

FABRICATION OF A BAR ATTACHMENT RETAINED OVERDENTURE

In most cases, the patient perceives no esthetic difference between an implant attachment retained overdenture and a bar attachment retained overdenture. However, the patient can expect a more stable (less movement) and more expensive prosthesis with a bar attachment retained overdenture. The chairside protocols for bar attachment retained overdentures, using different attachment mechanisms (i.e. O-Rings, ERA Attachments, Ball Attachments, etc.) are virtually the same. The primary differences between these attachment mechanisms include: required interarch vertical space, angle correction capabilities, amount of retention they provide, and biomechanical advantages and disadvantages. There are three common abutment systems available for a bar attachment retained overdenture: the UCLA Abutment, Fixed Detachable Abutment and the Standard Abutment Systems (also known as transmucosal abutments).



UCLA Abutment System



Fixed Detachable Abutment System



Standard Abutment System



Diagnostic Wax-up



Bar Attachment Retained Overdenture

When the tissue depth exceeds 3mm, a transmucosal abutment is recommended to extend the seating platform of the metal framework to the abutment approximately 1.0mm to 1.5mm above the tissue height. This will allow better access for hygiene care. It is highly recommended that a full diagnostic set-up be completed prior to fabrication of any overdenture restoration. Typically, fabricating a new denture for the patient is required due to the limited ability to retrofit an existing denture to a metal bar.

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The UCLA Abutment System

TECHNICAL CONSIDERATIONS:

- A minimum interocclusal clearance of 4.5mm for SD and RD and 5.0mm for WD UCLA Abutments is required between the implant prosthetic table and the top of the Abutment Screw when seated.

CLINICAL PROCEDURE

Impressioning



For implant level impressions, refer to pages 9-12 in this Restorative Guide for an open tray or a closed tray impression technique.



Tissue Measurement Gauge

LABORATORY PROCEDURE

Master Model Fabrication



If the implant analogs are subgingival, fabrication of a soft tissue model is recommended.

Step 1: Inspect the impression for accuracy.

Step 2: Pour the master model with a dental stone.

Wax Rim Fabrication

For the laboratory procedures of a wax bite rim fabrication, follow normal denture procedures.



If the patient's ridge has resorbed or is thin, incorporate a minimum of two (non-hexed) Temporary Abutments with Abutment Screws into the baseplate. This creates a stable baseplate resulting in a more accurate try-in by the clinician.



Since distortion in materials may occur and cause inaccuracies in the impression, a verification jig should be made for all multi-unit bar restorations.



Wax Rim with Temporary Sleeves

Verification Jig Fabrication

Step 3: Place the Temporary Abutments onto the master model and hand tighten using the long screws.



Temporary Abutments Placed



If the Fixed Detachable Abutments were placed, use the Fixed Detachable open tray Impression Post and long screws for the fabrication of a verification jig as shown or use Temporary Abutments as described in Step 4.



Fixed Detachable Impression Posts

Step 4: Intertwine the dental floss around the Temporary Abutments.



Intertwined Floss

Step 5: Apply a pattern resin or a light-cured material to the Temporary Abutments. Incorporate the dental floss and lute the abutments together.



Light-cured Material

Step 6: Section the pattern resin between the Temporary Abutments. Mark the Temporary Abutments for the mid-facial orientation and return them to the clinician individually or luted together in 2 by 2 sections.

Step 7: Send the sectioned verification jig with the Abutment Screws to the clinician for try-in. A passive fit intra-orally will confirm that an accurate final impression has been achieved.

CLINICAL PROCEDURE Interocclusal Record



For the clinical procedures of a wax bite rim try-in, follow normal denture procedures.



If the laboratory has incorporated Temporary Sleeves into the wax bite rim, remove the corresponding healing cap prior to try-in of the wax bite rim.

Step 1: Once the interocclusal record is completed, remove all the remaining Healing Abutments with a .048" Hex Driver to try-in the verification jig.

Step 2: Place the sectioned verification jig onto the implants and tighten the Abutment Screws firmly. Be sure to place the sections in the mouth in the same position as they were on the master model.

Step 3: Lute the sections together using a pattern resin or a light-cured material.

Step 4: Once the luted material has set, remove the Abutment Screws. Lift the luted verification jig from the mouth. There should be no binding or fracturing of the verification jig upon removal. This will confirm that a passive fit has been achieved.

Step 5: Replace the Healing Abutments and return the verification jig to the dental laboratory.



Facial Dots for Orientation



Sectioned Jig Placed in the Mouth



Luting of Sections



Completed Verification Jig

LABORATORY PROCEDURE

Denture Wax Set-up and Model Verification



For the laboratory procedures of a denture wax set-up, follow normal denture procedures.

Once the clinician has established a passive fit with the verification jig, the master model may need to be altered to the new relationship before the bar framework can be fabricated. Remove the soft tissue from the master model. Using a straight bur, remove the misaligned analog(s) from the master model. Attach the implant analog(s) to the verification jig. Soak the master model in water and then carefully vibrate stone into the voids around the flats of the implant analogs.



