The relining of complete dentures

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The relining of complete dentures involves solving all of the problems encountered in the construction of new dentures, except positioning individual teeth.

The first and most important problem is to achieve a healthy condition of the tissues of the basal seat for the dentures. To do this, the patient must be without his dentures for at least 24 hours before the impressions are made.

The dentist looks for errors in the occlusion, the occlusal vertical dimension, and for whatever other changes should be made. A posterior palatal seal is formed in modeling compound on the upper denture before any other change is made on the impression surface. The modeling compound is reheated and the denture is reseated in the mouth to perfect the form of the posterior palatal seal. After each heating, the compound is tempered and placed in the patient’s mouth; slight pressure is applied near the distal end of the denture, and the cheeks are pulled in to mold the compound around the distal ends of the buccal flanges. The width of the posterior palatal seal is reduced to about 2mm.—the width of the area between the bead on the denture and the end of the denture.

Space is provided inside the denture for the new impression material by grinding about a 1.0 mm. thickness of resin from the entire palatal surface. All undercuts removed from the labial and buccal flanges. The borders are shortened 1.0 mm. to allow space for the impression material to form a new border. The labial notch is broadened and deepened so it will not interfere with the labial frenum.

The lower denture is prepared for the reline impression in exactly the same way as a tray would be prepared for making a new denture. The buccal surfaces of the lingual flanges are ground to minimize the pressure against the mylohyoid ridges and between the tissues of the floor of the mouth and the buccal sides of the lingual flanges. The lingual flange between the premylohyoid eminences is shortened 1 mm. The labial flange between the buccal notches is shortened 1 mm. Shortening the flanges provides space so the impression material can form new borders.

Nothing is removed from the buccal flanges, but grooves are cut on the buccal sides of the lingual flanges to facilitate removal of the retromylohyoid eminences after the cast is poured. A modeling compound handle formed over the lower anterior teeth facilitates handling the denture when it is carried to the mouth. Paper tape (3M Micropore surgical tape, Minnesota Mining & Engineering Co., St. Paul, Minn.) is adapted over the polished surface of both dentures and over the teeth. The tape is cut away from the borders of the dentures. The tape facilitates the removal of excess impression material.

The form of the denture prepared for relining is the same as the form of a tray made for a new denture.

A small piece of gauze is used to remove mucous secretions from the palatal glands; the patient’s face is lubricated with petroleum jelly; a large gauze pack is placed over the top of the tongue to keep the palate dry. Equal lengths of the two components of a zinc oxide and eugenol impression material are squeezed onto a mixing pad and mixed according to the manufacturer’s directions. The mixed material is spread in a uniform layer over the entire inside surface of the denture.

The gauze is removed and the labial notch and labial frenum are used as guides for positioning the front end of the denture. The posterior palatal seal is the guide for positioning the distal end of the denture. The finger that maintains the denture in position should be directly under the seal.

Exactly 15 seconds after the denture has been placed in the mouth, the patient is asked to pull his upper lip down and to open his mouth wide. These actions mold the impression material over the borders of the denture. If the border molding is done too soon, the borders of the impression will be sharp rather than well rounded. The upper denture is laid aside until the lower impression has been made.

When the patient is prepared for the lower impression, the gauze to keep the mouth dry is placed under the tongue. The zinc oxide and eugenol impression material is mixed and spread over the impression surface of the prepared denture.

The denture is placed in the mouth just above the ridge and the patient is asked to raise his tongue “just a little bit.” The index fingers are placed over the first molar teeth, and the denture is seated, with the use of a very gentle downward pressure.

After 15 seconds, the patient is asked to open his mouth wide, put his tongue against the upper front teeth, and hold it there. This does all the border molding necessary for forming the borders of the lower impression.

Excess impression material may be removed after the material has become firm. When the impression material is completely set, the denture is removed.

All impression material is removed from the occlusal surfaces of the teeth and from the labial and buccal surfaces of the denture bases. The paper tape helps in this operation. The modeling compound handle is removed from the lower denture to allow the teeth on the two dentures to be fitted together.

