


Obstructive Sleep Apnea

The Dentist's Role in Diagnosis and Treatment

BY ELIZABETH NEWMAN

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There is a rumbling sound getting louder throughout the country. It emanates from the bedrooms of many Americans, causing stress and discomfort, not only for the source producing the sound, but for all those within earshot. That sound is snoring. At first, it may appear to be simply an annoying habit that a lot of people have. And, in some cases, it *could* be merely an annoyance. But for many snorers—more than 18 million Americans, according to the American Academy of Dental Sleep Medicine (AADSM)—it can indicate the presence of a very common, but serious, sleep disorder: obstructive sleep apnea (OSA). Dentists already know about OSA and its relationship to patients' mouths, but the way in which OSA is diagnosed and treated has posed some challenges for dentists: The most obvious of these is that physicians typically diagnose sleep disorders and dentists then help to treat them. But dentists need to understand their role in both diagnosis and treatment of sleep disorders and how to overcome the challenges involved, not only for their sake, but for the health and well-being of their patients.

Identifying OSA

Who is clinically at risk for OSA? According to the AADSM website (www.aadsm.org), patients with sleep disorders often are "obese, middle-aged men. OSA risk increases with weight gain because excess fat in the back of the throat can narrow the airway. Women and men with OSA often have neck sizes of more than 16 or 17 inches, respectively." But anyone can suffer from OSA—even athletes and children.

The AADSM website defines OSA as "a sleep-related breathing disorder that prevents airflow during sleep. OSA occurs when the tissue in the back of the throat collapses and blocks the airway. This keeps air from getting into the lungs." The AADSM explains that, when there is not enough air in the lungs, the body responds by waking up, sometimes hundreds of times per night.

Signs of OSA include loud snoring, choking or gasping during sleep, and long pauses in breathing while sleeping. A person with the disorder may get up frequently in the night, sometimes due to restlessness and insomnia. Not all OSA sufferers snore, and not all snorers have OSA. A May 2009 article in *Australian Family Physician* says, "It is estimated that more than 60% of adults occasionally snore and more than 30% regularly snore, and that obstructive sleep apnea occurs in approximately 10% of females and 25% of males, of whom 2 and 4% respectively have OSA with sleepiness."

Most times, people who have OSA aren't aware of these symptoms because, well, they are asleep! But even if they aren't aware of the symptoms, the physical effects are certainly palpable. Watching for the symptoms—or having their bed partner watch for symptoms—will help people to know if they might have OSA and need to talk to their dentist or physician about the next steps for diagnosis.

If a patient is unaware of his or her OSA, his or her dentist may be able to identify particular physical symptoms. In the *AGD Impact* article "Breathing Easier" (March 2009), Dennis Bailey, DDS, FAGD, says that physical signs of OSA include bloodshot eyes, black circles around the eyes, and puffy eyes. Dentists also might encounter a coating on the tongue, which can be a result of mouth breathing. "Redness of the soft palate or an enlarged uvula or tongue also can be signs of OSA," adds Dr. Bailey.

People with OSA often wake up with a dry mouth or a sore throat (due to the mouth being open during sleep). They also might feel sleepy throughout the day, even if they "sleep" for a seemingly long period of time. They may have tired-looking eyes as a result of the condition. All of these are physical symptoms that dentists may notice during a routine exam or cleaning.

The overall health effects of OSA can be quite severe. According to the AADSM, "OSA patients are much more likely to suffer from strokes and heart

problems, such as heart attack, congestive heart failure, and hypertension. They also have a higher incidence of work- and driving-related accidents." In addition, the American Academy of Sleep Medicine (AASM) cites fluctuating oxygen levels; impaired glucose tolerance and insulin resistance; impaired concentration; and mood changes as additional health problems that result from undiagnosed and untreated OSA ("Obstructive Sleep Apnea," AASM fact sheet).

The authors of the *Australian Family Physician* article mention other health effects caused by OSA. "Increasing evidence suggests that untreated OSA is associated with greater cardiovascular disease (CVD), similar in proportion to that seen with cigarette smoking. Untreated OSA is associated with a 2–4-fold increased chance of cardiovascular events in the community, and clinic populations. Despite this strong association between OSA and CVD, the effective size of OSA treatment on subsequent development of CVD is unknown."

OSA can affect other areas of a person's life as well. The *Australian Family Physician* article mentions the disorder's effects on family, noting that "snoring is associated with greater divorce rates." According to the article, patients with any of the following snoring habits should be referred for assessment by a sleep physician: "sufficient to disturb partner more than three nights per week; audible in other rooms; occurs despite alcohol abstinence; occurs in lateral sleep position; or occurs greater than 10% of the night."

