

Beyond Bruxism

Measuring How Treatment Can Impact Airway

One of the most common dental diseases is bruxism, which research suggests may affect nearly one in every three patients. It's time to start paying attention to bruxism for a number of reasons, especially because your treatment may be exacerbating other medical conditions.

The most common treatment for bruxism is to create a bruxism appliance for the patient. Many dentists fall in love with one type of bruxism appliance and they use it for all of their bruxism/temporomandibular disorder patients. The patient goes home with said appliance, and the prescribing dentist hopes the patient's condition will improve. Sometimes the condition does get better, sometimes it doesn't, and, other times, the appliance just doesn't make much of a difference.

I want you to consider this: Would you treat periodontal disease without a periodontal probe? Would you treat caries without taking a radiograph? Would you place an implant without doing any diagnostics? Of course you wouldn't—because you can't treat what you can't measure. Bruxism has been the exception to this rule because, in the past, we have not had the ability to measure for bruxism. With modern advances, however, we now are able to measure bruxism and use this data to provide better bruxism treatment.

Measuring more than bruxism

With advancement in the areas of bruxism and dental sleep medicine, dentists now have the capacity to objectively and effectively collect data to measure bruxism and, at the same time, obstructive sleep apnea (OSA) in their patients. The STATDDS™ Bruxism and Sleep Monitor is worn by patients at night while they sleep. This effective home test costs less than \$20 to administer.

The software that comes with the monitor is made specifically for dentistry. It analyzes the testing data and provides the dentist with a simple to understand report that highlights the patient's bruxism episodes index (BEI) and the apnea-hypopnea index (AHI). The BEI measures the number of bruxism episodes per sleep hour, while the AHI measures the number of apnea-hypopneas per sleep hour. These numbers provide us with the data we need to determine how often and how intense a patient's bruxism is.

Let's take a look at the two main data indicators, the BEI and AHI numbers. We use the rule of 5 when looking at these numbers. If the BEI is greater than 5, the patient has clinically significant and destructive bruxism, which needs to be addressed not only with an appliance but also perhaps with restorative dentistry, whether via crowns, bridges, implants, etc. If the AHI is above 5 and less than 30, then either a CPAP or mandibular advancement appliance for OSA needs to be considered as primary therapy. An important note is that OSA is a medical condition that requires a diagnosis by a physician. As a dental professional and primary provider, I am able to discuss the patient's bruxism with his or her physician, and following a medical diagnosis of OSA, I can take care of both conditions with the right appliance.





The STATDDS™ Bruxism and Sleep Monitor can be used by patients for overnight home testing.

Reviewing a case presentation

With the advent of new technologies, bruxism treatment plans now can be data-driven and not such a guessing game. In addition, we as dental professionals now can test and evaluate our treatment so that we can make the proper adjustments if necessary. In this way, dental professionals can get the best possible therapeutic outcomes by objectively knowing whether our treatment is working or not. We also will be aware if our bruxism treatment is affecting the patient's airway—which involves the area of sleep medicine, specifically dental sleep medicine.

Let me share with you a case presentation by my colleague, Robert W. Renger, DDS, which he was gracious enough to share with me. This case is an excellent example of why it is vital to test every patient in your office, and it demonstrates how you can use this testing data to help treatment plan a patient, allowing you to provide the best care possible.

Dr. Renger had made one of his patients a popular anterior plane appliance approximately two years ago for severe bruxism. After being trained in the use of the STATDDS Bruxism and Sleep Monitor at a combined bruxism therapy/dental sleep medicine course, Dr. Renger wanted to objectively evaluate whether the appliance he made was appropriate and effective for this patient when he came into the office for a recall appointment.

Let's take a look at the STATDDS monitor's initial home bruxism and sleep test report results from when this patient was wearing the appliance. The patient has a BEI of 4.7, which means the patient has some bruxism activity in his muscles even while wearing the appliance; however, the number is less than 5, so it is acceptable. From a bruxism standpoint, the appliance is effective. Now let's look at the AHI number, which tells us about the patient's airway and OSA. At 19.4, the AHI is a very worrisome.

Let's analyze this case as if we were the treating dentist. The provided appliance is working for bruxism, but it may be causing or exacerbating the patient's OSA. I can personally tell you that, in my more than 35 years of dental practice, I have never seen a patient die of bruxism—but they can die of complications related to OSA. This report clearly indicates that this anterior plane appliance is not only inappropriate for this patient, but it may be potentially dangerous.

"A bruxism appliance that closes the airway and makes a patient's OSA worse will constantly disrupt their sleep and worsen their overall health."

As the treating dentist, Dr. Renger then decided to use the STATDDS monitor to test this patient again without the overnight anterior plane appliance. The BEI was now 15.8, while the AHI was 9.5. There is no question that this patient is a very destructive bruxer, and this should be addressed. However, it is clear that the patient still exhibits an AHI greater than 5, and he has OSA—a diagnosis that was confirmed by the patient's physician.

Based on this patient's data, the treatment choice was now clear to Dr. Renger. Upon consultation with the patient's physician, a mandibular advancement device—that doubles as a bruxism appliance—was selected for this patient. It is important to note that not all oral appliances for dental sleep medicine are appropriate for bruxers, and training is needed to understand which appliances best fit each clinical situation based on the obtained data.

Dr. Renger provided me with additional testimony on this case:

"I just thought I would forward you these two airway EMG [electromyography] reports, which I found very interesting. I took a bruxism and dental sleep course, and I'm very glad I did.

You showed a result similar to this one in the course I attended, but I can't believe the quantitative difference in this patient. This patient had been wearing a NTI-type anterior appliance I had made for him a year or two ago for severe bruxism. I was so happy to see how well I had helped his bruxism, and then I saw what it was doing to his airway. He had undiagnosed mild OSA, which was made significantly worse with the appliance. I hate to think how many dental patients are experiencing this phenomenon worldwide. We do indeed have so much more to learn in dentistry...."

Dr. Renger's experience shows just how important measuring for bruxism and OSA can be.

So, before you make another "bruxism appliance," consider its possible impact on OSA. With education, medical partnerships, and new testing devices, you can improve your treatment plan and raise patient care to an entirely new level, ensuring the best therapeutic outcomes for the patient's dental and medical conditions. ♦



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Editor's note: Dr. Malcmacher serves as a consultant for STATDDS.