

## Hybrid Denture Protocol

### CAD/CAM Titanium Bar/Acrylic Denture Abutment Level

#### Appointment #1

##### Diagnostics

1. Make impressions of upper and lower arches using custom trays. Care should be taken to capture the complete palate as well as vestibules. If using alginate or hydrocolloid, the impressions must be poured within five minutes to ensure accuracy.
2. Record a bite registration using a rigid bite registration material.
3. Take a full series of digital photographs of the patient. Verify the images are clear and in focus. See the DCS photography checklist on the back of this document for reference.

##### CT scans

To appropriately plan your case, CT scans are necessary. It is important to confirm with the x-ray technician that the Nobel Biocare CT protocol is understood. Assistance with this protocol is available from DCS Dental Lab and Nobel Biocare.

1. If the patient is partially edentulous with six or more teeth present:
  - Refer the patient to the x-ray for CT scans directly. Provide the x-ray lab with a prescription requesting the Nobel Biocare protocol.

If the patient is fully edentulous or partially edentulous with five or less teeth present:

- A duplicate of the patient's denture or partial denture will be required prior to the CT scan. An appointment can be made with DCS to duplicate the patient's denture in clear acrylic. The duplicating procedure will be done while the patient waits at DCS (the lab) for approximately one hour. After completion of the clear duplicate denture, it is recommended that the appliance is tried in the patient's mouth to ensure accuracy. After confirmation of the fit of the clear duplicate stint, the patient can be referred to the x-ray lab for CT scans. The patient will need to bring the clear duplicate stint, a bite registration (provided by the laboratory), and an x-ray lab prescription requesting the Nobel Biocare duplicate denture. Two CT scans will be done: one with the clear duplicate in the patient's mouth, and one without.
2. After completion of the steps above, send the following items to the laboratory:
    - Impressions or models
    - Bite Registration
    - Digital photographs (can be emailed to [wemakesmiles@dcslab.com](mailto:wemakesmiles@dcslab.com) or sent on CD, memory card, USB drive, etc.)
    - CT scans on digital media (CD, memory card, USB drive, etc.; CT scans are too large to email)
  3. The lab will complete the following prior to the next step:
    - Digitally plan the case using NobelClinician Software. A copy will be emailed to the restorative dentist as well as the implant surgeon for approval. This viewer software is free and can be installed/viewed on either PC or Mac.
    - Design the immediate denture(s).
    - Set up an appointment to assist with implant-retained immediate denture conversion (if immediate loading protocol has been chosen).

#### Appointment #2

##### Surgery/Immediate Denture(s)

Implant surgeon will perform the surgery and place the dental implants. This process may include extractions and/or osseous re-contouring. The laboratory will have made surgical guide(s) to assist with this process. The surgeon will determine if immediate loading of the implants is possible based on several factors. These factors may be unique to the patient and/or case situation.

If immediate loading of the implants is chosen:

- DCS recommends that laboratory assistance is scheduled to assist with this process. The immediate dentures will be modified in your office to adapt to the implants. This process has several steps and requires unique materials and equipment as well as advanced training.
- Make impressions of the converted implant-borne provisional(s) for study models and custom trays.

If immediate loading of the implants is not chosen:

- The immediate denture(s) will need to be relined with a soft liner for fit and comfort.

## Appointment #3

### Conversion of Immediate Denture(s)

If delayed loading has been recommended for the case, the immediate denture will need to be converted to an implant-borne fixed denture. Before the final prosthesis is fabricated, DCS recommends that laboratory assistance is scheduled to assist with this process. The immediate denture(s) will be modified in your office to adapt to the implants. This process has several steps and requires unique materials and equipment as well as advanced training.

Make impressions of the converted implant-borne provisional(s) for study models and custom trays. If immediate loading of the implants was done following surgery, this step will have already taken place.

## Appointment #4

### Final Impressions

The final implant-supported prosthesis will be fabricated using a precision-made custom CAD/CAM titanium bar and acrylic denture combined as one piece. A passive fit of the titanium bar is critical to the long-term success of the case. It is recommended that the final prosthesis is made after the patient has had his or her immediate denture converted to an implant-borne denture and has adapted to the uniqueness of this hybrid prosthesis.

#### Step 1: Evaluating the situation

Carefully evaluate the esthetics and function. Any changes that need to be made should be carefully documented. Photos should be taken of the patient with their provisional in place to help with placement of the midline and incisal plane. Some examples of challenges to note include:

- Midline shifted too far either direction.
- Incisal length too long/short or appearance of a “gummy smile” due to high lip line.
- Facial or lingual inclination of an implant abutment.
- Take a full series of digital photographs of the patient. Verify the images are clear and in focus. See the DCS photography checklist on the back of this document for reference.