The American Sleep Apnea Association suggests asking several questions that might help people to determine whether they have OSA:

- Are you a loud and/or regular snorer?
- Have you ever been observed to gasp or stop breathing during sleep?
- Do you feel tired or groggy when you wake up, or do you often have a headache as soon as you wake up?

- Do you feel tired or worn out during the day?
- Do you fall asleep while sitting, reading, watching TV, or driving?
- Do you often have problems with memory or concentration?

John Bixby, DMD, FAGD, the dental director at ComfortSleep, Center for Diagnosis of Sleep Disorders, in Neptune City, N.J., recommends giving these types of questionnaires to both patients and their bed partners, since those people have firsthand experience and can observe the patient while he or she is sleeping.

Understanding OSA and helping patients who have it could put dental and medical professionals in a position to save many people's lives—not only those who suffer from the disorder, but those who may be on the road, in flight, or working with them.

Other sleep questionnaires include the Berlin Sleep Evaluation and the Epworth Sleepiness Scale. Dr. Bailey says that the Epworth scale "draws an empirical correlation between the information collected on the questionnaire and other predictors, like the Mallampati Score, with the potential for detecting patients who could be at risk for OSA" ("Breathing Easier," March 2009).

There also are different levels of OSA: mild, moderate, and severe. The AASM indicates that those with mild OSA have five or fewer episodes of apnea (stops in breathing while sleeping)—or an apnea-hypopnea index (AHI) of 5; patients with moderate OSA have an AHI index of 15–30; and patients with severe OSA have an AHI of greater than 30. People who have moderate OSA, the AASM says, experience "involuntary sleepiness during activities that require little attention, such as watching TV or reading" ("Obstructive Sleep Apnea," AASM fact

sheet). The AASM fact sheet explains that severe OSA can affect people when they are engaged in activities that require a lot of attention, including talking or driving.

The authors of the *Australian Family Physician* article explain: "By definition, excessive daytime sleepiness due to OSA should be considered when it occurs despite adequate sleep volume and following exclusion of other common causes of sleepiness such as depression, anemia, medication side effects, or electrolyte disturbance. Sleepiness can be a subtle symptom and use of the Epworth Sleepiness Scale is a good guide."

Undiagnosed OSA not only produces different health conditions, it can seriously affect the judgment of people who have it, especially when they are driving or required to perform tasks that require focus and concentration. The authors warn that undiagnosed OSA can result in very dangerous, even fatal circumstances: "Untreated

OSA is associated with motor vehicle collisions, often confounded by chronic sleep deprivation and circadian factors. Judgment, speed and accuracy, personality change, memory loss, and scholastic performance also can be affected."

Concern about the impact of sleep disorders has resulted in the development and proposal of new screening guidelines. According to a February 2010 *Wall Street Journal*, "Last fall, the National Transportation Safety Board recommended that drivers and pilots of commercial buses, trucks, airplanes, and ships be screened for [OSA], citing several accidents in which undiagnosed sleep apnea was thought to play a role." Understanding OSA and helping patients who have it could put dental and medical professionals in a position to save many people's lives—not only those who suffer from the disorder, but those who may be on the road, in flight, or working with them.

Brock Rondeau, DDS, IBO, DABPC, a general dentist and experienced lecturer from London, Ontario, Canada, whose practice is limited to the treatment of patients with orthodontic, orthopedic, TMJ, and snoring and OSA problems, recently educated those in the trucking business about OSA. "The Canadian Trucking Alliance hired me to talk to the truckers here in Canada," he says. "A lot of people are falling asleep at the wheel and no one is checking them! Pilots are tested, but no one is testing the truckers. Mandatory testing is coming, and when it arrives, we won't have enough dentists to treat them."

Diagnosis diligence

According to the AASM's "Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea in Adults" (*Journal of Clinical Sleep Medicine*, March 2009), "OSA should be approached as a chronic disease requiring long-term, multidisciplinary management. There are medical, behavioral, and surgical options for the treatment of OSA." It is very important, however, for dentists to understand that they cannot legally *diagnose* a patient with a sleep disorder—even if they are very certain that the patient has OSA. According to Dr. Bixby, "OSA can be diagnosed only by a physician. However, we as dentists *must* be screening our patients for it." He stresses the importance of dentists assessing a patient's airway and looking for signs of OSA. "There are about 35,000 cases of oral cancer found by dentists each year," he says. "Compare this to the fact that there are about 20 million undiagnosed patients with OSA. Who better is there to help them than their dentists who see them—and their airways—so often?" Dentists play an integral role in the initial identification and the continued treatment of OSA, and therefore must work closely with the patient's physician to ensure that the patient is receiving treatment.

