

Removable Prosthetics: *Clinical Indications and Treatment Principles*



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Advancements in reconstructive dentistry utilizing adhesive bonding techniques and aesthetic materials have given the clinician a new perspective on the treatment options available to patients. Some clinicians, however, overlook patients who, due to economic and/or anatomical limitations, are not candidates for this type of dentistry. There are many clinical and financial situations where the removable prosthetic alternative is clearly the correct treatment choice.¹

This is particularly true for the prospective implant patient. Although options for augmenting an existing ridge are available, many patients simply do not want to undergo the surgery necessary for implant placement (Figure 1). Many of these patients can be treated very predictably with options other than standard fixed prostheses. The ongoing trend in fixed prosthodontics has created a lull in removable prosthodontic testing at a time when there has been less emphasis placed on removable prosthodontics in many dental schools.¹ Less time devoted to removable prosthetics in dental school curricula and an increasing need for such services creates a perplexing dilemma.² Clinicians who continue to hone their skills in removable prosthodontics can expect to provide these services to a multitude of patients and, when attentive to several basic principles, will experience increased referrals from these previously underserved individuals.

This article will discuss clinical indications for removable prosthetic treatment options as well as treatment principles, and illustrate the use of removable prosthodontic techniques in a case report.

PROSTHETIC ADJUSTMENTS AND ADAPTATION

Some practitioners avoid removable procedures because of the need to perform ongoing adjustments to the prosthesis. As with any treatment, however, adjustments must be performed in accordance with the dynamic structural change the body undergoes as it adapts to the aging and resorptive process. A properly designed, expeditiously constructed, and well-supported removable prosthesis can require as few adjustments

as its fixed counterpart. Additionally, with careful planning and proper sequencing of treatment, a removable partial or full denture can be a very desirable aesthetic option (Figures 1 through 5).

Consideration of basic physiological principles in the design of the removable prosthesis ensures patient comfort and prevents the formation of destructive lateral forces that initiate the "denture effect" and the successive loss of abutment teeth.³ The destructive forces from improperly designed frameworks can often result in pathophysiological resorption of the residual ridges.⁴

One of the primary components in the ideal adaptation of a removable prosthesis to the residual ridge is a mucosa-prosthesis interface that is fluid, or perhaps generated via a mere fluid (as opposed to a static) impression. It is difficult to have a patient remain motionless during an impression for a removable prosthesis that will eventually rest upon fixed and/or potentially moving tissues. This is why a conventional alginate impression can, in many cases, create inaccuracies between mucosa and a stone model, particularly in non-tooth areas. Kennedy Class I and II type partial dentures with the addition of the saddles and denture teeth.^{5,6} The Alfred or split-raft technique for the development of removable partial dentures devised several years ago was originally designed to compensate for this dilemma.⁷ Various impression techniques have been devised over the years to address this inability to accurately obtain impressions of a moving object with a "hard shell" type of impression.⁸

With the fully edentulous patient, the establishment of an ideal impression entails the use of a very slow-setting material (eg, Hydrocast, Sultan Dental, Permaset, DENTSPLY Austenal; Microcast, Amco International) that acts as both an impression material and a relining material. Over several days and appointments, pressure points and the vestibular borders are selectively cut back and re-refined as needed. Generally, the occlusion is evaluated during these "trial denture" (adjustment/impression/relining) appointments to ensure that any sore spots experienced by the patient are not attributed to an occlusal etiology. In the



Figure 1. Panoramic radiograph illustrating the presence of severe periodontal bone loss and the existence of a severely resorbed maxillary ridge. The sinus floor also precludes the possibility of any implant options without additional orthognathic surgery on the maxilla due to its close proximity.



Figure 2. Before full-face photograph of full-mouth reconstruction case.



Figure 3. Retracted "before" anterior view of maxilla. (See full-mouth reconstruction case.)

continued on page 95