



3D printed dental guides to accurately locate implants

One-Stop Digital Dental Solutions

Digital Dentistry Enhances
Service Quality With 3D
Printing

“

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Dr. Ming-Che Wu

Sense & Beauty Dental Clinic





3D printed dental models used to test fitting of fixtures

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The Sense & Beauty Dental Clinic (SBDC) in Taiwan is a one-stop dental center offering a range of comprehensive dental services to over 10,000 patients annually. Since its start in 2005, SBDC has emphasized the use of advanced technologies in diagnoses, dental treatments and training for practitioners.

In addition to incorporating the most advanced equipment, including sterilization units, 3D x-ray scanners, dental washer disinfectant and purification system, Dr. Ming-Che Wu, SBDC's managing director, added a 3D printer to the center after learning about the technology at a seminar.

"The vividness amazed me when I saw a dental part that accurately reproduced soft gingiva for validating functional testing for implants, crowns and bridges," said Dr. Wu. "The colors, texture and details were beyond my expectations. And it was created within much shortened time, which would highly benefit our patients."

Expedited Dental Treatments

Traditionally, dentists and surgeons fabricate stone models of every patient's jaw through handcrafting and clay casting. However, the process requires prolonged production time and causes material waste

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as operators remove excess molding materials. There is also room for improvement on the precision and accuracy of handcrafted dental models.

With the Objet Eden 260V™, Dr. Wu can 3D print patients' jawbones, dentures and other dental implants, making the whole diagnosis process faster and more streamlined, from intra-oral scanning and modeling to producing customized dental crowns and fixtures. Instead of spending weeks using traditional fabrication methods, Dr. Wu's technicians can build the same denture in just half a day with 3D printing.

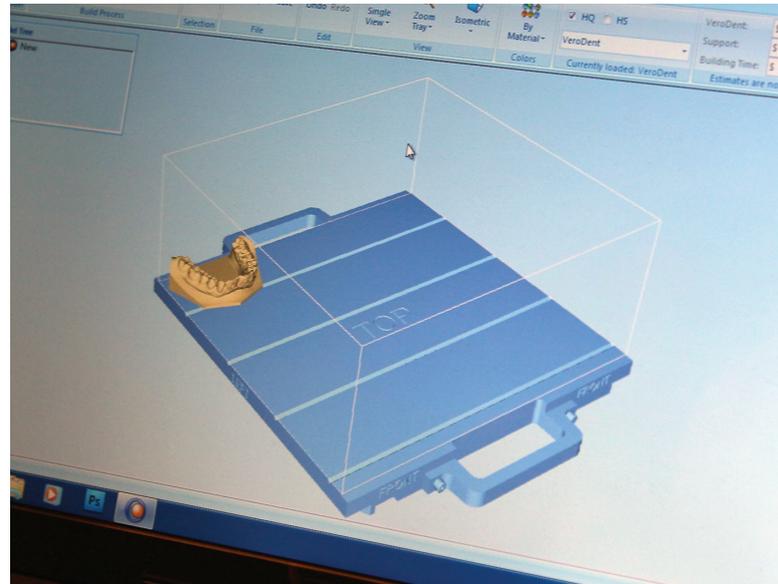
Improving Surgical Safety

After installing the Objet Eden 3D Printer, technicians can convert the digital data of a patient's oral scan to a printable STL file. The patient's dental model is then 3D printed from the STL file and used as a base for dentists and surgeons to test fit and use as a communication tool with patients.

For example, instead of showing 3D images to patients, dentists can demonstrate the pre- and post-treatment conditions using 3D printed models in conjunction with oral scan software. Patients are better advised on the procedures and outcomes, leading to greater confidence and satisfaction.

"Another key benefit of 3D printing lies in its capability to produce models of implants and end-use oral fixtures in very fine detail with a smooth surface," Dr. Wu said. "Every patient has their unique dental anatomy, so required treatments and surgical tools may vary even if two oral conditions are similar. 3D printing allows us to replicate real-life conditions and produce customized tools, helping us make the optimal decision for every patient and perform the surgery smoothly."

3D printing now plays an important role in dental implant surgeries at SBDC. Instead of manually adjusting tools by relying on experience, surgeons can create implants and guides within hours. The 3D printing process is quick and the 3D printed guides are highly precise, improving the overall operation safety while minimizing patient's discomfort and speeding up recovery.



Converting digital data into printable STL file

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Digital dentistry and 3D printing has allowed Dr. Wu to capitalize on opportunities from other parts of Taiwan and overseas. As the first clinic to adopt digital dentistry, SBDC now serves as an education hub hosting seminars and workshops for dental practitioners, introducing the innovative technology and sharing best practices with other industry players.

“3D printing allows us to reproduce real-life conditions and create customized tools, helping us make the optimal decision for every patient and perform surgeries smoothly. Patients are better consulted on the treatment procedures and outcome, resulting in higher confidence and satisfaction,” said Dr. Wu.

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