Dr. Les Priemer
SNORING AND SLEEP APNEA THERAPY

DENTAL SLEEP MEDICINE
UPDATE 2015

Dentists can Help Change Lives and Relationships

According to a survey taken by couples across America, 27% of couples over the age of 40 no longer sleep in the same bedroom, opting for separate sleeping quarters due to the distracting sounds of their partners' snoring. Snoring can affect the life of the bed partner as much as it does the life of the snorer, because the partner is not getting the amount of sleep they need, resulting in daytime fatigue, irritability, and overall moodiness. Likewise, as the obesity epidemic in America continues to affect many people, the amount of snorers also increases. Snoring can be aggravated by obesity, which is why a correlation between the two is not unimaginable. Snoring increases the risk of cardiovascular disease, as well as overall comorbidity with other disorders. Out of all the patients who suffer from sleep apnea, 34% are at risk for coronary heart disease, 40% are at risk for hypertension, 65% are at risk for diabetes, 80% are at risk for fibromyalgia, and 84% are at risk for nocturnal strokes.

Dr. Les Priemer

After the initial diagnosis of sleep apnea, doctors give patients different options for treatments, such as oral appliances or CPAP therapy. The American Academy of Sleep Medicine now considers oral appliances the first and foremost treatment option for mild to moderate cases of obstructive sleep apnea. Patients who cannot tolerate continuous positive airway pressure (CPAP) therapy are also good candidates for oral appliances, although many of these patients are never told of this option. On the Internet, patients can also find "boil and bite" mouth guard-like appliances that claim to help snoring, but these are fairly inadequate when compared to the oral appliances that are custom fitted by dentists and sleep physicians.

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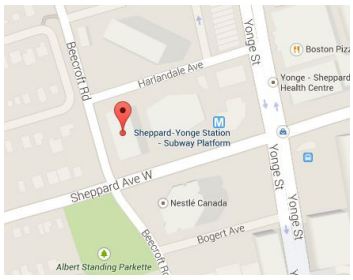
When considering treating a patient with an oral appliance, many tests must take place to ensure that the patient will be compatible with the appliance. Nasal obstructions, such as a deviated septum, must be identified, as the patient will do a majority of breathing through their nose. Oropharagenal obstructions, such as enlarged tonsils or adenoids, must also be addressed surgically due to the obstructions they cause in the airway. Patients who have hypopharangeal obstructions, mainly retrognathic mandibles, are prime candidates for oral appliances, because they alter the position of the jaw to allow for better airflow. If patients choose to use an oral appliance, it is adjusted for a period of two to four months in order for it to reach its fullest potential. The patient's soft palate may be swollen due to snoring or smoking, therefore the period of adjustment is necessary. Patients using oral appliances experience higher levels of overall health and longer lifespans after the initial adjustment period. Oral appliances are the most effective noninvasive methods of treating snoring, and are the preferred treatment by patients.



Rondeau, B. (2010) "How dentists who treat snoring and sleep apnea can save marriages and lives" Dental Tribune International. Web.

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Oral Appliances and Their Effects on Sleep Apnea

Oral appliances have been used as early as 1902 to treat disorders of the mandible and upper airway obstruction. Since then, the technology has advanced greatly and an increasing number of oral appliances have been used to treat snoring and sleep apnea. Obstructive sleep apnea is associated with upper airway obstruction during sleep, causing snoring, apneas, and hypopneas. The pathophysiology of obstructive sleep apnea is related to the patient's upper airway anatomy, upper airway resistance, and the function of muscles in the upper airway. Oral appliances modify the upper airway by altering the position of the patient's mandible and tongue, producing consistent effects in a multitude of patients.

Researchers reviewed data from 21 different publications, which included 320 patients threated with oral appliances for either snoring or sleep apnea. Evidence showed that snoring was improved or eliminated in most of the patients treated with an oral appliance. In regards to obstructive sleep apnea, a majority of patients experienced significant progress, and the average AHI was reduced from 47 to 19 apnea events per hour. According to the researchers reviewing the previous studies, the recorded improvement in sleep quality reflects the effect that oral appliances have on the patient's breathing.

Dentists have developed a variety of devices to correct various types of occulsal disorders, and they use traditional dental techniques to modify the position of the patient's mandible and tongue. Oral appliances are designed to change the position of the upper airway structure to either enlarge it or to reduce the chances of it collapsing. Researchers used cephalometric radiographs to view the increase of upper airway dimensions in patients using mandible advancing oral appliances, as well as the effect that a downward rotation of the mandible. Their data showed that this downward rotation increased the superior airway space, allowing for more oxygen to flow through unobstructed.

