



Dream Team

How an Interdisciplinary Approach Can Help Dentists Start Treating Sleep Apnea

By Dan Kolen

Obststructive sleep apnea (OSA) is a chronic sleep-related breathing disorder with potentially serious consequences. OSA occurs when the muscles in a patient's throat relax during sleep, causing the soft tissue in the throat to collapse and obstruct the upper airway. This obstruction leads to partial reductions in air flow (hypopneas) or even complete cessations of breathing (apneas) that last for 10 seconds or more. In mild cases, this will happen at least five times per hour of sleep during an average night; in severe cases, this will happen 30 or more times per hour.¹

During an apneic event, the patient experiences a sudden drop in oxygen levels, which can fall as much as 40%. Long-term effects of OSA include elevated daytime blood pressure, increased risk of stroke, higher rate of death due to heart disease, mood changes and impaired concentration, among others.¹ OSA affects nearly 30 million adults across the United States, and OSA with associated daytime sleepiness occurs in 4% of men and 2% of women.^{2,1}

Treatment is possible. A trained dentist can observe signs of this pervasive condition during routine exams, and he or she can become an important part of the patient's treatment team in conjunction with other medical professionals.

"It feels amazing to help someone understand where their pain and suffering comes from," said Sue Ellen Richardson, DDS,

MAGD, FICD, FAACP, ABDSM, a presenter at AGD2019 on OSA treatment. "OSA causes so many problems, and people have no idea that it is their sleep that is causing so many of their emotional and health problems."

"Being treated for sleep apnea with oral appliance therapy and living with it — it's the difference between functioning normally and dragging for so many years," said Diana Batoon, DMD, a dentist who treats OSA in her practice.

Screening for OSA

Properly trained dentists can help treat OSA by screening patients. "A dentist who is trained in dental sleep medicine (DSM) can see signs in a patient's mouth that point to OSA," said Nancy Addy, DDS, president of the American Academy of Dental Sleep Medicine (AADSMD). If dentists see potential signs of OSA, they should refer the patient to a board-certified physician for an official diagnosis.

A dentist may observe a multitude of signs: a small or recessed chin, large neck circumference, a scalloped tongue, an overbite, enlarged tonsils, eroded enamel, bruxism and a decreased inter-molar distance with a vaulted palate.³ In one recent study, dental researchers compared the ratio of the soft palate and upper airway between patients with and without OSA. They concluded that "OSA patients had a longer soft palate in proportion to their oropharyngeal airway compared to controls."⁴



Managing Side Effects of Oral Appliances

Oral appliance (OA) side effects center around temporomandibular joint (TMJ) pain, irritation to intraoral soft tissues, occlusal changes, tooth damage and overall issues with appliances. Some side effects and possible treatment options are:

- **Excessive salivation:** May resolve on its own eventually. If persistent, the dentist may need to modify the device or use a mouth shield, or the patient's physician may need to prescribe medication.
- **Dry mouth:** A common side effect that may subside on its own in days or weeks, or it may persist. Consult with the patient's physician and determine whether the cause could be medication and not the OA. Discontinuing use of alcohol-based mouthwash and the intake of alcohol, tobacco, caffeine and sugary or acidic foods before bedtime may help.
- **TMJ pain:** Educate the patient that instances of pain may resolve after a few weeks. If it continues, potential therapies include muscle massage, heat therapy and relaxation techniques.
- **Tooth movement:** Palliative care and adjusting the OA will help. Use of NSAIDs may effectively manage the pain associated with the condition. Decreasing the titration rate of the device may help. Other options include resin splinting or using a pressure- or vacuum-formed clear retainer during the daytime.
- **Bite change:** Watchful waiting, jig exercises and jaw stretches, and the use of a morning occlusal guide all may help, but changes to the appliance may also be necessary.

Source: Sheats, Rose, et al. "Management of Side Effects of Oral Appliance Therapy for Sleep-Disordered Breathing." *Journal of Dental Sleep Medicine*, vol. 4, no. 4, 2017, pp. 111-125.



An example of a MAD. These devices reposition the mandible and hold it in an advanced position throughout the night.

