



Screw-Retained Denture

(CAD/CAM Ti Bar/Acrylic Hybrid)

Step-by-Step Restorative Protocol

Screw-Retained Dentures offer a fixed implant solution for edentulous patients desiring a stable and esthetic replacement for removable prostheses. Featuring a custom titanium framework produced using state-of-the-art CAD/CAM technology, Screw-Retained Dentures improve chewing and speech function.

FIRST Appointment

Preliminary Impression

Before moving forward with the Screw-Retained Denture option, consider anterior-posterior spread and keep in mind that 10 mm or more of vertical clearance is required. Although a closed-tray impression technique is described here, open-tray impressions are acceptable.

- Take an implant-level impression, including the vestibules. Ensure the palate is included for maxillary impressions.
 - a.** Remove the healing abutments or appliance from the implants. If the patient has multi-unit abutments in place, take an abutment-level impression.
 - b.** Seat the impression copings and tighten the screws (*Fig. 1*). Take a periapical radiograph to verify complete seating. Check the impression tray for proper fit.
 - c.** Take a VPS impression of the edentulous arch (*Fig. 2*). Allow the material to completely set, carefully remove the impression tray, loosen the screws, and remove the impression copings.
 - d.** Replace the healing abutments or appliance.
 - e.** Carefully place the impression copings back into the impression (*Fig. 3*).
 - f.** Fill out lab Rx including implant system and diameter of implants. Send the lab Rx in with the case.



Figure 1: Seat the impression copings.



Figure 2: Take preliminary VPS impression.



Figure 3: Carefully reinsert impression copings into impression.

SECOND Appointment

Jaw Relation Records and Shade Selection

You will receive from Glidewell Laboratories a bite block with two screw-retained temporary cylinders (*Fig. 4*) and a wax-rim checklist.

- Remove the healing abutments or appliance from the implants.



Figure 4: Bite block with temporary cylinders



- Seat the bite block and gently tighten the screws by hand (**Fig. 5**).
- With the patient sitting up, use conventional denture technique to achieve accurate jaw relation records.
- Unscrew the cylinder screws and remove the bite block(s). Replace the healing abutments or appliance.
- Take an impression of the opposing dentition and an impression of current denture for study model.
- Select the shade and mold of the denture teeth. The study model of the patient's existing denture can be used as a reference regarding the size and shape of the new teeth.

Note: We will match to VITA® denture teeth unless otherwise directed. Indicate the selection on the lab Rx.

- Select the gingival shade.
- Return the case to Glidewell with the master model, bite block, bite registration, opposing impression and study model.

Note: The final restorative option is determined following the Second Appointment, after your bite block has been received. At this point, Glidewell Laboratories may determine that multi-unit abutments are required to correct implant angulation, accommodate screw access holes that are too far to the facial, or connect the prosthesis to implants that are more than 2 mm subgingival. In these cases, the lab will contact the doctor to provide information concerning treatment options and pricing.

THIRD Appointment

Setup Try-in, Verification Jig and Final Impression

You will receive from Glidewell Laboratories a wax setup, a custom tray and an implant verification jig (IVJ). If multi-unit abutments are required, they will also be provided.

Setup Try-in

A wax setup is provided with temporary cylinders and a checklist.

- Remove the healing abutments or appliance. If multi-unit abutments were supplied by Glidewell, deliver the multi-unit abutments in the same sequence and positions represented on the model.
- Seat the trial denture setup (denture base with teeth in wax). Tighten the temporary cylinder screw(s) by hand (**Fig. 6**).
- Evaluate the VDO, CR, esthetics, shade, tooth arrangement, occlusion, phonetics and midline (**Fig. 7**). If CR is incorrect, a new bite registration should be taken.
- Send clinical photos per the checklist included with the case.



Figure 5: Seat the bite block



Figure 6: Seat trial denture and gently tighten temporary cylinder screws.



Figure 7: Evaluate trial denture setup.



- Unscrew the temporary cylinder screws and remove the setup.
- If a reset is necessary, a new bite registration should also be taken (Fig. 8).

Verification Jig

To ensure a passive fit of your restoration, it is vital to obtain an accurate final impression. A custom tray is provided along with an implant verification jig (IVJ) that has been sectioned and numbered on a working model. Each acrylic section contains a titanium cylinder. This procedure should be followed to ensure an accurate final impression.

- Seat each section of the jig onto the appropriate implant or multi-unit abutment and tighten the guide pin (Fig. 9).
 - a. The sections should not be in contact. If necessary, remove one section, minimally trim it with a disc, and reseal it. Each section should have a gap about the thickness of a credit card. Visually verify gaps before luting.
- Lute the sections together with a suitable material (e.g., Triad® DuaLine® – DENTSPLY; Pattern Resin™ – GC America; Zapit® – Dental Ventures of America or ADDS-IT – American Diversified Dental Systems) (Fig. 10).
 - a. Allow the material to flow through and completely around the gaps (Fig. 11).
 - b. Ensure the material is completely cured.
- Optional** – If desired, the clinician can test the passivity of the jig with a one-screw test. Tighten a single guide pin into one of the distal cylinders. No lifting of the jig should occur. Check for a passive fit by visibly inspecting completely around each cylinder for complete seating. This process can be repeated for each implant.
 - a. If any section has a cylinder-implant interface that is subgingival, a periapical radiograph should be taken to verify complete seating.
 - b. If any cylinder is not completely seated, the jig must be sectioned in that area, reluted and rechecked until a passive fit is obtained.