*Note: An implant-borne fixed prosthesis is made using precision-milled titanium bars with acrylic resin and denture teeth. The bar is designed to support the final contours based on the approved temporary/set up. Any necessary changes should be noted at this time or sooner. If this is not done, it may risk the strength of the final restoration and would require a new bar to be made.*

#### Step 2: The master impression

With a verified provisional, we can make a pick-up impression of the actual provisional implant-borne denture with a custom tray fabricated by the lab to generate an accurate model for the final restoration, saving time and cost.

1. Remove the prosthetic screws and place 20mm guide pins (supplied by the lab with custom tray). Flow light body polyvinyl impression material under the base of the prosthesis in the mouth to capture the tissue contours.
2. Take a pick-up impression of the prosthesis in the mouth with a medium- or heavy-body polyvinyl impression material.
3. Remove the prosthesis and impression from the patient’s mouth and inspect it. Screw in the multi-abutment replicas (provided by the laboratory) and pour in low-expansion die stone in the dental office (not laboratory). Pouring the models in the dental office will save time and expense. If this process is not possible in the dental office, then move to the alternate plan (see step 2: Alternate plan, below)
4. Once the stone has set, remove the guide pins from the impression. Remove and trim model and clean up impression material from prosthesis. Mount the new model to the opposing and record the pin setting (if applicable). Once the plaster has set, you may return the prosthesis to the patient.

#### Step 2: Alternate plan

1. Take a pick-up impression of the implant abutments with impression copings designed for those abutments. Use either a coat hanger that has been cut into small sections or other type of rigid material and lute everything together with light-cured composite resin.
2. Send this impression to the laboratory. The lab will pour this model and return for verification at the next appointment (laboratory):

#### (Step 2, alternate (after models) have been returned from the laboratory):

3. Remove the prosthesis from the patient’s mouth and seat on the model provided by laboratory. If the prosthesis does not fit on the model, then the model is not accurate. It will be necessary to take a new impression or use the method outlined in Step 2 above.
4. Mount the new model to the opposing and record the pin setting (if applicable). Once the plaster has set, you may return the prosthesis to the patient. Send the models on the articulator to the laboratory for the final prosthesis.

## Appointment #5

### Final Prosthesis

#### Step 3: Fabrication and verification of bar/wax setup

The prosthesis will be set up with denture teeth and wax for an intraoral try-in on the titanium bar. At this stage, note any esthetic changes, such as minor midline shifts or changes to final shade, and return for processing.

1. Remove the temporary implant-borne denture
2. Try-in the final prosthesis (titanium bar with wax/denture teeth at this stage) and evaluate occlusion and esthetics.
3. Evaluate the fit of the titanium CAD/CAM bar using the quarter screw test (outlined below).
4. Take a full series of digital photographs of the patient. Verify the images are clear and in focus. See the DCS photography checklist on the back of this document for reference.

#### Quarter-turn screw test

*Note: The quarter-turn screw test was designed to check the passivity of any multiple-unit screw-retained restoration. This test is only a guide and should be used in combination with visual keys and intra-oral x-rays.*

1. Place the bar with only one screw holding it in place on one of the distal implants with hand-tightened force. Do not torque the screws at this stage as it will weaken them for the final placement.
2. Hand-tighten a single screw on the opposite side until the point of first resistance.
3. Once the screw has reached the point of first resistance, try to turn it one quarter turn (90 degrees) past this point. If you are able to do so, the bar is not accurate and will need to be cut and welded.
4. Upon successful completion of the quarter-turn screw test, repeat this test on the other implants to be certain of passive fit.

## Appointment #6

### Delivery of Final Prosthesis

At the delivery appointment, you will need:

- The final prosthesis
- Multi-unit prosthetic screws (provided by DCS)
- Nobel Biocare torque wrench (can be loaned from DCS if requested)

1. Hand-tighten all screws in place and verify phonetics and adequate pressure on the tissue, creating a seal with the discussed pontic design. If everything is suitable to the patient, tighten the screws in place with the torque driver.

*Note: The recommended force is 15 Ncm torque.*

2. After torquing the prosthesis to place, you may make any occlusal adjustments.
3. We love before-and-after photos! If you have a moment, please take some pictures and send them to us for our records along with any comments/compliments.

### Photography Checklist

Successful anterior cases are based on good communication between the dentist and the laboratory. This picture list focuses on the consistency of photographic views required for a successful anterior case. The type and quality of the camera is not important. What is very important is taking all the photos as shown on this photo guide. *Note: Please follow this Photography Checklist guide as well as our Esthetic Checklist printed on our lab slips when submitting your next case.*

- Pre-op full face
- Pre-op smile
- Profile
- Retracted front

*Note: If the patient has a denture, submit the same photos above with and without the denture in place.*

- Pre-op full face w/o denture
- Pre-op smile w/o denture
- Profile w/o denture
- Retracted front w/o denture