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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PIT AND FISSURE SEALANTS HIGHLY SUCCESSFUL—Pit and fissure sealants, along with fluoride, have dramatically reduced the tooth decay rates for many children. However, a concern exists about the longevity of pit and fissure sealants. Most research projects evaluating sealants have been performed under highly controlled conditions in dental schools. The success rate of sealants placed in general dental practices had never been evaluated. Do they last, and are they successful? These questions were answered in a recent study published in The Journal of Dental Research (1995;74:1583-1590). In this study, a sample of 600 schoolchildren from Montreal were evaluated 2 years after the placement of sealants. At that point, 73.5% of permanent first molars were still fully sealed, 4.5% were partially sealed, and sealants on the remaining study teeth had been lost. When the caries rate was assessed, the teeth that remained fully sealed had a lower decay rate. In conclusion, sealants placed in general dental practices seemed to be moderately successful in remaining after 2 years and highly successful in reducing dental decay.

IMPROVED PERIODONTAL RESPONSE WITH RESIN-BONDED BRIDGES—Prior to 1975, if a permanent tooth was missing, the common solution was a conventional full-coverage bridge using the adjacent teeth as abutments. With the introduction of bonding to the dentist's armamentarium, resin-bonded bridges were developed in the late 1970s. Although the failure rate can be high using these types of restorations, they may still be preferred if the periodontal health around abutment teeth can be improved with resin-bonded restorations. A comparison of conventional and resin-bonded bridges was presented in The Journal of Periodontology (1995;66:1973-1977). The sample for this study consisted of 103 resin-bonded bridges that had been placed between 1980 and 1984. The patients were examined 10 years after placement. Periodontal measurements were made to determine the health of the attachment surrounding the abutment teeth. Statistically significant differences were found in recession and attachment loss between abutment teeth compared with controls. However, the differences were not clinically significant, and the authors believe that resin-bonded bridges may be superior in their periodontal response to other types of restorations. The only problem with resin-bonded bridges is their high failure rate after 7 to 10 years.

JAW SURGERY MAY CORRECT SLEEP APNEA—Sleep apnea is a problem that affects many individuals in the United States. In its more severe forms, sleep apnea causes oxygen deprivation and may significantly jeopardize the patient's health. Several means of increasing air flow in apneic patients have been attempted. Surgical alteration of the soft palate, use of oxygen masks with positive pressure, and removable functional appliances have all been tried, but none of these permanently change the dimensions of the poste-

rior pharyngeal airway. Oral and maxillofacial surgeons have suggested combined maxillary and mandibular advancement surgery to increase air flow in order to reduce the symptoms of sleep apnea. The effects of this type of surgery were documented in The Journal of Oral and Maxillofacial Surgery (1995;53:1414-1418). Researchers evaluated 19 subjects with obstructive sleep apnea syndrome who had undergone combined maxillomandibular advancement. The maxillas were advanced an average of 7.5 mm and the mandibles about 10 mm. Cephalometric radiographs were compared before surgery, after surgery, and at least 1 year following treatment. The surgery seemed to be stable with minimal relapse after the first year, and the surgery was successful at reducing the symptoms of sleep apnea. Although combined surgery is generally reserved for patients where more conservative efforts are unsuccessful, this study shows that if surgery is attempted, the success rate is high for ameliorating the symptoms of significant obstructive sleep apnea.

DOES NONAXIAL LOADING CAUSE IMPLANT FAILURE?—Now that titanium and hydroxyapatite-coated titanium implants have been used clinically for over 10 years, researchers are retrospectively evaluating the reasons for failure of some of the fixtures. Errors in technique, infection, lack of bone support, and peri-implantitis have been associated with implant failures. Anecdotally, the direction of occlusal loading on the implants has also been implicated, and some clinicians believe that nonaxial loading is responsible for implant failure in some patients. This issue was debated in a recent issue of The Journal of Oral and Maxillofacial Implants (1995;10:621-625) Four distinguished researchers in the field of implants discussed the issue of nonaxial loading and its effect on implant integrity. Three out of the four panelists believe that nonaxial loading does not cause loss of osseointegrations around implants. The remaining panelist believes that nonaxial loading could be a partial factor in loss of integration. However, this individual did not present evidence to support this claim. In conclusion, the consensus seems to be that nonaxial loading is not a primary cause of implant failure.

EXCESSIVE FLUORIDE REDUCES BONE STRENGTH—No one can dispute the benefits of fluoride in reducing dental caries. By incorporating fluoride in toothpaste and in the water supply, many communities have shown substantial decreases in the rate of dental caries. However, supplements remain controversial. Some groups believe that fluoride is harmful and should not be added to the water supply. A recent study published in The Journal of Dental Research (1995;74:1475-1481) shows that high doses of fluoride in experimental animals reduce bone strength at older ages. In this study, extremely high doses of fluoride were administered. The amount of fluoride in the bone was calculated and correlated with the stress necessary for bone fracture. At younger ages, there was no increased risk of fracture. In fact, bone density actually increased in younger animals. In older animals, however, increased amounts of fluoride caused a higher predilection for fracture. The difference was statistically significant, but the amount of fluoride administered to cause bone fracture in adult animals was about 50 times the amount that would be ingested by humans. Therefore, the findings of this study probably have little clinical significance for patients.