The American Dental Association (ADA) encourages dentists to screen patients for sleep-related breathing disorders and to refer patients to physicians for an official diagnosis.⁵

OSA symptoms include daytime sleepiness, fatigue and feeling unrested. Patients may have difficulty concentrating, impaired cognitive function and social interaction, and a compromised quality of life. In the middle of the night, they may awaken with a gasping or choking sensation, snore loudly or exhibit witnessed apneas. Additional risk factors include cardiovascular disease, strokes, coronary artery disease, refractory hypertension and Type 2 diabetes.⁶

"You're really doing a life-changing service," said Andrew Swiatowicz, DDS, FAGD, a dentist who has been treating OSA for nearly 10 years. "OSA is a chronic and terminal medical condition. It will be a contributor to someone's death if left untreated."

Navigating Treatment Options

Continuous Positive Airway Pressure Therapy

One highly effective treatment option for OSA is continuous positive airway pressure (CPAP) therapy.⁷ A CPAP device is worn on the patient's face, either on the nose or the nose and mouth. It applies positive pressure through the patient's airway, keeping the airway open and alleviating airway blockages.⁸

While effective when used, and considered the gold standard in OSA

treatment, CPAP therapy has a low adherence rate. In a recent study of 82 clinical trials, 10.7% of patients could not tolerate the CPAP machine for the duration of the trials, and, for those who could tolerate the machine, the mean duration of use was just 4.7 hours per night. Medicare considers a patient to be compliant with CPAP therapy if that patient uses the CPAP machine for at least 4 hours for 70% of the nights, but adhering to that is a major challenge for many patients, and even "total" adherence to this recommendation leaves patients unprotected for a significant portion of their sleep.

CPAP manufacturers are attempting to create quieter and more comfortable machines, but non-adherence rates remain around 30–40%. Patients cite noise, comfort, nasal problems, masks that will not fit, convenience, price and claustrophobia as reasons for not wearing the masks.⁹

Oral Appliance Therapy

But there's another option — oral appliance therapy (OAT) with a custom-fitted oral appliance (OA) such as a mandibular advancement device (MAD). OAT is provided by a dentist after a referral or prescription by a board-certified physician. Adjustable and removable, MADs work by repositioning the mandible while the patient is asleep, which helps to prevent collapse of the upper airway. MADs are the most commonly used type of OA for sleep apnea. While boil-and-bite MADs can be purchased over the counter by patients, custom MADs require

a dentist for evaluation, fabrication and adjustment, and all oral appliances should be used under supervision by a dentist.

Swiatowicz suffered from sleep apnea. Before treatment with OAT, he used to wake up seven to eight times per night. “Now, I don’t wake up during the night anymore. I don’t snore. I feel better in the morning. It changed my life,” he said.

A physician will write a prescription or make a referral for OAT based on the severity of the patient’s condition and the tolerance of other therapies. “In certain circumstances, CPAP is the best option,” said Addy. “It used to be that, 15 years ago, the patient would exhibit mild or moderate symptoms, and the physician would automatically say, ‘You need a CPAP.’ Now, what they’re finding and what research is showing is that a patient would far prefer wearing an OA to a CPAP.”

According to Addy, in the most severe cases, patients will start and stay on CPAP therapy unless they cannot tolerate it. For mild or moderate cases, she gives the patient the choice: OAT or CPAP.

While not proven as effective as CPAP, MADs are more easily tolerated.¹⁰ A recent study showed that 81% of patients preferred MADs for their efficacy, ease of use, portability, comfort, noninvasive nature and unobtrusiveness.¹¹ The devices can also be used in conjunction with CPAP, either fitted to have a CPAP mask worn over or to be worn at times when the patient would otherwise be unprotected, such as when traveling.

A 2019 study examined 58 adult patients and investigated the effectiveness of OAT. Prior to treatment, the mean apnea-hypopnea index (AHI) baseline was 31.3, meaning the average patient experienced more than 31 apneic events per hour. More than 86% of patients saw a reduction in their AHI level with OAT. The average AHI reduction was 10.4, while 31% of patients experienced a reduction of more than 50%.¹²

Patients who use CPAP machines will have to work with manufacturers in addition to physicians. With OAT, patients have a direct relationship with their dentist, and the dentist ensures that the device is as effective and comfortable as possible. Adjustments are made incrementally and over time as the patient’s mouth adjusts. For instance, Addy initially meets with patients every three months, and then moves to

every six months and, finally, annually as the patient’s condition stabilizes.

