

The IMPLA 3D Navigation System

The IMPLA 3D Navigation System from SCHUTZ Dental Group, Inc is a tool for the production of high-class drilling templates with depth stop. The templates can be created using virtually any implant system on the market and can be produced in your own laboratory.

The complete system consists of the IMPLA 3D planning software, laptop, IPS (Implant Positioning System) and consumables. The software can also be purchased individually.

Accurate 3D planning requires the production of an X-Ray template, CT or Cone Beam X-Ray with this template correctly in place, and a surgical guide produced from the information provided by the CT Scan and the planning done in the 3D software. Steps 1-4 discuss the creation of an X-Ray template.

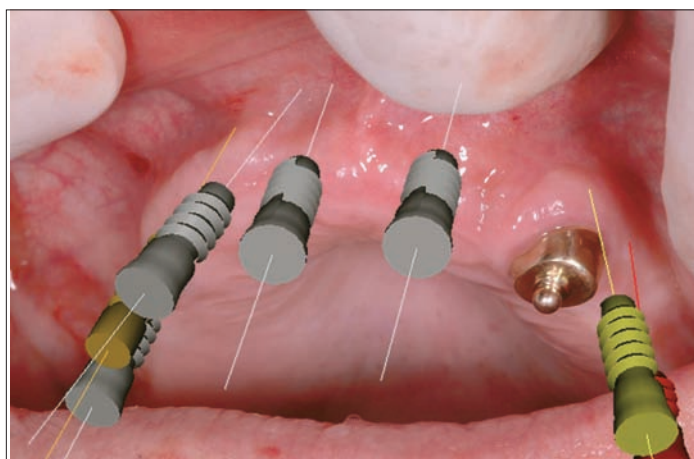


Fig. 1: From the dentist's impression a model is made in the traditional manner. A type 4 plaster should be used and the model should be trimmed with the base parallel to the occlusion area and the distal at 90 degrees. As this is a model based system, it is very important to follow these parameters. If you wish to check the accuracy of your surgical guide, you can pour a second model at this time.

Fig. 2: Mount the models in an articulator and wax-up or place acrylic teeth on the section where you wish to place the implants. Duplicate the teeth with a silicone form. Inject TemRay™ into the form. TemRay™ is a premixed radiopaque material that easily shows up on CT scans and greatly reduces "scatter".

Fig. 3: Isolate model and block out undercuts. Produce a template using FuturaGen™ (or any other clear acrylic material) with impressions of the opposite model. Place the model on the IPS table and turn all three axes to 0 degrees. Use the drill on the IPS to create reference holes in the position where you would like to have the abutments. NOTE: This is not the final position of the implants, only a reference marker for the software to calculate the displacement and angulation of the implants that are planned in the software. Take care to drill through the TemRay™ material but not into the model.

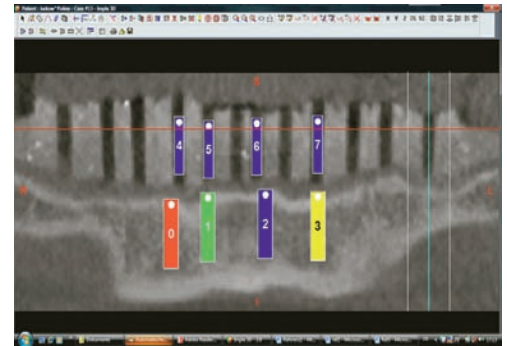


Fig.4: To complete the x-ray template, apply a straight plate at the incisal area to help the x-ray department into positioning the patient correctly into the CT or Cone Beam Scanner. It is important to make sure that the x-ray shows the reference holes perpendicular to occlusion.

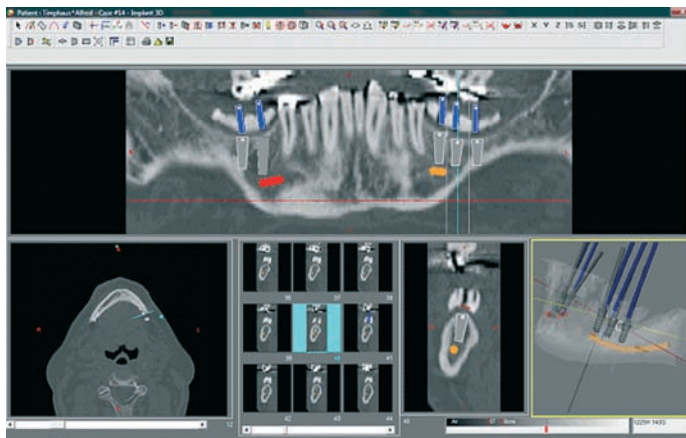


Fig. 5: The CD-Rom with the raw DICOM files are then uploaded into the IMPLA 3D software. There is no data conversion needed. The software does this automatically for DICOM files and 60 other data formats. After the file is imported, you can select your panoramic cut, and highlight the mandibular nerve canals. The software allows you to look at your information in 5 different views, measure any distance you need, check bone density and hardness and virtually place your implants.

