy subjects who were orally rehabilitated with osseointegrated implants. These patients were evaluated every 3 months after implant placement. Clinical parameters as well as the composition of the subgingival microflora...
were determined. In addition, radiographs were taken at 1, 3, 5, 8, and 10 years. The authors found that throughout the follow-up period, the peri-implant gingival index of the periodontitis patients was significantly higher than in periodontally healthy subjects. In addition, implants in the periodontitis group showed significantly higher attachment loss and bone loss. The implant survival rates were 100% in the periodontally healthy subjects versus 83% in the aggressive periodontitis subjects. The authors conclude that partially edentulous subjects treated for aggressive periodontitis can be rehabilitated successfully with osseointegrated implants; however, the bone and attachment losses at the implants were higher than in periodontally healthy subjects.

**Root cementum may modulate periodontal regeneration in humans.** The major challenge in periodontal therapy is to restore the structure and function of the dental attachment that is lost during periodontal disease. Although there has been some success in a variety of periodontal regeneration techniques, not all of these approaches have resulted in predictable outcomes, especially regarding the formation of new attachment. As a part of the preparatory treatment prior to regenerative procedures, the root cementum is curedtted for the purpose of eliminating endotoxins that are on the surface. But does this scaling of the cementum destroy the capability of the cementum to provide for reattachment of the periodontal ligament during regenerative procedures? What role does the cementum play in reestablishment of the periodontal attachment? These questions were addressed in a study that was published in the *Journal of Periodontology* (2008;79:323–331). This study evaluated 30 subjects with deep intrabony defects of greater than 5 mm. The subjects were assigned to either the test or control group. The control group received scaling and root planing with the removal of granulation tissue and root cementum. The test group underwent removal of granulation tissue and soft microbial deposits by cleaning the root surface with a microbrush and saline solution. This latter procedure was aimed at cementum preservation. Guided tissue regeneration procedures using membranes were applied to both groups. After 3 weeks, the newly formed tissue under the membranes was assessed for the expression of several genes known to promote tissue regeneration. Interestingly, the authors found that specific genes responsible for promoting regeneration of the periodontal attachment were higher in sites where root cementum was kept in place compared to sites where root cementum was removed completely as part of the periodontal therapy. The authors conclude that root cementum may modulate the expression of growth and mineral-associated factors during periodontal regeneration.

**Preoperative analgesics reduce postoperative pain after jaw surgery.** Postoperative pain management after double jaw surgery is challenging. Studies have shown that when orthognathic surgical procedures combine sagittal split ramus osteotomy and Le Fort I osteotomy at the same session, the patients are reported to have the highest postoperative pain scores compared with other oral and maxillofacial procedures. Could this pain be reduced by administering preoperative analgesics to the jaw surgery patient? This question was addressed in a study that was published in the *Journal of Oral and Maxillofacial Surgery* (2008; 65:2453–2458). The purpose of this study was to compare the postoperative analgesic affects of the preoperative use of a synthetic opioid or a nonsteroidal anti-inflammatory drug for postoperative pain in patients undergoing bimaxillary osteotomy. The sample consisted of 36 orthognathic surgery patients who underwent both Le Fort I osteotomy in the maxilla and bilateral sagittal split ramus osteotomy in the mandible. These patients were divided into three groups. One group received a preoperative intramuscular injection of a synthetic opioid, the second group received an intramuscular injection of a nonsteroidal anti-inflammatory drug, and the third group received an injection of saline. The postoperative pain intensity was evaluated with a visual analogue scale. The results showed that the worst pain was experienced in the group that received the saline injection preoperatively. Both the nonsteroidal anti-inflammatory injection and the synthetic opioid reduced the postoperative pain. There was no difference between these two drugs. The authors conclude that preoperative nonsteroidal inflammatory or synthetic opioid injections effectively decrease postoperative pain following double jaw orthognathic surgery.