But treating OSA is more than just fitting the patient for an OA. It requires a team of physicians. Dentists may be accustomed to working without significant collaboration with other medical professionals, but, with OSA, an interdisciplinary approach is essential.

An Interdisciplinary Plan

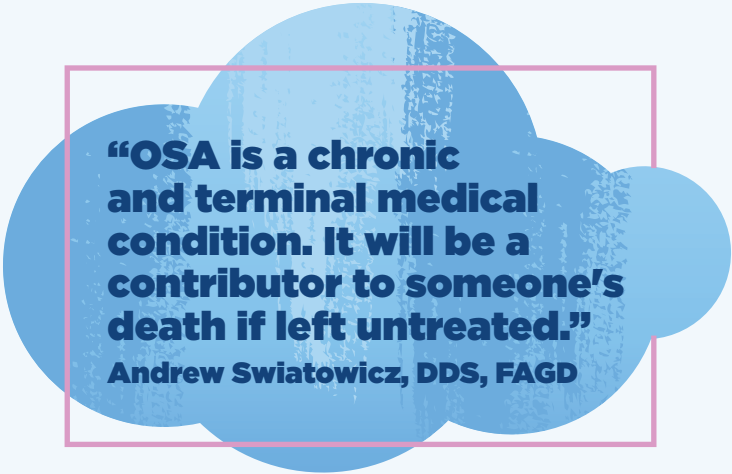
According to Swiatowicz, proper treatment cannot be given without a team-focused approach. “There are unfortunately groups that will advocate that you can just do this by yourself — you don’t need anyone else to treat these patients,” he said. “But if you’re following the guidelines from the American Medical Association, the ADA, the American Academy of Sleep Medicine and the AADSM, then you know it’s a collaborative, interdisciplinary approach to treatment.”

Primary care providers, sleep medicine specialists and surgeons may also be on the patient’s OSA care team. In its clinical guideline, the Adult OSA Task Force of the AADSM recommends approaching OSA “as a chronic disease requiring long-term, multidisciplinary management.” For the long-term

After a physician determines that OAT is a treatment option based on medical expertise, the dentist will then evaluate the patient and determine if OAT is appropriate based on his or her dental expertise and will determine which type of OA fits the patient’s needs. The dentist and referring physician should remain in regular communication to follow the patient’s progress and assess whether additional treatment or testing is needed.⁵

“You’re there to work toward the common goal of a healthier patient — not go out on your own and be the hero,” Swiatowicz said. “You have to find the best way to serve them in the most comprehensive way possible. I am not a medical doctor, so I want to have a team. Accept your own limitations.”

Effective communication with other professionals on the care team is essential, according to Batoon. Using SOAP notes — subjective, objective, assessment and plan — is key. The notes objectively document what the patient has observed and what the dentist has used as assessment. “By using SOAP notes, everyone on the care team is going to understand that you did your assessment and exam properly.”



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management of the disorder, the task force recommends that patients “have regular, ongoing follow-up to monitor adherence to therapy, side effects, development of medical complications related to OSA and continued resolution of symptoms.”¹³

According to the ADA, before a dentist becomes involved in the treatment of OSA, he or she needs a direct physician referral.

Batoon also noted that using SOAP notes helps when working with medical insurance companies, an area in which dentists should familiarize themselves so they can be reimbursed for providing OAT.

Technological Advancements

With hundreds of OAs available on the market — many of them FDA approved

— there are regularly new devices and innovations. According to Addy, “For every new appliance, I actually have that appliance made for myself before I use it on a patient. It’s an incredible education.”

3D scans are also a new development. The two types include computed tomography (CT) and 3D intraoral scanning. A CT scan is taken while the patient is awake and upright. “It shows the airway anatomy beautifully,” Richardson said, “which is useful to educate and engage the patient. Unfortunately, it’s not proven to help us predict successful treatment position or success.”

“I want to know what a patient’s airway looks like when they’re lying down and asleep,” Swiatowicz said. “If I take a CT scan when they’re sitting upright and awake,

it’s a totally different thing. As long as people are using it in conjunction with the accepted and diagnostic testing for patients, it’s just another tool in the tool belt to help treat OSA.”

A 3D intraoral scan takes an impression of the patient’s mouth digitally and is an alternative to traditional alginate impressions, according to Richardson. The scans are then used to create the patient’s OA.

“These have a lot of potential,” said Addy, who uses 3D intraoral scans in her office. The scans are then sent to a lab. Some labs can create the OA in-house, while others need to send the scans to a printing mill to print the OA.

