i-CAT Case of the Month®

Cone Beam CT Technology

AGAINST ALL ODDS

Patient Profile

A 67 year old male was referred to the Pi Dental Center at the Institute for Facial Esthetics with a prior diagnosis of **"no bone in the maxilla."** His desire for treatment included "fixed teeth" and improved esthetics. The following medical conditions were detrimental to the long-term prognosis of his case, but not insurmountable. He presented with diabetes, emphysema, high blood-pressure, as well as dry mouth. To make matters worse, he smoked 2 packs of cigarettes a day and admitted to an intense parafunctional habit of clenching.

Figure 1: Pre-op Panoramic Radiograph With Failing Mini Implants

Clinical Exam

Following a thorough oral examination, which included assessment of the existing prosthetics, diagnostic casts, panorex and AP and lateral cephalometric radiographs and preoperative clinical photographs, the following treatment plan was developed using the "No Bone Solutions™" protocol:

(1) Removal of non-integrated "mini" implants in the area of teeth #13 and 14 (Fig 1).

(2) Fabrication of complete maxillary denture incorporating radiographic gutta percha markers to be used in conjunction with an i-Cat scan.

(3) Teeth In A Day® guided surgery, for placement of five traditional Brånemark implants and freehand placement of four zygomatic implants, to support an interim all-acrylic screw-retained fixed prosthesis.

(4) After 8 to 12 weeks of healing and osseointegration of the implants, the final screw-retained fixed ceramic prosthesis is to be fabricated.

Figure 2: Pre-Treatment i-Cat scan converted to 3D model using Procera

Figure 3: Maxillary Teeth in a Day® Supported by "Quad" Zygomatic Implants

Radiographic Study

Following a 20-second cone beam i-Cat scan the DICOM files were converted to 3-D planning files using the Nobel Biocare Procera software. Evaluation of the bone volume confirmed the original "no bone maxilla" diagnosis. (Fig. 2) The anterior maxilla suffered combination syndrome exacerbated by the mandibular anterior implant supported overdenture. The maxilla at the floor of the nose ranged from 0.5 to 2mm, except for an 8mm island of bone at the midline. The posterior maxilla also exhibited extreme atrophy with expanded antra bilaterally. The left sinus was previously grafted with a xenograft in the area of the failing mini implants. The bone at the floor of the sinus in all other areas was less than 3mm.

Figure 4: Teeth in a Day® Postop Panoramic Radiograph

Clinical Course

The non-integrated mini implants were easily removed by reverse turning.

Five implants were placed using Nobel Biocare's guide protocol. In the anterior, 2 paranasal Brånemark 3.75mm diameter implants and one midline implant were placed. Additionally, 2 pterygoid implants were also placed with the aid of the surgical guide.

Following the guided implant placement, the surgical guide was removed and full thickness flaps elevated to permit a lateral viewing window to be opened in both sinuses. Four Brånemark zygomatic implants were securely placed followed by flap closure and the construction of the screw retained fixed Teeth In A Day® all acrylic interim prosthesis.(Figs. 3 and 4)

Our illustrations attest that he patient's goals were achieved. Not only did he leave the day of surgery with an implant supported Teeth In A Day® prosthesis, but his esthetics, speech and quality of life were immediately enhanced.

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