

Treating Obstructive Sleep Apnea in the Dental Setting: Clinical and Practice Management Considerations

A Peer-Reviewed Publication

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Treating Obstructive Sleep Apnea in the Dental Setting: Clinical and Practice Management Considerations

EDUCATIONAL OBJECTIVES

At the conclusion of this educational activity, participants will be able to:

1. Describe the magnitude of the issue of untreated OSA and its potential impact on public health
2. Recognize the signs and symptoms of OSA
3. Describe the required approaches to screening patients for OSA in the dental setting
4. Understand the role of the medical doctor and medical billing in securing an OSA diagnosis and treatment
5. Describe the process involved in offering OSA management in the dental setting

ABSTRACT

Obstructive sleep apnea (OSA), which is a partial or complete blockage of a person's airway, is a serious medical condition estimated to affect more than 20 million people in the United States alone. The importance of effective treatment is based on how it affects the body and overall health and quality of life. OSA not only degrades healthy restful sleep, it leads to a decrease in the oxygen on which the human body is highly dependent to thrive and survive. The role of the dentist is first and foremost to create awareness. Dentists cannot diagnose OSA—that is currently restricted to medical doctors—but they should be able to recognize the signs and symptoms of OSA, educate patients, and assist them in receiving prescribed treatment, which may include a customized mandibular advancement appliance provided by dentists. The intent of this article is to raise awareness of this issue among dentists and describe steps they can take to offer treatment within a private practice.



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INTRODUCTION

While nearly everyone is aware that a good night's sleep offers an improved quality of life, there is a growing recognition that healthy sleep greatly contributes to overall physical and mental health, and that those with difficulty achieving it are more likely to suffer serious health consequences, as well as accidents and poor performance due to daytime sleepiness. This has given rise to a growing interest in what is known as "good sleep hygiene," and a list of recommendations including sleeping in a cool darkened room, maintaining a regular bedtime routine, and unplugging from electronics well in advance of retiring for the night.

Yet, for millions of people worldwide, treatable breathing disturbances are at the root cause of their sleep problems. In fact, many who suffer from daytime sleepiness may not even be aware that the quality of their sleep is behind their exhaustion, difficulty concentrating, and irritability. This is especially true of those who experience obstructive sleep apnea (OSA), a relatively common chronic condition in which a sleeping person's breathing either becomes shallow or ceases entirely from anywhere from 10 seconds to 1 minute or longer. This can occur hundreds of times each night, rousing the sleeper from a deep sleep to a lighter one of poorer quality. However, because sufferers don't wake entirely, they may be unaware of OSA's existence, and it can go undiagnosed for long periods of time.

This fragmented sleep is the most common cause of daytime sleepiness and issues related to sleep deprivation including problems with memory, reaction time, sex drive, and hormonal problems. It may also lead to serious illnesses due to its reduction of oxygen levels. This combination of disturbed sleep and oxygen starvation may contribute to ailments including hypertension, heart disease, stroke, diabetes, sexual dysfunction, and depression, plus a significantly higher risk of accidents, including those in the workplace and while driving.

HOW SERIOUS A PROBLEM

The importance of managing OSA effectively might be better appreciated if its impact on the body were better understood. Because OSA partly or completely blocks the airway, it decreases the oxygen on which the human

body depends. According to estimates cited by the American Sleep Apnea Association on its website, some 22 million Americans likely suffer from sleep apnea, with 80 percent of the cases of moderate and severe obstructive sleep apnea undiagnosed.¹ Although this is roughly the same number with diabetes—with which it may be associated—OSA receives far less attention in the medical community than that condition despite growing evidence that it can lead to cardiovascular issues such as high blood pressure, chronic heart failure, atrial fibrillation, and stroke.² It is also associated with depression—possibly due to its quality-of-life impact and seems to be both a cause and effect of obesity.³

THE ROLE OF THE DENTAL PRACTICE

The role of dentists is first and foremost to create awareness of OSA. They cannot legally diagnose it—that is currently restricted to medical doctors—but they should be able to recognize the signs and symptoms of OSA, make patients aware of it and their suspicions, and assist them in getting properly diagnosed—and, when recommended—being treated with an oral appliance fabricated by the dental office's lab of choice.