So what should dentists do if they suspect that a patient has OSA? Dr. Bixby says, "It's very simple: Just look for symptoms during the oral exam, ask the right questions, and then, if

you suspect that the patient has OSA, refer him or her to a physician for a sleep study."

Sleep studies at a sleep center

In order for patients to receive a proper diagnosis, they must undergo a sleep study. "For patients who are suspected of having a sleep disorder, it is recommended that they have a complete overnight sleep test to get a baseline," says Dr. Bixby. "This is the best way to diagnose OSA. You should

never attempt to treat a patient—even for snoring—without a sleep test."

Dr. Rondeau echoes that advice. "The only way to tell for sure is with a sleep study," he says. "You cannot confirm OSA any other way—you have to have the sleep study."

Home-monitored sleep studies

Home-monitored sleep studies are another option, but Dr. Bixby points out that home sleep studies don't always give the most comprehensive results.



"You get so much more data with an in-lab test," he says. "Some health care professionals push the home monitors, but those devices monitor only four or five things going on in the body, while the sleep-center study monitors about eighteen! Also, with an in-lab test, there's always someone monitoring what's going on who can stop the test to make adjustments if needed."

Another problem with home monitors is that sometimes patients aren't sure how to use them, which could result in incorrect or misleading results. The authors of the *Australian Family Physician* article found that unattended, in-home polysomnography tests require "the patient setting themselves up with the aid of detailed instructions ... Test failure rates are modestly high, thus requiring repeat testing."

There is a wide variety of home sleep monitors for dentists and patients

to try, but again, these devices might not produce the same accuracy as the results from a technician-monitored study at a sleep center, says Dr. Bixby. He adds, "I've seen some dentists take the results of a home study, send it off-site to a sleep physician who looks at the data and says, 'Yes, this person has OSA,' use that as a diagnosis, and then give the patient treatment. They are trying to get around having the patient go in for a sleep study. A sleep study is just better medicine."

Establishing a relationship

The most important part of the diagnosis is getting accurate results so that the physician and the dentist can determine the best treatment plan for the patient. Because dentists can refer a patient to a sleep physician for a sleep study and diagnosis, they must understand the importance of forming a relationship

with a sleep center. "It is extremely important that the dentist become very comfortable communicating with the sleep center during this period of diagnosis and treatment, especially if the dentist is performing the oral appliance therapy," advises Dr. Bixby. "Communication is key."

Jonathan Fashbaugh, president of Concerto Internet Marketing LLC, a Colorado-based Internet marketing firm that helps dentists advertise their OSA services accurately and efficiently online, agrees. "Talking to my clients, I would say that establishing a good referral relationship with a sleep physician and/or sleep center is critical," he says. "It's also the most challenging part of building a practice in which OSA is a focus."

Dr. Rondeau advises general dentists and their team members to develop a very strong relationship with a sleep center. "Dentists must establish a relationship with the sleep physician, too. That's key—you have to do that."

While some dentists may be new to the sleep medicine world, Dr. Rondeau acknowledges that it takes time to truly bond with a sleep physician. "It does take a while to form that relationship, but once you have it, it's very helpful. I've been doing this for a long time and I have a great relationship with my sleep physician. We help each other: I refer patients to him and he refers patients to me."

The multidisciplinary, tag-team approach to OSA can be fun, too, says Dr. Rondeau. "Physicians have the advantage of working with other physicians all of the time, whether it's in hospitals or other places. On the other hand, dentists often work alone in an office by themselves. Maybe they're in group practice, maybe not, but they don't really converse with a lot of physicians. Treating OSA gives them the opportunity to get into the medical world and actually talk to medical professionals, which is kind of a neat thing to do."

Treatment preferences

Once the dentist and physician have established that a patient does, in fact, have OSA, there are three treatment



options: an oral appliance, a continuous positive airway pressure (CPAP) machine, or surgery. The authors of the AASM guideline explain that surgery was the original treatment for OSA when it was first diagnosed years ago. The surgery "includes a variety of upper airway reconstructive or bypass procedures."

