

# Aqualizer Muscle Directed Bite Registration — A Perfect Bite the First Try

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**D**entistry is abundant in devices that promise more but deliver less. For every therapy that is founded in strong, “evidence-based” science and reasonable practice, there are countless others that are endorsed and sold whose usefulness is suspect.

Therapies for TMD (Temporal Mandibular Disorder) are probably the most vulnerable to this kind of misrepresentation. Patients with TMJ (Temporal Mandibular Joint) symptoms are usually frustrated beyond belief with the pain they are experiencing, and subsequently carry that frustration to the dentist whose care they seek.

For the most part, the pain realized by these patients is difficult to diagnose and even more challenging to treat. This is because it is near impossible to diagnose them while they are in pain, and certainly impossible to break that cycle.

However, every once in a while a new product is introduced that helps fulfill a need in the dental marketplace. The Aqualizer<sup>1</sup> is one of these products (Figure 1). Using the laws of fluid dynamics, Dr. Martin Lerman, a prosthodontist at the University of Illinois, designed this simple device consisting of two water pads, connected by an equalizing channel. When placed in the mouth, this hydrostatic splint allows both left and right sides of posterior segments to equilibrate with each other, allowing the muscles of mastication to relax (Figure 2). The Aqualizer applies one of the basic laws of nature known as Pascal’s Law, which states that an enclosed fluid will apply equalized fluid pressure regardless of where pressure is applied to the fluid (Figure 3). In other words, biting down on the Aqualizer causes fluid to distribute forces evenly across the bite, reducing TMJ pressure and pain and ensuring relief.<sup>2</sup>

As the water pad separates the teeth, any existing prematurities in the occlusion are eliminated for the time being. Muscle spasm is eradicated by the occlusal-muscular harmony. And as this continues over a long period of time, the muscles can start to heal themselves.

The Aqualizer’s floating action makes it an excellent tool to simplify TMD diagnoses and treatment planning. Once inserted, the Aqualizer should immediately start relaxing (deprogramming) the patient’s muscles and begin minimizing the pain that he is presenting. If, after wearing an Aqualizer for ten minutes or so, the patient does not report any change, then one can explore the option that the patient’s pain may not be true pain, but a phantom response or referred pain from somewhere else in their body. All this is done without the need to have costly treatment rendered with the unlikelihood of success.



FIGURE 1



FIGURE 2



FIGURE 3

As well, the Aqualizer can act as a temporary pain control splint. If a patient presents with severe pain and is seeking immediate relief, the acting dentist can insert an Aqualizer to relieve the patient's discomfort. The patient can continue to wear the Aqualizer until a more permanent appliance can be custom fabricated. For those patients who are unable to open their mouths wide enough for comprehensive dental

of the main areas of discontent with these types of appliances is the time required, and often wasted, making occlusal adjustments<sup>3</sup>. By using the Aqualizer Muscle Directed Bite Registration Technique, one can provide the lab with a perfect bite, with the correct amount of vertical opening (between 2-3mm), so that they can in turn provide you with a splint that requires minimal occlusal adjustments.

### AQUALIZER MUSCLE DIRECTED BITE REGISTRATION

#### *A Simple Step-by-Step Procedure to Capture the Open Bite for Splints and Bruxism Appliances*

Step 1: Insert an Aqualizer into the mouth allowing the muscles to bring the mandible to its natural, most comfortable 3-D position, (great in combination with T.E.N.S. and jaw tracking). Add base plate wax under pads for small increases of less than 2mm, and if there is no spasm in the muscles, step two can be performed 10 minutes after insertion (Figure 4).

Step 2: Instruct the patient to swallow/close naturally into the Aqualizer, while injecting bite registration material in the open space from cuspid to cuspid (Figure 5).

Step 3: Remove the Aqualizer while leaving the anterior bite still in place. Inject registration material between the occlusal surfaces of the left and right posterior teeth. Instruct the patient to remain closed into the previously established anterior bite. Allow the posterior bite registration material to set (Figure 6).

Step 4: Remove the one-piece full arch bite registration from the mouth.

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and is seeking immediate relief, the acting  
dentist can insert an Aqualizer to relieve  
the patient's discomfort

procedures to be preformed, wearing an Aqualizer prior to their appointment will relax their facial muscles enough so they can open wider for longer periods of time.

Aqualizers are available in three volumes: low volume with a vertical opening of 1-2mm, medium volume with a vertical opening of 3-4mm, and high volume with a vertical opening of 5-6mm. The most popular by far is the medium volume Aqualizer.

The Aqualizer is an ideal aid when taking an open vertical bite registration for bruxism appliances and TMJ splints. One

By utilizing an Aqualizer for the bite registration technique, the restorative dentist can pre-determine if the patient will be compliant and wear the splint prior to splint fabrication. If the patient is unable to tolerate the 2mm vertical opening that the medium volume Aqualizer produces than the practitioner can try a low volume Aqualizer. If the patient cannot find comfort with the low volume Aqualizer and its 1mm vertical opening, than it can be assumed that the patient will find the resulting laboratory fabricated splint uncomfortable and the chances he will wear the splint are low.



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8

Step 5: Assemble the patient's dental casts accurately into the bite registration. Send this assembly to the lab, or mount the combined casts/registration assembly on your articulator.

Step 6: Remove the silicone bite registration. The Aqualizer allows you to preview, then accurately reproduce for splints, the most functional cranio-mandibular occlusal relationships with the ideal vertical dimension necessary for splint fabrication (Figure 7).

Once the splints have been fabricated and returned from the laboratory the insertion procedure is similar to the protocols normally followed, with one major exception. By checking the occlusion immediately after insertion, the occlusion will be misrepresented, and altering the appliance at this point will only eliminate the balance that was created in the laboratory. The bite registration with an Aqualizer was taken with the

patient's muscles deprogrammed. Upon returning to your office for appliance fitting, the muscles have returned to their distressed state. The patient will need to wear the appliance for a few minutes prior to checking the occlusion. This will allow the appliance to deprogram the muscles and the occlusion will flow into place (Figure 8).

TMJ Splints and Bruxism Appliances can be custom made from a variety of materials with an almost endless array of designs to meet the treatment modalities of each restorative dentist's ideology. However, what matters the most is the occlusal relationship that the appliance is made to; such as the amount of vertical opening, the three dimensional position in space where the mandible is placed when the appliance is inserted, and the position of the condyles in the glenoid fossa. By utilizing the law of fluid dynamics found within an Aqualizer, dentists can

now take more accurate bite registrations to help alleviate pain, discomfort and the destructive forces of nocturnal grinding. **OH**

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*The author wishes to express that he has no financial interest in Jumar Corporation, the makers of the Aqualizer, however Klausz Dental Laboratories is one of the Canadian distributors of the Aqualizer.*

*Oral Health welcomes this original article.*

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