Complementary Therapies, Not Competing Treatments

Patients face the choice of retaining a tooth through endodontic therapy and restoration, extraction without replacement, extraction and replacement with a fixed partial denture, or extraction and replacement with an implant-supported restoration. The key question is not which treatment is best, but which therapy best serves the individual. Because these options profoundly differ, they should be considered to be complementary therapies, not competing treatments. Clinicians must be able to accurately advise their patients on the best options.

However, few direct comparisons of these therapies have been performed. Differing definitions of success render systematic comparison of success rates largely meaningless. Systematic review of limited survival data has suggested that implant and endodontic treatments result in superior long-term survival compared to fixed partial dentures. However, clinical, psychosocial, and economic outcomes must all be considered by patients, clinicians, and other stakeholders.

Benefits and harms are part of the clinical outcome matrix. The principal benefits of extraction are pain relief and removal of diseased tissues. Limited physiologic and psychosocial data have suggested that extraction without replacement may result in profound psychologic effects, especially when visible teeth were lost, but only in slight diminution of physiologic function. Surgical complications and sequelae of extraction may be encountered. The benefits of retaining a tooth through treatment of pulpal and/or periradicular pathosis and restoration may include maintenance of the existing appearance, conservation of the remaining crown and root structure, preservation of alveolar bone and existing gingival architecture, and unchanged minor physiologic benefits. Clearly, a tooth that has already been ravaged by caries or periodontal disease is at substantially greater future risk and might not be usefully restored.

The primary benefits of tooth replacement with a fixed partial denture may include improved self-image and esthetics, with a minor physiologic benefit. Tooth preparation and subsequent provision of fixed partial dentures are widely considered to increase the future risk of pulpal, periradicular, and periodontal diseases. Again, surgical complications and sequelae of extraction, including bone loss, may be encountered.

The primary benefits of tooth replacement with an implant may also include improved self-image and esthetics, with variable physiologic benefits. Unlike fixed partial denture treatment, implant treatment does not involve preparation and restoration of adjacent teeth with attendant risks. All means of tooth replacement may face esthetic challenges in recreating natural hard and soft tissue contour and appearance. Surgical complications and sequelae of extraction and implant placement, as well as prosthodontic complications, may be encountered. However, implant placement may reduce subsequent bone loss. Unfortunately, the risks and impacts of potential harms and benefits have yet to be comparatively evaluated.

Economic outcomes are best measured by lifetime cost-benefit analyses, because maintenance needs, complication rates, and length of service probably vary among these therapies. Retention of a natural tooth and adjacent tissue is a perceived benefit that the alternative therapies do not provide. Consequently, the economic burden of proof lies with the alternatives. The alternatives must result in less total lifetime cost or provide greater lifetime function, freedom from pathology, comfort, or acceptability to a patient. Currently, such data are unavailable.

The existing outcomes literature does not help clinicians understand which treatment best serves an individual patient's needs. Some prognostic factors affecting outcomes for single-tooth implants and endodontically treated teeth restorations were retrospectively compared in a case-matched cohort study by Doyle et al.[1] This represents a small start in the effort to provide evidence-based answers to the question of which therapy best serves an individual patient. In the meantime, clinicians must understand that these choices are among complementary therapies that are best addressed by considering their feasibility, likely clinical outcomes, potential benefits and harms, psychosocial effects, and economic impacts on the individual patient.

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1. Doyle SL, Hodges JS, Pesun IJ, Baisden MK, Bowles WR. Factors affecting outcomes for single-tooth implants and endodontic restorations. J Endod 2007;33:399–402.

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