What's new in dentistry

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As orthodontists, we are often unaware of the technical and methodological advances in other dental specialties. However, many of these new experimental developments may ultimately become accepted dental therapy and influence the diagnosis and treatment of our orthodontic patients. Therefore, as part of the dental community, we must keep abreast of current information in all areas of dentistry. The purpose of this section of The Angle Orthodontist *is to provide a brief summary of what's new in dentistry.*

ANTI-INFLAMMATORY DRUGS REDUCE TMJ INFLAMMATION—Management of temporomandibular disorders can vary from the use of occipital splints to open surgery of the temporomandibular joint. The treatment depends upon the symptoms. When the symptom is pain due to inflammation of the joint, or synovitis, the ideal treatment would be to reduce the inflammation. Inflammation in other parts of the body is often reduced using anti-inflammatory drugs. A study published in the *Journal of Oral and Maxillofacial Surgery* (1998;56:1288-1295) tests the effectiveness of anti-inflammatory drugs on TMJ inflammation. The sample consisted of 42 experimental animals. Initially, a drug was injected into the joint to produce inflammation of the synovium. Then the researchers tested systemic and direct intra-articular injection of two different drugs. One was a steroidal anti-inflammatory drug and the other a nonsteroidal. The results of this experiment showed that both drugs and both routes of administration were effective. The nonsteroidal anti-inflammatory drug, Ketorolac, was slightly more effective than the steroidal drug, and direct intra-articular injection of Ketorolac was slightly more effective than systemic administration. However, both means of administration and both drugs helped reduce inflammation of the TM joint.

SINUS-LIFT PROCEDURES DO NOT DAMAGE SINUS MEMBRANES—Patients who are missing teeth in the maxillary posterior region often require dental implants as part of their restorative treatment plan. However, in many patients, the sinus extends down to the level of the alveolar crest, reducing the amount of bone available for implant placement. Typical treatment for these patients involves grafting bone into the sinus prior to implant placement. A major concern of this procedure is the potential negative effect on the sinus membrane, as well as the potential for sinus infection. The histologic response of sinus-lift procedures was tested in a study published in the *Journal of Oral and Maxillofacial Surgery* (1998;56:1170-1176). A sinus-lift procedure was performed in each of 12 experimental animals, and autogenous bone was grafted into the sinus area. In a second group of animals, a synthetic bone graft was placed in the sinus. A third group served as controls. The histologic lining of the maxillary sinus was evaluated at varying intervals up to 6 months. The histologic structure was scrutinized carefully to determine if any negative changes had occurred in the sinus lining. The results clearly showed that there was no inflammation or purulent exudate, and no infections occurred. The sinus linings were essentially normal. The results of this study showed that after 6 months, sinus grafting to provide stability for implants does not cause secondary deteriorating effects on the histologic structure of the sinus linings in experimental animals.

LASERS USED TO REMOVE CALCULUS MAY DAMAGE CEMENTUM—Lasers have become a popular method for some types of periodontal procedures. Gingivectomy, or removal of excess tissue, has been attempted with lasers. Recently some clinicians have suggested that lasers can be used at specific intensity to remove calculus from teeth during maintenance procedures. However, the concern is that the lasers could damage the cementum and cause irreparable change in the root surface. In order to test this possibility, researchers evaluated the effects of laser treatment on extracted human teeth. The results were published in the *Journal of Periodontology* (1998;69:1283-1290). Specimens were placed in a laboratory dish and held with forceps. The roots were irradiated with an Er:YAG laser at the rate of 1 pulse per second. The power was varied between 25,

50, 75, and 100 mJ. The results showed that the laser beam created crater-like defects in the root surface. The diameter of the defects and the depth of the craters varied with the power applied, with higher power creating more severe defects. In conclusion, despite water irrigation, the results of this study show that cementum is damaged by Er:YAG laser irradiation.

BIOABSORBABLE MEMBRANES HELP PRESERVE BONE IN EXTRACTION SOCKETS—When permanent teeth are extracted and adjacent teeth are not restored, the replacement for the missing tooth may involve placement of a dental implant. However, if implant placement is delayed, bone resorption can occur in the edentulous site and require bone grafting in the future. This is especially true in young orthodontic patients when implant placement must be delayed until the patient has finished growing. However, a study published in the *Journal of Periodontology* (1998;69:1044-1049) discussed the benefits of bone grafting in the socket after extraction to preserve the alveolus. The sample consisted of 16 patients. Each had two anterior teeth that required extraction because of underlying trauma or periodontal disease. After extraction, one of the extraction sockets was covered with a bioresorbable membrane and the other was left uncovered. After 6 months, the areas were flapped and measured to determine if the membrane had reduced the amount of ridge resorption. Although some resorption occurred both vertically and labiolingually in both sites, the amount of resorption was significantly less when the membrane was used to preserve the extraction socket. In conclusion, placing a membrane may help preserve the ridge so that bone grafting may not be required in areas where implants are to be placed at a later time.

ARTHROSCOPIC SURGERY EFFECTIVE FOR DISC PERFORATIONS—A significant consequence of temporomandibular joint disease is perforation of the meniscus, or disc. Once this occurs, it is difficult to repair. In many situations, repair requires open surgery of the joint. However, a study published in the *Journal of Oral and Maxillofacial Surgery* (1998;56:1237-1239) suggests that arthroscopic surgery may be helpful in patients with disc perforation. The sample for this study consisted of 44 temporomandibular joints in 25 subjects. About half the sample had Grade III chondromalacia, or fibrillated cartilage. All the individuals were treated with arthroscopic surgery. The procedures consisted of abrasion arthroplasty, motorized shaving, and laser vaporization of the joint. After the procedure, the patients were asked to rate their pain level on an analog scale before and after the procedure. At that time, the average score on the visual analog scale for pain was 2.7, compared with 7.4 at the outset. In addition, the degree of clicking and range of motion had improved substantially. In conclusion, arthroscopic surgery provided significant improvement for the patients in this sample with disc perforations.