

Guided Implant Placement with the BIOMET 3i™ Navigator® system and the GALILEOS Implant Software: An integrated approach

Robert Gougloff, DMD, Fred Stalley, DDS

A fifty-nine year-old male had been edentulous for over 7 months in the areas of #30 and #31. The patient's desire was to have both teeth replaced with dental implants and, if at all possible, have a provisional restoration placed at the time of surgery. A clinical exam and an initial GALILEOS CBVT scan indicated that the alveolar ridge may be too thin at the crestal portion of the #30 area, indicating a possible bone grafting procedure prior to placement of a dental implant. It was decided to utilize the new BIOMET 3i Navigator System in conjunction with SICAT Surgical Guides in a guided surgery approach.

The treatment sequence was as follows: A laboratory wax-up was created to ascertain the proper inter-occlusal relationship for the final prosthesis. Once the wax-up was deemed acceptable, it was used to create a radiographic scanning template with radio-opaque representations of teeth #30 and 31 included. A GALILEOS CBVT was taken with the scanning template in place.

This volume was then utilized in the GALILEOS Implant software to plan a virtual implant placement under the guidance of the radio-opaque representation of the original wax-up. It was determined that the #30 implant could be positioned without the necessity of an additional grafting procedure, and a 4.1mm diameter x 11.5mm long BIOMET 3i CERTAIN implant was chosen.

The cross-sectional scan of the #31 area showed a very deep indentation of the lingual cortex due to a prominent submandibular fossa, so that a 5.0mm diameter x 8mm long BIOMET 3i CERTAIN implant was chosen. This information, along with the scanning template was sent to SICAT and a surgical guide along with a surgical protocol for the BIOMET 3i Navigator System was returned within a few days.

The surgical guide was first utilized to premanufacture the provisional prosthesis. The appropriate laboratory analog mounts (as specified in the surgical protocol) were connected to the drill template and a stone cast was formed with the appropriate analogs in place. This cast was then used to build the provisional restoration utilizing the appropriate temporary abutments and sleeves. After local infiltration with septocaine 3%, a

small mid-crestal incision was made for the sole purpose to re-position the keratinized tissues more apically, after the temporary abutments were connected.

The surgical drill guide was then placed into the patient's mouth and the appropriate sequence of starter drills, drill/drill handle combinations, taps, implant mounts and bone profilers were used according to the SICAT/BIOMET 3i surgical protocol for both implants.

Once the implants were in place, the appropriate temporary abutments were placed onto the implants, along with the sleeves. The tissues were re-sutured and the provisional was then placed on top of the sleeves and the occlusion checked for any functional or static contacts. The sleeves were then picked up with some self-curing composite and the provisional was then cemented with temporary cement. A post-operative GALILEOS CBVT scan was taken to demonstrate the accuracy of placement as compared to the original virtual plan.

Products used:

GALILEOS Comfort 3D Conebeam
GALILEOS Implant Software
BIOMET 3i™ Navigator® System
BIOMET 3i™ temporary abutments and sleeves
BIOMET 3i CERTAIN Implants
SICAT Surgical Guide
G&H Dental Arts, Inc

