Direct Applications of a Nanocomposite Resin System: Part 2

Bonding to Enamel/Dentin Etched With Phosphoric and Hydrofluoric Acids

Replacement of Missing Maxillary Canines With Dental Implants

The Clinical Long-Term Success of Ceramic Restorations: Part I
Clinical Realities

PAPILLA AND FREE GINGIVAL MARGIN PRESERVATION IN MULTIPLE-TOOTH EXTRACTION

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Bone atrophy is a natural response to tooth extraction, and anatomic and functional aberrations can be magnified when alveolar atrophy is accompanied by periodontitis, root fracture, radicular caries, apical processes, or endoperiosteal complications. Some of these concerns require the clinician to perform several surgical procedures (e.g., soft tissue and hard tissue autograft and allograft) with sometimes unpredictable results relative to interdental papilla reconstruction and the invariable loss of the gingival margin. In some instances, it may be advisable to preserve, rather than reconstruct, the papillary and marginal appearance, since this favors the predictability of the outcome.

Studies have described the determinant position of the alveolar crest for allowing dental papilla conservation or reconstruction. In dealing with the anterior portion of the maxillary arch, the aesthetic and functional outcome of treatment is known to be proportional to the alveolar ridge reconstruction or preservation achieved. In this context, implant and conventional fixed partial denture (FPD) therapy could be jeopardized, particularly when two or more contiguous teeth are missing. In these cases, papillary response may be poor or contrasting with neighboring teeth, particularly with regard to papillary form and the degree of filling of the interdental implant to implant, tooth to implant, pontic to pontic, and pontic to tooth relationships. For these reasons, a predictable gingival papilla preservation technique becomes essential, particularly in preserving the gingival margin of the lost teeth.

Case Presentation

A 63-year-old female patient presented with an unaesthetic periodontal condition characterized by a loss of attachment, mobility, chronic inflammation, and extensive vertical bone loss. Treatment options for the required tooth extractions included implant therapy (i.e., followed by multiple surgical procedures to enhance alveolar bone and soft tissue morphology), a conventional Maryland bridge, a conventional lateral to lateral FPD, a removable partial denture, or combined management comprising an ovate FPD with gingival papillary and marginal preservation therapy (PMPT). Following evaluation of the possible aesthetic outcome, the need for multiple surgical reconstructions, and various patientspecific factors, the combined management approach was selected.

Figure 1A. Preoperative appearance of maxillary central incisors demonstrates compromised aesthetics.

Figure 1B. Postoperative view of the anterior teeth demonstrates enhanced aesthetics provided by the final FPD.
Clinical Realities

2A

2B

3A

3B

4A

4B

5A

5B

6A

6B
Figures 2A,B,C. Probing suggested increased bone involvement and bone decay. After periodontal control of the active processes, the two maxillary central incisors were atraumatically removed. Care was taken to avoid pressure on the alveolus in order to limit the potential for bone resorption. Instruments were applied on the palatal aspect, and the final step was completed with circular movements, assisted by pediatric forceps.

Figures 3A,B,C. Following tooth extraction and supragingival or marginal preparation of the pontics, each alveolus was carefully cleaned to avoid damaging the soft tissue of the margin and the papilla. Since the alveolar walls and bone margins would require additional support, a nonabsorbable filling material (HTR Septodont, Kerr/Sybron, Orange, CA) was selected for the extraction sites. After prosthetic preparation of both lateral incisors and canines, an acrylic impression of the sockets was obtained and a provisional FPD was fabricated. The sockets were incrementally filled with discreet amounts of alloplastic material.

Figures 4A,B,C. The provisional FPD, featuring ovate pontic designs, was immediately placed, exerting pressure with the pontics to compact the filling material against the alveolus and ensure close contact with the more coronal bone structures of the alveolus. Intimate sealing and favorable soft tissue response were thereby achieved. For the acrylic FPD, a depth of 3 mm to 4 mm was reserved for the emergence profile of the ovate pontics in order to preserve and support the gingival margin.

Figures 5A,B,C. The healing process was monitored every two weeks until the epithelium demonstrated no translucency and inflammation was absent. Once the epithelium had sufficiently matured, the final prosthesis was fabricated to duplicate all the morphological characteristics of the provisional construct. Four months following the placement of the provisional FPD, the tissues had healed and the epithelial seal had matured. The definitive ceramic FPD was placed to support the papillary structure and gingival margin.

Figures 6A,B,C. Postoperative appearance after four years demonstrated the adequate tissue response and tolerance, and the presence of required support and emergence angle. The stable and aesthetic papillary filling was achieved by the combination of interproximal management of the pontics and preservation of bone height.

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