Dental devices such as oral appliances produce changes in the shape and function of the patient's upper airway. In some patients, snoring has been connected to other significant sleep disturbances, as well as higher risk of stroke or cardiovascular disease. Obstructive sleep apnea can affect a multitude of the body's other systems, and lead to diseases such as cancer, diabetes, and hypertension. The potential to positively influence the lives of those suffering from sleep disorders lies in the use of oral appliances, because many patients who use them show significant improvement.

Shmid-Nowara, W., Lowe, A.,Weigand, L., Cartwright, R., Perez-Guerra, F., Menn, S. (1995) "Oral Appliances for the Treatment of Snoring and Obstructive Sleep Apnea" Sleep, Vol. 18, pp. 501-510.

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The Relationship between Snoring and Carotid Artery Atherosclerosis

Snoring and obstructive sleep apnea may be important risk factors in the development of cardiovascular disease, as well as carotid atherosclerosis and stroke. While a connection between the two diseases has been hypothesized, there was never much evidence to prove that snoring affects the carotid artery. In 2007, a study of 110 volunteers aged 45-80 years, both snorers and on snorers with sleep apnea was conducted to find a correlation between snoring and carotid atherosclerosis. Each person was put into one of three groups: mild snorers, moderate snorers, and heavy snorers.

Out of those who were mild snorers, 20% experienced carotid atherosclerosis, while 32% of the moderate group and 64% of the heavy group had the same diagnosis. The data shows that snoring is significantly associated with carotid atherosclerosis, and that plaque buildup in the arteries is more common in people who snore heavily. Other research groups have hypothesized that oscillatory pressure waves from the upper airway may be transmitted to the surrounding tissues in the cardiovascular system. These vibrations are considered to be pathophysiological factors for development of carotid atherosclerotic plaque that clog arteries and may cause strokes. This constant exposure to heavy vibrations causes fundamental damage to the endothelial cells of the carotid artery walls.

The risk of developing carotid atherosclerosis affects those with obstructive sleep apnea as well as those who are heavy snorers. Snoring is often a common side effect of obstructive sleep apnea; therefore the patients are also experiencing the effects of the vibrations to the cardiovascular artery walls. Snoring is usually regarded as more of a social and marital issue than a health issue, but the evidence shows that it can have a detrimental effect on one's health. The severity of which snoring can affect the body as a whole has often been overlooked by patients, as they do not see it as more than a nuisance. The truth is that heavy snoring is an independent risk factor for carotid atherosclerosis, which could eventually develop to be associated with fatal strokes.

Lee, S.A., Amis, T.C., Byth, K., Larcos, G., Kairaitis, K., Robinson, T.D., Wheatley, J.R. (2007) "Heavy Snoring as a Cause of Carotid Artery Atherosclerosis" Sleep, Vol. 31, pp. 1207-13.

Oral Appliance Therapy as an alternativeto CPAP and is covered by Medicare and most medical insurances

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Sleep Disordered Breathing in Children: A Retrospective Review

A retrospective review of pediatric experimental sleep data sought to summarize the most important and recent scientific developments of pediatric sleep medicine, specifically as it relates to sleep disorders and sleep in special pediatric populations. The review is based on a Medline search with the following terms: pediatric, infant, child, sleep, insomnia, sleep disorders, and includes articles referencing people under the age of 18. The most important articles were in the AASM, which were evidence-based reviews on respiratory indications for nocturnal polysomnography in children. A study of adolescents aged 13-18 examined the important clinical issues of whether adult or pediatric scoring should be applied in adolescents. Use of adult standards for meeting criteria for sleep apnea classification resulted in less teens being diagnosed, emphasizing the importance of standardized parameters.

Another study provided data-driven analyses of conventional polysomnography information for the diagnosis of obstructive sleep apnea in children, streamlining the parameters for diagnoses. A different study assessed risk factors for developing sleep apnea, such as maternal smoking, age, weight gain during pregnancy, as well as pre or perinatal complications. Most risk factors were insignificant, but delayed motor milestones were a great indicator of sleep-disordered breathing. It was also noted that obese children were more likely to develop obstructive sleep apnea due to a higher consumption rate of fast foods, and less exercise.

The impact of sleep disordered breathing on metabolic and cardiovascular function of a young body put the child at risk for insulin resistance. Children with sleep disordered breathing were also observed to have neurocognitive impairments, lower IQ, and ADHD. The review highlights much clinical research focused on sleep disorders in children and in high-risk pediatric populations. Improved diagnostic tools and methods, better understanding of individual risk factors for adverse consequences of sleep continue to be worthy goals for future research for pediatricians and sleep physicians alike.

Owens, J.A., “Update in Pediatric Sleep Medicine” Curr Opin Pulm Med. 2011;17 (6):425430.

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