Implants vs. endodontics: Are they complementary treatment strategies or adversarial threats?

By Richard Mounce, DDS

Implant therapy and endodontic therapy are complimentary treatment strategies each with relevant indications and contraindications. When carefully evaluated, cases of endodontic disease cannot be evenly weighted in their indications, and occasions in which a choice between one modality or the other is not clear are exceptional and uncommon.

Comparison of the two modalities should include, amongst many possible issues, the type of implant placed as well as the care and skill behind either of the treatment modality, a parameter that is challenging, at best, to measure across populations of clinicians. The best choice between the two modalities is often clearly present when the patient is allowed to choose between options that are clearly defined and in which the financial benefit of the clinicians has been taken out of the equation.

The endodontic literature indicates that the success rates of endodontic treatment are very evenly matched to implants (James Porter Hannahan, Paul Duncan Eleazer, Journal of Endodontics, November 2008 (Vol. 34, Issue 11, Pages 1502-1505) and Scott L. Doyle, James S. Hodges, Igor J. Pesun, Alan L. Levine, Walter R. Bonies, Journal of Endodontics, September 2008 (Vol. 52, Issue 9, Pages 922-927)). In essence, the choice between the two modalities should be made on the basis of the patient's clinical situation and of course, as mentioned, primarily, the patient's wishes since he or she has been informed of the objective facts.

As a starting place, underpinning all treatment planning for retention of the natural tooth is a correct diagnosis and case assessment even before any restorative treatment is undertaken.

Is caries present? Does the patient or contemplated restorations have to be placed? All efforts that reduce pulp trauma are beneficial and ultimately will diminish the need for endodontic therapy. Secondarily, having the clinician be aware of the pulp status at all stages in the restorative course will hold significant value for all involved.

Clinically, this is manifest as the restoration that knows both the present vitality of the tooth being treated as well as the potential for future tipping, rotation, calcified canals, atypical root anatomy of all types, resorptive defects and endo perio lesions.

It is an essential aside to mention that the quality of chemotherapy to the head and neck, as well as those who have taken biophosphonates, especially in IV form, dental history, bromux and parafunc- tional habits, presence or absence of atypical root anatomy, quality of the cleanings, shaping and obturation; patient anxiety and in particular, tipping, rotation, calcified canals, atypical root anatomy.

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Restorability and periodontal status

Clinical choices between first-time endodontic treatment, retreatment or extractions and implant are primarily a matter of determining whether the tooth is restorable.

This said, there are a host of secondary factors that must be considered and will be discussed below.

Knowing which teeth should be removed and implants placed is a vital diagnostic step. The author, a full-time endodontist, empirically estimates at one out of 10 or 15 of the referrals for consultation is made on a non-restorable tooth (Figs. 2, 3). As a result, the primary criterion for restorability is absolutely vital as treatment of these teeth would lead to later extraction.

Primary factors to consider in restorability include the patient's wishes and needs with regard to expected function and esthetics of the given tooth, pulp status, remaining tooth structure, presence of existing endodontic treatment, retreatment or extractions for natural tooth retention relative to the alternatives.

In a hypothetical yet common clinical situation, if a molar is tipped to the mesial, has no response to cold testing (relative to the control teeth), shows calcification in the pulp chamber and a widened PDL, and a bridge is planned from #29 to #51 to replace a missing #30, it makes sense to inform the patient that the pulp in #51 is likely partially necrotic, even in the absence of overt symptoms, and that the tooth is a candidate for a root canal.

To restore the tooth without endodontic intervention is to invite a future symptomatic painful event that now violates the bridge and risks iatrogenic events as well as create a cycle of microleakage. At a minimum in this scenario, the patient must be informed that the tooth has a strong likelihood of becoming symptomatic and given a chance to either have a tooth or prefer secondary intervention or to place the bridge and risk its subsequent failure.

The microleakage mentioned can occur if the tooth is not properly restored after the endodontic treatment under a rubber dam and ideally with a surgical operating microscope (Global Surgical, St. Louis, MO) for enhanced visualization) and using bonded obtur- ation with a material such as Re- alSeal* in master cone or obtu- rator form.

