CASE PRESENTATION

Virtual Implant Planning Using CBCT

A 62-year-old male patient with poor oral hygiene habits presented with pain in all 4 molars. Additionally, he was dissatisfied with his chipped, discolored front teeth and “gap tooth smile” (Figure 1). His pain prevented him from eating the foods he liked and getting out and being social, and he feared that dentures were his only option. The patient also had severe anxiety about dental visits. A perio exam revealed a Type II classification, and all molars were found to be nonrestorable due to deep decay and multiple areas of abscess.

Treatment Plan
After discussing all options, a phased treatment plan was developed to allow the patient to budget: 1. Removal of pain and infection through perio therapy, extracting hopeless teeth, and bone grafting of extraction sites
2. Decay removal
3. Cosmetic treatment to include wax-up of anterior teeth, whitening, and placement of anterior crowns
4. Replacement of missing teeth using CBCT, virtual surgery, surgical guides, and implants

Due to his treatment anxiety, the patient expressed interest in trying sedation for his initial treatment and was prepared following the Dental Organization for Conscious Sedation protocols. Periodontal therapy was completed using the NV Microlaser (DenMat), and molar teeth were extracted atraumatically using Physics Forceps (GoldenDent) (Figure 2). Socket preservation was completed using freeze-dried bone product (OsteoLife Biomedical). After this initial treatment, the patient said he felt as though he slept through the entire appointment and was ready to continue treatment to replace his missing teeth and increase the esthetics of his smile.

Six months later, a diagnostic wax-up was completed for his 4 front teeth (GlideWell Laboratories) (Figure 3), providing a blueprint to help simplify crown placement. The front teeth were prepared for BruxZir Anterior crowns (GlideWell Laboratories) using an ELECTROTorque handpiece (KaVo Kerr), and 2 weeks later, the crowns were cemented using Relinx luting cement (3M). The patient wanted his post-treatment smile to be white, so in-office whitening was also performed with Zoom QuickPro (Philips).

Image-Guided Implant Surgery
A cone beam image was taken with the OP 3D Pro (KaVo Kerr) (Figure 4). Cone beam images—in addition to allowing me to actually see what I need to effectively and confidently come up with a plan and offer more predictable, safer, and efficient treatment—play a key role in implant surgery. Here, the high-quality cone beam image was used in the fabrication of surgical guides (Anatomage Labs) using Invivo software (Figures 5a and 5b), and I was able to virtually plan for implant placement. Virtual surgery allows me to perform prosthetically-driven dentistry and increases patient safety by identifying and avoiding vital structures.

Due to his circumstances, the patient was interested in trying a diagnostic wax-up and was ready to continue treatment without sedation. However, he felt as though he slept through the entire appointment and was ready to continue treatment to replace his missing teeth and increase the esthetics of his smile. At his postoperative appointment, the patient reported only very minimal discomfort from his implant surgery. He was delighted with his temporary crowns, and he was even more thrilled when he saw the final crowns (Figure 7). The patient has his self-confidence back and advised that he is ready to get out there again and start dating.