## Perspectives

## IMPLANT OR ROOT CANAL THERAPY: AN ENDODONTIST'S VIEW

R ecently the debate about treatment options for pulpally involved teeth has broadened to the point that in certain cases, some practitioners now recommend tooth extraction followed by implant placement rather than a more traditional approach using endodontic treatment to maintain the tooth. I cannot claim impartiality in this discussion since my professional career depends on the survival of endodontics as a viable treatment option. I also have experienced an implant that replaced a central incisor I lost 37 years after a traumatic injury. If it had been successful, I would have undergone two surgical procedures and tolerated a "flipper" for 3 to 6 months. It failed after 3 weeks, so I was spared the discomfort. Two of my extended family members also have experienced failed implants, which, according to what I hear about implant successes, has left me wondering, "Are all the implant failures in the world confined to my family?"

Now let me try to take a more rational and scientific approach. My assumption is that most patients would prefer a healthy, well-functioning natural tooth to an implant, even if the implant did function well. Therefore, if a dentist were to ethically recommend an implant over root canal treatment in a tooth with pulpal or periapical disease, it must be his or her opinion that the implant would offer a better probability of a successful outcome.

My understanding is that the assumed success rate for implants is mid-90%. This figure is gathered from sanctioned studies by the US Food and Drug Administration that required a controlled environment including approved testing sites, operator training, and surgical procedures. Also success does not necessitate a healthy marginal periodontium, only a stable implant unit. To fairly compare the probability of success for endodontic procedures, we need to use those studies that were performed in equally controlled environments. It is also important to point out that the definition of success in endodontic studies is the absence of clinical or radiographic signs of apical periodontitis, not just a stable tooth.

Root canal treatment on teeth with vital pulps (irreversible pulpitis) has a documented probability of success of over 90%. Thus, in teeth with this diagnostic category, endodontic treatment would certainly be the best choice. In teeth with necrotic pulps with apical periodontitis, the reported success rates range from 80%, when the root canal procedure is performed without particular concern for canal disinfection before filling the root canal, to 95%, when specific disinfection protocols are used, which usually require an additional visit. However, extraction is not necessarily the end of the line for a failed root canal treatment. Re-treatment has a success rate of 60 to 75% depending on the technical difficulty of removing the previous root filling and the pretreatment periapical status of the tooth. In addition, endodontic surgery offers an additional 60 to 80% chance of success on these failed re-treatment cases. Thus, if we take the worst reported success rates and start with 100 teeth, 20 may fail (80% success rate). Of these 20 teeth, 8 may fail after re-treatment (60% success rate of 20 teeth). Of these 8 teeth, only 3 would ultimately require extraction (60% success rate in 8 teeth).

One may argue that the success rates I have quoted are not those achieved in general dental practice. This position is probably true, but one needs to appreciate that the success rate for implants performed by an ever-increasing number of practitioners with minimal implant surgical or prosthetic training has yet to be reported. It is highly unlikely that it will remain at 90%. It is also important to appreciate that the root canal treatment for the studies for orthograde endodontic treatment that I have quoted were performed by undergraduate dental students. Thus, it should

be quite within the capabilities of the general dentist to achieve the same result if he or she follows the biologic principles required for success and prudently selects which cases to treat and which to refer to a specialist.

It is quite natural that there is "tension" between the specialties as to which treatment choice is best for the patient. However, I believe that there are enough spaces in our patients' mouths that legitimately require implant therapy. We need to choose a treatment that offers our patients the best chance of maintaining their natural dentition for as long as possible. I hope I have made the case that endodontics is still most often the best choice.

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