

Restoration of the Endodontically Treated Tooth: A Review

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While the restoration of the endodontically treated tooth has been practised for more than 100 years, the criteria upon which we base either the restoration or the ultimate removal are not altogether clear. We have all experienced the treatment planning dilemma of whether or not a tooth should or more importantly can be saved. Many of these teeth which we ponder over are post endodontic, some are post periodontic and many of them cannot be restored.

Fracture, caries, periodontal disease, internal and external resorption and pulpal death with or without periapical pathology are some of the reasons for endodontic therapy. As well, elective endodontic treatment is sometimes needed for adequate resistance and retention form in the final restoration. The reasons for endodontic therapy are numerous and with an established failure rate (Fig. 1) for post endodontic restorations of 2-10% per year as well as evidence embracing immediate restoration of all endodontically treated

teeth, a workable, reliable formula of the "if" and "how" needs to be developed.

FACTORS AFFECTING RESTORATIVE OPTIONS

Based on many long term retrospective studies, certain positional considerations in the arch, existing occlusal schemes, parafunctional activity, abutment potential for fixed or removable partial dentures, single crowns versus abutment retainers for fixed restorations and relative masticatory muscle size must be carefully weighed when considering the long term potential of restorations (Fig. 2). **Restoration of the endodontically treated tooth is the very essence of treatment planning.** The patient must be pain free but not necessarily committed to final treatment on the initial visit. Once pain free, (on another day), an informed decision can be reached. Complete examination is the only way to assess the final role of the tooth, the need for endodontics and the restorative options. Do not treat in isolation.

AMOUNT OF REMAINING TOOTH STRUCTURE

If the amount of remaining tooth structure is minimal (less than 50%) due to fracture, caries, endodontic access opening or old existing fillings, a new core will need to be created utilizing a post. Crown lengthening, extrusion or both procedures are sometimes necessary in order to create a ferrule to protect the tooth from fracture. A ferrule of at least 2.0 mm is mandatory in order to create one third of a positive resistance triad. Antirotation, a ferrule and the protection of remaining vertical tooth structure create this positive resistance triad. Maximum destruction of coronal tooth structure demands the use of a post which, if metal, extends into the root by an amount equal to the length of the crown. If the post choice is carbon fibre or quartz, the length need only be 7-8 mm. The space created for the post must leave 4-5 mm of gutta percha as an apical seal. The literature is divided as to whether endodontically treated teeth are more brittle than vital teeth but there is a consensus that the