Redondo Beach Dental Group

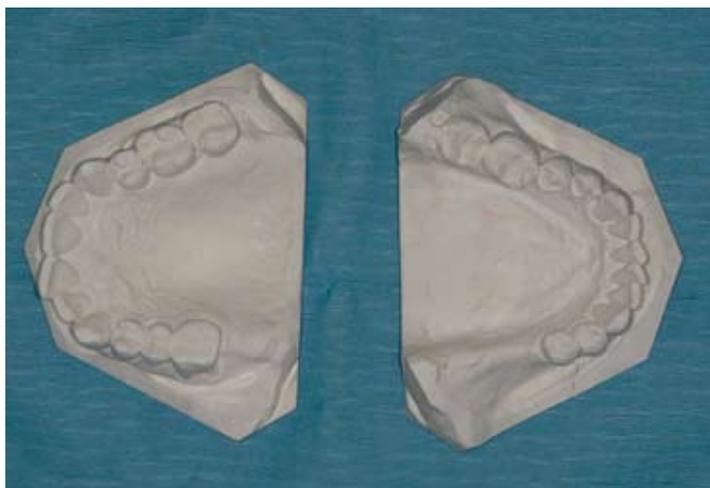
Dr. R. Gougloff
Dr. F. Stalley

2511 Artesia Blvd
Redondo Beach, CA 90278 USA
Tel. 001-310-542-6988

www.redondobeachdentalgroup.com
www.robertgougloff.com

Email: rgougloff@gmail.com
Email: fstalley@dslextreme.com





Upper and lower stone casts of the patient



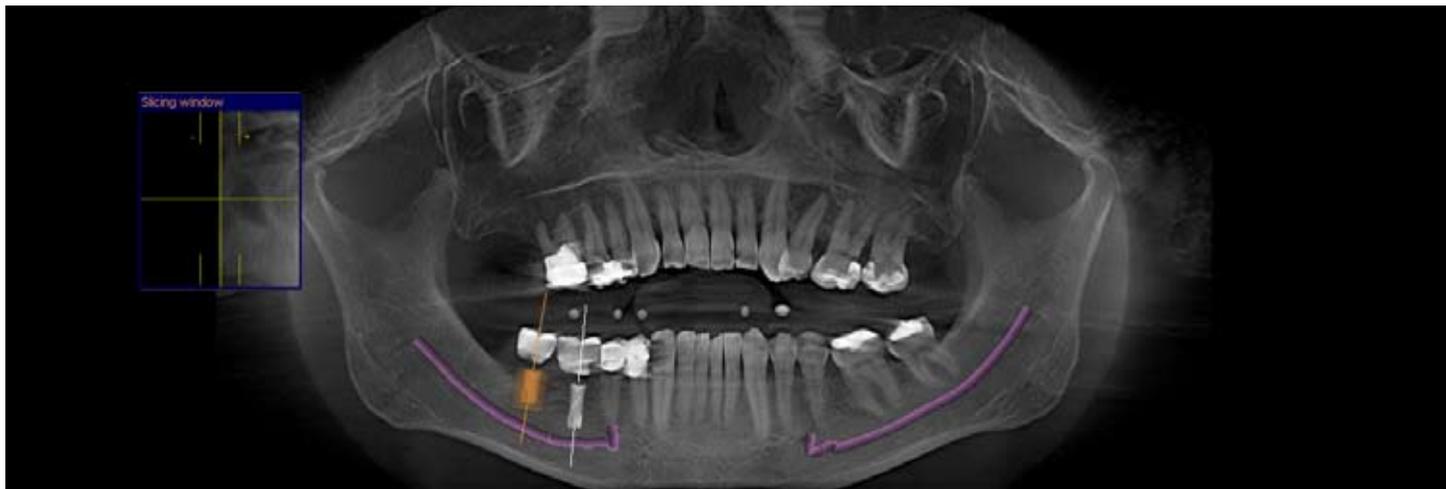
Scanning appliance plate for the GALILEOS CBVT scanner



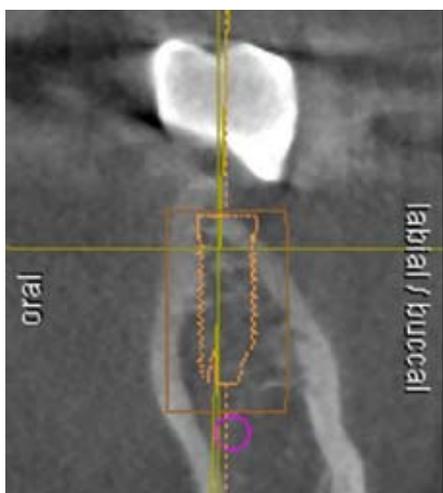
Scanning appliance fitted for the patient's teeth. Radio-opaque representation of the missing teeth included for #30 and #31