However, most patients today do not undergo surgery for OSA. The February 2010 *Wall Street Journal* article found that "Today, 60% to 70% of patients are treated with CPAP, in which the breathing mask, connected by tube to an air pump, sends pressurized air through the patient's nose. The air flow keeps the upper airway open and prevents apneas." The AASDM adds, "CPAP uses pressurized air generated from a bedside machine. The air moves through a tube, connected to a mask that covers your nose, mouth, or nose *and* mouth. The force of the pressurized air keeps the airway open. CPAP opens the airway like air into a balloon; when air is blown into the balloon, it expands."

The AASM guideline explains that "positive airway pressure (PAP) is the treatment of choice for mild, moderate, and severe OSA and should be offered as an option to all patients. Alternative therapies may be offered depending on the severity of the OSA, and the patient's anatomy, risk factors, and preferences should be discussed in detail." The *Wall Street Journal* article notes that comfort and appearance may cause some patients to react adversely to the CPAP. "Many patients complain that the CPAP mask and the air pressure make them feel claustrophobic. Others balk at sleeping with a mask and tubes on."

One of the alternatives to CPAP is an oral appliance. An article in the February 2006 issue of *Sleep* says, "Oral appliances (OA) are indicated for use in patients with mild to moderate OSA who prefer them to continuous positive airway pressure (CPAP) therapy, or who do not respond to, are not appropriate candidates for, or who fail treatment attempts with CPAP."

Additional studies support the efficacy of oral appliances. The August 2007 issue of *Chest* notes, "Oral appliances are often considered by patients to be a more acceptable treatment modality compared to CPAP, as they are quiet, portable, and do not require a power source. There is now an increasing evidence base to support the use of oral appliances in clinical practice."

Not only are dentists who treat OSA patients helping the patient, they are changing their lives—and their family members' lives.

When it comes to oral appliances, the possibilities are endless. According to Dr. Bixby, mandibular advancement, or moving the jaw forward, is the basis of all oral appliance therapy. "As you bring the lower jaw forward and hold it there through the night, you decrease the severity of OSA," he explains.

"There are plenty of appliances out there—more than there are letters in the alphabet!" says Dr. Bixby. "You just need to find one that you like working with—they all work on the basic principle of mandibular advancement, with some offering add-ons."

Dr. Rondeau says that patients often don't know they have options. "Sometimes the sleep clinic will give the patient a CPAP machine no matter what. There are alternatives like oral appliances, but a lot of times patients don't even know about them."

Oral appliance challenges

If oral appliance therapy is recommended, dentists need to know what to do. Patients should undergo a thorough dental examination to assess their candidacy for an OA. In addition, because the appliance adheres to the teeth, the AASM guideline recommends that "candidates for a [mandibular repositioning appliance (MRA)] require adequate healthy teeth upon which to seat the oral appliance, no important TMJ disorder, adequate jaw range of

motion, and adequate manual dexterity and motivation to insert and remove the OA, as determined by a qualified dental professional."

There are drawbacks to the use of oral appliances, though. A literature review published in the February 2009 issue of *Sleep* explains that oral appliances can cause certain symptoms for patients, including "long-term dental and skeletal changes." The authors also say that some oral appliances extend beyond the dental arches, which applies pressure to the gums and the oral mucosa.

In addition, the authors found that some immediate minor side effects do occur. "Commonly reported minor and temporary side effects included TMJ pain, myofascial pain, tooth pain, salivation, TM joint sounds, dry mouth, gum irritation, and morning-after occlusal changes." While some consider these to be minor side effects, patients may not tolerate them well.

The Snoring and Sleep Apnea Dental Treatment Center reports on its website that "jaw muscle and joint pain occur in approximately 10% of the patients. The pain will disappear when the patient discontinues use of the appliance. However, the pain can recur for these patients when they start wearing the appliance again."

In addition, oral appliances can change a person's bite, which may be uncomfortable and result in difficulty chewing. "Changes in the bite can occur for about 30 to 40% of the patients. Although the changes may be slight, it may still be difficult for the patient to close their back teeth together, which may have an effect on their ability to chew effectively," according to the Snoring and Sleep Apnea Dental Treatment Center. The CPAP is another option for those patients whose experiences with oral appliances are not positive.

Future advancements

As mentioned earlier, there are a great number of oral appliance options on the market these days, and Dr. Bixby says that dentists will have even more

options in the future. He says that one device currently going through FDA approval is an oral appliance which includes a computer chip that measures temperature when the patient is wearing the device. These temperature readings are recorded and sent to a database to show how compliant patients are in using the oral appliance. This may be very helpful for employers, especially those who are in high-risk professions, such as trucking or aviation. If an employer is concerned about an employee who has OSA operating a vehicle or heavy machinery, the employer can monitor how often the employee is using the oral appliance. This is a major breakthrough, Dr. Bixby says, because "insurance companies and employers don't want the risk of accidents."

