

# 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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## **BIORESORBABLE MEMBRANES BETTER FOR TREATING CLASS II FURCATIONS —**

Orthodontists occasionally treat adult patients with furcation defects in the molars. In recent years, the prognosis for these teeth has been improved with the use of guided regeneration of bone using polytetrafluoroethylene membrane. However, the membrane had to be removed after two months. A recent study published in the *Journal of Periodontology* (1995;86:634-634) shows that bioresorbable membranes are now superior to nonresorbable types. In their study, the researchers evaluated 38 patients with bilateral Class II furcation defects in mandibular molars. On one side, a nonresorbable polytetrafluoroethylene barrier was used. On the other side, a bioresorbable membrane was placed over the furcation defect. The patients were evaluated 12 months after surgery. Although both groups had reattachment and healing of the furcation defect, the results for the bioresorbable were better than the nonresorbable membranes. In addition, there were fewer complications. In the future, orthodontists will be able to use this technology to salvage previously hopeless molars with Class II furcation defects.

**TOTAL JOINT REPLACEMENT WITH A CAD/CAM TMJ —** Most temporomandibular disorders involving orthodontic patients may be handled with nonsurgical treatment. However, occasionally, some patients have degenerative joint disease and require surgical intervention. If this fails,

surgeons may recommend replacement of the condyle with an artificial TMJ. In the past, this type of surgery has been highly unpredictable. It is difficult to duplicate the natural contours of the patient's condylar head. Recently, researchers have experimented with computer-designed and constructed temporomandibular joints for patients with reticent degenerative joint disease. Their data was published in the *Journal of Oral and Maxillofacial Surgery* (1995;53:106-115). A sample of 215 patients underwent computerized tomographic scanning to formulate a custom model of the skull. From this model, a CAD/CAM reconstruction of the TMJ was developed out of titanium alloy. The patients were evaluated after 4 years. In general, the patients showed statistically significant decreases in pain and increases in function. The patients also had improved range of mandibular motion. These early results look promising. In patients with significant degenerative joint disease, it may be possible to provide a custom reconstruction of the patient's own joint and provide predictable improvement in temporomandibular function.

## **HEAVY BITE FORCES DON'T CAUSE CRANIO-MANDIBULAR DISORDERS —**

Some orthodontic patients with temporomandibular dysfunction symptoms have clenching or bruxing habits. Are these associated? Does excessive clenching, extensive bruxing, or heavy bite force cause signs and symptoms of craniomandibular disorders? This subject was addressed in a study

published in *Acta Odontologica Scandinavica* (1995;53:254-258). The sample for this investigation consisted of 129 subjects without temporomandibular disorders. A bite force gauge was used to measure the maximum bite force between molars and incisors. Patients were asked to bite as hard as possible on their molars and then on their incisors. This was repeated several times. Bite forces were measured and compared. The results show that maximum bite force was much higher on the molars than on the incisors. Men usually generated higher forces than women. There was no correlation between maximum bite force and the presence of any craniomandibular disorders. Although the association between heavy bite force and temporomandibular symptoms seems logical, this study shows that there is no association.

**NEED FOR TRANSFUSION LOW IN ORTHOGNATHIC SURGERY** — Today, orthognathic surgery may involve sectioning of the mandible and chin and multiple sectioning of the maxilla to correct a severe malocclusion. With all of this surgery, the potential for blood loss increases. As this occurs, the need for a transfusion may arise. Many patients are fearful of transfusions. But how serious is the problem of blood loss during significant orthognathic surgical procedures? Can it be minimized? A study published in the *Journal of Oral and Maxillofacial Surgery* (1995;53:880-883) investigated this subject. A sample of 506 consecutive orthognathic surgery patients was reviewed. The amount of blood loss in each patient was assessed. Each of the patients had hypotensive anesthesia, in which the blood pres-

sure is lowered significantly during surgery. Average blood loss for the entire sample was 273 ml and there was significantly more blood loss in double-jaw osteotomies than in single-jaw procedures. Males had greater blood loss than females, but less than 1% of the sample received transfusions. The authors believe that hypotensive anesthesia significantly reduced blood loss and the need for transfusions, and this type of anesthetic technique is becoming more and more common to avoid the need for transfusion during orthognathic surgery.

**GROUP FUNCTION VERSUS CANINE GUIDANCE: WHICH IS BETTER?** — During orthodontic finishing, some clinicians attempt to produce guidance in lateral excursion. Others believe that group function provides a more gnathological occlusion. This controversy has existed for many years. Is there any difference between these two? This question was addressed in a study published in the *Journal of Prosthetic Dentistry* (1995;74:174-180). In this study, occlusal splints were made for 10 asymptomatic subjects. In half the sample, the splints provided canine guidance. In the other half, group function was established. The patients wore the splints and electromyographic recordings were made during clenching and bruxing. In each subject, canine guidance or group function splints were evaluated. The only significant observation was that thicker splints produced a reduction in masseter muscle EMG activity. In conclusion, this study suggests that both group function and canine guidance are acceptable relationships following therapy.