Final Impression

- Check the custom impression tray for proper fit (no contact with the jig or cylinders).
- Using a medium body VPS material, take the final impression with an open-tray technique.
 - a. Inject VPS impression material under and around the jig to capture the ridge and all anatomical landmarks as for a full denture including full vestibular extensions (Fig. 12). Capture the complete palate for maxillary cases.



Figure 8: Taking a new bite registration (if necessary).



Figure 9: Implant verification jig seated.



Figure 10: Luting sections of the implant verification jig.



Figure 11: Implant verification jig luted together.



Figure 12: Inject impression material under the implant verification jig.



b. Completely fill the impression tray. Seat the filled impression tray, ensuring the heads of the guide pins are exposed through the tray (*Fig. 13*).

c. Once the material has set, remove guide pins and then remove the impression.

Note: the verification jig is picked up in the impression. Inspect the impression for the required detail.

- Replace the healing abutments or appliance. If multi-unit abutments were supplied by Glidewell, leave them in place if possible.
- Send in entire case, including the trial denture setup, opposing model, the final impression containing the implant verification jig and guide pins, and lab Rx with reset instructions (if necessary).

■ **RESET** Appointment

Reset Denture Try-in (if necessary)

You will receive from Glidewell Laboratories a reset denture with temporary cylinders.

- Try-in reset denture according to Third Appointment instructions.
- Approve setup or submit lab Rx with reset instructions.

■ **FOURTH** Appointment

Framework/Final Setup Try-in

You will receive from Glidewell Laboratories the final denture setup on the titanium framework.

- Remove the healing abutments or appliance.
- Seat the framework/final denture setup on the implants or multi-unit abutments (*Fig. 14*).
- Verify the fit of framework. Tighten one screw and verify a passive fit on all of the implants or multi-unit abutments (no lifting of the framework). Remove the screw and repeat the process for each implant or multi-unit abutment.
- Verify the VDO, CR, occlusion, esthetics, shade, tooth arrangement, phonetics and midline (*Fig. 15*).
- Remove the framework/final denture setup.
- Replace the healing abutments or appliance.
- Return the case to Glidewell Laboratories for processing.



Figure 13: Seat tray, ensuring guide pins are exposed.



Figure 14: Seat the final denture setup with titanium framework.



Figure 15: Verify the final denture setup.



FIFTH Appointment

Delivery of Final Screw-Retained Denture

You will receive from Glidewell Laboratories the final denture.

- Remove the healing abutments or appliance.
- Seat the final denture on the implants or multi-unit abutments.
- Hand tighten the prosthetic screws, alternating from one side to the other.
- Tighten the screws to the appropriate torque per manufacturer instructions. Wait approximately 5 minutes and retorque the screws (**Fig. 16**).
- Confirm the occlusion (**Fig. 17**). Make adjustments as necessary.
- Place small amount of cotton in the screw access holes and fill with light cure composite or acrylic to prevent bacteria build-up (**Fig. 18**).

Note: Tooth-colored composite or acrylic should be used for access holes in the teeth, while pink composite or acrylic should be used for access holes in the denture base.

ONE Week

Follow-Up Check

- Check occlusion.
- Review oral hygiene instructions.
- Set recall schedule.
- Take upper and lower impressions as well as a bite registration in centric occlusion for complimentary bite splint.
- Send impressions to lab for fabrication of complimentary bite splint.

MAINTENANCE Appointments

How to Maintain Final Prosthesis

- Six-month hygiene appointment
 - a.** Perform prophylaxis under the prosthesis.
- Twelve-month (annual) hygiene appointment
 - a.** Remove prosthesis for thorough cleaning.
 - b.** If prosthesis screws are damaged or show signs of stripping, screws should be replaced.

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Figure 16: Deliver final prosthesis.



Figure 17: Confirm occlusion.



Figure 18: Occlusal view of the final denture in place following sealing of the screw access holes.



Screw-Retained Denture

Predictable implant lab fees and no hidden costs

Price (per arch) includes: CAD/CAM precision-milled titanium bar; premium denture teeth from VITA® (Acrylic Hybrid); all labor, model and die work; analogs, set-ups, bite blocks, try-ins and verification jigs.

Inclusive Screw-Retained Hybrid Denture

**Prices may vary based on the cost of ancillary components of chosen implant system. Multi-unit abutments are available for purchase in cases where they are required.*

Inclusive Tooth Replacement System Screw-Retained Hybrid Denture

(includes implants, healing abutments, impression copings, analogs and final surgical drill)

Quick Reference

	Doctor	Glidewell
FIRST Appointment	Preliminary impression	Pour models, fabricate bite block (3 days)
SECOND Appointment	Jaw relation records, select tooth shade/mold, impression of opposing dentition and current denture for study casts	Articulate casts, set denture teeth in wax, fabricate implant verification jig and custom tray (8 days)
THIRD Appointment	Trial denture setup try-in, photos, lute verification jig, take final impression	Fabricate master cast, fabricate titanium framework, final transfer setup of denture teeth on framework (15 days) OR reset (if necessary – 4 days)
RESET Appointment <i>(if necessary)</i>	Try-in and approve reset denture, photos	
FOURTH Appointment	Combination framework/final setup try-in	Process acrylic and denture teeth to the framework (10 days)
FIFTH Appointment	Final prosthetic delivery	
ONE WEEK Post-Delivery Check	Check occlusion, take upper and lower impressions for complimentary bite splint	Fabricate complimentary bite splint (4 days)

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