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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DENTAL EROSION PRODUCED BY COLA SOFT DRINKS—Orthodontists often recommend that their patients reduce the consumption of soft drinks during orthodontic treatment. The common concern is that certain types of soft drinks will cause dental erosion. If erosion occurs around brackets, the teeth might appear unesthetic once the brackets are removed. A study published in *Acta Odontologica Scandinavica* (1997;55:390-397) evaluated a sample of 95 individuals to determine if dental erosion and cola consumption were related. The average age of the sample was 21 years. The key parameter for inclusion in the study was tooth erosion. Individuals with the greatest erosion and those with the least were asked to complete questionnaires to determine how much cola they drank each day. When the researchers compared the low and high erosion groups, they found that the mean cola consumption in the low group was about 2500 ml per week, while individuals in the high erosion group ingested twice that amount. Based on this data, the authors concluded that dental erosion can be caused by consuming large amounts of cola-type soft drinks.

IMPLANT SUCCESS POSITIVELY CORRELATED WITH SURGEON'S EXPERIENCE—If your son or daughter were congenitally missing a tooth and required an implant, would you seek a surgeon who had placed 100 implants or 10? Does surgical experience in placing implants affect the success rate? This question was addressed in a study published in the *Journal of Oral and Maxillofacial Surgery* (1997;55:12-18). The purpose of the study was to retrospectively compare the success rate of implants with the clinical experience of the surgeon. The data was gathered from several different clinics and hospitals. The sample consisted of two groups of surgeons, one very experienced in placing implants, the other fairly inexperienced. The results showed that surgeons who had placed 50 or more implants had success rates twice as high as those who had placed fewer than 50. The researchers further examined the data to determine if there was a threshold level at which success rates improve dramatically. They found that the success rate improved after the ninth case had been completed. The failure rate in this study was about 2.5%. Although the less experienced surgeons had failure rates of about 6%, the general failure rate with implants is still relatively low.

SYSTEMIC TITANIUM ION LEVELS LOW IN DENTAL IMPLANT PATIENTS—A common concern after placement of any type of dental restorative material is the possibility of leaching ions and depositing them in the body. Most common dental materials have been tested for ion dissolution. However, now that dental implants are becoming more popular to replace missing teeth, clinicians are concerned about the possible loss of titanium ions from implants. A recent study in the *International Journal of Oral and Maxillofacial Implants* (1997;12:828-834) evaluated the blood level of titanium ions in dental implant patients. The sample consisted of 52 subjects in whom 150 dental implants had been placed. The blood from these subjects was analyzed for titanium ions before and after implant placement, and then 1, 2,

and 3 years later. Sophisticated analyses were performed to determine the level of titanium in the blood. There was some evidence of titanium ions in the blood, but the levels were very low and were consistent over the entire 3-year period. In conclusion, although titanium ions are found in the blood stream after implant placement, the amount is low and is probably of little concern.

SMOKING ASSOCIATED WITH IMPLANT BONE LOSS—Past studies have shown that cigarette smoking aggravates bone loss around teeth in patients with active periodontal disease. Although the exact mechanism is not known, it is assumed the cigarette smoking affects the blood flow and exacerbates periodontal inflammation. Now that implants are being placed more frequently in adults, clinicians are concerned that smoking may damage soft tissues around implants. This issue was addressed in a study published in the *Journal of Dental Research* (1997;76:1667-1674). Researchers evaluated 45 subjects in whom implants had been placed to support dental prostheses. The sample included 21 smokers and 24 nonsmokers. Periapical radiographs and attachment measurements were made at the time of implant placement and sequentially over a 10-year period. The number of cigarettes smoked was correlated with the amount of change in attachment around the implants. The results show that smoking is extremely detrimental to implant attachment. Although smoking did not cause the demise of any implants, it did result in more significant bone loss. This would result in soft tissue attachment loss, which could make the implant look more unesthetic. The number of cigarettes used by smokers correlated with the amount of bone loss. In conclusion, cigarette smoking negatively affects the bone and soft tissue attachment around titanium implants.

NONSUBMERGED IMPLANTS HAVE HIGH SUCCESS RATES—Traditionally, the placement of dental implants has required two surgical procedures. During the first procedure, a flap is elevated and the implant is placed. The soft tissue is reapproximated and the implant is allowed to integrate within the bone. The implant is uncovered in a second surgical procedure about 6 months later . Two surgeries is both more expensive for the patient and more time-consuming for the surgeon. A recent study in the *International Journal of Oral and Maxillofacial Implants* (1997;12:749-757) reported on a 3-year longitudinal trial of nonsubmerged implants placed in one surgical procedure. The sample consisted of 320 implants placed consecutively in 109 patients. With these implants, the top portion is allowed to protrude through the alveolar gingiva. The implant is not loaded occlusally for 6 months, but the tissue is allowed to heal around the implant instead of burying it. After 3 years, the implants were evaluated to assess the gingival health and bone level around the implants. The overall success rate of the nonsubmerged implants was 98%. The amount of bone loss around the implants over the 3-year period was 0.8 mm. In conclusion, not submerging the implant at the time of placement does not seem to affect the long-term success of osseointegration.