The authors believe the entire team should be onboard to maximize the ability of the practice to ensure that patients with OSA are properly screened, diagnosed medically—for which medical insurance can be accessed—and treated, if indicated, with a dentally prescribed mandibular advancement appliance.

First of all, patients need to be made aware that the practice manages obstructive sleep apnea, with the right signals and marketing, including OSA-related literature in the waiting room and posters throughout the office and treatment rooms, such as those asking, "Do you snore?"

Further, even nonclinical staff should be aware of easily apparent signs and symptoms—like obesity, large necks, and obvious fatigue.

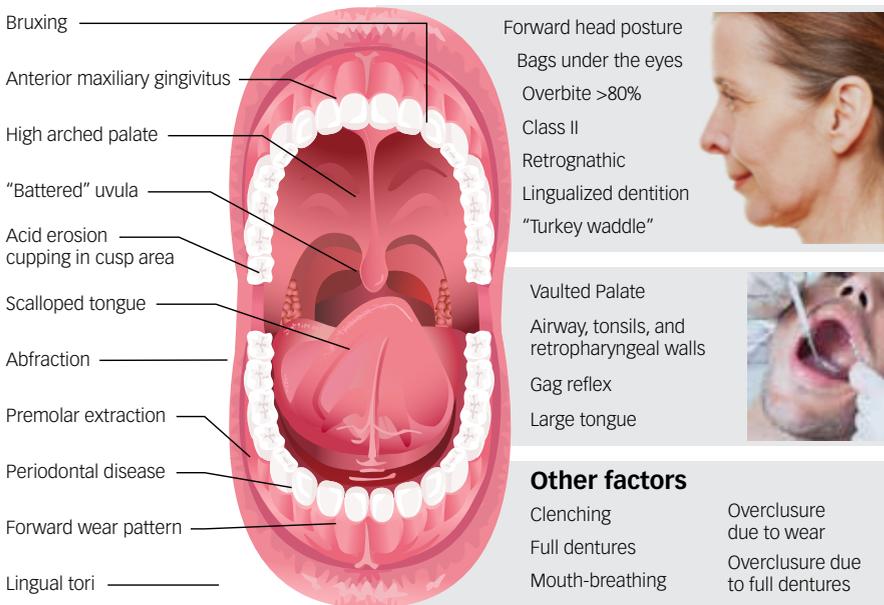
Office managers should know the basics of medical billing, including how to conduct a basic eligibility check for treatment through the patient's medical insurance. They should be able to quickly determine the patient's deductible, copay, and acquire preauthorizations and otherwise facilitate OSA treatment at every stage. Patients should be prepared for the next step—e.g., a sleep study, appointment with an ENT or sleep physician—when they leave the office.

Screening

There are multiple steps involved in screening patients for and educating them about OSA.

Patient history—Asking the right questions is an essential aspect of diagnosing OSA, especially since few people are aware of it. Making sure you are asking the right questions on paper and chairside are essential. For example, the health history should include questions designed to elicit symptoms, such as Have you or a partner noticed that you snore or that your breathing seems to cease but then resume with a loud gasp or choking sound? and Has anyone ever recommended you wear C-PAP. (If the answer to the C-PAP question is yes, it should be followed up with questions about whether they wear it and when it was prescribed.) Both as a matter of patient history and medical authorization requirement, The Epworth Sleepiness Scale (THE EP-

Elliott Evaluator
Sleep Apnea Signs & Symptoms



Elliott Evaluator, a guide for screening patients for signs and symptoms of obstructive sleep apnea. Created by Dr. Erin Elliott of Post Falls Family Dental.

