

Real World Implant Prosthetics: Fixed and Removable

Samuel M. Strong, DDS

Attachment Retained Overdenture Guidelines

Maxillary:

- 4-6 implants recommended
 - Two IP's as far posterior as possible (graft?)
 - Two IP's in cuspid positions, laterals if necessary
- 2 implants less successful in maxilla than mandible
- 3 implants could be alternative option
 - Ex: Site #'s 4, 7 (or other anterior site), and 12
 - Used due to financial reasons or bone limitations

Mandibular:

- 4 implants recommended
 - Ex: Site #'s 21-23-26-28 or Site#'s 19-22-27-30
- 2 implants alternative option (financial, bone reasons) in cuspid sites

Recommended attachments:

- Locator (Zest Anchors)
- ERA (Sterngold)
- Consult your laboratory, colleagues, mentor, and literature for attachment recommendations

Considerations with the use of attachments:

- Preview retention and seating of all attachments at try-in appointment
- Always use attachment systems with metal housings in denture base
- Be prepared to set housings and attachments chairside (intra-orally)

Considerations with all removable implant overdentures:

- Advise patient that attachments will require replacement every 6-12 months
- Advise patient that rebase or reline procedures will be required every 2-5 years
- Discuss advantages of a second overdenture
 - Embarrassment overdenture
 - Fully processed overdenture

Overdenture Impression Procedure

Size the Denplant impression tray

Heat mold using a water bath at 165 degrees F.
Reinsert in the mouth and confirm comfort to patient.

Occlusal Stops- Maxillary and Mandibular

Tray adhesive to the tray interior.
Place a strip of Heavy PVS Fast Set material through the entire trough of the tray.
Insert into the mouth about two mm. short of the maxillary vestibule depth.
Remove from mouth after full set of PVS. Trim any material that extends to or over the tray periphery.

Border Molding

Place tray adhesive to the borders of the tray.
Place a strip of Heavy PVS Fast Set material around the entire periphery of the tray.
Insert into the mouth with metal retractors being held by patient or assistant.
Manually border mold the buccal vestibule and anterior frenum.
Have the patient perform the following movements for the maxillary:
 Pooch and Smile
 Open widely
 Cough forcefully as you hold the nostrils shut.
Have the patient perform the following movements for the mandibular:
 Stick the tongue straight out, right, left, and up.
 Pooch and Smile
Continue holding the tray until the material is set.
Remove from mouth and trim about 2mm of impression material from the borders of the impression. Also trim any material from around the implant impression copings.

Wash and Final Border Molding

Place adhesive to any portions of exposed tray.
Place Light Body PVS Fast Set around the periphery of the border molding.
Place Medium Body PVS Fast Set throughout the entire impression interior.
Place Light Body PVS Fast Set around all impression copings in the mouth.
Insert the tray into the mouth with metal retractors held by patient or assistant.
Repeat all border movements.

Remove the impression from the mouth.
Remove each impression coping from its implant connection, join it to an implant replica, and reinsert into the impression. The impression is now ready to be boxed and poured for the master model.

Expedited Overdenture Workflow

Duplicate overdenture made using Lang duplicator

Appt. 1: Impression/Records

Establish occlusion and VDO with duplicate overdenture

Establish incisal edge position, buccal corridor, lip support, and midline with duplicate

Multiple bite registrations of duplicate in full occlusion

Wash and border molded impression with duplicate in occlusion

Shade determination/ tooth mold determination

Lab scans the wash impression, bite registration, and opposing cast

Lab creates AvaDent Preview of virtual setup

Dr. evaluates and approves Preview by email

AvaDent creates Biofunctional Try-In (BTI)

Appt. 2: BTI

BTI is evaluated, adjusted if needed, and approved for occlusion, phonetics, and esthetics.

New wash/border molded impression of BTI if needed

Multiple bite registrations of BTI in occlusion

Lab scans the BTI, bite registration

Lab creates new Preview of virtual setup

Dr. evaluates and approves Preview by email

AvaDent mills and finishes the completed overdenture

Appt. 3: Delivery and attachment pickup

Completed overdenture is adjusted as needed

Attachments are pickup up intra-orally with light cured (preferred) or chemical cure material.

Attachment retention customized

All on Four Workflow for Final Prosthesis

Samuel M. Strong, DDS

Appt. 1: Master impression

Acrylic verification jig (AVJ) from Interim All on Four model (IA04) provided by lab.

Facebow/Impressions of IA04 in the mouth.

Bite registrations of IA04.

Remove IA04.

Two Options for Impression

1. Place open tray impression copings. Connect impression copings with metal rods and flowable composite. Panoramic x-ray to confirm seating of impression copings. Fit impression tray with holes.

OR

2. Seat the AVJ in the mouth. Confirm passivity with one screw test. Place long pins in the AVJ. Panoramic x-ray to confirm seating of the AVJ. Fit impression tray with holes.

Complete the open tray impression with polyvinyl siloxane Heavy/Light material.

Lip ruler measurements.

Lab:

Pour master cast. Return with baseplate wax rim and GAT device.

Appt. 2: Jaw relation records

Contour wax rim or place tooth shells for incisal edge position, midline, lip support.

Facebow transfer

Centric relation record at correct VDO using the Massad Jaw Relation Recorder.