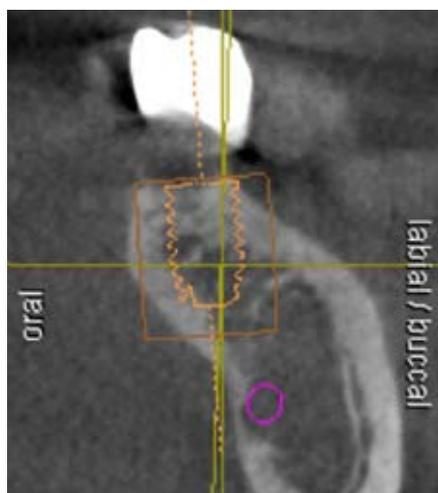
GALILEOS CBVT scan with scanning appliance in place. Prosthetic proposal (barium sulfate) and registration markers are clearly imaged on the scan.



Implant planning with the GALILEOS Implant software. BIOMET 3i CERTAIN implants were selected in the software for this case.



#30. Implant slightly submerged to cover buccal surfaces with bone at the expense of some bone removal lingually. Since implant is still aligned into good prosthetic relationship to tooth, buccal grafting was avoided.



#31. The sublingual fossa is very prominent, so that the implant length had to be limited to 8mm.



The surgical guide is disinfected and ready for surgery.



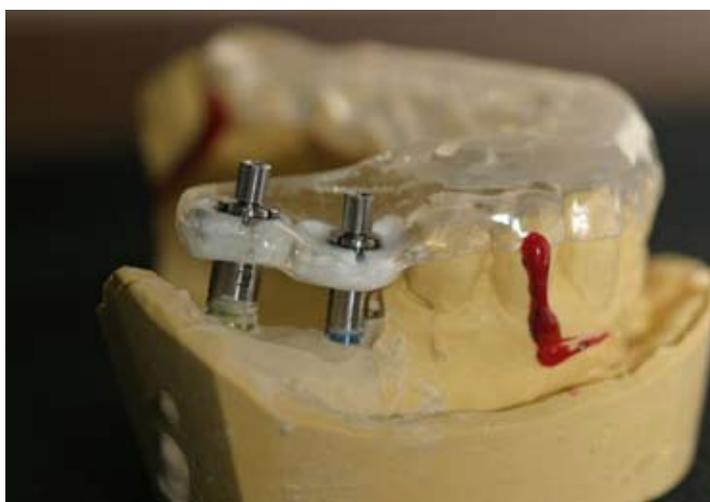
Close up of guide sleeves. Note the notches and their extensions into the acrylic portion of the guide. The final implant mounts have similar notches which need to be aligned so that implant can be placed with correct hex alignment.



The appropriate BIOMET 3i analog mounts are chosen as indicated in the surgical protocol provided by SICAT.



The analog mounts are attached to the surgical guide.



A master cast with proper analogs is formed from the surgical guide.



The proper temporary abutments are attached



The pick-up sleeves are attached to the temporary abutments.



The provisional prosthesis is completed prior to surgery.



Intraoral image of the edentulous area.



The surgical guide is placed into the patient's mouth.



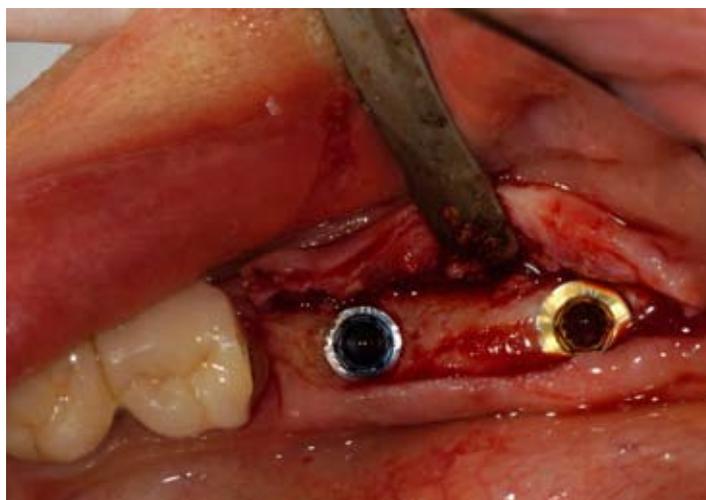
Close-up of the surgical guide in position.