WORTH TEST) can be administered either by the patient or physician to measure sleepiness.⁴

The history should be recorded and reviewed with an understanding of the medical conditions associated with sleep apnea. This includes elevated blood pressure,⁵ cardiac incidents such as stroke⁶ or heart attack, mood disorders including depression⁷ and anxiety, and, of course, daytime sleepiness. Be especially aware of patients on one or more blood pressure medications. Research suggests that anywhere from 30–50% of patients with high blood pressure have sleep apnea—among them, the biggest public health concern is for those with resistant hypertension—i.e., they cannot be sufficiently controlled with BP treatment.⁸

Head and neck examination—Conduct a thorough head and neck exam noting findings seen in the mouth that are known to be associated with OSA, including tooth wear and grinding, deep bite, class 2 occlusion, high vaulted palate, enlarged tongue, scalloped tongue, mandibular/maxillary tori, or difficult-to-see airways.

Patient education—As the dental office can explain to the patient, there are many types of treatment available depending on the patient's condition—mild, moderate, or severe—as determined by a medically interpreted and certified sleep study for which the dental office can make arrangements or even provide. In some cases, surgery is needed to correct a condition; in others, the most effective treatment—continuous positive airway pressure (CPAP)—is unacceptable (60% fail due to noncompliance). For many, an effective solution is the treatment the dentist can offer, a customized sleep appliance. The authors consider the use of 3D technology for OSA to be useful to initiate a conversation about OSA—e.g., by showing a 3D representation of the airway—but it is not diagnostic of airway issues.⁹

In reality, few people come to their dentist complaining about OSA. Yet once we have reason to suspect it, we can go into “education mode”—

that is, we can let them know about the correlation between a condition we learn about through any of the above approaches and OSA. We can also assist them in receiving the treatment they need.

THE MEDICAL-DENTAL INTERFACE

It must be emphasized that dentists cannot diagnose OSA. It must be diagnosed by a sleep physician based on his/her interpretation of an at-home unattended or in-lab attended sleep study, which records the number of apneas (breathing cessation lasting 10 or more seconds) or hypopneas (a decrease in oxygen saturation of 3–4% lasting more than 10 seconds) per hour of sleep during the study, which is called Apnea Hypopnea Index (AHI). It indicates the extent to which a person is experiencing hypoxia or apnea in the course of one hour.

Based on the AHI, the severity of OSA is classified as follows:

- None/Minimal: AHI < 5 per hour
- Mild: AHI ≥ 5, but < 15 per hour
- Moderate: AHI ≥ 15, but < 30 per hour
- Severe: AHI ≥ 30 per hour

What the index means in layman's terms—for purposes of patient education—is that, in OSA, there is the occurrence of a sleep disturbance—either a decrease in oxygen saturation or breathing cessation. Either way, the completed sleep test is scored by a certified sleep tech, then read and certified by a physician.¹⁰

The physician then provides a formal diagnosis—which is absolutely necessary to engage in medical insurance, thus making treatment more affordable for patients—and makes treatment recommendations from among the four modalities described below:

1. Lifestyle change: This includes effort to improve health—especially aspects directly related to OSA—including exercise, weight loss, breathing exercises, and sleep hygiene to help with overall sleep

2. CPAP therapy: Continuous positive airway pressure (CPAP) is rendered by a device that uses a mask or nasal pillows to blow air—not necessarily oxygen—down the airway to force it open and allow regular breathing. The problem with this method is that although it is effective, about 60% of patients who use it, fail—i.e., they quit.¹¹

3. Oral dental appliance: This is widely considered the first line of defense and should be the first choice of treatment for mild and moderate sleep apnea or for patients who fail CPAP therapy or are intolerant. It is also where the dentist comes in.

4. Surgery: Surgery may be needed when there is an anatomical obstruction. The two most common ones are: vulopalatopharyngoplasty (UPPP), a procedure that removes excess tissue—e.g., uvula, soft palate, tonsils, adenoids—and uvulopalatopharyngoglossoplasty, which involves removal of a small part of the tongue, if its size is the problem.¹²

WHAT DENTISTS NEED TO KNOW

About home sleep study

So, while dentists cannot diagnose OSA or even recommend treatment, most states allow dentists to own their own sleep testing equipment and dispense it at will to patients they suspect may have sleep apnea. (It would be prudent for the dentist to check with his/her dental board to learn their individual state board stance.) Yet many dentists who own their own equipment are not aware they can bill their patient's medical insurance for the HST.

