Surface characteristics of implants affect behavior of fibroblasts. Today, implants are routinely used to replace missing teeth. The surfaces of these implants are either machined with a smooth surface or roughened with sandblasting or acid etching. The rough surface has been shown to enhance the osteointegration of the implant through more bone deposition on the surface of the implant. However, the implant must also perforate the gingiva and enter the oral cavity. What affect does surface smoothness have on the attachment of fibroblasts and collagen to the implant surface? A study published in the *International Journal of Maxillofacial Implants* (2009;24:419–431) investigated the effects of surface texture on the fibroblastic and collagen attachment to titanium implants. This was a laboratory study. Discs of pure titanium were made with three different surface textures: one with a smooth machined surface and two with roughened surfaces. One of the rough-surfaced implants was produced by etching with hydrofluoric acid, and the other was produced with sulfuric acid. Then, fibroblasts were cultured on these different implant surfaces to determine the effect of surface texture on cell number, collagen production, and fiber orientation. The authors found that cell attachment was significantly weaker on the machined surface than on either of the surfaces that had been roughened by acid etching. No differences were observed between the two methods of acid etching. In contrast, collagen production was highest on the machined surface, and the fiber orientation was parallel. On the acid-etched surfaces, the fiber orientation was multidirectional. Finally, the cell counts on the machined and hydrofluoric acid-etched surfaces were higher compared with the surface that had been etched with sulfuric acid. The authors conclude that surface characteristics of titanium affect attachment, spread, and proliferative activity of fibroblasts as well as the deposition pattern of the collagen.

Patients’ immunologic profile affects the prognosis of replanted avulsed teeth. Trauma involving the maxillary anterior teeth can result in avulsion of the affected tooth. Replantation of the tooth is desirable, but root resorption and ankylosis can occur in some children, even if the replantation occurs soon after the initial trauma. In other individuals, the outcome of replantation can be favorable even if the time after the trauma is not ideal. Does the participation of the immune system have any effect on root resorption after tooth replantation? A study published in the *Journal of Periodontology* (2009;80:1121–1124) evaluated the immunologic profiles of patients who had avulsed a tooth that had then been replanted and followed up a minimum of 1 year later. The authors wanted to determine whether atopic individuals had greater success with replantation than nonatopic individuals did. Atopy is a hereditary disorder marked by the tendency to develop immediate allergic reactions to substances such as pollen, food, dander, and insect venoms and is manifested by hay fever, asthma, or similar allergic conditions. To make this determination, the authors recalled 57 patients who had had an avulsed and replanted tooth. The follow-up involved clinical and radiographic examination. Atopy of the sample was based on family history as well as the skin-prick test for five allergen extracts. The authors found that of the 46 teeth with a favorable outcome to replantation, 72% were in atopic patients and 28% were in nonatopic patients. Of the 11 teeth with an unfavorable outcome to replantation, 36% were in atopic patients and 64% were in nonatopic patients. The authors conclude that the outcome after 1 year for avulsed and replanted teeth is more favorable in atopic patients. The authors believe that the atopic person has a tendency to produce more anti-inflammatory cytokines following avulsion and replantation than the nonatopic individual, which could affect the outcome of avulsion and replantation.

