Dental implant esthetics and the multi-faceted nature of contemporary prosthodontics

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When placing a dental implant, prosthodontists have much to consider, and a successful esthetic outcome requires careful treatment the patient's tissue as well as their tooth.

Introduction

Immediate implant placement and provisionalization offers our patients remarkable opportunities when replacing failing teeth, especially in the esthetic zone. Prosthodontists have learned that tissue changes that occur after tooth extraction can result in esthetic problems due to facial gingival recession. This is more pronounced for patients with thin versus thick periodontal biotype. A procedure of converting thin to thick biotype around implants with a subepithelial connective tissue graft has been advocated, and this step can reduce or eliminate this esthetic problem of tissue recession at the visible portion of an implant crown. This article describes the surgical and prosthodontic approach of combining immediate implant placement with tissue modification (subepithelial connective tissue graft).

A 38-year-old female patient was concerned about her failing maxillary right central incisor (#8). Radiographic and clinical evaluations showed no signs or symptoms of active infection. Bone sounding measurement of 3 mm at the facial aspect of tooth #8 revealed a normal osseous/gingival tissue relationship.

For this patient, the failing tooth was removed with minimal trauma to preserve the tissue architecture. An implant (Nobel Active, Nobel Biocare, Yorba Linda, CA) was placed immediately without gingival flap reflection. Primary implant stability, required for immediate provisionalization, was attained by careful engagement of bone palatal and apical to the extraction socket. The implant-prosthetic platform was placed 3 mm from the

Figure 1 — Pre-treatment view of the failing tooth #8 (right maxillary central incisor) due to failed endodontic procedure.

Figure 2 — Periapical radiograph of the failing #8.

Figure 3 —
Tooth extraction with minimal alteration to the gingival architecture. An implant was placed immediately without flap reflection.

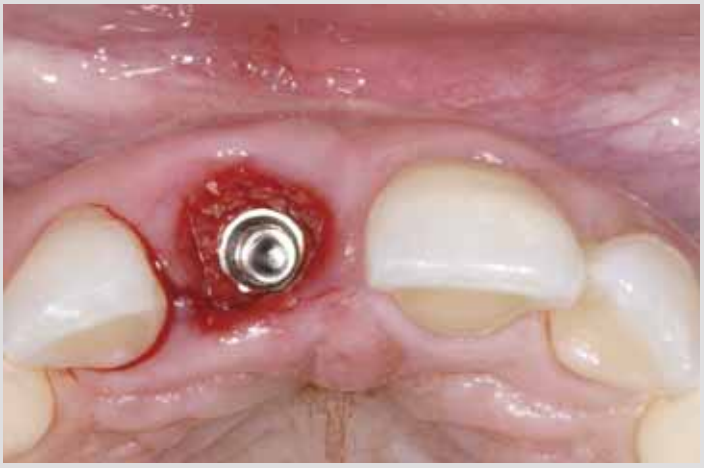

Figure 4 —
Occlusal view of the extraction showing buccolingual position of implant with bone graft at the facial gap.

Figure 5 —
A scarf shaped subepithelial connective tissue graft was harvest from the palate and will be placed in the sulcus between the provisional and the facial gingiva.

Figure 6 —
Placement of the definitive zirconium abutment

Figure 7 —
3-years follow up with the definitive implant restoration.

pre-determined gingival margin. The gap (~1.5 mm) between the implant and facial bone was then filled with bone graft material (Bio-Oss, Osteohealth Co, Shirley, NY).

To provide the patient with an attractive provisional crown after surgery, a zirconium abutment was placed onto the implant and a customized provisional crown was carefully fashioned to the adjacent teeth and tissues, and afterward refined extra-orally to ascertain optimal fit. The abutment was then hand tightened on to the implant. With the implant and abutment in an ideal position relative to the existing tissues, further enhancement of this single tooth replacement was achieved using a scarf shaped submucosal connective tissue graft harvested from the patient's palate using a single-incision technique. This small tissue segment was strategically placed between the

abutment / provisional assembly in order to augment the visible tissue. The provisional restoration was then cemented onto the abutment. Both antibiotic and analgesic were prescribed for post-operative use. The patient was instructed not to brush the surgical site, but rinse with 0.12% chlorhexidine gluconate and be on a liquid diet for 2 weeks. Soft diet was recommended for the remaining duration of the implant healing phase (4 months). The patient was also advised against activities with the surgical site.

During this 4 month healing period, the provisional restoration offered esthetics and function for the patient. After 4 months, a final impression was made and a matching ceramic crown was constructed. The definitive zirconium abutment was torque as recommended by the manufacturer and the definitive restoration was cemented.

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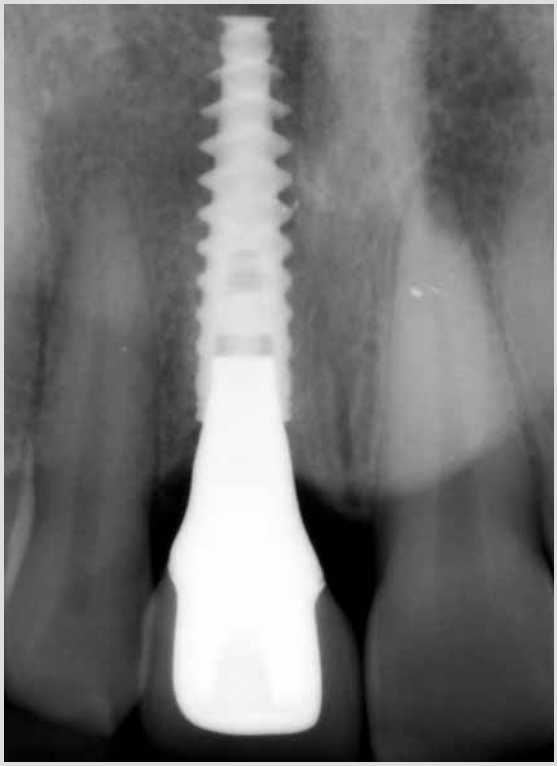

Figure 8 —
3-year post-operative periapical radiograph of implant #8.

Providing Ideal Tooth Replacement

Ideal implant esthetics encompasses tooth and soft tissue concerns. The illustrated technique of soft tissue enhancement performed simultaneously with immediate implant placement and provisionalization is a valuable addition in treatment, especially for patients with thin periodontium where, without the gingival graft, greater tissue recession is likely to occur. Prosthodontists are experts in the many facets of dental implants. Although the favorable results illustrated using this treatment modality can be attained, the fundamentals of careful patient selection, and treatment planning are still as (or even more) important than the treatment itself.

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