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TIPS AND TECHNIQUES

SNORING AND SLEEP APNEA

DR. ROB W. VEIS, D.D.S.

Written exclusively for dentists.
Designated for one CE Contact Hour.

OVERVIEW

Upwards of 10% of adults snore... and for an estimated 1% of snorers, their noisy habit is the first indication of a potentially life threatening disorder: Obstructive Sleep Apnea (OSA).

The good news is that dentists can be of vital assistance in recognition and treatment of Snoring and OSA. The unenlightened sufferers are among your existing patients, but to provide them with optimal care, the dentist must have an overview of the complex process of sleep and sleep disorders, as well as the means available for diagnosis and treatment.

EDUCATIONAL OBJECTIVES

The overall objective of this course is to provide the participant with an evidence-based guide to the advantages, applications and proper procedural protocols for the treatment of Snoring and Obstructive Sleep Apnea in the dental office.

UPON COMPLETING THIS COURSE, PARTICIPANTS WILL BE ABLE TO:

- Recognize the etiology, signs and symptoms of OSA in adults and children, as well as the role of the dentist in addressing them.
- Discuss with patients the range of OSA prevention and treatment options available to them.
- Implement the steps necessary for integrating Sleep Therapy into their dental practice.
- Market Snoring/Sleep Apnea Solutions to their patients.



About the Author:

ROB VEIS, DDS.

Dr. Veis began practicing in 1984 as a solo general dentist and has been a part of both solo and group practices since then. A graduate of USC Dental School, he taught for 12 years at the University of Southern California as a Clinical Professor in Restorative Dentistry; is an internationally renowned lecturer (at locations including UNLV, Columbia University, Loma Linda University and NYU) on the topics of Dental Sleep Medicine, Orthodontics for the General Practice and Appliance Therapy; and has served on the faculty of the Las Vegas Institute of Advanced Dental Studies. He is the co-author of The Principles of Appliance Therapy for Adults and Children – considered one of the definitive texts on the subject – and has lectured extensively for the Academy of General Dentistry-sponsored mastership program. In 2014, he will embark on a world-spanning lecture tour encompassing Canada, Australia, Taiwan and the US.

AUTHOR DISCLOSURE:

Dr. Veis discloses that he is the CEO of SML™ Space Maintainers Laboratories.

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Have you wondered why, all of a sudden, your dental patients are asking if there is something you can do to help them with their snoring? It's because in today's information age, they can't read a paper, listen to the radio or watch television without learning something about the latest electronic device, herbal medicine, nasal strip, surgical technique or dental appliance being used to treat snoring.

If you snore loudly and often, you may be accustomed to middle of the night elbow thrusts and lots of bad jokes. But snoring is no laughing matter. That log-sawing noise that keeps everyone awake comes from efforts to force air through an airway that is not fully open.

Perhaps ten percent of adults snore and although for most people snoring has no serious medical consequences, for an estimated one percent of snorers habitual snoring is the first indication of a potentially life threatening disorder called "Obstructive Sleep Apnea."[1]

It has been estimated that the indirect costs of sleep disorders are over 41 billion dollars a year from lost productivity, 17 to 27 billion dollars a year from motor vehicle accidents, seven billion dollars a year in work-related accidents and 2 to 4 billion dollars a year in home and public accidents. Clearly this is a major national problem that needs to be dealt with in an appropriate fashion.

Unfortunately, most physicians have not been trained to deal with these common problems. It has been estimated that on average during the four years of medical school only two hours are spent teaching medical students anything about sleep. This has created a significant deficit in our current medical system.

Dentists can be of vital assistance in recognition and treatment of Snoring and Obstructive Sleep Apnea. To provide optimal care, the dentist must have an overview of the complex process of sleep and sleep disorders.[1]

What is Sleep Apnea?

Steadman's Medical Dictionary defines "apnea" as "the absence of breathing or the want of breath." When there is a cessation of airflow at the mouth and nose for more than 10 seconds, an apnea episode has occurred. If a person experiences 30 or more apnea episodes during a seven-hour sleep period, they are believed to be suffering from Sleep Apnea.[2,3]

The severity of apnea is usually categorized by the frequency of apnea episodes: 5-15 episodes per hour is mild, 15-25 episodes per hour is moderate, and more than 30 episodes per hour is considered severe.

Episodes can last anywhere between 10 to 20 seconds each, terminating with at least a partial wakening.