The osteotomy is prepared through a sequence of drills passing through the surgical guide, following the instructions of the surgical protocol.



The implants are in place with the implant mounts attached. Note how the notches of the implant mounts line up with the notches of the drill guide to assure proper hex alignment.



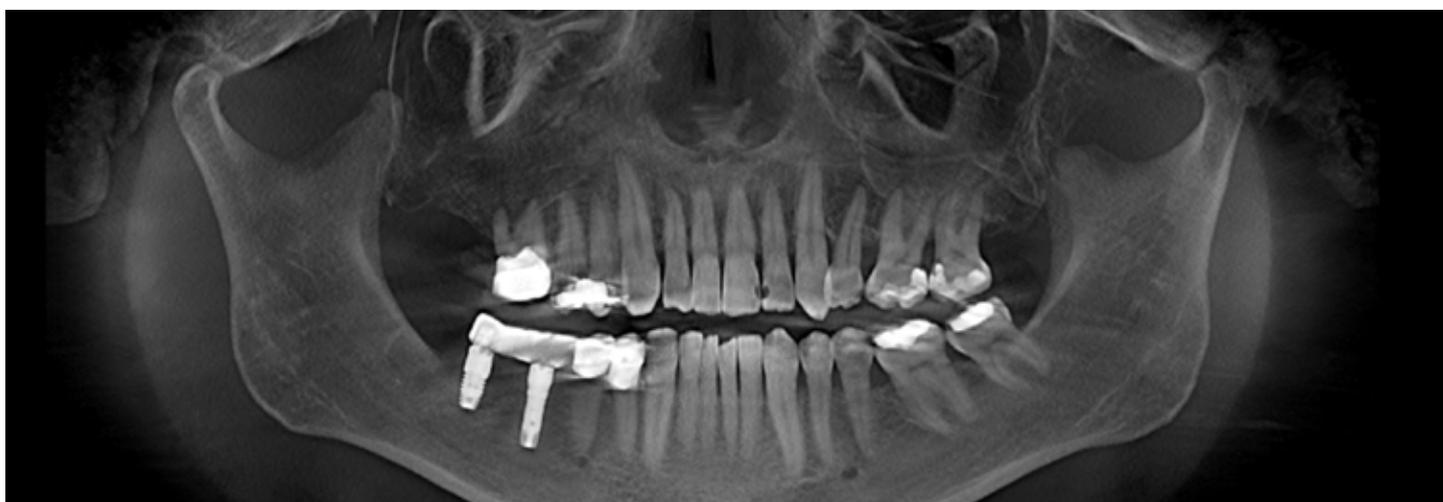
Intraoral image of the implants in position.



The provisional restoration is immediately attached to the implants and properly adjusted.



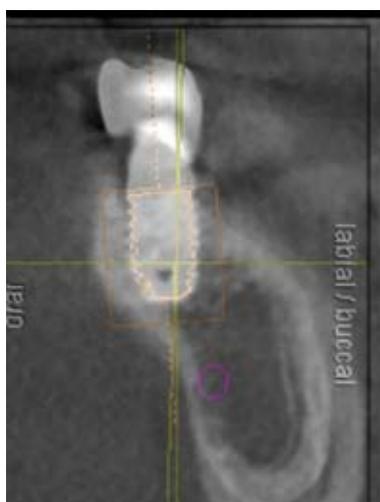
Laser biostimulation is initiated in order to accelerate healing and regeneration.



Post-operative GALILEOS scan showing the implants in the previously planned position.



Cross-sectional view showing #31 implant in place as planned.



Overlay of the original planning scan onto the post-operative scan to demonstrate the accuracy of this guided surgery modality.