

WHY OCCLUSAL NIGHT GUARDS MIGHT BE DETERIMENTAL TO THE OVERALL HEALTH OF YOUR PATIENT

Brock Rondeau, D.D.S. I.B.O., D.A.B.C.P., D-A.C.S.D.D., D.A.B.D.S.M., D.A.B.C.D.S.M.
Diplomate American Board of Dental Sleep Medicine

The flat plane occlusal night guard (upper or lower) are routinely prescribed for patients that are diagnosed with bruxism. The clinical signs are shortened or damaged teeth, flattened cusps, particularly the cuspids, wear facets, attrition, and abfractions at the gum line. The objective is to obviously protect the teeth from further damage due to occlusal forces.



ABFRACTIONS



SEVERE BRUXISM

Bruxism occurs when the posterior teeth touch at night. (Nocturnal bruxism). The standard flat plane occlusal night guard allows the posterior teeth to contact which encourages the contraction of the temporalis, masseter and medial pterygoid muscles. This results in the patients waking up with headaches in the morning due to clenching and bruxing all night. The patients will frequently point to the side of the face as to the source of their pain. The research confirms that flat plane occlusal night guards rather than prevent bruxism actually encourages the patients to brux more.¹ One problem that I have observed is that in many cases the dentist does not follow up with the patient to check the efficacy of the night guard.



**UPPER FLAT PLANE SPINTS ARE COMMONLY PRESCRIBED
FOR BRUXISM BUT THEY MAKE IT WORSE**

The other problem that I have noted is that if the night guard has not been effective most patients do not inform the dentist. Some patients have told me that because the insurance paid for the appliance they were not concerned. Fortunately for me, early in my career many patients informed me of the fact that the night guard was not effective in preventing bruxing and I was able to look for a new design for the upper night guard. The night guards are made of hard processed acrylic and yet when you look at them after the patient has been wearing them, even for a few months, there are wear facets in the acrylic. This is clear evidence that these night guards are not preventing bruxism. The other observation is that the frequent clenching and bruxing at night often destroys these night guards and the patient has to pay for another one. I had one patient who destroyed 5 night guards over several years and her dentist was going to fabricate a sixth night guard for her.



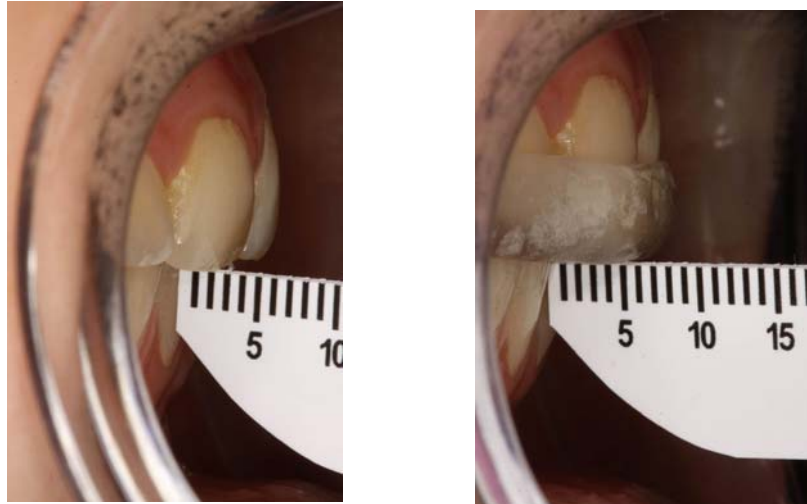
**UPPER NIGHT GUARD
BITE MARKS**

I believe that bruxism needs to be prevented and patients need to wear an appliance at night. One of the oldest upper anterior deprogrammer appliances was developed by Dr. William Farrar over 50 years ago. It was appropriately named the Farrar Appliance and was made entirely of acrylic. I modified the appliance by adding 2 ball clasps and 2 Adam's Clasps and called it the Ferrari 2 Appliance. This design only allows the lower incisors to contact the anterior biteplate when the patient occludes. There is no contact with the lower cuspids, bicuspid or molars when the patient occludes. This prevents bruxism and prevents the contraction of the temporalis and masseter muscles which eliminates sore facial muscles and morning headaches. To help distribute the occlusal forces more evenly I recommend a lower Essix retainer from second molar to second molar.