Typically, a patient may have as many as 300 apneic episodes per night.

There are three basic classifications of sleep apnea: central, obstructive, and mixed.

Central Apnea occurs when air flow stops because inspiratory efforts temporarily cease. Although the airway remains open, the chest wall muscles make no effort to create airflow. The etiology frequently is encephalitis, brainstem neoplasm, brainstem infarction, poliomyelitis, spinal cord injury, and cervical cordotomy.[4]

Obstructive Apnea is the cessation of airflow due to a total airway collapse, despite a persistent effort to breathe. An obstruction in the upper airway can occur in three areas: the nasopharyngeal, oropharyngeal and hypopharyngeal.

Regardless of the level, an obstruction causes the breathing to become labored and noisy. As pressure to breathe builds, muscles of the diaphragm and chest work harder. The effort is akin to sipping a drink through a floppy straw, the greater the effort the more the collapse. Collapse of the airway walls eventually blocks breathing entirely. When breathing stops, a listener hears the snoring broken by a pause until the sleeper gasps for air and awakens but so briefly and incompletely that he/she usually does not remember doing so in the morning.[1]

Mixed Apnea is a combination of central and obstructive apnea usually beginning with a central episode being immediately followed by an obstructive one.[2]

What is Snoring?

Many people think that snoring and apnea are the same thing. This is not true. Snoring, which is caused by a change in airflow through the nasal and pharyngeal tissues, is only a sign that a patient may be suffering from apnea.

It's basically like water running through a pipe. If the water runs abnormally through the pipe it will vibrate. The same thing happens with airflow when it is partially obstructed.

Snoring can be categorized by its severity. On one side of the spectrum, you have the benign snorer, who snores but experiences no physical problems. On the other side of the spectrum, you have the snorer who suffers from apnea, and in the middle you have the snorer who suffers from what we call **Upper Airway Resistance Syndrome.** In these people, though they may not actually experience apnea episodes, their snoring is so loud and their breathing is so labored, that it still wakes them up numerous times throughout the night. This leaves them unrefreshed and tired in the morning.

THE ROLE OF THE DENTIST

Because the etiology of obstructive sleep apnea is multifactorial and the treatment options are varied, proper diagnosis and treatment are best handled by a team approach. Members of this team may include a sleep specialist, an ENT, an internist, an orthodontist, an oral surgeon, and a general dentist. As a general dentist, you should play an active role in:

a) screening your patients

b) treating them in conjunction with other sleep specialists

c) providing them with follow - up treatment.

SIGNS & SYMPTOMS

The following are some of the signs and symptoms that are indicative of a person who is suffering from apnea:

Adults

- Heavy snoring
- Gasping or choking during the night
- Excessive day time sleepiness
- Frequent arousals during sleep (fragmented sleep)
- Non-refreshed sleep
- Restless sleep
- Morning headaches
- Nausea
- Becoming irritable or temperamental
- Severe anxiety or depression
- Poor job performance
- Clouded memory
- Intellectual deterioration
- Occupational accidents
- Impotence
- Decreased sex drive
- Bruxing
- Dry mouth when you awaken
- Scratchy throat

Children

Children can suffer from sleep apnea as well. Typically these children suffer from growth and development problems. A lot of them have under-developed maxillas, narrow upper arches, and retruded mandibles. Often they are highly allergic with their airway completely blocked due to tonsillar hypertrophy. If they are already having snoring and breathing problems, do not ignore them. Here are some of the signs and symptoms seen in children:

- Hyperactivity
- Poor concentration
- Developmental delay
- Hyponasal quality to their voice
- Noisy breathers
- Obesity
- Frequent upper airway infections
- Ear aches
- Bed wetting
- Nocturnal mouth breathing
- Snoring
- Restless sleep
- Nightmares
- Night terrors
- Headaches
- Chronic nose running

CONTRA INDICATIONS AND CONCERNS

As a dentist, it is essential that you work as part of a team of health care professionals. This is particularly important because many other medical conditions can be associated with OSA.[2] Some of these are:

- Increased hypertension.
- Elevated protein levels (Proteinuria).
- Angina pectoris – more likely to develop.
- Initiation of a gastroesophageal reflex.
- Frequent nocturnal voiding.
- Hypoxema.
- Hypercapnia (high blood level of CO^2).
- Cardiac changes –bradycardia, tachycardia, & right heart failure, possibly leading to sudden death.
- Susceptibility to atherosclerosis.
- Hypothyroidism- causing polythycemia and bicarbonate retention.

