

What's new in dentistry

Vincent Kokich, DDS, MSD

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.

TWO TYPES OF ADHESIONS FOUND IN HUMAN TMJ—Some adult orthodontic patients may have temporomandibular disorders that include adhesions between the condyle and disc. These adhesions can be released with arthroscopic surgery. In the past, surgeons had believed that these adhesions were anatomically similar. However, a study published in the *Journal of Oral and Maxillofacial Surgery* (1999;57:165-170), conclusively shows that there are two different types of adhesions in the human temporomandibular joint. The authors evaluated a sample of 36 temporomandibular joints in 22 patients. All subjects had pain, clicking, and limitation of mouth opening. When arthroscopic examination was performed, all individuals were diagnosed with adhesions between the condyle and disc. However, the results showed that there were two different types of adhesions. One was a band-like adhesion that had a uniform appearance. The second was a pseudowall adhesion that did not have a uniform appearance. Although the authors could not determine the significance of the difference in these two types of adhesions, further investigation may uncover the reason for the difference, and this may help determine the cause of this temporomandibular disorder.

IMMEDIATE AND DELAYED-IMMEDIATE IMPLANTS EQUALLY SUCCESSFUL—If an adult fractures a maxillary central incisor below the level of the alveolar bone or avulses the tooth in an accident, an implant may be the choice for replacing the damaged tooth. When the remaining root is extracted, two choices exist for placing the implant. One involves immediate placement following the extraction. Another possibility involves placing the implant after about 3 weeks (delayed-immediate placement) so the

soft tissue can grow over the socket. A study published in the *International Journal of Oral and Maxillofacial Implants* (1999;14:210-216) documented the difference in success rates between these two approaches. The sample consisted of 143 subjects. Two hundred fifty (250) implants were placed in these individuals. The two different methods of placement were distributed between this sample. The authors evaluated the success after 3 years. There were no differences between implants placed immediately after tooth extraction and those placed after 3 weeks. Both groups showed some failures, but the failure rate was relatively low. The success rates for immediate and delayed-immediate implants in the maxilla and mandible were both well over 90% after 3 years.

GINGIVAL OVERGROWTH WITH HEART MEDICATION IS RELATIVELY LOW—Some adult orthodontic patients may be taking medication to reduce hypertension. Today, a popular drug for this purpose is nifedipine, a calcium channel blocker. It reduces hypertension and is commonly taken by both males and females. However, in some individuals, this drug causes gingival overgrowth. If orthodontic appliances are in place, this gingival hyperplasia could create a problem for maintaining adequate oral hygiene. A study published in the *Journal of Periodontology* (1999;70:63-67) documented the incidence of gingival hyperplasia in a large sample of subjects. The sample consisted of 442 patients who were regularly taking nifedipine for hypertension. In each of these patients, the amount of gingival overgrowth was assessed. In addition, the gingival index and plaque index were also determined. Based on the results of this study, only 6% of the subjects had gingival overgrowth. The authors found that those subjects with higher plaque

scores had the most exaggerated gingival response to the medication. In conclusion, if orthodontists have patients that are taking nifedipine during orthodontic treatment, that individual must maintain excellent oral hygiene to avoid gingival hyperplasia in response to the medication.

WIDER IMPLANTS HAVE HIGHER FAILURE RATES—Implants are a popular replacement for missing teeth in adult orthodontic patients. Implants are available in a variety of sizes, ranging from 3 mm to 6 mm. Wider implants are generally used in the maxillary and mandibular posterior regions, while narrower implants are placed in the mandibular incisor and maxillary lateral incisor areas. Generally, implant success rates are very high. However, a study published in the *International Journal of Oral and Maxillofacial Implants* (1999;14:173-160) documented the difference in failure rates between wide and narrow implants. The sample consisted of 67 patients who ranged in age from 16 to 86 years. A total of 300 implants were placed in these subjects. The sizes of the implants varied from 3.75 mm to 5.0 mm. The survival rates of the implants were assessed after 5 years. The results showed that the most successful implants were the 3.75 mm implants, which had a failure rate of only 5%. The highest failure rate was seen in the 5.0 mm implants. Their success rate was 73%. The success rate of the 4.0 mm implants was 84%. This information is important for the orthodontist. The 5.0 mm implants are actually a better size for replacing congenitally missing mandibular second premolars. However, with this higher failure rate, it seems prudent to

consider the more reliable, narrower implants. The reason for the lack of success of the wider implants is not known. In this study, multiple regression analyses showed no relationship between marginal bone loss and implant diameter, bone quality and quantity, or jaw type.

LOCALIZED CHLORHEXIDINE ACCELERATES PERIODONTAL HEALING—Adult orthodontic patients may have periodontal pockets that are difficult to clean and maintain during orthodontic therapy. The ability to clean can be compromised by the orthodontic appliances. However, a study published in the *Compendium of Continuing Dental Education* (1999; 20:427-434) shows that the use of a chlorhexidine chip, placed in the periodontal pocket, can improve periodontal health. The sample for this study consisted of 447 patients. They were divided into treatment and placebo groups. Each individual had at least four sites that probed between 5 mm and 8 mm. After scaling and root planing, either a chlorhexidine chip or a placebo chip was placed in the pocket. These sites were reevaluated up to 9 months after placement. The results show that the chlorhexidine chip significantly reduced the probing depth within 9 months. Compared with the controls, there was significant clinical improvement in the treatment group. In conclusion, local delivery of chlorhexidine using a chip improves periodontal health significantly, and may be useful in the future for periodontal patients who are undergoing orthodontic therapy.