



IMPLANT SOLUTIONS

# DUAL-SCAN PROTOCOL



In keeping with Glidewell's restorative-driven approach to implant treatment, it is crucial that digital treatment planning cases are **designed to support the optimal prosthetic outcome**. For fully edentulous cases, the best practice is following the **dual-scan protocol**.

## DUAL-SCAN PROTOCOL FOR FULLY EDENTULOUS CASES

As the name suggests, the dual-scan protocol requires two scans. For optimal results, the patient must have a well-fitting denture. Make sure that the denture is well adapted on the tissue. If not, it is recommended to reline the denture with a hard radiolucent reliner prior to scanning.

### Material Requirements

- The patient's well-fitting existing prosthesis or a clear acrylic duplicate scan appliance  
*Note: The denture must not contain metal or mesh.*
- Reline material (if existing prosthesis does not fit well)
- Fiducial markers (radiopaque stickers)
- Block of foam or Styrofoam

## BEFORE YOU BEGIN

### DENTURE RELINE (If Necessary)

*If your patient's existing denture is poor-fitting, it is crucial to perform a reline to ensure accurate fabrication and fit of the surgical guide on the soft tissue, and implant positioning that enables proper design, contours and function of the future restoration.*

1. Inject a reline material directly onto the intaglio surface of the patient's denture.
2. Guide the patient into proper occlusion and let the reline material set.
3. Remove the denture and trim any excess material from the denture's exterior surface.



### APPLY RADIOGRAPHIC MARKERS

Apply radiopaque markers (stickers) such as Suremark DentalMark 2.0 mm Visionline Ball on Denture Sized Labels to the denture.

- Use 6 to 12 small radiopaque markers (3 to 6 per side).
- Position them in a staggered axial pattern, placed sub-gingivally (within the pink acrylic), and distributed on both the buccal and lingual surfaces of the denture.



## SCAN 1: EXTRAORAL SCAN OF DENTURE

The first scan of the dual-scan protocol is to scan the patient's existing denture. This can be accomplished with a CBCT or an intraoral scanner. For either method, the appliance needs to be prepared for scanning.

**NOTE: Do not move, reposition or replace radiographic markers in-between the scans.**

### Option 1: Extraoral Scan of Denture Using CBCT

- Place the denture or scan appliance on a foam or Styrofoam block in the center of the field of view (FOV) so the denture will appear to be floating in space in the scan. Orient the denture according to its occlusal orientation (e.g., maxillary teeth facing downward, or mandibular teeth facing upward)

**NOTE:** Do not scan the denture or scan appliance sitting directly on the plastic stand of the CBCT scanner, which will interfere with the image.

- Scan the denture or scan appliance following the dedicated denture scan protocol of the CBCT scanner.
- Ensure the entire denture is fully captured within the CBCT FOV.

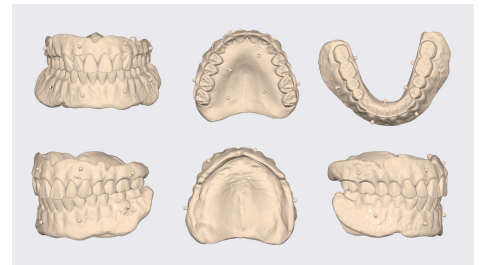


### Option 2: Extraoral Scan of Denture Using Intraoral Scanner

Use a high-resolution intraoral scanner to scan:

- The intaglio surface (tissue side)
- The cameo surface (external side)

Ensure full 360° coverage to capture complete geometry. This produces an STL file that represents the full shape of the denture.



## SCAN 2: CBCT SCAN OF PATIENT

The second of the two scans needed for accurate digital treatment planning and surgical guide fabrication in full-arch cases is taken with the denture or scan appliance in the patient's mouth.

**NOTE: Do not move, reposition or replace radiographic markers in-between the scans.**

- Seat the prepared and marked denture or duplicate scan appliance in the patient's mouth. Instruct patient to bite lightly on cotton roll or gauze bilaterally in the posterior ensuring the denture is fully seated against the soft tissue.
- Instruct the patient to remain as still as possible during scanning.
- Make sure the radiographic markers are visible in the scanner FOV, and confirm that the denture is seated properly.
- Scan the patient with the denture fully seated.



**NOTE:** Recommended FOV is from inferior orbital rim to chin. Before dismissing patient, evaluate the quality of the scan ensuring stitching or double imaging is not present. Confirm all vital structure are included in the CT scan (e.g. IAN, sinuses, and ramus of mandible, etc.).

## TIPS AND SUGGESTIONS

### Bite Registration

*A radiolucent bite registration (such as Capture Clear Bite Registration) is suggested to establish centric relation to serve as a bite index to prevent the denture or duplicate scan appliance from moving during scanning, and to correctly position and fixate the surgical guide during guided surgical implant placement.*

- With the patient's denture or duplicate scan appliance in place, apply a thin layer of radiolucent bite registration material.
- Guide the patient to close their mouth into centric occlusion and hold that position while the material is allowed to set.
- Remove the bite registration and trim any excess material. The bite registration will serve as an index during CT scanning to prevent movement of the denture or scan appliance.



**TIP:** Keep the bite registration for use during the surgical appointment to ensure the surgical guide is fully seated when securing the anchor pins of the surgical guide.



**Need help fabricating an acrylic duplicate scan appliance?**



*See our online video tutorial.*



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