Make sure that your patient gets a proper sleep test. Taking a polysomnogram is the only way to make the distinction between someone who snores and someone who is actually suffering from apnea. For those who have patients who are a little hesitant to go and take a sleep study, as an initial step, you may give them a pulse oximeter to take home. This will at least allow you to measure their oxygenation level during sleep. Showing them that they have a decreased oxygenation level is often the extra push they need to have a complete sleep test done.

Treatment of Snoring and OSA with dental appliances without first having a definitive diagnosis confirmed by your medical team could cause the patient to become worse, not better. For example, some appliances may alleviate snoring giving the patient and doctor the false impression that the appliance is working, when in fact it is possible that the patient's apnea episodes could be getting worse even though their snoring has decreased.

Sometimes you may go through a series of appliances trying to find one that works and still not be successful. Appliances simply do not work all the time. Therefore treating an unmotivated patient is clearly a contraindication to appliance therapy. If you can't find an appliance that works, then CPAP or even a surgical approach may be appropriate.

As with any other mandibular repositioning appliance, you will need to make sure that the patient's occlusion stays stable. Even though most appliances cap the teeth, you can still get flaring and other occlusal changes.

Some of the common side effects that you see with the use of sleep appliances are excessive salivation, discomfort in the teeth, a dry mouth, tissue irritation from mouth breathing, temporary disharmonies in the bite and some pain in the joints. It is essential to respect the TMJ when considering the use of a repositioning appliance. A proper TMJ exam is recommended and if a patient is found to suffer from TMJ dysfunction or their muscles are sore and painful while wearing a repositioning appliance, you may need to use the Tongue Retaining Device (TRD). Appliance use is contraindicated for patients diagnosed with Central apnea.

Statistics show that one out of every ten people in your practice snore. But, if you don't find a way of telling your patients that you can help them, how are they going to know? Here are a few simple marketing ideas to help you reach your existing patients and bring new ones into the practice.

1. Place brochures on Snoring and OSA in your waiting room. We have created an excellent patient pamphlet called "Stop Snoring Before it Stops You." By reading this pamphlet, your patients will learn that you can help them with their sleep problem.

2. Revise your medical and dental questionnaires. Asking your patients the right questions can trigger a discussion on snoring and apnea. A few questions that you may want to add to your forms are: Do you snore? Do you wake up tired in the morning? Do you dream? Do you become extremely tired or fall asleep during the day? Are you overweight? Can you breathe through your nose? Do you drink before bedtime?

3. Re-evaluate your intraoral examination. If you are not spending the time to look at the oropharyngeal airway space, the hypopharyngeal airway space, the size of the tongue, the position of the mandible, the vault of the palate, and the nasal airway, then you are missing an opportunity to treat your patients for snoring and apnea.

4. Send out a newsletter. Newsletters are an excellent tool to keep your patients informed on what's new in your practice. Please feel free to use the information in this course to make your letter.

5. Work closely with other medical professionals in a team approach. Referring patients to a physician or a sleep diagnostic center indicates your desire to make sure that your patients get the best care possible. It is this level of knowledge and expertise that will have sleep specialists willingly referring patients back to you for appliance therapy.

By Rob Veis D.D.S.
CEO, SML™ (Space Maintainers Laboratories)

REFERENCES

1. Lamberg, L.; Sleep Apnea Symptoms, Causes, Evaluation and Treatment. American Sleep Apnea Disorders Association. 1988

2. Garry, J.; The role of the Dentist in Sleep Apnea. Dr. James Garry, 1321 N. Harbor Blvd. #201, Fullerton, Ca. 92635

3. Morgan, E.J.; Sleep Apnea Syndrome. WV Medical Journal 75: 14-15, 1979.

4. Waldron, R.E.; Sleep Apnea Syndrome. AFP 149: 149-162, 1985.

5. Weaver, Millman; Broken Sleep. Am J Nurse 88: 146-150, 1986

6. Meyer, Knudson; Sleep Apnea Syndrome, Part I, Diagnosis. Journal of Pros. Dent. 62: 675-679,1989

7. Dierks, Keller; Obstructive Sleep Apnea Syndrome, Correction by Mandibular Advancement. So. Medical Journal 83 #4: 390-394, 1990

8. Clinical Protocol for Dental Appliance Therapy for Snoring and Obstructive Sleep Apnea. The Academy of Dental Sleep Medicine, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154, Phone: 708-273-9366

9. Meyer, Knudson; Sleep Apnea Syndrome Part II. Journal of Pros. Dent. 63 #3: 320-324, 1990

10. Simmons, Guilleminault: Palatopharyngo-plasty Operation for Snoring and Sleep Apnea. Otolaryngol Head and Neck Surgery 92: 375-380, 1984.