About medical insurance arrangements

There are several things the dental office needs to know and do to ensure that they and their patients meet medical insurance requirements prior to implementing appliance therapy, if recommended. It involves receiving authorization twice—first for the sleep study if the dental office is providing it; and the second time for the device, if the dental office is providing it.

Obtaining prior authorization for HST provided by the dental offices—the dental office must, at a minimum, fax or upload via the insurance company's website, the following to the insurance company's preauthorization department:

Epworth Test

- Clinical notes from exam detailing symptoms—large tongues, excessive tooth wear, etc.
- This information is reviewed by a nurse or physician, and within 2 - 10 days, approval is issued. It contains a time range within

which the HST must be completed—eg, 30, 60, or 90 days.

HST provision and instructions—Only after the HST test is approved by medical insurance is the patient sent home with it with instructions for completing it.

HST results—The HST must be certified after review by physician to ascertain that data is acceptable. The physician also provides an interpretation and final diagnosis, which may include a prescription for appliance therapy.

Obtaining prior authorization for an oral appliance prescribed by physician and provided by the dental offices—Once there is a diagnosis that includes a prescription for an oral appliance, another preauthorization is required—this time for the oral appliance.

This time, these materials should be sent to the medical insurer's prior authorization department:

- a copy of the sleep test
- a prescription from an MD requesting that the dentist fabricate a mandibular advancement device

Some insurance companies may also require some or all of the following:

- the EPWORTH test
- a C-PAP intolerance form, a document stating why a patient refuses C-PAP treatment
- a 510K letter showing FDA approval for the appliance

When Oral Appliance Therapy (OAT) is Prescribed

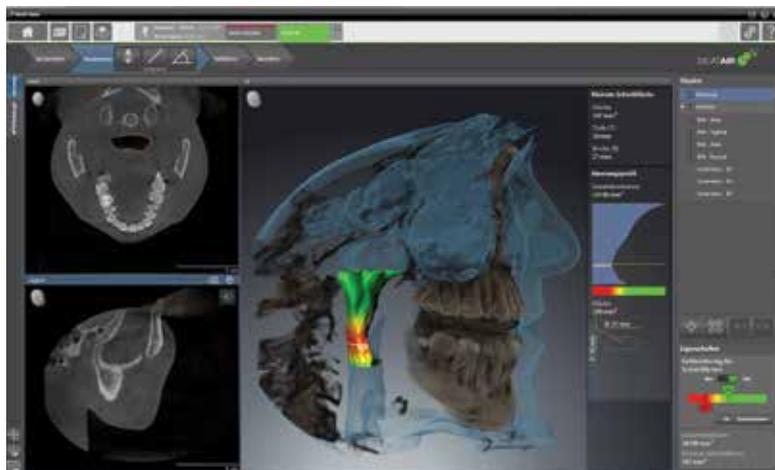
Most patients fall in the AHI 5-30 range, the group for whom appliances are generally most effective. If AHI is especially high, it may be for reasons beyond the scope of the dentist—i.e., other therapies such as surgery or CPAP are indicated.

OPTIGUIDE, an example of a fabricated oral appliance for OSA.



Patient selection

Not every patient is a good candidate for an oral appliance. Therefore, the dentist must conduct a complete exam to evaluate the bony structure, the gum structure, and tooth structure to be sure the patient has adequate foundation for an oral appliance. Also, to be considered are



Soft tissue: Airway comparison in 3D

the potential for issues with TMJ and tooth movement or bite changes before proceeding.

