



## Posterior Single Tooth Replacement

Decisions about posterior (premolars and molars) single-tooth replacement requires consideration of each patient's desires, condition of proximal and remaining dentition, anatomic and physiological characteristics of the edentulous site, and fiscal resources. There are many options and outcome possibilities. Decisions about tooth replacement need to be individualized by a knowledgeable provider and an informed patient to support choosing care wisely.

Patients differ in the value they place on their teeth. Psychological attitude about tooth loss varies. Some patients are willing to expend a significant proportion of their resources for interventions if they value the treatment or believe it is necessary, while others prefer to devote a minimal amount on dental care. Some patients want procedures to be done quickly and with the least disruption of their life, while others will endure discomfort and multiple procedures to get best possible or particular type of result.

Because functional and esthetic priorities of patients vary widely, the practitioner should acknowledge these priorities within fiscal realities when developing the treatment plan for single-tooth replacement. Patients' esthetic, functional, and self-image expectations should be determined. The dentist should explain outcomes expected with various treatment options, including no replacement. The potential longevity, maintenance, current and future cost, and effect of the various options on the patient's long-term dental stability and health should be carefully explained using evidence-based concepts and expert judgment. Informed patients best determine the treatment option with the most value for their own particular situation.

Dental arch instability caused by a missing posterior tooth is related to the tooth location, occlusion, and other variables. Drifting, tipping, rotation, supra-eruption, and segmental alveolar bone growth are potential detrimental effects associated with unrestored tooth loss. Each of these negative possibilities varies in the likelihood and extent of change anticipated.<sup>1-10</sup> Current evidence<sup>3-10</sup> suggests that these changes are not as frequent or extensive as historically believed.<sup>11</sup> These potential detrimental effects should be understood and explained to the patient. If intervention is not provided, conventional casts or digital replication of existing conditions for future comparisons is advised.

Restorative options also need to be clearly explained to the patient. A tooth-supported fixed dental prosthesis (FDP) can improve esthetics and function, stabilize tooth position, and reduce potential alveolar stresses,<sup>12</sup> but can compromise the teeth prepared to serve as abutments. The amount of natural tooth structures affected for making the FDP varies from minimal to substantial depending on the existing condition of the abutments. An implant-supported crown may be expensive and may require

alveolar augmentation that can range from simple to complex with varying success predictability. Implants with crowns are initially expensive but may be less costly and have more predicted longevity<sup>13</sup> than conventional FDPs.<sup>14-18</sup> Implant crowns are not susceptible to caries in caries-susceptible individuals. However, placement of single implants in a patient with a poor prognosis of remaining teeth may require removal of the implant if it is poorly positioned for an eventual full-mouth reconstruction or denture/over-denture.

Formal training, continuing education, evidence-based literature, and experience help prepare dental practitioners to diagnose and treatment plan with patient input to provide predictable outcomes using current knowledge and armamentarium. Several factors, such as high caries risk, excellent integrity of prospective abutments, and esthetics, might favor an implant and crown over an FDP. The condition of the edentulous site, potential abutment teeth needing restorations, or better esthetics may favor the FDP. Additionally, the patient's anatomic conditions related to proximity to vital structures (nerve, sinus, lingual undercut) may preclude implant therapy. Active growth occurring with a young individual, cost, or a patient with a poor prognosis of remaining teeth may best be served by a space maintainer or removable prosthesis. Nesbit type single tooth removable dental prostheses (RDPs) are generally contra-indicated due to aspiration risks.

Even one-tooth replacement decisions can involve complex diagnostic and treatment issues that can be enhanced by referral to specialists. Orthodontics may help enhance/restore proximal or opposing tooth position such as up-righting, intrusion, and rotation. Prosthodontic, endodontic, and periodontal assistance may provide the diagnostic acumen requisite to developing the best diagnosis, treatment planning, and care. Compromised health issues may favor implant placement by an oral and maxillofacial surgeon.

In summary, treatment options may range from no treatment, a resin partial removable denture prosthesis (RDP), and various tooth-borne FDPs to an implant-supported fixed restoration. There is information dentists need to know and patients need to be told and understand that is important for proper care. How does the treatment choice affect cost, complexity of care, and need for referral? Alveolar augmentation may enhance or be necessary for pontic or implant site development. Lack of restoring a maxillary first molar may not cause significant risk to stability of other teeth, but how does the patient feel about the esthetics of the missing tooth? How does the patient feel about reduced chewing ability if a missing posterior tooth is not restored? Failure to replace the lost mandibular molar may affect the stability of adjacent and opposing teeth. The mandibular FDP improves dental arch stability and forces on abutment teeth,<sup>12</sup> but what is the long-term risk for the teeth prepared for the FDP and the prognosis for longevity of the restoration?

## Conclusion

It is the position of the American College of Prosthodontists that single posterior tooth replacement can be beneficial to the patient. However, decisions related to replacement should be patient-centered and driven by the patient’s informed desires. This may include no intervention (with maintenance of three dimensional records of the patient’s existing dentition), relatively routine procedures, or intricate and complex decisions and skills for enhancing potential results. The patient’s values coupled with short- and long-term outcomes based on best available evidence, need for lifelong maintenance, and fiscal realities should be evaluated carefully with the patient when considering single posterior tooth replacement. Proper care is patient specific, and it is each dentist’s responsibility to identify and provide or manage appropriate care.

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