11. Cote, E; Obstructive Sleep Apnea, An Orthodontic Concern. Angle Orthodontist: 293-297, Oct., 1988.

12. Johnson; Airway Changes in Relationship to Mandibular Posturing. Otolaryngol Head and Neck Surgery 106: 143, 1992.

13. Clark, G; OSA and Dental Appliances to t\treat Sleep disorders. CDA Journal Oct: 26-33, 1988.

14. Roehrs, Zorick, Sicklesteel; Age related sleep wake disorders a sleep disorders center. J. Am. Geriatric Soc. 31: 364-370, 1983.

15. Krieger, Turlot, Mangin, Kurtz; Breathing during sleep in normal young and elderly subjects: Hypoapneas, apneas and correlated factors. Sleep 6: 108-120, 1983.

16. Bonnet MH; Effect of sleep disruption on sleep, performance and mood. Sleep 8: 11-19, 1985

17. Carskadon, Brown, Dement; Sleep fragmentation in the elderly: Relationship to daytime sleep tendency. Neurobiol. Aging 3: 321-327 1982

18. Stepanski, Lamphere, Badia; Sleep fragmentation and daytime sleepiness. Sleep 7: 18-26, 1984.

19.Glaros, A.G.; Indidence of diurnal and nocturnal bruxism. J. Pros. Dent. 45: 545-549, 1981

20.Lugaresi, Cirgnotta, Coccagna, Piana; Some epidemiological data on snoring and cardiocirculatory disturbances. Sleep 3: 221-224, 1980.

21.Waller, Bhopal; Is snoring a cause of vascular disease? An epidemiological review. Lancet I: 143-146, 1989.

22.Haponick, Smith, Meyers, Bleeker; Evaluation of sleep disordered breathing. Is polysomnography necessary? Am. J. Med. 77: 671-677, 1984.

23.Krol, Knuth, Barlett; Selective reduction of genioglossal muscle activity by alcohol in normal subjects. Am Rev Respir Dis 129: 247-250, 1984.

24.Cartwright RD; Effect of sleep position on sleep apnea severity. Sleep 7:110-114, 1982.

25.Dolly, Block; The effect of flurazepam on sleep disordered breathing and nocturnal desaturation. Am J Med 73: 239-243, 1982.

26.Rogers, R.; Sleep Disordered Breathing, Part I: Overview, Physiology, Clinical Management, Clinical Dentistry Vol 1, Ch 37 1-22, 1995

27.Rogers, R.; Sleep Disordered Breathing, Part II: Oral Appliance Therapy. Clinical Dentistry Vol 1, Ch 37A 1-32, 1995.

28.Lowe, A.A., Fleetham, Ryan, Matthews; Effects of a Mandibular Repositioning Appliance used in the Treatment of Obstructive Sleep Apnea on Tongue Muscle Activity, in Sleep and Respiration. F Issa, P. Surett and J. Remmers Wildy-Lisa Inc. 395-405, 1990.

29.Lowe, Bookstein – Airway/Tongue Interactions in Obstructive Sleep Apnea, In: The Biological Mechanisms of Tooth Movement and Craniofacial Adaptation. Z. Dairdovitch, EBSCO Media Birmingham Alabama 261-267, 1991.

30.Lowe, A.A.; Dental Appliances for the Treatment of Snoring and/or Obstructive Sleep Apnea In: Principles and Practices of Sleep Medicine. M. Krugger, T. Roth, W. Dement, WB Saunders Co, 722-735, 1994.

31.Ferguson; Ono, Lowe, Keenan, Lore, Wiggs Fleetham; A Randomized Crossover Study of an Oral Appliance vs CPAP in the Treatment of Mild-Moderate Obstructive Sleep Apnea. Chest 109: 1269-75, 1996.

32.Lowe, Fleetham, Adachi, Ryan; Aphalometrus and CT Predictors of Apnea Index Severity. AM J. Orthodontics Dentofacial Orthopedics 107: 589-95, 1995.

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