Step by Step

Ease of Use and Flexibility in Framework Fabrication

A SIMPLIFIED DESIGN TO EASILY IMPLEMENT IN YOUR LABORATORY USING THE ANAXFORM VERTICULATOR.

BY Jaro Urbanski

EVERYDAY, DENTAL TECHNICIANS FACE MANY DIFFICULTIES to bring their final work to the highest level. Even with the most sophisticated digital solutions, technicians still lack total satisfaction and control from the initial stage to the final restoration.

In this article, the author will demonstrate a new analog system that gives technicians the control they desire from start to finish of the case, while also providing the time savings and efficiency often only associated with CAD/CAM systems. The author will illustrate specifically how the system simplifies design and build up of a resin framework for scanning or casting.

Overcoming Obstacles with Frame Design

Use of a traditional matrix does not allow a precise way to transport information from your wax-up. CAD/CAM-milled metal structures sometimes do not reflect the precision of the design planned by the technician. In the market, there are still so few solutions to regaining or transporting the diagnostic wax-up or denture setup on the metal structure. The anaxform Verticulator provides an easy and simple way to manually build up the structure without losing any information from the wax-up, and the structure can be cast or scanned for milling—enabling traditional and digital workflow.

The Benefit of Repeatability

Time is money, and when technicians can use a repeatable process to achieve the desired results, they will have vast time-savings, directly impacting production and profitability in the laboratory. Also, daily work becomes a pleasure when the technician has confidence that the detail built into their case plan will be retained through each step of a repeatable process.

The anaxform System

The anaxform system—which consists of a line of flasks, specialized silicones, and a tool called the Verticulator—empowers dental technicians with a simple and easy way to plan and process even the most difficult cases with complete precision and repeatability, making the system an essential tool in any laboratory striving to provide the highest quality work. Also, the individuality of the technician is a part of each phase of the case.

The Verticulator

The author will present the versatility, value, and ease of use of one specific component of the anaxform system—the Verticulator (Figure 1). This tool facilitates planning of the case, recording of data, and transportation of all necessary information, starting with the wax-up—including vertical dimension, tooth position, esthetic concept, and shape. Though this tool has many uses, this article will focus exclusively on framework design and buildup and transferring of information from the wax-up to the frame. Two framework styles will be covered: a T-shape frame for an acrylic final and a frame for a ceramic final.

Fig 1. The anaxform black flask (left) and Verticulator (right).

Fig 2. The final form wax-up.

Fig 3. A Matrix Form 60 Shore silicone matrix completely surrounds the wax-up.

Fig 4. Matrix Form 70 Shore silicone joins the 60 Shore matrix to the Verticulator lid and stabilizes the matrix in the Verticulator.

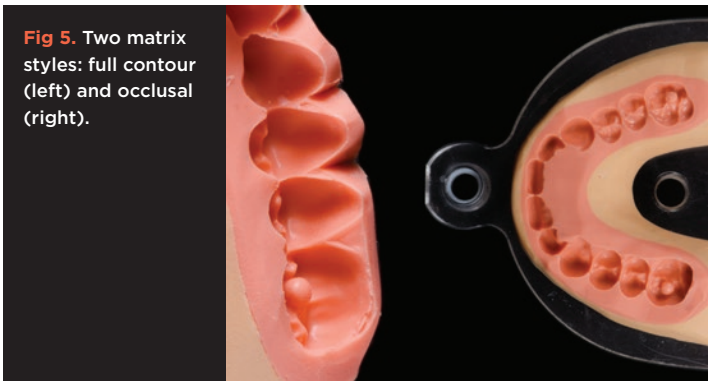

Fig 5. Two matrix styles: full contour (left) and occlusal (right).

Capturing the Wax-up

The most important information from the wax-up (Figure 2) is stored in the Verticulator, using anaxdent's high-precision silicone, Matrix Form 60 Shore, to surround the wax-up (Figure 3) and allow the silicone to set in a dry pressure pot at 2 bar. The model is then mounted in the base of the Verticulator (using a split-cast method). Then, Matrix Form 70 Shore silicone is placed on top of the Matrix Form 60 and inside the Verticulator lid, which is lowered until the vertical stop is reached, stabilizing the matrix and filling the space between the lid completely (Figure 4).