Completed Verification Jig

CLINICAL PROCEDURE

Denture Wax Try-in for the Patient

For the clinical procedures of a denture wax set-up for try-in, follow normal denture procedures.

LABORATORY PROCEDURE

Bar Fabrication

The bar fabrication, try-in and final process using the UCLA Abutment System is shown below. If the Fixed Detachable or Standard Abutments are used for fabrication of a bar attachment retained overdenture, the bar fabrication, try-in and final processing procedures are the the same.

Step 1: Index the facial contours of the approved wax set-up with a putty or plaster matrix. This will provide a guide for bar positioning and attachment placement.



Matrix on Model

Step 2: Remove the matrix and the wax set-up from the master model. With an abutment screw and the UCLA Gold/Plastic Combo Sleeves (Non-Locking), secure the sleeves onto the implant analogs and hand tighten. Reduce the occlusal height of the sleeves to fit within the matrix of the denture set-up.



Sleeves Cut Down

Bar Attachment Retained Overdentures

Step 3: Using a plastic bar pattern, cut a section of the bar pattern to fit between the implant sites. Adjust the height of the bar section so the bar height is even all the way across the top of the bar.

Step 4: Place the matrix back on the model. Use the matrix as a guide to provide adequate clearance for the attachments and their housings, bar pattern, teeth and acrylic thickness.



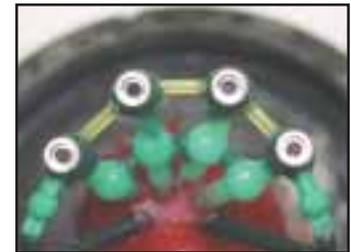
There are many different types of attachment mechanisms in various heights and diameters. Choose an attachment mechanism that will provide adequate thickness for the acrylic and enough room for the denture teeth.



Waxed Bar Pattern

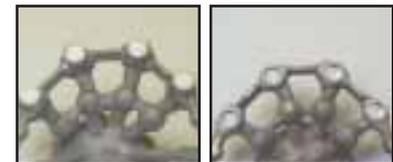
Step 5: Connect the bar pattern to the Gold/Plastic Sleeves using wax or resin material. Use a rubber wheel to reduce the height of the waxing sleeves to 0.5mm above the top of the bar. Smooth out the wax-up to prepare for spruing.

Step 6: Sprue the pattern with 8/10-gauge wax with reservoirs. Use a high-heat, phosphate-bonded investment and follow the manufacturer's specifications for liquid/water/powder ratios, mixing times, etc.



Sprued Bar on Base

Step 7: When divesting the framework, use of a chemical divesting material to maintain the integrity of the gold cylinder is recommended.



Before

After

Chemical Divesting



When polishing the interface between the implant and the prosthetic connection, attach an implant analog to protect the abutment.

Step 8: Send the framework and the denture to the restoring doctor for try-in. Include the Abutment Screws.



Completed Bar

CLINICAL PROCEDURE

Framework Try-in

Step 1: Remove the Healing Abutments.

Step 2: Confirm that the bar framework seats passively.



Bar Framework Seated

Step 3: Beginning with the most distal abutment/implant, place the first Abutment Screw. Hand tighten the Abutment Screw. Make sure the abutment interface/connections on all the remaining implants are completely seated.



First Coping Screw Placed

Step 4: Continue placing the Abutment Screws around the arch. Verify the fit each time you place a screw.



Third Coping Screw Placed

Step 5: Once the bar framework is completely seated, follow the normal procedures for wax set-up evaluation.



Bar Completely Seated

Step 6: Remove the metal bar framework from the patient's mouth.

Step 7: Replace the Healing Abutments.

Sectioning Framework Procedure



If the framework does not seat passively, it must be cut and soldered/laser welded.

Bar Attachment Retained Overdentures

Step 8: Mark the bar framework just before the first abutment that has lifted and is not seated on the abutment interface.

Step 9: Remove the metal framework from the patient's mouth



Sectioned Bar

Step 10: Section the metal framework where necessary and relate it in the mouth using a pattern resin or light-cure material.

Step 11: Remove the sectioned bar framework and replace the Healing Abutment.

Step 12: Return the luted bar framework and the master model to the laboratory for solder/laser weld.



Luted Sections



A non-passive fitting metal framework can cause the patient to feel pressure or a pulling sensation when the Abutment Screws have been tightened.

LABORATORY PROCEDURE

Processing

Step 1: Process using conventional denture techniques.

Step 2: Return the final restoration to the clinician for final insertion.

CLINICAL PROCEDURE

Final Insertion

Step 1: Remove the Healing Abutments using a .048" Hex Driver.

Step 2: Insert the bar framework and tighten the Abutment Screws using a 30Ncm Accu-Torque Wrench and .048" Accu-Torque Driver.



Fastening Screws and Coping Screws, which are used with transmucosal abutments, have a different torque value. Please refer to page 7 of this Guide for Fastening and Coping Screws torque values.

Step 3: Seat the final overdenture and follow conventional procedures for the delivery of the final restoration.



Final Prosthesis



Final Denture with Attachments