Addy uses intraoral scanning because it is a clean and hygienic way of creating an appliance; additionally, since the scans are digitally stored, the lab can more easily create a new OA in the event a device breaks or is lost.

One concern about OAT is patient adherence, so, in 2015, the FDA approved the use of trackers to monitor OA use. A microrecorder can be embedded in the OA that measures temperature, time and positional changes. Data is used to create reports and tell the story of the patient’s compliance.¹⁴

“It’s good to have objective data,” Swiatowicz said. “Certain types of occupations require documentation of treatment compliance when employees have sleep apnea; an example of this is transportation companies.”

While CPAP data use can be manipulated by having someone else wear the mask or by recording data while awake, the custom-fitted nature of OAs makes them basically tamper proof.¹⁴

The future for technological advancements in OAT is wide open. Projections for the global OA market are around \$480 million by 2023, more than doubling the \$233 million in 2018. This growth is spurred by technological advancements, greater awareness of OSA and increasing popularity of OAs, and the largest share of growth is in the market of OAs prescribed by doctors.¹⁵

A New Revenue Stream

When dentists begin treating OSA, they open up a new possibility for revenue in their practice. “From the business side, it’s a nice procedure to be able to do,” Swiatowicz

said. “I would much rather do a one-hour sleep consultation with a patient than a Class II filling. It’s way more enjoyable to me, and, on a numbers side, it results in much better production for your time.”

Physician referrals are necessary. Without the official diagnosis and referral, it is impossible for dentists to see new business. “You have to have a good relationship with physicians who will want to refer you,” Addy said. “That’s how you make money. You will get referrals by doing exceptional work and staying in contact with physicians. Will it happen overnight? No.”

Before dentists can start, they need proper education. “The financial benefits are there, but they require an investment in continuing education to learn about treating OSA,” said Richardson. “Seeing a financial benefit takes education and persistence.”

Before Treating OSA — Education is a Must

While there are short-term weekend training courses and programs offered by private companies, proper training and education is imperative. Addy recommends dentists study with a nonprofit like the AADSM or the American Board of Dental Sleep Medicine.

“You can learn a bit in that weekend, but it doesn’t mean you’ve been trained properly,” Addy said. “It’s like anything else. You learn over time and by doing.”

Addy has encountered many patients suffering from OSA who had improperly trained dentists administer appliances. The results have been damaging.

One of her patients complained of six months of pain after wearing an OA created by another dentist. “We put in the device, and the man’s jaw was just so far forward. I asked, ‘How did you decide to put this here?’ He said the dentist asked him how far forward he could bring his lower jaw, he did, and his dentist said that’s where he’ll put it. You may think you’ve learned something in a course, but if you don’t have any follow-up to ensure that you’re doing it properly, you haven’t been trained.”

The AADSM offers a mastery program in DSM with live courses and clinical work between each course. Dentists receive certificates as they complete various stages of the program, and eventually they achieve accreditation as practitioners of DSM. They will learn how to treat OSA, be a part of

How to Build up a Referral Base

Clear communication is key. Keeping every physician informed throughout oral appliance therapy will increase your likelihood of referrals and create the best results for the patient.

- Approach the treatment of obstructive sleep apnea as collaborative.
- Be familiar with the physician and his or her preferred communication practices.
- Face-to-face communication (when appropriate) will help.
- Educate yourself on the documentation you will need to treat the patient.
- Send letters/emails to the referring physicians thanking them for the referral, communicating strategies for the treatment plan (including whether titrating the device is necessary), and asking for further assessments of the therapy and the patient’s condition.
- Avoid using dental terminology.
- Use SOAP notes.
- Use a software system.
- Document and communicate any side effects from the oral appliance.

Source: White, John and Sue Ellen Richardson. “Protocol for Communicating with a Patient’s Treating Physician.” *American Academy of Dental Sleep Medicine*, 2018.

the treatment team, properly fill out paperwork, work with insurance companies and manage billing.

Learning how to properly treat OSA is one more way that dentists can fulfill their commitment to providing excellent care to patients.

“The most rewarding part is how appreciative the patients are for how much you’ve helped their overall health,” said Batoon. ♦

Dan Kolen is a freelance writer and media producer based in Chicago. To comment on this article, email impact@agd.org.

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