Depending on the case specification, this recorded information can now be transmitted through various matrix styles. In this case, the author created two matrixes for use at different stages of the case:

Full-contour matrix, which is made to either retain denture teeth in the

Fig 6. The prepared denture teeth are inserted into the full-contour matrix in the Verticulator lid.

Fig 7. The denture teeth are released from the matrix after transferring resin onto the frame base.

Fig 8. Final form design of the T-shape frame.

Fig 9. The denture teeth are transferred to the metal frame using the Verticulator and bisacryl.

Fig 10. A resin duplicate of the wax-up formed using the Verticulator. *Note the 1.5-mm black spacer was removed, dropping the vertical stop by 1.5 mm.*

Fig 11. The occlusal matrix is used to reference the wax-up while cutting back.

Fig 12. The occlusal matrix is then used to transfer occlusal modeling from the wax-up to the frame.

Fig 13. The final acrylic fixed hybrid denture is gingiva-tinted with anaxdent's Acryline kit.

case of an acrylic final restoration, or to create a full-contour resin duplicate of the wax-up in the case of a ceramic final restoration. The full-contour matrix is also used to transport denture teeth onto the final frame. This matrix is finished by trimming the interproximal areas away (Figure 5).

An occlusal matrix is used to visualize the wax-up as a reference while cutting back the buildup of a frame for veneering material and to transport occlusal information onto the final frame. This matrix is finished by trimming all silicone away just below the occlusal surface (Figure 5).

Framework Build-up and Transfer of Information

The author used a design of a T-shaped structure, taking biomechanical properties into account. Denture teeth are prepared to accommodate internal support, then placed into the full-contour matrix. An appropriate acrylic-to-acrylic separator is applied to the surface of each tooth (Figure 6).

After the model is mounted in the base of the Verticulator, the four abutments are splinted with anaxacryl RS resin. Next, the teeth are filled with the same resin, and the lid of the Verticulator is lowered until the vertical stop is reached, connecting the tooth to the resin base for the frame (Figure 7). The frame is then shaped to final form and prepared for casting or scanning (Figure 8). Teeth are easily transported to the final frame for try-in or final processing by cleaning the teeth, placing them back in the full-contour matrix, filling them with bisacryl, and then lowering them onto the model until the vertical stop on the Verticulator is reached (Figure 9).

Frame for Ceramic or Veneering Material

Using the same full-contour matrix, which is inserted in the top of the Verticulator, the model is mounted to the Verticulator base, and then the abutments are splinted together with anaxacryl RS resin. Next, all three 1.5-mm black spacers on the side rods of the Verticulator are removed, lowering the vertical stop by 1.5 mm. The full-contour matrix is then filled with anaxacryl resin, and the Verticulator lid is lowered until the new vertical stop is reached. This allows for automatic lowering of the occlusion by 1.5 mm, creating room for the veneering material of choice. This results in a duplicate of the wax-up that is easily cut back to allow space for veneering material, yielding a final form that can be cast or scanned (Figure 10).

During the cutback process, the full-contour matrix is replaced with the occlusal matrix, providing excellent visualization of the wax-up for easy checking of the ceramic space (Figure 11).

Once the final frame is ready, a try-in is created by mounting the model in the base of the Verticulator with the frame attached. Next, with all three black 1.5-mm spacers reinserted onto the side bars of the Verticulator, the occlusal matrix is filled with bisacryl (Figure 12), lowered until the vertical stop is reached, and is left in place until the material cures completely. This completes the accurate transportation of the occlusal information from the wax-up onto the final frame (Figure 13). This technique makes framework design simple, fast, and precise. It also allows flexibility in fabrication, making it a simple process to implement in any laboratory.

About the author Jaro Urbanski is a dental technician specializing in implant solutions at his laboratory in Mexico and is course instructor for anaxdent.