Implant placement under local anesthetic results in electrocardiographic alterations. Most dental endosseous implants are placed in adults. Some of these mature subjects could have underlying heart problems that have not been diagnosed. Does the trauma of implant placement under local anesthesia affect cardiac function? A study published in the *International Journal of Oral and Maxillofacial Implants* (2009;24:412–418) analyzed the electrocardiographic alterations during dental implant surgeries when local anesthetic agents were used. A sample of 18 healthy subjects underwent implant placement using local anesthesia.
During the implant placement procedure, electrocardiographic evaluation was performed for each patient, and the heart rate, duration, and amplitude of the P wave, as well as a series of other cardiac tests, were performed. Baseline cardiac information was recorded for each patient on a different day. The authors found that the heart rate showed an increase from the baseline stage (mean, 69 beats per minute [bpm]) to the bone-drilling stage, during which the highest values were found (mean, 78 bpm). In 12 patients, cardiac arrhythmias were also found and included sinusal tachycardia and bradycardia, sinusal arrhythmia, and ventricular and supraventricular extrasystole. With regard to age, one event occurred in a patient younger than 20 years, three occurred in patients between 20 and 30 years of age, one occurred in a patient between 30 and 40 years of age, six occurred in patients between 40 and 50 years of age, and one occurred in a patient between 50 and 60 years of age. Among the patients who were younger than 40 years, the most common events were tachycardia, bradycardia, and sinus arrhythmias. The authors conclude that dental implant surgeries, even in the case of single implants with a favorable diagnosis, can induce electrocardiographic alterations.

**Crestal bone levels change minimally 5 years after implant placement.** A concern regarding the longevity and success of dental endosseous implants is the maintenance of the crestal bone height supporting the implant. Crestal bone loss has been reported around implants with time. But does this remodeling occur gradually each year after implant placement, or does the bone resorption occur early and then decrease in later years? An investigation published in the *Journal of Periodontology* (2009;80:725–733) evaluated the crestal bone changes between the time of implant placement and 5 years after final restoration in a human prospective multicenter clinical trial involving five international sites, 192 patients, and nearly 600 implants. All subjects were older than 18 years prior to implant placement. All implants were nonsubmerged single-stage implants with a titanium plasma-sprayed coating. Restoration occurred between 4 and 6 months after implant placement. Then, the patients were recalled at 3, 6, 12, 18, 24, 36, 48, and 60 months after prosthesis placement. Radiographs were taken at the time of implant placement, at the time of final restoration, 6 months after restoration, and then annually up to 5 years. The radiographs were measured to determine the amount of bone loss interproximally on either side of the implant. The results showed that clinically significant remodeling of the marginal bone occurred during the first 6 months after implant placement, with a mean marginal bone loss of 2.4 mm. After that, clinically insignificant mean changes in the bone level were observed. Overall, 0.22 mm of bone loss occurred between the time of restoration and the last 5-year recall. The authors conclude that in general, clinically significant marginal bone remodeling will occur from the time of implant placement and restoration of a one-stage nonsubmerged titanium implant with a plasma-sprayed surface but that subsequent bone loss up to 5 years postloading is minimal.

**Lack of consensus between orthodontists and surgeons regarding the definition of centric relation.** Surgeons and orthodontists work closely in the management of patients who undergo jaw surgery to correct a skeletal malrelationship. However, the key to repositioning the jaws is determined by the eventual occlusion. Furthermore, the occlusion is intimately related to the relationship of the mandibular condyle to the glenoid fossa. During the operation, the surgeon attempts to place the jaws in proper centric relation. But what does the term **centric relation** mean? Or perhaps more importantly, do orthodontists and surgeons define centric relation similarly? A study published in the *Journal of Oral and Maxillofacial Surgery* (2009;67:1058–1061) surveyed orthodontists and oral surgeons to obtain a consensus opinion of the term **centric relation**. A survey was sent to the chairpersons of every oral and maxillofacial surgery and orthodontic program in the United States. Only full-time faculty members from each program were asked to respond to the survey. A list of five definitions of centric relation as provided from the “Glossary of Prosthodontic Terms” was given to the participants, and they identified which definition most accurately applied to the definition of centric relation. The results of the survey showed that there was no difference between the two groups on the need for mounting dental casts in centric relation for use in orthognathic surgery. However, these two groups had significantly different responses regarding the definition of centric relation. The results of this study show that there is a statistical lack of consistency among practitioners regarding an absolute definition of centric relation as it relates to orthognathic surgery. This inconsistency exists not only between specialties but also within practitioners in each specialty.