Guest Editorial

Implants in restorative dentistry—Too much of a good thing?

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It has been more than a decade since the Toronto Study[1] confirmed the excellent results reported from Sweden by Dr Per-Ingvar Brånemark and coworkers[2] on the use of root-form titanium implants. Following Brånemark's precise techniques for the placement of the "fixtures" (as he referred to the implants), Dr George Zarb and coworkers[1] at the Faculty of Dentistry of the University of Toronto reported similarly successful results in their 5-year replication study. Only after more than 20 years of basic and clinical research were these implants made available to the dental profession. In addition to all the research conducted over the years, these implants were placed in limited areas of the mouth, specifically between the mental foramen in the mandible and anterior to the maxillary sinus of the maxilla. Other researchers had been carrying on investigations with other systems, such as ITI (Straumann) and IMZ (Interpore International) for many years, but the first major impact on the entire profession in the United States came from the Nobelpharma system. The term "osseointegration," used by Brånemark to describe the interface between bone and the titanium surface of the implant, became synonymous with successful implants. Since its introduction in 1983, there has been a virtual explosion in the number of these root-form titanium implants that have been placed. It has been estimated that there will be more than a tenfold increase in their use, from 30,000 to 350,000 in the period from 1984 to 1994.

Tens of thousands of patients throughout the world have benefited greatly, both functionally and psychologically, from the addition of implants to the restorative dentist's armamentarium. In my opinion, however, there has been a disturbing increase in the misuse as well as the overuse of this modality. Techniques are being advocated widely with little or no research to indicate long-term, predictable success. Let it be known at the outset that, since 1984, this author has been involved in many successful restorative treatment plans that have benefited greatly from the use of implants and is wholeheartedly in favor of the use of osseointegrated implants when indicated. What is most upsetting is seeing lecturer after lecturer, article after article describing treatments using implants where more conservative, simpler, faster, and less costly traditional techniques involving far less risk would benefit the patient to a far greater degree.

I recently returned from the annual prosthodontic meetings held in February 1993 in Chicago, Illinois, where I saw a few things that were difficult to believe. One highly competent prosthodontist, who is also trained in periodontics, listed the treatment options for the replacement of a single missing tooth. However, the only "options" listed were types of implants to use! The same lecturer showed many examples of a lost maxillary anterior tooth where the ridge was perfectly acceptable for adaptation of a pontic. Instead, his treatment required bone grafting, fiber barrier techniques, and ridge augmentation procedures including free gingival grafts, in addition to two implant surgeries to replace a single missing tooth. There was no discussion of alternative treatments considered, of informed consent, of who paid for the additional surgeries, or of the total cost. In one particular example, the overall time for the replacement of one tooth was 2 years. The final result, in almost every example shown, was excellent—but at what price?

Several well known oral surgeons and periodontists have also been proudly displaying their surgical skills with these same grafting procedures to obtain esthetic soft tissues around an implant, when the preoperative photographs showed a ridge that would have been acceptable esthetically with an ovate pontic. In many of these situations, the teeth on either side of the implant were being prepared for complete-coverage restorations! One cannot help but question the economic motivation behind these procedures.

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I will readily admit to favoring the adhesive, resin-bonded restoration in most single-tooth replacement situations when there is no diastema present, and the abutment teeth are healthy and not too thin or transparent. I am well aware of the poor reputation that this technique has, mostly due to the fact that many dentists relied too much on the bonding materials for retention and not nearly enough on the retentive design of the casting. With proper preparation of the enamel and a meticulous technique, these restorations have been reported to have a higher than 90% long-term success rate. Certainly the management of the single tooth implant requires far greater skill to obtain an esthetic result.

One of the arguments in favor of the single-tooth implant has been that the dentist "does not want to touch the teeth." From what is demonstrated in many articles and lectures, a great deal more bone and soft tissue is touched in implant surgery than the small amount of enamel removed for an adhesive resin-bonded restoration. To claim that implants are the most conservative treatment is not realistic in many situations.

It also has been stated that the single-tooth implant, especially in the posterior region, is placed in "light" occlusion. We all know what that means. What happens if the opposing tooth extrudes to make contact? Several authors have described placing adhesive resin-bonded restorations not only in occlusion, but in bruxers and in anterior teeth used in mutually protected occlusion.

When an implant drill or an implant touches an adjacent root of a vital tooth, there is a good possibility of the tooth becoming nonvital and the implant being lost. A recent article in a prestigious journal[3] showed such an example; the implant appeared, in three radiographs, to be less than 0.5 mm from the adjacent root, and no mention was made of the risk involved in the procedure. At the very least, it should be discussed as a potential hazard. In the same article, bone loss on the adjacent teeth of the 14-year-old patient was observed without any comment by the authors. There also was no mention of the potential for complications due to growth of the child.

As with most popular new techniques introduced into dentistry, there is a pendulum swing in enthusiasm and usage. It is my opinion that the pendulum has swung too far and complications are occurring that must be discussed openly. The benefits and risks of procedures such as antroplasty and nerve transposition must be carefully considered when treatment alternatives are compared.

Implants certainly have gained an important place in restorative dentistry. Let us hope that they do not become too much of a good thing.

References

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