What's new in dentistry

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.*

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CONDYLAR CHANGES FOUND IN ORTHODONTIC PATIENTS—During orthodontic treatment of young patients, changes in the occlusion often occur during the 2 year treatment interval. As the occlusion is modified, the head of the mandibular condyle shifts position slightly in the glenoid fossa. It is usually assumed that changes in occlusion during orthodontics do not cause significant morphologic changes in the head of the condyle. However, a recent study published in Acta Odontologica Scandinavica (1995;53:85-91) has shown that some patients undergo significant alterations in condylar shape. The sample for this study consisted of 625 treated patients. They were compared with a sample of 700 untreated subjects. Panoramic radiographs were available for all individuals. The investigators evaluated condylar shape, bone structure, and occurrence of osteophytes. The results of this study show that 9% of the orthodontically treated patients and 3% of the control subjects experience alteration in condylar shape. The most common change was flattening of the articular surface, which was seen in half of the affected, orthodontically treated patients. Although the appearance of condylar changes was significant after orthodontic treatment, the authors believed that the changes were clinically insignificant.

ANTIBODIES TO PERIODONTAL BACTERIA FOUND IN CHILDREN—Researchers have clearly shown that periodontal disease is caused by six or seven known periodontal pathogenic bacteria. Patients who have antibodies to these bacteria are at significantly reduced risk to losing alveolar bone secondary to periodontal disease. Patients who do not have antibodies to these bacteria are at higher risk to bone loss. How early are these antibodies acquired? A study published in the Journal of Periodontology (1995;66:369-376) shows that antibodies are found in children and adolescents. Researchers looked at 41 children with an average age of 7 years. Plaque was obtained from each subject in the area of the first molars, and a blood sample was collected to analyze for serum antibodies. The study showed that antibodies for one of the key periodontal pathogens was detected in a large number of the young patients in this sample. The study suggests that individuals are exposed to the bacteria early on in life, probably transmitted from parents, and some develop antibodies. This is similar to vaccinating patients against certain diseases. Perhaps in the future, antibodies can be discovered for all the periodontal pathogens, and they can be given to patients early on in life to prevent the disastrous effects of significant periodontal breakdown in later adulthood.

DISTRACTION OSTEOGENESIS USED FOR NONSURGICAL MAXILLARY ADVANCEMENT—By now, most orthodontists and surgeons are familiar with the Alizarov technique for lengthening bones. Commonly called distraction osteogenesis, this method involves separating a bone, maintaining the periosteal covering, apply-

ing a force to distract the segments and observing bone deposition at the rate of 1 mm per day. Although most experimentation has occurred in long bones, a recent study published in the Journal of Oral and Maxillofacial Surgery (1995;53:561-565) has applied this technology to the maxilla in a sample of dogs. An osteotomy was performed transversely across the anterior maxilla and a palatal expanding appliance was turned sideways and cemented to the lateral incisors and premolars. It was expanded 1 mm per day. After 6 months, the osteotomy sites were evaluated. Bone had filled in the entire site. However, after 6 months, 50% relapse had occurred, so that the teeth were only 5 mm apart. This study shows that although distraction osteogenesis is possible, using the teeth to support the appliance results in significant dental relapse. Perhaps implants can be combined with this technique in the future to achieve greater clinical success.

METAL PARTICLES FOUND AROUND SURGICAL MINIPLATES—Following orthognathic surgery, titanium screws and/or miniplates are commonly used to fix the bony fragments during postoperative healing. Typically, these plates and screws are left in the bone indefinitely. It has been assumed that these materials do not break down, corrode, or dissolve in the body. However, a recent study published in Acta Odontologica Scandinavica (1995;53:65-71) has reported metallic particles in the area of the miniplates. The sample for this study consisted of 15 subjects who had jaw surgery or mandibular fractures and were stabilized with miniplates and screws. The miniplates were retrieved and tissue and bone adjacent to these sites were harvested and evaluated histologically. Metal particles were found around the miniplates. However, the particles were only found locally and not systemically. The authors believe that the particles should not cause a problem unless a patient has a delayed hypersensitivity reaction.

MOUTH RINSE REDUCES PERIODONTAL BONE LOSS—Bone loss due to periodontal disease is a concern in some adult orthodontic patients. Recent research has shown that nonsteroidal anti-inflammatory drugs, such as Advil or Nuprin, can slow down bone loss. These drugs interfere with bone resorption. In a recent study published in the Journal of Oral and Maxillofacial Surgery (1995;53:777-782), researchers tested the use of nonsteroidal anti-inflammatory drugs in a mouthwash. A drug called Ketorolac was included in a mouthwash that was given to a group of patients with periodontal disease. The patients were asked to rinse with the mouthwash twice each day. After 6 months, the plaque index, gingival index, and amount of bone loss were compared with a control group in which no drugs were given. The results of this study show that a statistically significant reduction in bone loss occurred in those patients using the mouth rinse containing Ketorolac. In the future, perhaps clinicians may be able to use these drugs in patients who are undergoing orthodontic treatment to help minimize the risk of bone resorption during tooth movement.