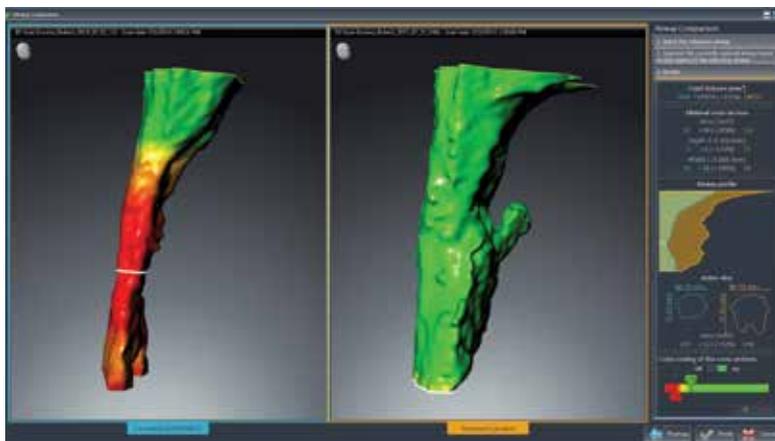
Considerations in choosing an appliance

There are dozens of different appliances based on different theories, and not every appliance is appropriate for every patient who is a candidate for oral appliance therapy. Understanding which appliance may be best for a specific patient is where the art of dentistry comes into play.

Some key factors to consider are:

- **The amount of movement the patient needs:** If the patient is a lateral grinder, for example, the appliance must allow some freedom of movement.
- **Whether it provides adjustability:** The dentist should be able to move it forward, backwards and vertical adjustability would be preferred.
- **Size:** As a large bulky appliance can push the tongue back, one that that minimizes bulk and size is generally more comfortable
- **Durability:** an appliance should be robust enough to last for a reasonable period of time

Airway comparison



Appliance fabrication

Once the patient is deemed to be a good candidate, the appliance can be fabricated based on the following components: (1) an upper impression; (2) a lower impression; and (3) a treatment bite—usually a George gauge, which has a vertical opening and mandibular protrusion to move the jaw forward to create room and open the airway.

Appliances can be fabricated using a traditional analog process or a more modern digital process, which is favored by the authors for some of the following reason: Patients prefer having their mouth scanned digitally compared to biting into a tray with a polyvinyl siloxane or polyether material, and they offer sufficient accuracy while reducing the potential for lab errors. Further, the diagnostic capabilities of CT scanning enable the dentist to evaluate the patient's joints for arthritis and to evaluate the joints more closely to avoid potential problems with TMJ and bite changes notes above. It also enables the dentist to view the nasal pharynx, examining the nasal passages and sinuses to determine whether the patient should be referred to an ENT for upper airway conditions an appliance would not resolves, such as deviated septums, nasal turbinances, and sinus abnormalities.

Words of Caution

As the objective of prescribing appliances—whether or not it is for a known medical condition such as OSA—is to improve patient health, the authors caution against the use of snore guards because they could be masking or worsening a serious medical condition underlying that symptom. For the same reason, they recommend sleep testing before advocating the use of an occlusal guard.

SUMMARY

There are several components involved in treating patients for obstructive sleep apnea in the dental practice. First among them is screening. Armed with a knowledge of signs and symptoms and the patient's risk factors based on a completed medical/dental history and physical exam, the dentist can identify patients and educate them about OSA. Although dentists can neither diagnose nor treat OSA with an oral appliance without medical authorization, they can assist them in completing the necessary hurdles for medically covered treatment, including securing preauthorization for the required in-lab or home sleep study (HST), something some dental practices can provide/administer, depending on state laws. (The authors recommend such a test prior to proceeding with occlusal guard fabrication, although it is not required, as it does not involve a medical diagnosis.)

If an OSA diagnosis is made and a prescription provided for oral appliance treatment based on sleep study results, the dental office can again access medical insurance as method to help with reimbursement to make it more affordable for their patients.

