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Efficient Face-Bow Utilization: An Essential Step to Predictable Aesthetics

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Great aesthetics requires the dental technician to create crowns or veneers with the illusion of reality. For the technician to exercise his or her artistic talents in this process, the models must be oriented on the technician's bench in the same horizontal plane as they will be when they are placed in the patient's mouth and the patient is standing erect.

Modern face-bows and articulators are absolutely essential for producing consistently predictable outstanding aesthetic restorations, and they have become extremely accurate and easy to use. This article is about how to use the face-bow efficiently to achieve great aesthetics.

Then and Now

Face-bows and articulators have been used to replicate function in restorative cases for decades. The older face-bows were flimsy and difficult to use. Labs would even occasionally discard the face-bow and mount the case on the articulator just to placate the dentist. Even when the case was meticulously mounted, often the restorative case functioned no better than one fabricated on a hinge articulator. It was a lot of effort for very little results. That has changed!

Today's articulators with precision joint mechanics are incredibly accurate, and restorative cases fabricated on these machines actually occlude and function in the patient's mouth just as they do on the articulator. This certainly takes much of the stress out of delivering a large case. Modern face-bows allow the dentist to present the case to the technician on an articulator that sits on the lab bench with the same horizontal orientation that exists when the patient is standing erect. This eliminates stick bites and any compensation or guess work on the part of the technician when trying to achieve the correct vertical and horizontal angles for the restorations.

Face-bow Utilization

Figure 1. *This picture is funny because we have all seen it, but it is not funny when it is*

our patient.

Have you ever received a case from the lab that looks great on the articulator, but when you place the case into the patient's mouth, the teeth are canted to the left or right, or they are flared out or dumped back? Have you noticed restorations placed by other dentists that fit well, are the right color, and the proportions were good, but the teeth just don't look right (Figure 1)?

This is often because the orientation of the master cast to the horizon is not correctly represented on the articulator. The laboratory technician will have a tendency to create restorations that look good when models are parallel to the workbench. Even when the technician receives photos and models of patient-approved temporaries, the job is much more difficult if he or she is forced to extrapolate slight changes to the angulations of the restorations. High-quality aesthetic restorations require artistic interpretation by the technician. When the case does not look right on the articulator and the technician forces changes, the work will look artificial.

Following is a quick, easy technique for relating the teeth to the TMJ, while at the same time correctly orienting the maxillary teeth to the horizon. This makes the laboratory technician's job much easier, giving the dentist more predictable results.

Clinical Technique

This technique uses only a face-bow, a quick-release bite fork, and a universal registration joint. The nose piece and the reference indicator are not used. In this article Ivoclar Vivadent's UTS 3D Universal Transferbow System and Stratos 300 articulator will be used to illustrate the technique.

Figure 2. *Try in the bite fork and note the orientation of the maxillary teeth so the bite registration material can be applied appropriately.*

Figure 3. *The patient easily closes and holds the bite fork in place.*

The bite fork is tried into the patient's mouth, and the patient is asked to close. The locations of the upper teeth are noted on the bite fork. The bite fork is then removed, and fastset vinyl polysiloxane bite registration material is placed on the upper surface to capture the position of the maxillary teeth. The bite fork is reinserted into the patient's mouth, and the patient is instructed to close and hold the device in place with the teeth (Figures 2 and 3).

Figure 4. *The patient is very comfortable securing the face-bow's ear plugs.*

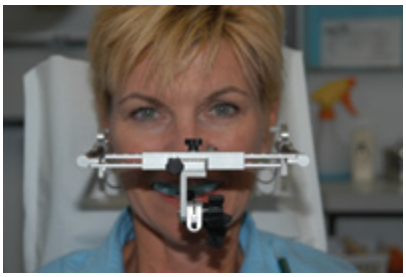


Figure 5. *Orient the face-bow as accurately as possible with the patient seated.*

While the impression material is setting, with the dentist's help the patient is asked to place the earplugs of the face-bow snugly in place, and the face-bow's width-setting screw is tightened. The dentist then attaches the face-bow to the bite fork via the registration joint (Figure 4). While the patient is still seated, the doctor approximately aligns the face-bow in a horizontal position and locks the transfer joint in place (Figure 5).

Figure 6. *Evaluate the orientation of the face-bow with the patient standing. Patients may be more comfortable if they stabilize the face-bow with their hands when they stand up.*

Figure 7. *Verify that the face-bow is parallel to the horizon both from a right-to-left and an anterior-to-posterior perspective. Make sure that the patient does not have his or her head tilted.*

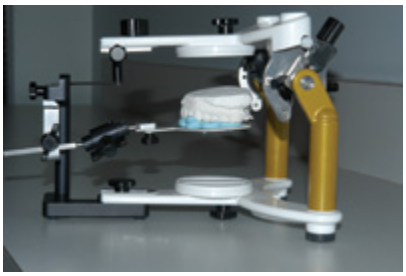
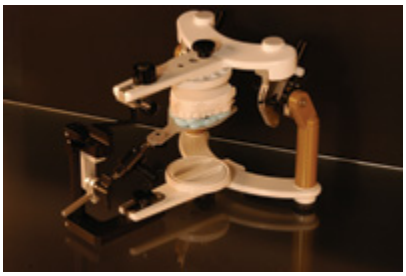
The patient now is asked to stand. With the patient standing and holding his or her head erect, the transfer joint is loosened, and the face-bow is aligned with the horizon, both left to right and anterior to posterior. The ears are quite flexible, and the face-bow can be reoriented to the correct horizontal positions with no discomfort to the patient. When the face-bow is correctly aligned and centered, the transfer joint is retightened (Figures 6 and 7).

The doctor steps back, the correct alignment of the face-bow is verified, and the ear pieces are released by loosening the width-setting screw. The patient opens his or her mouth, and the face-bow and bite fork are removed. Horizontal orientation has been quickly and accurately recorded as well as the relationship of the teeth to the temporomandibular joint.

This procedure is quick and easy on both the dentist and the patient. The models are correctly

oriented to the horizon on the technician's workbench, and the restorations return from the lab with aesthetic angulations both right to left and anterior to posterior.

Transferring the Model to the Articulator

Figures 8a and 8b. *Mounting models with modern face-bows is easier and much more accurate than it has been in the past.*

The face-bow is not required to transfer the model to the articulator. The transfer joint and bite fork are removed from the face-bow and attached directly to the articulator with a registration joint holder (Figures 8a and 8b). The joined bite fork and transfer joint is small and easy to transport, and is easier to mount than an entire face-bow assembly. Additionally, the office only needs one face-bow to support an unlimited number of transfer joint and bite fork assemblies.

Conclusion

This face-bow transfer technique is quick, easy, and accurate. The mounted case meets the occlusal and functional demands of the dentist while at the same time providing the technician the correct horizontal and vertical orientation of the model. This correct spatial orientation enables the technician to visualize and produce the highest-quality aesthetic restoration possible for the dentist and patient.

The use of this technique with modern articulators and face-bows facilitates the production of higher-quality restorations that save lab time and doctor chair time, and increase patient satisfaction.

Dr. DeLopez received his bachelor's degree from Florida State University in 1967 and his DDS from Emory University in 1971. He spent 3 years in the US Army as a dental officer and then entered private practice in Tallahassee in 1974. He is the former president of the Leon County Dental Association and maintains a full-time practice that emphasizes restorative and cosmetic dentistry. Dr. DeLopez writes and lectures on crown and bridge dentistry and doctor/laboratory communications. His publications include subjects on digital photography, predictable pressed

crowns, and preparation and impression techniques for posterior crowns. He can be reached at drtomd@nettally.com.