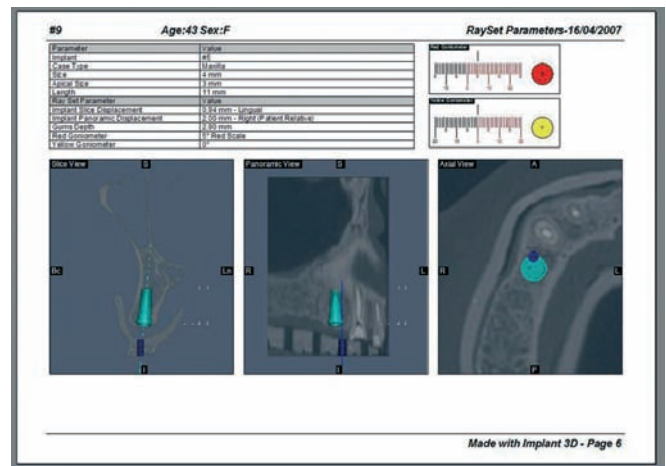


Fig. 6: After all implants are placed and the planning is finished, a complete forensic documentation of all implants can be printed. For fully edentulous cases, “anchors” can easily be planned as well. There will be one page for each implant or anchor, showing all relevant information including the five axis of where to adjust the IPS for the new location of the implant.

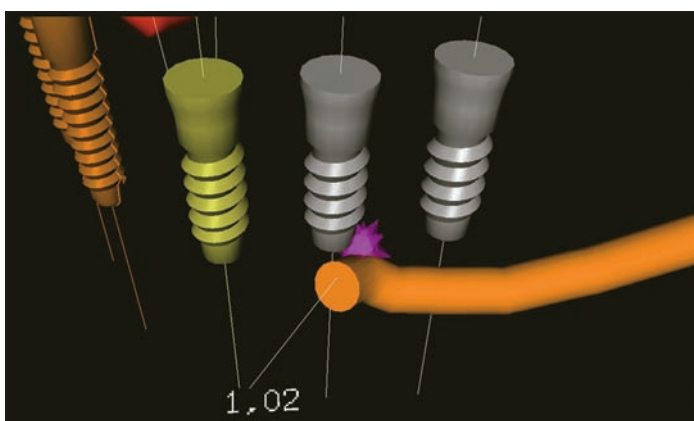


Fig. 7: The model is placed on the IPS in the “zero” position at the first indicated implant reference mark. Using the information from the printout, the implant slice and panoramic displacement are adjusted and then the new position of the implant is marked using articulating paper. The new angulation is now applied using the yellow and red goniometer values from the printout.

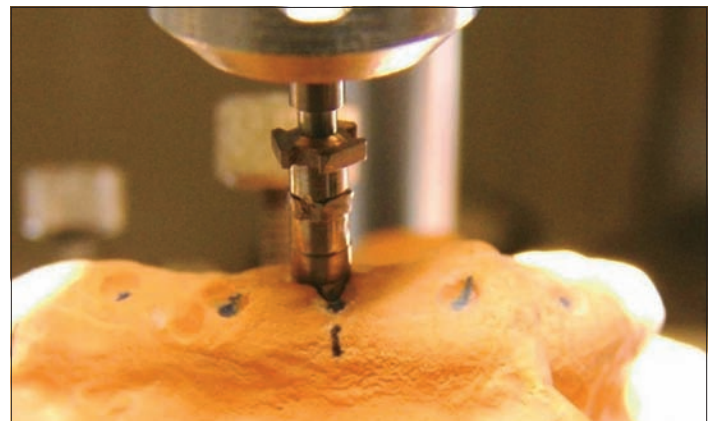


Fig. 8: Now that the new position and angulation of the implant are known, you can now use the IPS to drill directly into the model. If you are using implants that have a sleeve with depth stop, you can now place an analog or drilling sleeve into the horizontal micrometer screw and then place into the IPS and fix to the desired zero position. The gum depth from the printout is now set by turning in .3 steps. Repeat steps 7 and 8 for each implant.

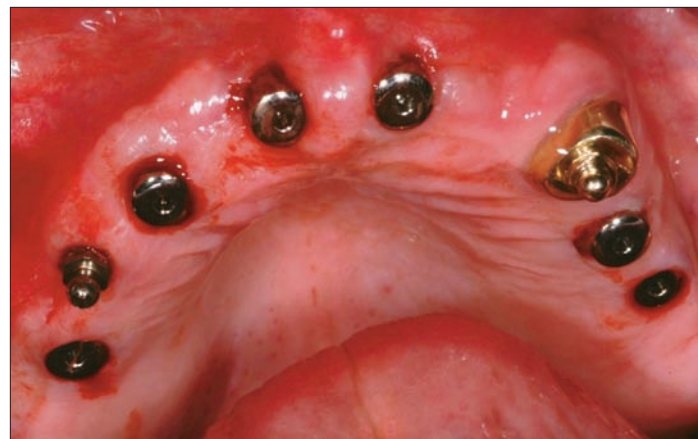


Fig. 9: The surgical guide is now created by injecting SteriGuide™ around the drilling sleeves. This material is a high density composite which can be autoclaved with all drilling burs and implants.

Fig. 10: The finished guide is used to quickly, easily, and safely place the implants necessary. This flapless procedure, combined with the autoclavable surgical guide provides for less traumatic and stress free surgery for the dentist and patient.

About the authors



Steve Djuric, D.D.S., graduated in 1991 from USC (University of Southern California). He has had a private practice in Florida since 1992 and is currently practicing part-time in Pensacola , FL. He's enjoyed the privilege of an in-house lab where he works hand in hand with his technicians with the IMPLA 3D system. Member of American Academy of Implant Dentistry. Email: lildental@aol.com or 850-712-4980.