In this realistic clinical sce- nario, the patient needs correctly and properly at the initial indication for endodontic intervention can make manifest the best indications for natural tooth retention. #50 might be replaced with an implant, #51 #1 right-sided and treated endodontically and crowned, thus in either event, a proactive outcome (Figs. 1–2).

Informed consent

The patient should be told realistically, and without bias, what the likely outcome of treatment will be with either treatment modality (endodontics versus implants) when the financial interest of the clinician is taken out of the picture. Arbitrarily removing #8 and placing a single tooth implant because of open apex after trauma, for example, without an endodontic consultation, is shortchanging the patient by not giving all the possible options.

Alternatively, doing a second surgery on a failed root canal or possibly doing a first exploratory surgery where the longterm prognosis is guarded at best, (case dependent) often is better handled definitively by extraction and placement of an implant. There is an old expression that applies: “A horri- ble ending is better than a horri- nor that never ends.”

Simply put, remove teeth that more ideally would be better served with implant therapy and keep those teeth where the predictability of restoration is such that this is the superior service.

Endodontic case-persistence, hastened case-failed

While on the surface it might seem simple to address this issue, it is not always entirely clear when endodontic therapy has succeeded or failed.

What of the upper molar tooth that has had root canal therapy and is less sympto-
As an adjunct to retreatment, there are similar precautions relating to implants with regard to impingement on vital structures such as the mandibular canal, the mental nerve, perforation of the lingual cortical plate in the mandibular posterior region as well as precautions related to the maxillary sinus, amongst others. Horizontal and vertical lack of bone and adequate attachment gingival tissue are also considerations that might argue for resection of the natural tooth.

Costs: direct/indirect

The direct and indirect costs of implant therapy are greater than those of retreatment as well as conventional orthograde root canal treatment, but this assumes that the endodontic therapy is successful in an apples-vs.-apples comparison.

The worst of all situations is one where the patient has the tooth treated or retreated or has surgery, then loses the tooth and ends up with an implant. This unfortunate circumstance can be addressed and must often be avoided through a proper restorative evaluation and consideration for treatment prior to the initial, first-time orthograde treatment and possible retreatment as outlined in this article.

Advantages and indications for implant therapy

Advantages of implant therapy include the prevention of bone loss after tooth removal if the implants are placed six to nine months after tooth removal, and functional and esthetic tooth replacement, amongst other factors.

A primary consideration that must be taken into account is always the provision of an optimal implant utilization. In other words, the placement of the implant in a location that does not harm to vital existing structures; and in which the implant will be given enough time to properly integrate. Additional considerations are the loading of the implant with regard to the lack of lateral forces and correct axial load forces.

Implant utilization also carries with it the advantage that it can be of service in a variety of other situations that might be beneficial to the patient, where this might not exist otherwise: complete upper and lower denture stabilization and the single-tooth implant (especially in the upper anterior region and combined single crown/fixed partial denture restoration scenarios assuming that the implants are loaded correctly and intra-arch bone grafting materials and techniques might be optimal for situations where the mandible is resorbed.

Sound clinical judgment and principles must obviously be applied in a case-by-case basis.

And while this is an article directed at making treatment planning decisions with regard to choosing between endodontics vs. implants, it bears mention that endodontic surgical intervention should be noted as an option in this continuum both with and without known sources of odontogenic failure.

A surgical approach is invaluable to address cases where the bone has had optimal endodontic treatment and possibly retreatment as well as ideal coronal seal and yet failed, to biopsy lesions of unknown origin in combination with the need for root end surgery and to perform exploratory surgery if the cause of failure is not clear.

A clinically relevant discussion of considerations that should be made when evaluating endodontic versus implant plans has been presented. Emphasis has been placed on a careful assessment of the restorability of the given tooth, whether the existing root canal has indeed failed, if retreatment is feasible and what the future prognosis is for the tooth in view of the options for extraction and placement with an implant.

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