**THE FARRARI 2 APPLIANCE HAS AN ANTERIOR
BITEPLATE ONLY CONTACT LOWER INCISORS
LOWER ESSIX RETAINER**

The other serious shortcoming of the standard occlusal night guard is that it is flat and when the patient sleeps supine the mandible goes back and this closes the airway which can increase the incidence of snoring and sleep apnea. This can also increase the severity of TMD (Temporomandibular Dysfunction) by moving the condyles too far distally when the mandible retrudes.



**UPPER NIGHT GUARD
MANDIBLE GOES BACK**

The Ferrari 2 Appliance is designed with an incisal ramp that helps prevent the mandible from falling back at night, helping prevent the airway from collapsing. If the patient is a nasal breather this Ferrari 2 can be effective in eliminating clenching and bruxing, snoring and sleep apnea. If the patient has a sleep study and is diagnosed by a sleep specialist with sleep apnea or the patient is a mouth breather then it is necessary to utilize a two piece appliance such as Sommodent or Panthera X3 to solve the bruxing, snoring and sleep apnea.



UPPER FARRARI 2 INCISAL RAMP



Nocturnal bruxism has recently been referred to in the literature as 'sleep bruxism'. Many authorities believe that patient bruxes at night to open their airways so they can breathe. As mentioned previously, as many as 25% of adults and many children have sleep apnea so this is an extremely common and serious problem.

The *American College of Prosthodontists Position Statement, June 3, 2016*, stated that increasing the occlusal vertical dimension with a maxillary night guard without mandibular protrusion has been found to aggravate obstructive sleep apnea in some patients.² The American College of Prosthodontists recommend that all prosthodontists should screen for sleep apnea prior to fabricating night guards to prevent bruxism. In this regard I recommend you read the article entitled "*Aggravation of Respiratory Disturbances by the Use of Occlusal Splint in Apnea Patients.*"³ Authors include Yves Gagnon, Pierre Mayer, and Gilles Lavigne. The study that was done on 10 patients demonstrated that the AHI (sleep apnea index) was increased more than 50% in 5 out of 10 patients. Snoring was increased 40% with the occlusal flat plane splint.

Obviously snoring is an extremely serious social problem affecting about 50% of the adult population over age 50. Anything that makes snoring worse is certainly a problem. Studies have shown that the divorce rate is higher when loud snoring is present.

Obstructive sleep apnea affects 25% of the adult population as well as many children. The other rather upsetting fact is that this serious medical disorder is underdiagnosed 85% of the time.⁴ This is due to the fact that it is not taught in most dental schools and sometimes not covered in detail in medical schools. Obstructive sleep apnea can cause high blood pressure,⁵ heart attack,⁶ stroke⁷, type 2 diabetes⁸, acid reflux, 5 times increased risk of cancer, daytime fatigue, increased risk of motor vehicle accidents,⁹ memory loss, impotence, Alzheimer's and dementia, and many other factors detrimental to your health. Research has shown that people with sleep apnea have a reduced life expectancy of approximately 10 years.

Those of you not familiar with AHI, let me explain.

AHI – Apnea Hypopnea Index

Apnea means the number of times patient stops breathing for 10 seconds or more per hour. Hypopnea means 30% reduction in airflow for 10 seconds with blood oxygen saturation below 4%. Normal AHI: Patient stops breathing less than 5 times per hour.

Mild Sleep Apnea	Patient stops breathing 5-15 times per hour
Moderate Sleep Apnea	Patient stops breathing 16-30 times per hour
Severe Sleep Apnea	Patient stops breathing over 30 times per hour

Now that we are all aware of the serious consequences of obstructive sleep apnea when wearing the flat plane occlusal night guard, I am hopeful that dentists will screen for sleep apnea before prescribing this appliance for bruxism. **An oral appliance that makes bruxism worse and sleep apnea worse is certainly not in the best interests of the patient.**

The American Dental Association passed a resolution, October 2017 that U.S. dentists have the obligation to screen for sleep breathing disorders as part of their routine medical history evaluation of each patient.¹⁰ I highly recommend that all general dentists follow the advice of the American Dental Association and screen all patients. I recommend using the Epworth Sleepiness Scale. For a free copy of this pre-screening form for sleep apnea, please contact lee@rondeauseminars.com. If the score is above 10 (normal 4-6) I recommend a referral to a dentist who treats patients who snore or who have sleep apnea. The diagnosis of sleep apnea

can only be made by a sleep specialist interpreting the report following a sleep study. Sleep studies can be done at hospitals or private sleep clinics (polysomnogram) or home sleep studies. In our office we offer home sleep studies as part of our screening protocol. Patients much prefer to sleep at home in their own bed. The sleep studies are then sent to a qualified sleep specialist for a diagnosis.