After the relative positions of the teeth are noted, the dentures are returned to the patient's mouth, where the occlusion is compared with that of the hand-held dentures. When the balls of the fingers and thumb are placed between the upper and lower teeth, contacts between the teeth can be detected as the patient is directed to pull his lower jaw back and close his teeth until they barely touch. Any error in occlusion is obvious by this test.

Errors in occlusion are usual at this point because all efforts have been directed toward making perfect impressions. Now, records must be made to determine the correct location of the dentures in the mouth.

If a record of the patient’s profile is available, it can be compared with the patient’s profile after the impressions are complete and the dentures are replaced in the mouth. This is a guide to the correct vertical relation of the dentures. Other tests are used if the profile record is not available.

Information is recorded regarding the centric occlusion in the centric relation, occlusal vertical relation, orientation of the occlusal plane, the appearance of the patient, the prominence of the teeth, the relative length of the upper and lower teeth, and the midlines of the dentures. This information indicates any changes in denture position that may need to be made on the articulator. These are the same observations that must be made in the construction of new dentures.

The way in which the teeth relate to each other and the way the patient talks and looks are guides for changes. In order that these changes in position can be made the dentures must be mounted on an articulator by means of new interocclusal records.

The centric relation record is made with impression plaster placed on top of the lower teeth. The left hand is turned so the palm is toward the face. Then the ball of the finger and the ball of the thumb are placed between the teeth on both sides of the dentures. The patient is asked to pull his lower jaw back and to close his back teeth. Closure must stop before any contact between teeth or denture bases is made.

After the plaster is set, both dentures are removed, along with the centric relation record. The dentures are fitted into the interocclusal records, before the cast is poured, to make certain there is no interference between the upper and lower denture bases. A separating medium is painted on the plaster interocclusal record so the dental stone will not adhere to the record.

To form the land for the cast between the two lingual flanges of the denture, a piece of wet newspaper is placed in the tongue space, and impression plaster is shaped over the newspaper. The cast is poured after a separating medium has been painted on the plaster in the tongue space.

For adequate strength, the bases of the casts are built up to a thickness of at least 15 mm. When both casts have been made, the two dentures are fitted together by means of the plaster interocclusal record to make certain there is no interference between the casts.

The upper cast is mounted on the upper member of the articulator by means of the remount jig record or, if none is available, a new face-bow record. The remount jig record retains, the face-bow relationship used for original construction of the dentures. The lower cast is attached to the lower member of the articulator in the position indicated by the plaster interocclusal record of centric relation.

To compensate for the thickness of the interocclusal record, the incisal guide pin is adjusted to raise the upper member of the articulator while the lower cast is mounted. After the plaster has set, the interocclusal records are removed and the incisal guide pin is adjusted to establish the desired occlusal vertical relation. This relationship is determined by the information recorded when the impressions and dentures were in the mouth.

There will be an error in occlusion which must be corrected on the articulator. The position of either the upper or lower denture or both can be incorrect. Usually, the greater error will be in the orientation of the lower denture to its cast. If so, the lower denture is removed first and it is repositioned on the articulator before the upper denture is removed.

The distal ends of the lingual flanges of the lower denture are removed to avoid breaking the cast.

The palate of the upper denture is removed from the upper denture by cutting a groove around the palatal surface of the denture with a 562 cross-cut fissure bur. The cut follows the arch of teeth and it is palatal to the lingual festooning.

After the lower denture is removed from its cast, all impression material is removed. When the denture has been cleaned, a fresh surface is made in the resin by grinding the denture base with a carbide bur. The denture is placed in position in relation to the upper denture on the articulator. Part of the error in occlusion is corrected by placing the lower denture in this new position.

The dentures are attached to each other by means of sticky wax. A slight error in occlusion will likely remain because the position of the upper denture has not yet been corrected. This error in position occurred when the impression was made.