Confirm AVJ seating with one screw test.

Select shade and tooth mold.

Lab:

Mount casts. Scan casts and develop AvaDent Preview or do traditional denture setup in wax.

Appt. 3: Try-In

Hybrid Try-In (HTI) from AvaDent placed on denture teeth setup in wax placed. The HTI also serves as an acrylic verification jig.

Evaluate and adjust as needed for occlusion, phonetics, esthetics.

Photos

Lab and Nobel Biocare:

Scan HTI or denture teeth setup. Design and mill titanium bar

Appt. 4: Bar Try-In

One screw test (difficult to do if bar is embedded in the setup).

Lab: Scans final setup or HTI, Preview for approval, and milling of final A04.

Appt. 5: Delivery of final A04.

All on Four

Expedited Workflow (3 appointments)

Appt. 1

Panoramic xray of temporary All on Four's (TA04) in the mouth

Facebow transfer of maxillary TA04

Bite registration of maxillary and mandibular TA04's

Impression of maxillary TA04 in mouth (PVS or alginate)

Impression of mandibular TA04 in mouth (PVS or alginate)

Pour both impressions of TA04's in fast setting stone

This should set in about 15 minutes

While above models pours are setting, return to operatory

Replace all TA04 screws with long pins

Cut holes in maxillary and mandibular impression trays for long pins to extend through the trays (important!!)

Maxillary open tray impression over the TA04

Mandibular open tray impression over the TA04

Upon removal from mouth, place white healing caps on all multi unit abutments

Pour soft tissue /stone models of both maxillary and mandibular open tray impressions.

Dr. Strong prefers to use die stone requiring 30-60 minutes set time

Separate the original poured models of the TA04's

Mount the maxillary stone model of the TA04 using facebow transfer on a semi-adjustable

articulator

Mount the mandibular stone model of the mandibular TA04 to the previously mounted

maxillary model with the bite registration. This will result in stone models of both

TA04's mounted in centric occlusion at the correct vertical dimension.

Separate the open tray maxillary and mandibular impressions

Remove the previously mounted maxillary stone model from the articulator

Mount the maxillary soft tissue/stone master cast (with the maxillary TA04 still connected to the model) using the original bite registration.

Remove the previously mounted mandibular stone model from the articulator

Mount the mandibular soft tissue/stone master cast (with the mandibular TA04 still connected to the model) using the original bite registration

Note: You will need to replace the long pins with original screws for these mountings

This results in both maxillary and mandibular TA04's mounted on master casts at the correct vertical dimension. Removal of the TA04's from the casts results in the

**correct mounting of the master casts with accurate positions of the multi-unit analogs for fabrication of the titanium framework and final prostheses.
Shade determination is obtained to send to lab**

Replace the maxillary and mandibular TA04's in the mouth, torque the multi-unit screws to 15 NCm, place teflon tape over the screws, and fill all access openings with a temporary filling material (Fermit?) or composite.

Lab procedures from Appt. 1:

Lab scans the mounted maxillary and mandibular master casts and scans the bite registration.

Using AvaDent software, the lab partner will produce a virtual computer designed setup for the maxillary and mandibular final A04's.

The virtual design, or AvaDent Preview, is sent by email to the dentist for evaluation, suggestions if any, and approval.

Upon approval of the AvaDent Preview, the computer setup design is milled by AvaDent as a solid try-in and returned to the dental office.

Appt. 2: Solid Try-in

The AvaDent solid try-in is connected to the multi-unit abutments intra-orally, with either only two screws or all four screws per arch.

The solid try-in is evaluated for all the usual items; esthetics, occlusion, lip support, and phonetics. Any changes to the solid try-in can be made by trimming or adding to the acrylic of the try-in or drawing on the try-in. Photos are obtained of the patient's smile (frontal and profile), full face, and retracted views to be sent to the lab with the lab prescription.

If needed, a new bite registration of the altered solid try-in's is obtained at the approved vertical dimension.

The solid try-ins are removed from the mouth and replaced with the temporary A04's.

Lab procedures from Appt. 2:

Solid tray-in's with any alterations, if any, and new bite registration are scanned by the lab. A new AvaDent Preview is developed by the lab and sent online to the dentist for final evaluation and approval.

Once approved, a virtual framework design is obtained from Nobel Biocare and Avadent showing the framework within a transparent view of the final prosthesis.

This virtual framework design can be changed from any guidelines by the dentist and lab partner. The framework is then milled by Nobel Biocare and returned to AvaDent where it is fitted into the final milled prosthesis. Dr. Strong suggests that particular attention be paid to creating adequate thickness of the prosthesis above and below the titanium framework.

The finished case is sent to the dental office.

Appt. 3: Delivery

The completed maxillary and mandibular final All on Four prostheses are connected to all multi-unit abutments. Occlusion, esthetics, phonetics, and lip support are evaluated and approved by the dentist and the patient.

All retaining screws are torqued to 15 NCm. NOTE: DO NOT EXCEED THIS FORCE. BREAKAGE OF THE SCREW HEADS WILL OCCUR IF TORQUED TO EXCESS!

All retaining screws are covered with teflon tape and access openings sealed with Fermit, or another temporary material, or composite.