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QUESTIONS

1. The following are among the "good sleep hygiene" recommendations mentioned:
 - A. sleeping in a cool, darkened room
 - B. drinking warm milk before retiring
 - C. reviewing a list of the following day's activities before retiring
 - D. all of the above
2. Obstructive sleep apnea is:
 - A. an extremely rare condition
 - B. a form of anaphylaxis
 - C. a relatively chronic condition
 - D. A and B
3. In OSA a sleeping person's disordered breathing does *not*
 - A. become shallow or cease entirely for 10 seconds to 1 minute
 - B. increase oxygen
 - C. occur numerous times throughout the night
 - D. ever cause snoring
4. Symptoms of obstructive sleep apnea include
 - A. difficulty concentrating
 - B. irritability
 - C. daytime sleepiness
 - D. all of the above
5. OSA may contribute to ailments including
 - A. hypertension
 - B. stroke
 - C. diabetes
 - D. all of the above
6. The patient history should include questions about whether:
 - A. the patient or his/her partner has noticed has noticed snoring or breathing cessation followed by a loud gasp or choking sound
 - B. anyone ever recommended a C-PAP.
 - C. A
 - D. A and B
7. The estimated incidence of OSA in the United States is
 - A. 22 million
 - B. 65 million
 - C. 7 million
 - D. 12 million
8. The following condition is *not* associated with OSA
 - A. obesity
 - B. depression
 - C. irritable bowel syndrome
 - D. sexual dysfunction
9. The following practitioners are qualified to diagnose obstructive sleep apnea
 - A. chiropractors
 - B. dentists
 - C. physicians
 - D. all of the above
10. The authors believe, for OSA, the role of the dentist is first and foremost:
 - A. to diagnose OSA
 - B. to treat OSA
 - C. to create awareness of OSA
 - D. all of the above
11. One reason mentioned that OSA often goes undiagnosed is:
 - A. It's so rare
 - B. Its symptoms are so similar to allergies
 - C. Sufferers don't wake entirely
 - D. Testing is inaccurate
12. The following dental office team members can help screen patients for OSA:
 - A. dentist
 - B. dental hygienist
 - C. nonclinical staff
 - D. all of the above
13. Screening patients for OSA does *not* include:
 - A. a patient history
 - B. a physical examination
 - C. an MRI scan
 - D. an EPWORTH TEST
14. According to the article, the practice can make patients aware of its expertise in OSA treatment by:
 - A. having OSA-related literature in the waiting room
 - B. displaying posters with sleep apnea symptoms
 - C. showing advertising on different appliances
 - D. A and B
15. Some OSA-related questions to ask during the patient history concern:
 - A. Snoring
 - B. C-PAP use
 - C. Resistant hypertension
 - D. All of the above
16. Which of the following is *not* true?
 - A. The Epworth Sleepiness Scale can be administered either by the patient or physician.
 - B. A 3D representation of the airway is used to diagnose OSA
 - C. OSA must be diagnosed a sleep physician based on his/her interpretation of an at-home or in-lab attended sleep study
 - D. The most effective OSA treatment is continuous positive airway pressure (CPAP)
17. Findings seen in the mouth that are known to be associated with OSA do *not* include:
 - A shallow palate
 - B tooth wear
 - C enlarged tongue
 - D deep bite
18. Physical findings not seen in the mouth that may raise suspicion about OSA include all *except*:
 - A. Large nose
 - B. Large neck
 - C. Obesity
 - D. Male
19. A sleep study:
 - A. is used to determine whether a patient has OSA
 - B. records the number of apneas or hypopneas that occur each hour
 - C. is the basis of Apnea Hypopnea Index (AHI).
 - D. all of the above
20. According to the AHI, a score of 25 indicates:
 - A. minimal OSA
 - B. mild OSA
 - C. moderate OSA
 - D. severe OSA
21. A formal diagnosis provided by a physician:
 - A. is necessary to engage in medical insurance
 - B. includes treatment recommendations
 - C. both of the above
 - D. neither of the above
22. According to the article, OSA treatment recommendations may include any *except*
 - A. Surgery
 - B. C-PAP therapy
 - C. dental oral appliance
 - D. medication

