Dental Research Journal

Letter to Editor

A procedure for recording and reproducing the cast position on a surveyor

Sir,

Removable dental prosthesis (RDP) is still considered a treatment of choice for partially edentulous patients when fixed dental prostheses or implant-supported restorations are contraindicated because of financial concerns, technical and biologic conditions. Clinician should consider biologic and biomechanical elements in RDP treatment planning.[1] Appropriate analysis of the diagnostic cast is one of the initial and fundamental steps in planning RDP.[2-4]

Surveying the diagnostic cast allows the clinician to study and design an adequate planning for RDP framework.[5] Determining the best path of insertion and removal is an essential step in RDPs planning. The path of insertion is determined with the surveyor regards to height of contours, guiding planes, interferences and esthetics to provide adequate retention, stability, support and esthetics for RDPs.[3]

The path of insertion should be exactly recorded on the study cast in order to be transferred into the definitive cast or working cast. This also allows the dental technician to reposition the casts on the surveyor.[6]

Many methods have been suggested to record and reproduce the path of insertion. Conventional methods for recording the cast orientation include tripodization and scoring, which need several areas on the cast to establish a plane of orientation. In tripodization method, horizontal marks are placed on three divergent anatomic areas of the cast. A plan of orientation is defined by these marks for cast reposition. In scoring method, three vertical marks are made along the base of the cast on the posterior and lateral sides for repositioning of the cast. The analyzing rod of the surveyor is aligned with all three marks. These conventional methods are easy and do not need additional means.[7]

These methods only allow repositioning of the cast on marks, which have been placed; however, accurate repositioning of this cast or the other casts such as definitive or duplicated casts on the surveyor may be sometimes difficult.[8]

Several devices have been suggested for recording and reproducing the cast orientation. A geometric technique was introduced for recording the cast orientation, which requires a mounted protractor on the surveyor.[9]

Similar method was described in which a pin is attached vertically to the cast as a mean for repositioning the casts on a surveyor.[2,10] In addition, a device was developed with three adjustable arms engage to a surveyor, which contact the casts at three divergent points.[11]

Using the indices of the teeth occlusal surfaces and ridge area with different devices and materials were also recommended to record the path of insertion.[12-14]

A tripoder attachment with adjustable arms with three graduated (mm) pointers has been introduced, which can be locked at any height and selected points.[6] Dumbrigue and Chingbingyong[8] used an inclinometer for repositioning the cast on a surveyor table, which allows tilt to be measured in 1° increments in the frontal and sagittal planes with direct visualization of tilt measurements in two plans.

This article describes a simple and effective method for recording the cast orientation on the surveyor table and reproducing this orientation to multiple casts using an acrylic resin index.

1. Mix autopolymerized acrylic resin powder and liquid (Vertex Orthoplast, Vertex Dental, Zeist, The Netherlands) and allow reaching the doughy stage.
2. Provide 2 mm thickness of acrylic resin on a glass slab.
3. Lubricate the teeth occlusal surfaces and/or residual ridge with petroleum jelly.
4. Place the teeth occlusal surfaces and/or residual ridge of the cast on the acrylic sheet and allow the acrylic resin to be polymerized [Figure 1a]. Be sure, the cusp tips and/or ridge area make indentations into the resin [Figure 1b].
5. After surveying (Ney Co., Bloomfield, Conn, USA) the cast, place the occlusal index precisely on the cast.
6. Place a bulk of auto-polymerized acrylic resin on the other side of the occlusal index.
7. Lubricate the analyzing rod with petroleum jelly and secure it into the vertical arm. Lower the vertical arm, until the analyzing rod penetrates

the bulk of acrylic resin [Figure 1c].

8. To reorient the cast later, place the occlusal index on the cast (diagnostic or working cast) and secure it on the surveyor table.
9. While the table is free to move, place the analyzing rod into the hole on the back side of occlusal index.
10. Lock the surveyor table to preserve the orientation.

The advantages of this method for recording and reproducing the tilt of casts include simplicity, accuracy, less working time and no need for any additional devices. Both study and definitive casts can be reoriented with the same occlusal index. In addition, any misfit of the acrylic resin index may be the result of dissimilarity of the diagnostic cast and definitive cast.

This method has some disadvantages. The analyzing rods of various surveyor systems are different, therefore; this technique can be used only in similar surveyors. On the other hand, acrylic resin index may jeopardize the accuracy of the cast. In addition, shrinkage of the acrylic resin may result in inaccurate adaption of the acrylic index on the teeth occlusal surfaces and/or ridge area.

More studies are needed to evaluate and compare the accuracy of available techniques.

The present article introduced a simple method for recording and reproducing the tilt of a cast on surveyor, which is an important step in designing and fabricating RDPs. By using this method, the tilt of the cast is registered with an acrylic occlusal index that can be used to reorient the tilt of multiple casts such as study and definitive casts.

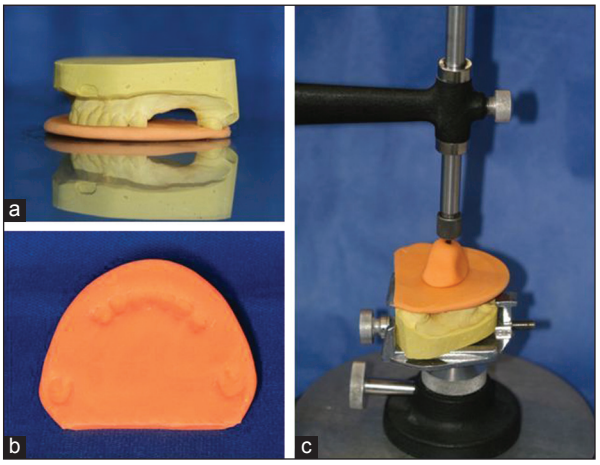

Figure 1: (a) Put the teeth occlusal surfaces on the doughy acrylic resin; (b) The acrylic resin occlusal index; (c) The analyzing rod is placed into the hole on the back side of the occlusal index

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