Coding challenges

While the future of OSA treatment is exciting, dentists still find some challenges in coding and billing insurance companies. Rose Nierman, owner of Nierman Practice Management in Tequesta, Fla., has developed a way to make things easier. "I was a dental hygienist in a very busy TMD practice in the early 1980s, and we had to figure out how to bill in order for medical insurance to cover TMJ treatment. The next evolution was the OSA program, because that gets billed to medical, too. About 10 years ago, we came out with the Dental Sleep Medicine DentalWriter™ software."

The software is designed to make things easier for dental practices that specialize in treating OSA. "The software actually prepares the practice to treat OSA," she says. "A general practice isn't used to all of the documents—the reports to send to other doctors and the sleep labs, and the medical billing." The software synchronizes with the patient's history and the results of the sleep study. "By entering the findings, either online or in the software, SOAP [subjective, objective, assessment, and plan] reports are generated that allow dentists to work directly with physicians," Nierman says.

Although Medicaid does not cover OSA treatments, it does cover CPAP

machines, and oral appliances were added in November 2010 to the list of equipment that, effective January 2011, Medicare will cover. "We're helping doctors get set up to bill for oral appliances," says Nierman. "They need to submit a special application—it isn't Medicare Part B; they're actually offering the service as a durable medical equipment supplier."

Nierman believes that the 2010 decision that established only one code for all oral appliances makes it much easier for dentists to bill Medicare for OSA treatment. Dentists must be sure that they are using an FDA-approved appliance, but that is the only significant restriction. Medicare also requires 90 days of follow-up care before dentists can submit another code, Nierman says. "Private care usually uses the same type of guidelines, and they pay a little more. There are follow-up care codes, too."

Nierman advises dentists to document *everything*. "You want to be sure that you're using the right code, that you're billing exactly how you're supposed to, and that you have the documentation in place to show what you did and why it's a medical necessity instead of a dental condition," she says.

According to Nierman, as more people are diagnosed with OSA, the public is becoming more aware of the condition—and insurance companies are noticing, too. "I would say that insurance companies have really stepped up to the plate in the last six to 12 months," she says. "And the Medicare decision added legitimacy to OSA treatment—it's become a little more mainstream now."

Transforming lives

The best way to find that information is to learn—a lot. "Dental professionals *must* educate themselves and then educate their patients," says Dr. Rondeau. "I recommend that dentists take a course and involve staff members." That way, he says, everyone on the team knows exactly what to tell patients when they have questions. Once dentists have the education and are confident in their abilities, sleep centers will respond and want to work with the dentist.

Not only are dentists who treat OSA patients helping the patient, they are changing their lives—and their family members' lives. "I have people thanking me, hugging me for saving their marriage, for increasing their husband's energy level," says Dr. Rondeau. "It affects everything. Patients have memory loss, they become depressed—all kinds of things happen when people are so tired."

Many dentists who see the rewards of treating patients with OSA shift their practices to focus on it. "The dentists with whom I work enjoy doing OSA treatment because it's easy, it has a high rate of return, and best of all, it's rewarding," says Fashbaugh. "Similar to TMJ treatment, they are transforming lives. OSA patients who are finally getting truly restful sleep can't believe the change in the way they feel, and the reality is that they are living longer because of their dentist."

Dr. Rondeau likes the challenge of working with OSA patients. He explains, "It's fun. Now I have to think. I have to figure out where the obstruction is, if there is an obstruction, how do I motivate this patient, how do I talk him or her into a sleep study, how do I convince him or her to go? It's a mental challenge. But I feel a lot more satisfaction because I'm helping patients."

Treating patients for OSA improves their overall health, says Dr. Rondeau. "I really feel like we're helping people now. I think the future of dentistry is as a health-centered practice. You fix a patient's teeth, you fix their gums—that's great. But what about their entire body? Successfully diagnosing and treating OSA reduces high blood pressure, diabetes, heart attack, acid reflux—and more."

If the mouth really does act as the window to the rest of the body, then Dr. Rondeau and others who treat OSA feel that they are changing lives. "The bottom line is that you want to feel good about your job," says Dr. Rondeau. "You can do this by helping your patients feel better." ♦

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