Treating the exacting patient

Blending digital dentistry and implant prosthodontics

Advanced digital dental technologies
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I first met Michael Frank on a job site where he was artistically and meticulously setting tile for a designer kitchen. Mike exuded energy and had an admirable work ethic. He had a good technician’s eye and measureable pride in accomplishment, but the first time I saw him smile, I knew I could contribute something very valuable to the rest of his life.

At the age of thirty-three, Mike had a lot going for him. Besides his talent, he was a vivacious athlete with a great sense of humor and an uncommon warmth. Married with two young daughters, he worked a sixty-hour week and played soccer in his spare time. A smile was the only part of his signature that simply did not fit.

It was not difficult to convince Mike to allow me to evaluate him clinically and present him with a treatment plan. His evaluation revealed advanced periodontitis with extensive bone loss around his remaining teeth in both the maxilla and mandible, most likely the result of his heavy smoking and excessive consumption of soda for quite a few years.

Mike’s clinical presentation demonstrated extensive flaring of the mobile anterior teeth. Diagnostic casts were made and articulated at the appropriate vertical dimension. These models were scanned digitally and the data files transmitted to a milling center for the construction of the fully milled monolithic PMMA resin provisional dentures. The anterior teeth were repositioned virtually in the 3-D planning software prior to production.
On the day of surgery, twenty cc’s of blood were drawn and Platelet Rich Plasma (PRP) was produced for use during surgery. Local anesthesia was administered to both maxilla (upper jaw) and mandible (lower jaw), and all remaining teeth were extracted. Alveoloplasty was performed in preparation for future implant placement.

In the mandibular arch, full tissue flaps were reflected to identify the mental foramina. The anterior loop of the mental nerve was measured and noted. Beginning with the posterior implant placements in the mandibular right and left sides, a precision drill introduced the initiation of osteotomies (bone drilling). These were placed at a forty-five degree angle posterior tilt.

Four implants were coated with PRP and installed according to the All-On-4® treatment concept protocol. Autogenous (host) bone was gathered during all of the osteotomy preparation procedures and reintroduced into the extraction sites. Angulated multi-unit abutments were installed on the posterior tilted implants and 1mm straight abutments were placed on the anterior axially placed implants.

Following the Teeth in a Day® procedure, special multifunctional copings were installed with guide pins on all four abutments. The rubber dam was then installed to the base of the copings. Using autopolymerizing acrylic resin, the monolithic conversion prosthesis was connected to the multifunctional copings. It was then removed and refined chairside.

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Flap closure took place with multiple interrupted sutures. The Teeth in a Day® conversion prosthesis was then installed using prosthetic screws. The upper monolithic fully milled removable denture was relined, adjusted, and delivered at the same time.

Mike was given post-operative instructions and medications. One week following surgery, he returned for suture removal and minor adjustments to the maxillary immediate complete denture. At ten weeks post-surgery, the patient presented for final impressions, initiating the construction of his mandibular fully milled implant-supported prosthesis reinforced with a milled titanium frame. New occlusal records were made and a reline impression made in the maxillary removable immediate digital complete denture.

Both arches were scanned and the data transmitted for the construction of a new fully milled monolithic maxillary removable digital denture and an All-On-4® final prosthesis with milled titanium framework for the mandibular arch.

Three weeks following the impressions, the final prostheses were delivered to an ecstatic patient whose sparkling personality and boundless energy went up still another notch, proof that at any age, a healthy, esthetic smile is a priceless asset.