What's new in dentistry

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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.*

LOW RISK OF PLATE REMOVAL AFTER ORTHOGNATHIC SURGERY—Titanium plates and screws are commonly used for rigid internal fixation after orthognathic surgery. Generally, these plates are compatible with human tissues and do not require removal. However, in certain situations, the plates must be removed after surgery. A study published in the *Journal of Oral and Maxillofacial Surgery* (1999;57:679-582), documented the incidence and reason for plate removal in a sample of consecutively treated orthognathic surgery patients. The sample consisted of 70 patients who had undergone a variety of orthognathic surgical procedures. Over 250 titanium plates had been placed in their jaws to fix the bony fragments. These patients were evaluated several years after the surgery to determine if the plates had been removed and if so, for what reasons. Specific documentation was made of the age and gender of the patient, as well as the anatomic location of the titanium plate. The authors reported that the plates were removed in 12% of the patients. The only consistent factor that related positively to the incidence of plate removal was age. Patients who were older than 30 years of age were more likely to have plates removed than younger patients. The remaining risk factors were not statistically significant. In conclusion, older patients should be cautioned that there is about a 12% risk of titanium plate removal after orthognathic surgery.

MAXILLOMANDIBULAR FIXATION NOT NECESSARY FOR CLASS III SUBJECTS—Although rigid internal fixation is almost exclusively used to fix bony fragments after orthognathic surgery, many surgeons also use intermaxillary maxillomandibular fixation with elastics for a short period of time postoperatively. But are the rubber bands necessary? Can maxillomandibular fixation be avoided? These questions were addressed in a study published in *Clinical Orthodontic Research* (1999;2:27-33). The objective of the study was to compare two groups of patients. Both groups had received mandibular osteotomies to correct Class III malocclusions, and the bony fragments had been fixed rigidly with titanium plates and screws. However, in half the sample (10 patients), no maxillomandibular fixation was used. In the other half (10 patients), the patients used elastic maxillomandibular fixation immediately after the surgery. The samples were compared cephalometrically up to 12 months after the surgery. The results show that there were no differences. Patients who had maxillomandibular fixation after jaw surgery were no more stable that those who did not. In conclusion, patients may not need elastic maxillomandibular stabilization after orthognathic surgery to correct Class III malocclusion.

DISK DISPLACEMENT HAS MINOR EFFECT ON FACIAL GROWTH—Chronic popping of the temporomandibular joint may indicate anterior displacement of the meniscus or disk. Generally, this problem occurs during adulthood after facial growth and development are complete. However, disk displacement could occur during childhood or adolescence. If it does, will it affect growth of the facial bones? And how could this affect the occlusion and function of the dentition? These questions were addressed in a study that was published in *Clinical Orthodontic Research* (1999;2:124-132). The purpose of this study was to create disk displacement in experimental animals, and then allow them to grow in order to determine the effects on development of the craniofacial complex. The

sample consisted of 13 rabbits that were divided into two groups, one control and one experimental. In the experimental group, an operation was performed unilaterally to create an anterior disk displacement. Then these animals were allowed to grow for 12 weeks. The amount of change in the mandibular ramus and glenoid fossa was measured. Based on the data, the glenoid fossa was located more anteriorly in the experimental animals, and the length of the ramus was shorter on the experimental side. However, these differences were small. Does this data apply to humans? That information is not known, but some effect should be expected if disk displacement occurs in children or adolescents.

STRESS EXACERBATES PERIODONTAL DISEASE IN SOME PATIENTS—Periodontal disease is caused by specific periodontal pathogens. Today, it is known that certain patients are resistant to these bacteria, while others are susceptible to the ravages of periodontal bone loss. Are any other host-related factors responsible for exacerbating periodontal disease? This question was asked in a study published in the *Journal of Periodontology* (1999;70:711-723). This epidemiological study surveyed 1426 subjects between the ages of 25 and 74 years of age. The sample was nearly equally divided between males and females. All subjects had a thorough periodontal examination. In addition, each was given a set of psychosocial questionnaires to complete in a private setting. Then the degree of periodontal disease and the degree of personal distress and stress were compared. The data showed that those individuals with more financial strain had a higher risk of having more severe attachment loss and alveolar bone loss compared with those who had lower levels of financial strain. Adjustments were made for age, gender, and amount of cigarette smoking. In conclusion, it appears that stress and distress, especially from financial problems, may play a part in the progress of periodontal disease in certain populations of patients.

HIGH SUCCESS RATES FOR NARROW IMPLANTS—Titanium implants have been used to replace single teeth for about 10 years. Initially, the diameter of all implants was similar, at 3.75 mm, and the diameter of the platform was 4 mm. However, in recent years, implant manufacturers have created varying diameters of implants to fit different situations, e.g., molars, premolars, and incisors. Initially, the stress tests for titanium implants were made using standard 3.75 mm implants. Narrower implants were regarded as weaker and subject to breakage. However, a study published in the *International Journal of Oral and Maxillofacial Implants* (1999;14:496-503) shows that reducing the diameter does not jeopardize the clinical strength of the implant. The sample consisted of 30 implants, 3.0 mm in diameter, that were placed in mandibular incisor or maxillary lateral incisor areas. They were restored and placed in function for 3 to 7 years. The results showed that 29 of the implants were still in function and stable. Only one implant fractured, after 5 years of function in the mandibular incisor region. The overall success rate was over 95%. These results are encouraging for orthodontists, since the gingival esthetics around maxillary lateral incisor implants is usually better if the distance between the implant and the adjacent teeth is increased.