According to the Practice Parameters of the American Academy of Sleep Medicine (medical specialists) for patients with mild or moderate obstructive sleep apnea the recommended treatment is with an oral appliance if there are no comorbidities.¹¹ Oral appliances are effective treating mild to moderate sleep apnea cases by moving the lower jaw forward and holding it forward all night which opens the airway. For severe obstructive sleep apnea, the treatment of choice is the CPAP (Continuous Positive Air Pressure). Basically, a compressor which blows air up the nose all night under pressure. The failure rate regarding compliance with the CPAP device is over 70%. Patients much prefer the oral appliance as a treatment option.

The treatment for children with sleep apnea is usually the removal of enlarged tonsils and adenoids and expansion of the upper arch which increases the size of the nasal airway.¹² This converts mouth breathers into nasal breathers which is an important step to long term health. Functional appliances such as Twin Block Appliance and Carriere Class II Motion Appliance, are very effective in opening the airway by nonsurgically moving the mandible forward permanently.¹³

In addition to sleep apnea, a stressful lifestyle, including final exams, marriage, divorce, family bereavement, job changes, etc., can contribute to nocturnal bruxism.

I need to alert you to the problems of prescribing occlusal flat plane night guards for patients with internal derangements (problem within the TMJ). These would include any noise within the TM joint, including clicking, popping, grinding noises. Also ask the patient if their jaw ever gets stuck when they try to open. Stage 2 of Internal Derangement is clicking, intermittent locking and pain. **Occlusal night guards must not be utilized for patients in Stage 2 Internal Derangement.** The problem is that when the patient sleeps supine the occlusal night guard allows the mandible to fall back at night which sometimes allows the disc to move anteriorly and get stuck in that position. This results in Stage 3 Chronic Closed Lock (lock jaw) which is extremely painful.¹⁴ My practice is limited to the treatment of patients with orthodontic problems, TMD and snoring and sleep apnea. As such, I am extremely fortunate to have several dentists and medical doctors referring patients to our office. Within the last few years I have almost 200 patients on record who did not respond favorably to upper occlusal flat plane night guards fabricated by their dentist. Most of these patients report that the night guards actually made them worse and some have reported lock jaw when they were clicking prior to the placement of the flat plane upper night guard.

In conclusion, I would recommend the following:

1. The American Dental Association recommends that you screen your patients for possible sleep apnea. If the patient states that they snore or are extremely tired during the daytime, give the patient the Epworth Sleepiness Scale. If they score is over 10, refer them to a general dentist in your area who treats snoring and sleep apnea.

2. Do not use a flat plane occlusal night guard to treat bruxism.
 - Patients actually brux more.
 - Increases incidence of snoring and sleep apnea.
 - Causes the mandible to go back at night which could result in a patient in Stage 2 Internal Derangement to get lock jaw (Stage 3).
3. If your patient is in Stage 2 Internal Derangement refer them to a dentist that treats TMD patients regularly with a lower centric relation splint (indexed) for daytime and an upper Ferrari 2 Appliance with incisal ramp for nighttime.
4. If you are prescribing flat plane occlusal night guards for acute injuries please follow up with your patients to check the efficacy of the appliance.

When all of us went into dentistry we promised to do no harm to our patients. Unfortunately the diagnosis and treatment of patients with snoring and sleep apnea and TMD was not part of the curriculum of most dental schools worldwide. This has left the dental profession significantly undereducated in order to treat these patients. This is particularly upsetting when you consider the number of patients who are suffering from TM Dysfunction and sleep apnea:

34% of the adult population has TMD

50% of men over 50 snore

25% of adults have life-threatening sleep apnea

I am hopeful that before you prescribe an upper flat plane occlusal night guard that you will prescreen for snoring and sleep apnea so you will not exacerbate the problem.

Also be aware of the dangers of prescribing an upper flat plane occlusal night guard for a patient in Stage 2 Internal Derangement with clicking.

If you have any questions or comments you could contact Lee at lee@rondeauseminars.com for additional articles and information.

I believe that the dental profession has to reexamine the routine use of occlusal night guards to treat bruxism. It is my firm conviction that ***“The Fabrication of Occlusal Night Guards May be Detrimental to the Overall Health of Your Patient”***.

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