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.*

Vincent Kokich, DDS, MSD

ZINC-CONTAINING CHEWING GUM REDUCES BAD BREATH—Many adult dental patients have halitosis. We know that volatile sulfur-containing compounds produced by gram negative oral bacteria cause the malodor. These bacteria metabolize amino acids in the diet and produce gases, such as hydrogen sulfide. We also know that zinc has an affinity for sulfur and will oxidize sulfur compounds. In a study published in *Acta Odontologica Scandinavica* (1997;55:198-200) researchers tested the effect of zinc-containing chewing gum on the production of oral volatile sulfur compounds in 11 people with significant halitosis. The subjects were asked not to brush their teeth the morning of the test. When the subjects arrived at the test site, a metered measuring instrument was used to evaluate the level of volatile sulfur compounds in their breath. Then the subjects were given a piece of gum that contained 2 mg of zinc and were instructed to chew for 5 minutes. When their breath was tested again, the level of volatile sulfur-containing compounds had dropped by 45%. The researchers did not determine how long the effect lasted. Perhaps in the future, subjects with halitosis due to gram negative odor-producing bacteria can combine improved oral hygiene with the use of zinc-containing chewing gum.

CANT OF OCCLUSAL PLANE REFLECTS FACIAL ASYMMETRY—Occasionally, one mandibular condyle may grow more than the contralateral condyle. This will produce an asymmetry in posterior facial height and result in canting of the maxillary occlusal plane relative to the patient's interpupillary line. If the canting is severe, the patient may require maxillary surgery to reorient the maxilla and compensatory mandibular surgery to establish occlusal contact. But how much deviation is necessary before surgery is indicated? This question was addressed in a study published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:811-816). The purpose of this investigation was to determine if occlusal plane canting is noticed by lay people and clinicians. The sample consisted of 21 subjects with varying degrees of occlusal plane canting that could be observed on smiling facial photographs and measured on cephalometric radiographs. Photographs were shown to lay people and oral and maxillofacial surgeons. They were asked if asymmetries were present. On average, the lay people identified a canted occlusal plan 82% of the time, while the surgeons were successful in 90% of the cases. By comparing overall data, the researchers found that the threshold level at which untrained and trained observers could identify occlusal plan canting over 90% of the time was 4 degrees relative to the interpupillary line. Canting of less than 4 degrees was not noticeable and therefore may not require surgical correction.

GROWTH HORMONE STIMULATES CRANIOFACIAL GROWTH—Some children with short stature receive human growth hormone therapy

to accelerate and stimulate their growth. Since this therapeutic procedure is becoming more popular, orthodontists may treat patients who are receiving human growth hormone injections. Although these treatments are directed at growth of the long bones, they may also affect growth of the craniofacial complex. A study published in the *Journal of Dental Research* (1997;76:1579-1586) documents the results of a randomized, controlled study of the effects of high doses of growth hormone over 2 years on the craniofacial growth of children of short stature. The sample consisted of 21 children divided into three groups. One group was an untreated control; the other two received different doses of growth hormone over a 24-month period. Cephalometric radiographs were made to determine the effect on craniofacial growth. The authors found that although the angular measurements between cephalometric variables did not change, some of the linear measurements did. "Catch-up" growth was found in the length of the spehno-occipital synchondrosis, posterior facial height, and some parts of the dentoalveolar region. In conclusion, the authors believe that the growth hormone therapy had its greatest effect on cartilaginous growth of the cranial base and condyle.

SINUS LIFTS FOR PLACEMENT OF IMPLANTS DO NOT AFFECT SINUS FUNCTION—Today, implants are a popular method of replacing missing teeth. However, in some patients, insufficient alveolar bone is present to support the implant. This is especially true in the maxillary posterior region if the maxillary sinus extends down to the level of the alveolar crest. In these situations, surgeons routinely perform a surgical procedure called a "sinus lift." This procedure involves fracturing the lateral wall of the sinus, elevating it upward, and placing a bone graft in the sinus to support placement of an implant. Although the implant placement is usually successful, what about other postoperative function of the maxillary sinus? Do patients suffer from sinus infections after this procedure? This question was answered in an article in the *Journal of Oral and Maxillofacial Surgery* (1997;55:936-939). The sample consisted of 45 patients who had sinus grafts followed by the insertion of implants. After surgery, the patients were evaluated using an endoscope to explore the nasal cavity and basilar radiographs to examine the sinus for infection. These evaluations were made for up to 5 years after the surgery. Prior to surgery, five patients reported a history of sinus problems. After the surgery, two of these patients developed sinus infections that were corrected with medication. None of the other patients had any evidence of draining, pain, or infection. This study concluded that a sinus lift procedure prior to implant placement does not increase the risk of maxillary sinus infection.

RESORBABLE PLATES AND SCREWS SUCCESSFUL FOR RIGID FIXATION—Over the past 10 years, rigid internal fixation has become a popular method of stabilizing surgical sites after orthognathic surgery. However, after the bones have fused, the titanium plates serve no purpose. In some patients, they become an irritant, especially if they are close to the surface in the oral cavity. In order to overcome this problem, researchers have been testing the use of bioresorbable screws and plates. A study, published recently in the *Journal of Oral and Maxillofacial Surgery* (1997;55:941-945) reports on the effect of bioresorbable miniplates and screws in a sample of 50 subjects. The sample was a group of patients who had fractured facial bones in traumatic accidents. The fracture sites were fixed rigidly with Poly-L-Lactide miniplates and screws. The author evaluated the integrity of the fixation at the time of placement and used clinical examination and radiographs to check the fixation postoperatively. The results were mixed, with about 80% of the cases showing excellent fixation and 20% showing good fixation. The latter sites had some mobility, but eventually healed. Although the results of this study look promising, these surgical sites were not under strain or pressure during healing. These traumatic fractures were simply re-approximated in their normal relationships. With orthognathic surgery, increased pressure would exist on the surgical site due to movement of the bony fragments, which could result in less favorable results.