The lower denture is supported in relation to its cast by softened wax at three locations between the denture base and the cast. This prevents change in the position of
the denture when molten wax flowed between the cast and the denture base cools.

After the wax cools, the surface between the denture and the cast is smoothed by carving. The sticky wax attaching the lower denture to the upper teeth is removed, and the upper denture is taken from its cast.

The groove to form the bead for the new posterior palatal seal is cut into the upper cast along a line 2 mm. in front of the distal end of the denture, and the groove to form this posterior palatal seal is cut into the cast with a large sharp scraper. The groove is 1 mm. wide and 1 mm. deep. The deepest part of the groove is carved very narrow so it will form a sharp bead extending upward from the basal surface of the denture. A smaller groove is carved around the cast of the labial frenum. This groove is only 0.5 mm. deep and 0.5 mm. wide.

The outline of the 24 gauge relief metal to be placed over the median raphe and the incisal papilla also is indicated on the cast.

The upper denture is positioned so its teeth are in centric occlusion with the lower teeth. When opposing teeth are in centric occlusion, the upper denture is properly related to its cast.

The two dentures are in centric relation as indicated by the interocclusal record. A new palate is formed on the cast in the denture, and a work authorization is prepared for the processing of the dentures.

To make the remount casts, undercuts in the dentures are blocked out with a caulking compound and dental stone is poured into the dentures.

After processing, the upper denture, along with its stone remount cast, is placed in the remount jig record, and the cast is attached to the articulator; the remount jig record is removed from the articulator.

The dentures are washed and carried to the patient’s mouth. Occlusion is observed. Although it may appear to be acceptable, some modification of the occlusal surfaces of the teeth is always necessary.

Two new interocclusal records are necessary to remount the lower denture and adjust the articulator. The first is a set of protrusive interocclusal records made in impression plaster. The patient is asked to protrude his jaw, stick his chin out, and bite on his front teeth; but as the teeth approach each other, he is directed to stop biting and hold that position until the plaster is set. This records the relationship of the mandible to the maxillae in a protrusive position. These records are labeled “right protrusive” and “left protrusive” and are laid aside.

An interocclusal record of centric relation is made next. Impression plaster is placed on the occlusal surfaces of the lower posterior teeth. With the same hand position as before, the patient is asked to pull his lower jaw back and close his back teeth. He must be instructed to stop closing before any contact is made between the teeth or bases.

After the plaster is set, the dentures are removed. The upper denture is placed in its remount cast on the articulator. The lower denture is placed in its remount cast fitted into the interocclusal record of centric relation, and attached to the articulator.

When the interocclusal records are removed, there must be no contact between the teeth or denture bases.

To perfect the occlusion in eccentric jaw relations, the condylar guidances on the articulator are adjusted by means of the protrusive interocclusal records. When this adjustment is being made, the incisal guide pin must not contact the incisal guide table.

Errors in occlusion which are difficult to see in the patient’s mouth are easily observed and corrected on the articulator. The occlusal contacts in centric relation are corrected first by selective grinding. Articulating paper is used to locate the occlusal contacts.

After centric occlusion is perfected, articulating paper is used to locate interfering tooth contacts in the lateral occlusions. This is done by modifying the height of the buccal cusps of the upper teeth and the lingual cusps of the lower teeth without altering the centric occlusion.

After the occlusion has been perfected in the centric position, and in the right and left lateral positions, the protrusive occlusion is corrected so all occlusions are “smooth-running” as the articulator is moved from one occlusal position to another.

When the dentures have been removed and cleaned they are placed in the patient’s mouth, the patient is asked to pull his lower jaw back and close “only until any tooth barely touches another,” and then to “close tight.” If the teeth touch and slide, the occlusion is incorrect. If the teeth contact and stop dead on the first closure, the centric relation and the centric occlusion coincide.

This technique allows each of the many problems involved in relining dentures to be solved individually, rather than in the few moments available while the impression material sets in the mouth.