

Esthetics Supported With Teamwork and i-CAT®



Extractions, the first step in correcting esthetics and occlusion



Mid-treatment scan aided in planning as case became more complicated

Cone Beam CT scanning played an integral part in treatment planning this complex orthodontic case. A 20-year-old woman was referred to me by my brother-in-law, oral surgeon Dr. Brent Boyse and her general dentist, Dr. Sheldon Sullivan. We three then had a interdisciplinary conference to determine treatment plan. The patient had prior orthodontic treatment. She was congenitally missing Teeth nos. 3, 4, 5, 7, 10, 12, 13, 14, as well as lower Teeth nos. 20, 21, 28, 29. The previous orthodontist placed partial denture overlays on the deciduous teeth which over seven years, caused a destructive occlusion. The patient and her parents approached Dr. Boyse to extract the deciduous teeth and replace them with implants. He noticed that once these teeth were extracted, there would be greatly reduced bone in those areas. Together, we planned a course of orthodontic treatment, bone grafts, implants, and final esthetic and dental restorations. After taking a mid-treatment panoramic x-ray, we realized that the case had become so complex that a 3-D scan became necessary. CBCT scans offered 3-D views of the dentition, root locations of existing teeth, and density and measurements of available bone much more precisely than 2-dimensional radiography.

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Dr. Stuart Frost graduated with honors from the University of the Pacific School of Dentistry (UPSD). He completed a fellowship for Temporomandibular Joint Dysfunctions and a residency in Orthodontics and Dentofacial Orthopedics at the University of Rochester in New York. He is a Damon System Mentor, an associate professor at UPSD and has spoken at the National Damon Forum, the American Association of Orthodontics Annual Session and the IDAP in Puerto Vallarta, Mexico. He hosts continuing education courses and has repeatedly been named one of the Top Orthodontists in *Phoenix Magazine*.

i-CAT®

The Leader in Cone Beam
3-D Dental Imaging

Further utilizing 3-D technology, I sent my CBCT scan and Dr. Boyse's intraoral scan of the soft tissue to Anatomage. The scans were married to make a surgical guide for precise implant placement and orthodontic treatment.



Low-dose, post-surgical scan verifies the placement and healing of grafts and implants

The treatment plan entailed orthodontics to move selected mandibular and maxillary teeth forward, and to level and align the arch. Plans included bone grafting for Teeth nos. 4 and 12, and then implant-supported bridges for Teeth nos. 4 to 6 and 11 to 13. Single implants were planned on 21 and 28. Four veneers were planned for the maxillary anteriors and on Tooth nos. 22 and 27 to make those cuspid teeth larger and restore the occlusion. Orthodontics would move maxillary cuspids forward to replace the lateral incisors. After 10 months in treatment, a second bone graft and sinus lift between Teeth nos. 4 and 6 and 11 and 13 was accomplished to place implants, to facilitate protraction of the molars forward, and move the cuspids into the lateral position. Once the bone grafts were accomplished and implants were considered, the i-CAT® provided a crucial look into the architecture of the bone, and the intraoral scanner showed the surrounding tissue needed for precise implant placement. As a result of teamwork and 3-D imaging, this young woman can be proud of her smile for the first time in her life.

Why 3-D, Why i-CAT®

Besides arming the dental team with the necessary specifications for bone grafting and implant placement, 3-D scans were an important part of educating the patient and the parents. The 3-D image of the intraoral complex and facial features gave the parents confidence that we knew exactly where to move these teeth for the most efficient treatment possible and to result in the beautiful smile that she lacked before arriving at our office. I had another 3-D imaging system in my office and decided to switch to i-CAT® because its image clarity, plus the i-CAT®'s collimation feature, gave me a broader ability to reduce radiation, something the other machine could not offer. I can collimate appropriately for each patient; for example, I can choose from variable fields of view, and collimate to isolate specific areas. It meets my needs clinically, and it was also important to me to have a company that would follow-up and follow-through with service and support.