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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IMPLANTS SUPPORTING BRIDGES ARE HIGHLY SUCCESSFUL–Implants have been used extensively in dentistry, Long-term studies are now available that test the survival rate of implants used for various purposes, including edentulous patients. Recently, more information has become available on partially edentulous patients where implants were placed to support fixed bridges. A recent report in the Journal of Oral and Maxillofacial Surgery (1995;53:264-268) gives a multicenter report on 150 patients who had had 450 implants placed to support bridges. The follow-up time was 3 years. The results of this study showed that the failure rate in the maxilla was 7% and less than 5% in the mandible. These researchers pointed out three main factors for implant failure: implant size, bone quality, and presence of plaque. Shorter implants (7 to 10 mm in length) had much higher failure rates, and 80% of the failed implants were placed in poorly corticalized and mineralized bone. The last factor which lead to implant failure was the presence of plaque and the development of periimplantitis. This usually occurred during the second and third years. In conclusion, the results of this short-term study are good. Success rates are high when implants are used to support fixed bridges.

RESTORATIONS MAY PREDISPOSE PERIODONTAL DISEASE IN ADOLESCENTS–All dentists are award of the problems that caries presents for a patient. Carious lesions must be restored and, over the lifetime of the patient, the restorations may need to be replaced. If restorations are poorly contoured and have overhangs, the patient may retain plaque and these areas are then more difficult to clean. Recently, a group of Norwegian researchers suggested that defective dental restorations and large carious lesions may predispose adolescent patients to interproximal bone loss. Their study was published in the Journal of Periodontology (1995;66:249-254.) This was a 3-year longitudinal study. Young patients were examined for dental caries, and bitewing radiographs were taken to determine if the patients had interproximal caries or defective restorations. The same exam was repeated annually over 3 years. The progression of interproximal bone loss was monitored by measuring directly on the radiographs. The results of this study showed that if patients had significant dental decay, overhanging margins, or even if they had a restoration interproximally between the teeth, the incidence of apical migration of the interproximal bone was higher. They proposed that the rougher the surface of the restoration, or the greater the overhang, the more plaque will accumulate and therefore enhance gingival inflammation and eventual bone loss. Although the results were convincing, the authors did not take into account the normal bone migration away from the CEJ as children become adults. It will be interesting to evaluate the longitudinal data from this study several years from now when this group of patients are adults.

MONITORING NERVE FUNCTION DURING SAGITTAL OSTEOTOMY–The most common complication of mandibular sagittal osteotomy is paresthesia of the inferior alveolar nerve. Most of the time this paresthesia is temporary, but occasionally the injury is total and nerve sensation in the lip and gingiva on the affected side never returns. In the past, surgeons had no way of monitoring nerve function during the surgical procedure. However, according to a recent article in the Journal of Oral and Maxillofacial Surgery (1995;53:269-279) monitoring of inferior alveolar nerve function during jaw surgery may be valuable. A group of Finnish researchers evaluated 10 patients who were undergoing sagittal osteotomies of the mandible. A stimulating electrode was placed in the mental foramen and a recording electrode was placed where the trigeminal nerve enters the base of the skull at the foramen ovale. Nerve function was continuously monitored during the entire surgical procedure. At two weeks and three months after the surgery, the same procedure was performed. The results of the study show that when the outer covering, or myelin sheath is partially transected, the recording device shows a change in nerve conduction. In addition, various incidents, such as pressure on the proximal part of the nerve during the procedure, mob lization of the nerve from the proximal fragment, and stretching of the nerve, altered conduction of nerve stimulation. Most of these temporary alterations resolved postoperatively. This technique may be useful for surgeons in the future to monitor the effect of surgery on the nerve to help avoid damage during surgery.

NEW TECHNIQUE FOR BONDING RESIN TO GOLD–Occasionally orthodontists must attach orthodontic bands or brackets to gold crowns. In most situations, the fit of an orthodontic band to a gold crown is less than desirable. Ideally, a bracket should be bonded to the crown. In the past, some researchers have suggested that a sandblasted be used to roughen the surface prior to bonding. A recent article in the Journal of Prosthetic Dentistry (1995:73:299-303) reported another technique to enhance the bonding of brackets to gold crowns. This group of Japanese researchers tested two primers, both containing Thiol derivatives. One contained vinyl-Thiol and the other contained thiophosphate. Initially the gold was sandblasted with alumina particles. Then the sample was divided into three groups in order to test each of the primers and have a control sample. Composite was bonded to the gold after the priming technique. A testing machine was used to sheer the composite-gold interface. The result showed that both primers worked better than sandblasting alone. There were no differences between the bond strength of the two primers. Although this is a restorative techniques to bond Maryland bridges to teeth, these primers may be useful to orthodontists for bonding brackets to gold crowns.

DISPLACED TMJ DISCS MAINTAIN ORIGINAL SHAPE LONG-TERM - A common injury to the temporomandibular joint is internal derangement. With this disorder, the meniscus or disc of the TMJ is displaced and usually the displacement is anterior and medial. The disc is out of position when the patient's teeth are in occlusion, but when the patient opens his or mouth, the disc moves back over the condyle. Some disc displacements may occur during adolescence and the disc may be displaced for many years. A study published in the Journal of Oral and Maxillofacial Surgery (1995;53:234-241) documented the shape of displaced discs 30 years after initial diagnosis. A group of Dutch researchers evaluated 50 patients who had been originally diagnosed with internal derangement at an early age. After 30 years, the patients were recalled and magnetic resonance imaging was used to determine the shape and configuration of the articular disc. The results were interesting. If the disc displacement was permanent or non-reducing, the disc had a convex amorphous shape. However, if the disc reduced and moved back over the condyle each time the patient opened, the disc retained its normal shape even after 30 years. These interesting findings emphasize the benefit of long-term records and long-term evaluations of patient populations.